

40-8989

# ENVIROCARE OF UTAH, INC.

THE SAFE ALTERNATIVE

April 1, 1994

Mr. Joseph J. Holonich, Acting Chief  
Uranium Recovery Branch  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Submittal Supplemental Groundwater Quality Data  
License No. SMC-1559

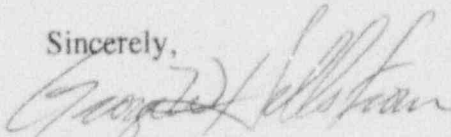
Dear Mr. Holonich:

Envirocare of Utah, Inc. ("Envirocare") submits 5 copies each of Envirocare's response to the Nuclear Regulatory Commission's ("NRC") comments dated February 1, 1994. These comments supplement Envirocare's submission of November 24, 1993, regarding License Condition 9.7 d). The following documents are included in this submission:

1. Bingham Environmental Project Memorandum, dated March 30, 1994, regarding Responses to NRC's February 1, 1994 Comments, Groundwater Quality Report, 11e.(2) Permit.
2. Bingham Environmental Project Memorandum, dated January 14, 1994, regarding Results of 4th Quarter of 1993 Groundwater Sampling.
3. Bingham Environmental Project Memorandum, dated March 28, 1994, regarding Proposed Groundwater Protection Levels, Compliance Monitor Wells.
4. Bingham Environmental Project Memorandum, dated March 29, 1994, regarding Corrosion of Stainless Steel Dedicated Sampling Pumps.
5. November 1993 and February 1994 organic analysis reports for 11e.(2) compliance monitoring wells.

Envirocare requests that the NRC review and approve these documents as provided by the license. If you have any questions regarding this submittal please contact the undersigned at 801-532-0920.

Sincerely,



George W. Hellstrom

110114

Enclosures

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**PROJECT MEMORANDUM**

**TO:** George Hellstrom - Envirocare of Utah, Inc.

**FROM:** Stan Plaisier - Bingham Environmental, Inc.  
 Mark Taggart - Bingham Environmental, Inc.  
 David Cline - Bingham Environmental, Inc. *DCC*

**DATE:** March 30, 1994

**SUBJECT:** Responses to NRC's February 1, 1994 Comments  
 Groundwater Quality Report  
 11e.(2) Permit  
 Envirocare Facility  
 South Clive, Utah

15. Bingham Environmental reviewed available hydrogeologic and groundwater quality data to evaluate whether wells could be grouped together into aquifer units which exhibit similar groundwater quality characteristics. Bingham concluded that wells could not be grouped together and the entire compliance well network should be addressed together. Bingham also evaluated grouping all the groundwater quality data and calculating a mean and standard deviation based on all the data instead of for each individual well, however, based on meetings held with the Utah Division of Water Quality concerning revisions to protection levels for all Envirocare compliance wells, this approach was not selected.

Ground Water Protection Levels (GWPL) have been proposed for inorganic, radiologic and organic constituents for each individual well which are consistent with revised GWPLs being developed for the existing Utah LARW Permit. The GWPLs for the inorganics and radiologic constituents are proposed as either the State of Utah, Division of Water Quality's Ground Water Quality Standard (GWQS) or the Mean + 2 standard deviations, based on samples collected between April 1991 and November 1993, whichever is greater. The results of the statistical analysis for mean concentration, standard deviation and mean concentration + 2 standard deviations are provided in Table 1. Tables 2 and 3 list the proposed GWPLs based on the comparison of the Table 1 results for each well and the GWQS for each constituent.

The GWPLs for the volatiles and semi volatile organics are based on Federal and State water quality guidelines because all analytical results to date have been below detection limits for organic constituents. The proposed GWPL and the basis for each of the organic GWPLs are provided in Table 2. The results of the organic analysis for

samples collected in November 1993 and February 1994 are provided in the attached laboratory results.

Statistical analysis for four of the constituents; cadmium, chromium, molybdenum and nickel, are based on samples collected between April 1991 and May 1993. Concentrations for these constituents in August and November 1993 were elevated. This has been determined to be due to corrosion of the stainless steel dedicated sampling pumps in the wells. Groundwater samples collected in August, November and December 1993 indicated significant increases in cadmium, chromium, molybdenum, nickel and iron concentrations when compared to previous baseline data. The metal concentrations began to decrease in December 1993 and January 1994 with the concentrations being much lower in samples collected in February 1994. Details of the corrosion are summarized in a Bingham Environmental Project Memorandum titled "Corrosion of Stainless Steel Dedicated Sampling Pumps", dated March 29, 1994.

Although Envirocare is in the process of removing the stainless steel sampling pumps from the compliance monitor wells, there is evidence that it will probably take some period of time for the metal concentrations to decrease down to baseline levels.

The statistical analysis for the proposed GWPLs have included recent quarterly sampling data for the month of November 1993. The analytical laboratory results for the November 1993 quarterly sampling and preliminary results for February 1994 are provided in the attached documents. February's results are preliminary pending final QA/QC review.

16. *Agreed.* The GWPLs are determined on a well by well basis.
17. Envirocare has drilled in excess of 40 exploratory holes in the last three years in the south half of Section 32 and reviewed hydrogeologic information including subsurface logs, cross sections and water level measurements to delineate the uppermost aquifer. Based on this information, review of previous data, evaluations of freshwater equivalent heads and the hydrostratigraphy below Section 32, the uppermost aquifer has been determined to extend to approximately 40 to 45 feet below the ground surface. Wells and piezometers which penetrate through Unit 2 and extend into Unit 1 typically exhibit higher freshwater equivalent heads than wells screened in Unit 2 or Units 2 and 3. Review of the well logs indicate that all POC wells are completed within the uppermost aquifer and do not penetrate through Unit 2 into Unit 1.  
  
In reference to GW-25, this well is adequately screened in the upper saturated zone of the uppermost aquifer. Based on the location of the water table (near the Unit 3/Unit 2 interface) the saturated zone mostly occupies Unit 2 and the screen interval is appropriate for obtaining reasonable recharge rates for the required sampling.
18. Envirocare will provide the required pre-operational monitoring data for GW-60 and GW-63 as well as the required data for fluorine, cyanide and organic constituents as it becomes available through ongoing quarterly groundwater monitoring over the next

1 to 3 years. Groundwater modeling has indicated travel times on the order of hundreds of years for any potential waste to reach the POC wells. Based on the projected travel times the 1 to 3 years of quarterly groundwater data should be suitable for use as background values.

19. The proposed standard of 5.33 pCi/l for thorium-232 was established by the Utah Division of Water Quality as a Ground Water Quality Standard for the LARW Groundwater Quality Discharge Permit.
20. Drill hole logs and completion details for GW-60 and GW-63 are attached to these responses.
21. Appropriate certifications for American West Analytical Laboratories, Inc. and Barringer Laboratories, Inc. are provided with these responses.



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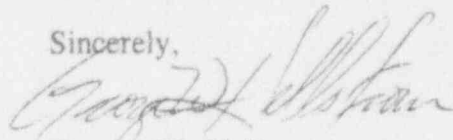
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TABLE 1

SUMMARY OF WATER QUALITY STATISTICS

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**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-19A

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	16	0.05	0.018	0.008	0.034
Barium	16	1	0.007	0.007	0.021
Beryllium	13		0.005	0.000	0.005
Cadmium	16	0.01	0.007	0.010	0.028
Chromium	16	0.05	0.033	0.032	0.096
Copper	16	1	0.007	0.008	0.0239
Lead	16	0.05	0.008	0.011	0.030
Mercury	16	0.002	0.0003	0.0002	0.0007
Molybdenum	14		0.493	0.205	0.903
Nickel	16	0.15	0.022	0.037	0.096
Selenium	16	0.01	0.005	0.000	0.005
Silver	16	0.05	0.006	0.002	0.009
Zinc	16	5	0.945	3.629	8.20
<b>ANIONS</b>					
Bicarbonate	16		173.125	37.536	248
Carbonate	16		10.000	0.000	10
Chloride	16		24125.000	1615.356	27356
Sulfate	16		4958.125	833.248	6625
<b>CATIONS</b>					
Calcium	16		769.375	69.053	907
Magnesium	16		1109.375	114.644	1339
Potassium	16		506.875	115.743	738
Sodium	16		15875.000	1218.349	18312
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	16	2.40	4.350	0.615	5.58
Fluorine	7		2.000	2.859	7.72
Nitrate	16		0.015	0.012	0.038
Nitrates (NO3-N + NO2-N)	15	10	0.019	0.023	0.065
Total Dissolved Solids	16		49625.000	2712.817	55051
Conductivity (umhos/cm)	15		65428.571	8723.648	82876
pH	16	6.5-8.5	7.444	0.122	7.69
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		3.087	5.926	14.94
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH	16		7.251	0.127	7.50
Conductivity (umhos/cm)	16		69908.375	6960.259	83829
Temperature (Deg. C)	16		12.894	0.691	14.27

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-19A

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	16	15	66.250	78.492	223.23
Gross Beta	16		483.125	139.137	761.40
Total Uranium (mg/l)	16	0.02	0.002	0.002	0.01
Beryllium-7	15		58.533	35.415	129.36
Cadmium-109	15		64.200	15.359	94.92
Carbon-14	12	2133	4.692	5.005	14.70
Cobalt-60	15		6.233	3.040	12.31
Iodine-129	6	1.07	1.317	2.643	6.60
Manganese-54	15		6.147	3.258	12.66
Neptunium-237	6		0.020	0.040	0.10
Potassium-40	15	48	400.000	138.948	677.90
Radium-226	16		0.475	0.382	1.24
Radium-228	16		1.038	0.801	2.64
Ra-226 + Ra-228	16	5	1.513	1.183	3.879
Strontium-90	16	8	0.238	0.357	0.95
Technetium-99	6	800	1.200	2.086	5.37
Thorium-230	15	5.33	0.436	0.951	2.34
Thorium-232	15	5.33	0.000	0.000	0.00
Tritium	12		6.667	13.123	32.91

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-20

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.022	0.010	0.042
Barium	17	1	0.007	0.008	0.024
Beryllium	13		0.0050	0.0000	0.005
Cadmium	17	0.01	0.006	0.008	0.021
Chromium	17	0.05	0.021	0.029	0.080
Copper	17	1	0.006	0.007	0.0197
Lead	17	0.05	0.005	0.000	0.005
Mercury	17	0.002	0.0008	0.0023	0.0054
Molybdenum	13		0.175	0.066	0.307
Nickel	17	0.15	0.022	0.041	0.103
Selenium	17	0.01	0.005	0.001	0.007
Silver	17	0.05	0.005	0.001	0.008
Zinc	17	5	0.005	0.007	0.019
<b>ANIONS</b>					
Bicarbonate	17		221.176	14.093	249
Carbonate	17		10.000	0.000	10
Chloride	17		24529.412	1538.435	27606
Sulfate	17		3700.000	316.982	4336
<b>CATIONS</b>					
Calcium	17		425.882	33.617	493
Magnesium	17		732.941	66.577	866
Potassium	17		537.647	67.347	672
Sodium	17		16235.294	2044.488	20324
<b>OTHER CHEMISTRYS</b>					
Cyanide	11		0.005	0.010	0.005
Flouride	17	2.40	2.924	0.540	4.00
Fluorine	6		0.600	0.082	0.76
Nitrate	17		0.089	0.087	0.263
Nitrates (NO3-N + NO2-N)	17	10	0.098	0.085	0.268
Total Dissolved Solids	17		48588.235	3482.035	55552
Conductivity (umhos/cm)	16		63866.667	8451.840	80770
pH (units)	17	6.5-8.5	7.524	0.186	7.90
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		2.493	6.671	15.83
Total Organic Halogens (TOX)	17		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.416	0.106	7.63
Conductivity (umhos/cm)	17		70278.471	5388.838	81056
Temperature (Deg. C)	17		12.853	0.956	14.76

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-20

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	48.941	98.681	246.30
Gross Beta	17		511.765	142.962	797.69
Total Uranium (mg/l)	17	0.02	0.010	0.006	0.02
Beryllium-7	17		138.294	246.709	631.71
Cadmium-109	17		87.824	77.881	243.59
Carbon-14	12	2133	4.750	4.781	14.31
Cobalt-60	17		8.865	9.259	27.38
Iodine-129	6	1.07	2.233	3.111	8.45
Manganese-54	17		10.144	13.281	36.71
Neptunium-237	6		0.083	0.146	0.38
Potassium-40	17	48	420.294	116.541	653.38
Radium-226	17		2.012	2.351	6.71
Radium-228	17		2.241	0.915	4.07
Ra-226 + Ra-228	17	5	4.253	3.266	10.785
Strontium-90	17	8	0.329	0.469	1.27
Technetium-99	6	800	2.467	4.740	11.95
Thorium-230	17	5.33	0.171	0.405	0.98
Thorium-232	17	5.33	0.000	0.000	0.00
Tritium	12		30.000	47.434	124.87

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-24

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.017	0.007	0.032
Barium	17	1	0.012	0.012	0.037
Beryllium	13		0.005	0.000	0.005
Cadmium	17	0.01	0.006	0.007	0.021
Chromium	17	0.05	0.021	0.027	0.074
Copper	17	1	0.007	0.007	0.022
Lead	17	0.05	0.005	0.000	0.005
Mercury	17	0.002	0.000	0.000	0.0006
Molybdenum	13		0.185	0.066	0.317
Nickel	17	0.15	0.023	0.037	0.096
Selenium	17	0.01	0.006	0.002	0.010
Silver	17	0.05	0.008	0.012	0.032
Zinc	17	5	0.005	0.007	0.019
<b>ANIONS</b>					
Bicarbonate	17		228.235	15.043	258
Carbonate	17		10.000	0.000	10
Chloride	17		24176.471	1822.580	27822
Sulfate	17		4141.176	1213.192	6568
<b>CATIONS</b>					
Calcium	17		477.647	39.337	556
Magnesium	17		734.118	59.117	852
Potassium	17		522.353	50.588	624
Sodium	17		16352.941	1780.323	19914
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	3.035	0.403	3.84
Fluorine	6		0.633	0.094	0.82
Nitrate	17		0.063	0.030	0.124
Nitrates (NO3-N + NO2-N)	17	10	0.069	0.033	0.135
Total Dissolved Solids	17		47235.294	1799.654	50835
Conductivity (umhos/cm)	16		64250.000	7570.502	79391
pH (units)	17	6.5-8.5	7.500	0.185	7.87
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		1.509	2.758	7.03
Total Organic Halogens (TOX)	17		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.381	0.081	7.54
Conductivity (umhos/cm)	17		69047.000	5525.055	80097
Temperature (Deg. C)	17		12.988	1.323	15.63

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
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 (in pCi/l unless noted otherwise)

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Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	102.353	217.919	538.19
Gross Beta	17		581.765	193.763	969.29
Total Uranium (mg/l)	17	0.02	0.015	0.004	0.02
Beryllium-7	17		111.294	150.935	413.16
Cadmium-109	17		72.353	24.044	120.44
Carbon-14	12	2133	4.083	5.024	14.13
Cobalt-60	17		7.429	4.713	16.85
Iodine-129	6	1.07	0.167	0.373	0.91
Manganese-54	17		6.765	3.727	14.22
Neptunium-237	6		0.083	0.121	0.33
Potassium-40	17	48	447.824	81.569	610.96
Radium-226	17		1.312	0.580	2.47
Radium-228	17		2.547	0.477	3.50
Ra-226 + Ra-228	17	5	3.859	1.057	5.972
Strontium-90	17	8	0.235	0.322	0.88
Technetium-99	6	800	1.733	2.934	7.60
Thorium-230	16	5.33	0.231	0.682	1.59
Thorium-232	17	5.33	0.071	0.282	0.64
Tritium	12		21.667	50.139	121.94

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**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-25

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PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.058	0.023	0.105
Barium	17	1	0.014	0.016	0.046
Beryllium	13		0.005	0.000	0.005
Cadmium	17	0.01	0.008	0.009	0.025
Chromium	17	0.05	0.032	0.037	0.106
Copper	17	1	0.016	0.030	0.075
Lead	17	0.05	0.005	0.001	0.007
Mercury	17	0.002	0.000	0.000	0.0007
Molybdenum	14		0.171	0.059	0.289
Nickel	17	0.15	0.022	0.033	0.089
Selenium	17	0.01	0.005	0.000	0.005
Silver	17	0.05	0.016	0.043	0.103
Zinc	17	5	0.005	0.007	0.018
<b>ANIONS</b>					
Bicarbonate	17		215.294	35.829	287
Carbonate	17		10.000	0.000	10
Chloride	17		24470.588	1538.435	27547
Sulfate	17		4311.765	373.981	5060
<b>CATIONS</b>					
Calcium	17		527.059	60.173	647
Magnesium	17		864.118	47.534	959
Potassium	17		512.941	88.035	689
Sodium	17		16588.235	1497.403	19583
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	3.394	0.453	4.30
Fluorine	7		1.671	2.176	6.02
Nitrate	17		0.034	0.024	0.081
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	17	10	0.038	0.021	0.080
Total Dissolved Solids	17		44452.941	10232.596	64918
Conductivity (umhos/cm)	16		64062.500	9902.454	83867
pH (units)	17	6.5-8.5	7.471	0.127	7.73
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		4.944	10.363	25.67
Total Organic Halogens (TOX)	17		0.034	0.116	0.267
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.329	0.079	7.49
Conductivity (umhos/cm)	17		66890.824	9930.568	86752
Temperature (Deg. C)	17		12.612	0.750	14.11

\* Based on samples collected between April 1991 and November 1993



TABLE 1  
SUMMARY OF WATER QUALITY STATISTICS  
Compliance Monitor Wells  
(in pCi/l unless noted otherwise)

Well Identification: GW-25

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PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	108.294	122.800	354.07
Gross Beta	17		612.471	171.301	955.17
Total Uranium (mg/l)	17	0.02	0.103	0.029	0.16
Beryllium-7	17		93.000	101.979	296.96
Cadmium-109	17		68.118	17.112	102.34
Carbon-14	12	2133	10.000	15.050	40.10
Cobalt-60	17		6.976	3.856	14.69
Iodine-129	6	1.07	0.450	0.739	1.93
Manganese-54	17		6.553	3.105	12.76
Neptunium-237	6		0.517	0.851	2.22
Potassium-40	17	48	450.235	166.701	783.64
Radium-226	17		1.647	0.638	2.92
Radium-228	17		2.494	0.581	3.66
Ra-226 + Ra-228	17	5	4.141	1.219	6.578
Strontium-90	17	8	0.324	0.310	0.94
Technetium-99	6	800	2.550	2.274	7.10
Thorium-230	17	5.33	0.665	1.031	2.73
Thorium-232	17	5.33	0.000	0.000	0.00
Tritium	12		33.333	61.146	155.63

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-26

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	15	0.05	0.094	0.050	0.195
Barium	15	1	0.017	0.014	0.046
Beryllium	13		0.005	0.000	0.005
Cadmium	15	0.01	0.007	0.009	0.025
Chromium	15	0.05	0.030	0.031	0.093
Copper	15	1	0.008	0.009	0.026
Lead	15	0.05	0.005	0.000	0.006
Mercury	15	0.002	0.000	0.000	0.0004
Molybdenum	13		0.477	0.119	0.714
Nickel	15	0.15	0.023	0.034	0.092
Selenium	15	0.01	0.007	0.003	0.014
Silver	15	0.05	0.005	0.001	0.008
Zinc	15	5	0.008	0.014	0.037
<b>ANIONS</b>					
Bicarbonate	15		115.200	21.100	157
Carbonate	15		10.000	0.000	10
Chloride	15		23533.333	1543.445	26620
Sulfate	15		4640.000	540.123	5720
<b>CATIONS</b>					
Calcium	15		638.667	48.972	737
Magnesium	15		936.667	39.441	1016
Potassium	15		475.333	78.982	633
Sodium	15		15400.000	1200.000	17800
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	15	2.40	3.573	0.497	4.57
Fluorine	7		1.486	1.845	5.18
Nitrate	15		1.016	0.087	1.19
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	1.020	0.082	1.18
Total Dissolved Solids	15		45400.000	5017.303	55435
Conductivity (umhos/cm)	14		62929	8697	80323
pH (units)	15	6.5-8.5	7.527	0.134	7.79
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		2.593	4.425	11.44
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	15		7.509	0.143	7.79
Conductivity (umhos/cm)	15		66151.667	10644.709	87441
Temperature (Deg. C)	15		12.973	0.839	14.65

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-26

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	15	15	32.000	65.136	162.27
Gross Beta	15		570.000	192.111	954.22
Total Uranium	15	0.02	0.024	0.008	0.04
Beryllium-7	15		54.333	32.130	118.59
Cadmium-109	15		61.667	20.082	101.83
Carbon-14	12	2133	6.742	15.718	38.18
Cobalt-60	15		5.973	3.192	12.36
Iodine-129	6	1.07	0.567	1.098	2.76
Manganese-54	15		5.220	2.989	11.20
Neptunium-237	6		0.467	0.576	1.62
Potassium-40	15	48	366.467	107.568	581.60
Radium-226	15		0.947	0.446	1.84
Radium-228	15		2.307	0.687	3.68
Ra-226 + Ra-228	15	5	3.253	1.133	5.519
Strontium-90	15	8	0.247	0.376	1.00
Technetium-99	6	800	0.550	0.465	1.48
Thorium-230	15	5.33	1.253	2.893	7.04
Thorium-232	15	5.33	0.000	0.000	0.00
Tritium	12		28.167	45.647	119.46

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-27

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	15	0.05	0.027	0.014	0.054
Barium	15	1	0.022	0.017	0.055
Beryllium	13		0.005	0.000	0.005
Cadmium	15	0.01	0.007	0.008	0.024
Chromium	15	0.05	0.025	0.027	0.079
Copper	15	1	0.008	0.008	0.023
Lead	15	0.05	0.005	0.000	0.005
Mercury	15	0.002	0.000	0.001	0.0020
Molybdenum	13		0.454	0.454	1.362
Nickel	15	0.15	0.019	0.030	0.079
Selenium	15	0.01	0.005	0.000	0.005
Silver	15	0.05	0.005	0.001	0.008
Zinc	15	5	0.005	0.007	0.020
<b>ANIONS</b>					
Bicarbonate	15		161.333	12.037	185
Carbonate	15		10.000	0.000	10
Chloride	15		21133.333	1359.739	23853
Sulfate	15		3946.667	527.720	5002
<b>CATIONS</b>					
Calcium	15		525.333	47.591	621
Magnesium	15		820.667	68.650	958
Potassium	15		502.667	39.067	581
Sodium	15		13800.000	1326.650	16453
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	15	2.40	3.453	0.459	4.37
Fluorine	7		1.886	2.498	6.88
Nitrate	15		0.055	0.081	0.217
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	0.057	0.082	0.220
Total Dissolved Solids	15		41933.333	5272.149	52478
Conductivity (umhos/cm)	14		57214	7552	72317
pH (units)	15	6.5-8.5	7.560	0.102	7.76
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		1.360	0.679	2.72
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	15		7.433	0.127	7.69
Conductivity (umhos/cm)	15		61142.400	8540.768	78224
Temperature (Deg. C)	15		13.160	1.601	16.36

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-27

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	15	15	73.333	138.066	349.47
Gross Beta	15		555.333	137.786	830.90
Total Uranium	15	0.02	0.011	0.009	0.03
Beryllium-7	15		47.733	26.714	101.16
Cadmium-109	15		64.800	19.360	103.52
Carbon-14	12	2133	4.500	4.213	12.93
Cobalt-60	15		6.040	3.323	12.69
Iodine-129	6	1.07	0.667	1.026	2.72
Manganese-54	15		5.033	3.069	11.17
Neptunium-237	6		0.317	0.664	1.65
Potassium-40	15	48	392.400	145.256	682.91
Radium-226	15		0.560	0.270	1.10
Radium-228	15		1.513	0.674	2.86
Ra-226 + Ra-228	15	5	2.073	0.944	3.962
Strontium-90	15	8	0.520	0.598	1.72
Technetium-99	6	800	1.150	1.502	4.15
Thorium-230	15	5.33	1.647	2.520	6.69
Thorium-232	15	5.33	0.007	0.025	0.06
Tritium	12		16.667	43.843	104.35

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-28

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	15	0.05	0.041	0.016	0.073
Barium	15	1	0.012	0.011	0.034
Beryllium	13		0.005	0.000	0.005
Cadmium	15	0.01	0.006	0.007	0.021
Chromium	15	0.05	0.022	0.025	0.073
Copper	15	1	0.009	0.009	0.027
Lead	15	0.05	0.005	0.001	0.008
Mercury	15	0.002	0.000	0.000	0.0008
Molybdenum	13		0.262	0.262	0.785
Nickel	15	0.15	0.020	0.033	0.085
Selenium	15	0.01	0.005	0.000	0.005
Silver	15	0.05	0.006	0.002	0.009
Zinc	15	5	0.009	0.015	0.039
<b>ANIONS</b>					
Bicarbonate	15		150.667	11.235	173
Carbonate	15		10.000	0.000	10
Chloride	15		22600.000	1306.395	25213
Sulfate	15		3740.000	340.196	4420
<b>CATIONS</b>					
Calcium	15		444.000	25.508	495
Magnesium	15		715.333	35.377	786
Potassium	15		510.667	61.043	633
Sodium	15		14533.333	1257.864	17049
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	15	2.40	3.140	0.379	3.90
Fluorine	7		1.814	2.526	6.87
Nitrate	15		0.319	0.134	0.588
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	0.323	0.138	0.598
Total Dissolved Solids	15		43733.333	2293.953	48321
Conductivity (umhos/cm)	14		60357	8406	77169
pH (units)	15	6.5-8.5	7.613	0.150	7.91
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		1.373	0.658	2.69
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	15		7.521	0.096	7.71
Conductivity (umhos/cm)	15		63915.600	10377.063	84670
Temperature (Deg. C)	15		12.827	0.765	14.36

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-28

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	15	15	112.667	157.669	428.00
Gross Beta	15		481.333	131.751	744.83
Total Uranium	15	0.02	0.008	0.002	0.01
Beryllium-7	15		50.200	29.492	109.18
Cadmium-109	15		61.800	16.638	95.08
Carbon-14	12	2133	4.333	5.467	15.27
Cobalt-60	15		6.093	3.103	12.30
Iodine-129	6	1.07	0.767	1.714	4.20
Manganese-54	15		5.287	3.204	11.69
Neptunium-237	6		0.050	0.076	0.20
Potassium-40	15	48	385.867	69.927	525.72
Radium-226	15		0.893	1.289	3.67
Radium-228	15		1.527	0.554	2.64
Ra-226 + Ra-228	15	5	2.420	1.943	6.306
Strontium-90	15	8	0.267	0.252	0.77
Technetium-99	6	800	1.433	2.142	5.72
Thorium-230	15	5.33	0.240	0.498	1.24
Thorium-232	15	5.33	0.000	0.000	0.00
Tritium	12		54.167	72.854	199.87

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-29

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.013	0.005	0.022
Barium	17	1	0.012	0.014	0.039
Beryllium	13		0.005	0.000	0.005
Cadmium	17	0.01	0.006	0.008	0.022
Chromium	17	0.05	0.020	0.026	0.073
Copper	17	1	0.008	0.008	0.024
Lead	17	0.05	0.005	0.000	0.005
Mercury	17	0.002	0.0043	0.0150	0.034
Molybdenum	13		0.193	0.090	0.373
Nickel	17	0.15	0.016	0.027	0.071
Selenium	17	0.01	0.005	0.000	0.005
Silver	17	0.05	0.007	0.006	0.019
Zinc	17	5	0.004	0.006	0.017
<b>ANIONS</b>					
Bicarbonate	17		324.706	27.033	379
Carbonate	17		10.000	0.000	10
Chloride	17		24764.706	1436.065	27637
Sulfate	17		4094.118	616.890	5328
<b>CATIONS</b>					
Calcium	17		529.412	47.213	624
Magnesium	17		810.588	65.122	941
Potassium	17		543.529	77.075	698
Sodium	17		16294.118	1636.521	19567
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	3.324	0.566	4.46
Fluorine	7		1.743	2.556	6.85
Nitrate	17		0.019	0.016	0.051
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	17	10	0.021	0.020	0.061
Total Dissolved Solids	17		46058.824	3637.559	53334
Conductivity (umhos/cm)	16		62750.000	8265.138	79280
pH (units)	17	6.5-8.5	7.412	0.160	7.73
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		1.886	4.106	10.10
Total Organic Halogens (TOX)	17		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.205	0.061	7.33
Conductivity (umhos/cm)	17		70047.529	5280.983	80609
Temperature (Deg. C)	17		13.006	0.844	14.69

\* Based on samples collected between April 1991 and November 1993



**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-29

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	65.647	94.494	254.63
Gross Beta	17		590.588	146.467	883.52
Total Uranium (mg/l)	17	0.02	0.024	0.010	0.04
Beryllium-7	17		140.647	244.750	630.15
Cadmium-109	17		88.471	85.507	259.48
Carbon-14	12	2133	8.433	9.187	26.81
Cobalt-60	17		9.553	11.382	32.32
Iodine-129	6	1.07	0.917	1.795	4.51
Manganese-54	17		9.053	15.132	39.32
Neptunium-237	6		1.033	1.763	4.56
Potassium-40	17	48	452.941	98.738	650.42
Radium-226	17		1.135	0.551	2.24
Radium-228	17		2.506	0.758	4.02
Ra-226 + Ra-228	17	5	3.641	1.309	6.259
Strontium-90	17	8	0.324	0.461	1.25
Technetium-99	6	800	1.400	1.297	3.99
Thorium-230	17	5.33	0.518	0.943	2.40
Thorium-232	17	5.33	0.076	0.306	0.69
Tritium	12		16.667	32.745	82.16

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
(in  $\mu\text{g/l}$  unless noted otherwise)

Well Identification: GW-36

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	15	0.05	0.032	0.014	0.060
Barium	15	1	0.015	0.014	0.043
Beryllium	13		0.005	0.000	0.005
Cadmium	15	0.01	0.006	0.007	0.020
Chromium	15	0.05	0.027	0.025	0.077
Copper	15	1	0.008	0.008	0.024
Lead	15	0.05	0.005	0.000	0.005
Mercury	15	0.002	0.0005	0.0008	0.002
Molybdenum	13		0.238	0.100	0.439
Nickel	15	0.15	0.034	0.058	0.150
Selenium	15	0.01	0.006	0.001	0.008
Silver	15	0.05	0.005	0.001	0.008
Zinc	15	5	0.006	0.008	0.022
<b>ANIONS</b>					
Bicarbonate	15		154.667	23.627	202
Carbonate	15		10.000	0.000	10
Chloride	15		22066.667	1339.983	24747
Sulfate	15		3626.667	349.221	4325
<b>CATIONS</b>					
Calcium	15		478.000	45.782	570
Magnesium	15		651.333	58.976	769
Potassium	15		480.000	40.000	560
Sodium	15		14400.000	1254.326	16909
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	15	2.40	2.840	0.535	3.91
Fluorine	7		1.586	2.211	6.01
Nitrate	15		0.570	0.054	0.678
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	0.587	0.063	0.713
Total Dissolved Solids	15		41066.667	1913.693	44894
Conductivity (umhos/cm)	14		58857	7347	73551
pH (units)	15	6.5-8.5	7.513	0.159	7.83
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		3.707	9.439	22.58
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	15		7.526	0.132	7.79
Conductivity (umhos/cm)	15		63713.267	5265.624	74245
Temperature (Deg. C)	15		12.713	0.964	14.64

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-36

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	15	15	83.333	125.468	331.27
Gross Beta	15		496.667	138.788	774.24
Total Uranium	15	0.02	0.043	0.013	0.07
Beryllium-7	15		60.267	51.613	163.49
Cadmium-109	15		62.267	22.143	106.55
Carbon-14	12	2133	6.000	6.745	19.49
Cobalt-60	15		6.027	3.590	13.21
Iodine-129	6	1.07	1.467	1.981	5.43
Manganese-54	15		5.340	3.246	11.83
Neptunium-237	6		0.133	0.180	0.49
Potassium-40	15	48	381.667	136.744	655.15
Radium-226	15		0.853	0.361	1.58
Radium-228	15		2.067	0.439	2.95
Ra-226 + Ra-228	15	5	2.920	0.800	4.521
Strontium-90	15	8	0.273	0.341	0.96
Technetium-99	6	800	1.067	1.832	4.73
Thorium-230	15	5.33	0.647	1.318	3.28
Thorium-232	15	5.33	0.000	0.000	0.00
Tritium	12		16.667	35.434	87.53

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-37

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	15	0.05	0.021	0.011	0.043
Barium	15	1	0.017	0.015	0.048
Beryllium	13		0.005	0.000	0.005
Cadmium	15	0.01	0.007	0.008	0.023
Chromium	15	0.05	0.023	0.031	0.086
Copper	15	1	0.008	0.008	0.023
Lead	15	0.05	0.005	0.000	0.005
Mercury	15	0.002	0.0004	0.0005	0.001
Molybdenum	13		0.246	0.108	0.463
Nickel	15	0.15	0.027	0.059	0.145
Selenium	15	0.01	0.005	0.001	0.007
Silver	15	0.05	0.005	0.001	0.008
Zinc	15	5	0.006	0.008	0.021
<b>ANIONS</b>					
Bicarbonate	15		135.067	17.264	170
Carbonate	15		10.000	0.000	10
Chloride	15		23800.000	1641.138	27082
Sulfate	15		3793.333	358.639	4511
<b>CATIONS</b>					
Calcium	15		480.000	53.666	587
Magnesium	15		736.000	79.816	896
Potassium	15		526.000	51.225	628
Sodium	15		15800.000	1720.465	19241
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	15	2.40	2.953	0.398	3.75
Fluorine	7		0.986	1.231	3.45
Nitrate	15		0.323	0.294	0.910
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	0.328	0.291	0.909
Total Dissolved Solids	15		46266.667	2015.496	50298
Conductivity (umhos/cm)	14		64286	9168	82623
pH (units)	15	6.5-8.5	7.513	0.109	7.73
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		2.660	5.450	13.56
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	15		7.467	0.117	7.70
Conductivity (umhos/cm)	15		67198.400	10317.387	87833
Temperature (Deg. C)	15		12.100	0.821	13.74

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-37

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	15	15	134.667	125.850	386.37
Gross Beta	15		543.333	153.522	850.38
Total Uranium	15	0.02	0.011	0.004	0.02
Beryllium-7	15		47.933	27.194	102.32
Cadmium-109	15		59.933	19.529	98.99
Carbon-14	12	2133	4.000	5.332	14.66
Cobalt-60	15		6.180	3.754	13.69
Iodine-129	6	1.07	0.833	1.367	3.57
Manganese-54	15		5.213	3.280	11.77
Neptunium-237	6		0.763	0.121	1.01
Potassium-40	15	48	412.200	119.960	652.12
Radium-226	15		1.313	0.970	3.25
Radium-228	15		2.747	0.665	4.08
Ra-226 + Ra-228	15	5	4.060	1.635	7.331
Strontium-90	15	8	0.500	0.784	2.07
Technetium-99	6	800	1.733	2.242	6.22
Thorium-230	15	5.33	0.480	0.946	2.37
Thorium-232	15	5.33	0.053	0.200	0.45
Tritium	12		12.500	41.458	95.42

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-38

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.022	0.011	0.043
Barium	17	1	0.024	0.031	0.087
Beryllium	13		0.005	0.000	0.005
Cadmium	17	0.01	0.007	0.008	0.022
Chromium	17	0.05	0.025	0.033	0.091
Copper	17	1	0.017	0.035	0.086
Lead	17	0.05	0.005	0.000	0.005
Mercury	17	0.002	0.0004	0.0004	0.001
Molybdenum	13		0.200	0.078	0.357
Nickel	17	0.15	0.019	0.027	0.073
Selenium	17	0.01	0.006	0.002	0.009
Silver	17	0.05	0.016	0.043	0.103
Zinc	17	5	0.010	0.018	0.047
<b>ANIONS</b>					
Bicarbonate	17		188.824	34.451	258
Carbonate	17		10.000	0.000	10
Chloride	17		20176.471	1423.967	23024
Sulfate	17		2988.235	205.462	3399
<b>CATIONS</b>					
Calcium	17		398.235	38.841	476
Magnesium	17		580.000	52.131	684
Potassium	17		457.059	56.544	570
Sodium	17		13058.824	1161.672	15382
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	2.482	0.340	3.16
Fluorine	7		1.357	1.896	5.15
Nitrate	17		0.285	0.158	0.602
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	17	10	0.296	0.151	0.599
Total Dissolved Solids	17		37000.000	1571.810	40144
Conductivity (umhos/cm)	16		54375.000	6122.448	66620
pH (units)	17	6.5-8.5	7.541	0.142	7.82
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		1.191	0.503	2.20
Total Organic Halogens (TOX)	17		0.034	0.116	0.267
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.434	0.121	7.68
Conductivity (umhos/cm)	17		57553.706	7398.918	72352
Temperature (Deg. C)	17		12.047	0.638	13.32

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-38

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	78.824	103.576	285.98
Gross Beta	17		452.353	89.280	630.91
Total Uranium (mg/l)	17	0.02	0.025	0.008	0.04
Beryllium-7	17		85.000	105.672	296.34
Cadmium-109	17		55.824	24.551	104.92
Carbon-14	12	2133	8.167	11.603	31.37
Cobalt-60	17		5.259	3.241	11.74
Iodine-129	6	1.07	0.850	1.608	4.07
Manganese-54	17		5.447	3.726	12.90
Neptunium-237	6		0.033	0.075	0.18
Potassium-40	17	48	363.647	180.241	724.13
Radium-226	17		1.341	0.320	1.98
Radium-228	17		2.847	0.982	4.81
Ra-226 + Ra-228	17	5	4.188	1.302	6.792
Strontium-90	17	8	0.471	0.556	1.58
Technetium-99	6	800	3.250	6.183	15.62
Thorium-230	17	5.33	0.076	0.180	0.44
Thorium-232	17	5.33	0.000	0.000	0.00
Tritium	12		14.167	31.743	77.65

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-57

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	14	0.05	0.012	0.006	0.024
Barium	14	1	0.020	0.015	0.049
Beryllium	13		0.005	0.000	0.005
Cadmium	14	0.01	0.007	0.008	0.023
Chromium	14	0.05	0.029	0.028	0.084
Copper	14	1	0.010	0.011	0.032
Lead	14	0.05	0.005	0.000	0.005
Mercury	14	0.002	0.0004	0.0005	0.001
Molybdenum	13		0.323	0.105	0.533
Nickel	14	0.15	0.024	0.044	0.111
Selenium	14	0.01	0.005	0.000	0.005
Silver	14	0.05	0.005	0.000	0.005
Zinc	14	5	0.009	0.012	0.033
<b>ANIONS</b>					
Bicarbonate	14		126.429	8.113	143
Carbonate	14		10.000	0.000	10
Chloride	14		20642.857	1493.182	23629
Sulfate	14		4192.857	647.483	5488
<b>CATIONS</b>					
Calcium	14		648.571	70.392	789
Magnesium	14		797.143	68.079	933
Potassium	14		490.000	74.929	640
Sodium	14		13500.000	1052.209	15604
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	14	2.40	3.314	0.352	4.02
Fluorine	7		1.629	2.195	6.02
Nitrate	14		0.322	0.060	0.443
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	14	10	0.324	0.062	0.448
Total Dissolved Solids	14		41214.286	2335.398	45885
Conductivity (umhos/cm)	13		55384.615	8490.161	72365
pH (units)	14	6.5-8.5	7.464	0.212	7.89
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	14		1.336	0.669	2.67
Total Organic Halogens (TOX)	14		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	14		7.441	0.074	7.59
Conductivity (umhos/cm)	14		61109.429	4730.496	70570
Temperature (Deg. C)	14		13.364	0.859	15.08

\* Based on samples collected between April 1991 and November 1993



**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-57

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	14	15	70.714	74.110	218.94
Gross Beta	14		516.429	155.178	826.78
Total Uranium	14	0.02	0.004	0.002	0.01
Beryllium-7	14		58.857	40.165	139.19
Cadmium-109	14		68.071	28.011	124.09
Carbon-14	12	2133	3.475	4.402	12.28
Cobalt-60	14		7.179	4.435	16.05
Iodine-129	6	0.000	0.000	0.000	0.00
Manganese-54	14		6.229	4.820	15.87
Neptunium-237	6		0.100	0.200	0.50
Potassium-40	14	48	415.286	77.628	570.54
Radium-226	14		0.579	0.314	1.21
Radium-228	14		1.293	0.524	2.34
Ra-226 + Ra-228	14	5	1.871	0.839	3.549
Strontium-90	14	8	0.336	0.447	1.23
Technetium-99	6	800	1.920	1.977	5.87
Thorium-230	14	5.33	1.614	2.306	6.23
Thorium-232	14	5.33	0.043	0.155	0.35
Tritium	12		50.000	47.610	145.22

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
(in m<sup>3</sup> unless noted otherwise)

Well Identification: GW-58

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	14	0.05	0.064	0.026	0.116
Barium	14	1	0.020	0.014	0.049
Beryllium	13		0.005	0.000	0.005
Cadmium	14	0.01	0.006	0.007	0.020
Chromium	14	0.05	0.022	0.023	0.068
Copper	14	1	0.069	0.070	0.209
Lead	14	0.05	0.005	0.000	0.005
Mercury	14	0.002	0.0005	0.0005	0.001
Molybdenum	13		0.200	0.078	0.357
Nickel	14	0.15	0.022	0.035	0.093
Selenium	14	0.01	0.005	0.000	0.006
Silver	14	0.05	0.005	0.000	0.005
Zinc	14	5	0.114	0.134	0.383
<b>ANIONS</b>					
Bicarbonate	14		144.286	11.157	167
Carbonate	14		10.000	0.000	10
Chloride	14		20500.000	1052.209	22604
Sulfate	14		2914.286	279.942	3474
<b>CATIONS</b>					
Calcium	14		415.000	36.985	489
Magnesium	14		637.857	48.282	734
Potassium	14		472.857	49.631	572
Sodium	14		13214.286	860.114	14935
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	14	2.40	2.821	0.330	3.48
Fluorine	7		1.843	2.517	6.88
Nitrate	14		0.686	0.163	1.012
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	14	10	0.689	0.166	1.020
Total Dissolved Solids	14		39642.857	2580.342	44804
Conductivity (umhos/cm)	13		56076.923	7927.183	71931
pH (units)	14	6.5-8.5	7.564	0.149	7.86
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	14		1.150	0.331	1.81
Total Organic Halogens (TOX)	14		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	14		7.524	0.123	7.77
Conductivity (umhos/cm)	14		61685.714	4791.638	71269
Temperature (Deg. C)	14		12.914	0.612	14.14

\* Based on samples collected between April 1991 and November 1993

TABLE 1  
SUMMARY OF WATER QUALITY STATISTICS  
Compliance Monitor Wells  
(in pCi/l unless noted otherwise)

Well Identification: GW-58

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	14	15	97.143	86.967	271.08
Gross Beta	14		511.429	176.458	864.36
Total Uranium	14	0.02	0.029	0.009	0.05
Beryllium-7	14		56.143	42.890	141.92
Cadmium-109	14		61.857	24.026	109.91
Carbon-14	12	2133	3.667	3.659	10.98
Cobalt-60	14		5.664	3.618	12.90
Iodine-129	6	1.07	0.220	0.440	1.10
Manganese-54	14		5.721	3.704	13.13
Neptunium-237	6		0.260	0.388	1.04
Potassium-40	14	48	382.214	99.035	580.29
Radium-226	14		1.407	0.390	2.19
Radium-228	14		2.529	0.795	4.12
Ra-226 + Ra-228	14	5	3.936	1.185	6.306
Strontium-90	14	8	0.321	0.347	1.01
Technetium-99	6	800	0.280	0.366	1.01
Thorium-230	14	5.33	0.457	1.089	2.64
Thorium-232	14	5.33	0.136	0.489	1.11
Tritium	12		39.583	67.899	175.38

\* Based on samples collected between April 1991 and November 1993

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**TABLE 2 AND 3**

**SUMMARY OF GROUND WATER PROTECTION LEVELS**

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**TABLE 2**  
**PROPOSED GROUNDWATER PROTECTION LEVELS**  
**Compliance Monitor Wells**  
**( in mg/l unless noted otherwise )**

PARAMETERS	UDWQ GWQS	Proposed GWPL (1)
<b>DISSOLVED METALS</b>		
Arsenic	0.05	0.05 (2)
Barium	1.0	1.0
Beryllium	NA	0.01 (3)
Calcium	0.01	0.01 (5) *
Chromium	0.05	0.05 (6) *
Lead	0.05	0.05
Mercury	0.002	0.002 (7)
Molybdenum	NA	(4) *
Nickel	0.15	0.15 *
Selenium	0.01	0.01 (8)
Silver	0.05	0.05 (9)
<b>OTHER CHEMISTRIES</b>		
Cyanide	NA	0.01 (3)
Fluorine	NA	(4)

- (1) GWPL established as GWQS or Mean + 2(s), based on samples collected between April 1991 and November 1993, whichever is greater.
  - (2) GWPL established at 0.05 mg/l for all the compliance monitor wells except as follows:  
 GW-25 - 0.105 mg/l    GW-28 - 0.073 mg/l  
 GW-26 - 0.195 mg/l    GW-36 - 0.060 mg/l  
 GW-27 - 0.054 mg/l    GW-58 - 0.116 mg/l
  - (3) GWPL established at 10 percent of detection limit.
  - (4) GWPL established at Mean + 2(s) for all the monitor wells, see Table 3.
  - (5) GWPL established at 0.01 mg/l for all the compliance monitor wells except as follows:  
 GW-25 - 0.017 mg/l    GW-38 - 0.016 mg/l
  - (6) GWPL established at 0.05 mg/l for all the compliance monitor wells except as follows:  
 GW-19A - 0.062 mg/l    GW-26 - 0.052 mg/l  
 GW-25 - 0.089 mg/l    GW-38 - 0.081 mg/l
  - (7) GWPL established at 0.002 mg/l for all the compliance monitor wells except as follows:  
 GW-20 - 0.0054 mg/l    GW-29 - 0.034 mg/l
  - (8) GWPL established at 0.01 mg/l for all the compliance monitor wells except as follows:  
 GW-26 - 0.014 mg/l
  - (9) GWPL established at 0.05 mg/l for all the compliance monitor wells except as follows:  
 GW-25 - 0.103 mg/l    GW-38 - 0.103 mg/l
- \* Based on samples collected between April 1991 and May 1993 because elevated concentrations for these constituents in August and November 1993 are apparently due to corrosion of the stainless steel sampling pumps.

**TABLE 2**  
**PROPOSED GROUNDWATER PROTECTIONS LEVELS**  
**Compliance Monitor Wells**  
**( in pCi/l unless noted otherwise )**

Page 2 of 3

PARAMETERS	UDWQ GWQS	Proposed GWPL (1)
<b>DISSOLVED RADIOLOGICS</b>		
Total Uranium (mg/l)	0.02	0.02 (2)
Radium-226 + Radium-228	5.0	5.0 (3)
Radium-226	NA	NA (5)
Radium-228	NA	NA (5)
Thorium-230	5.33	5.33 (4)
Thorium-232	5.33	5.33

- (1) GWPL established as GWQS or Mean + 2(s), based on samples collected between April 19 and November 1993, whichever is greater.
- (2) GWPL established at 0.02 mg/l for all the compliance monitor wells except as follows:
- GW-25 - 0.16 mg/l    GW-36 - 0.07 mg/l  
 GW-26 - 0.04 mg/l    GW-38 - 0.04 mg/l  
 GW-27 - 0.03 mg/l    GW-58 - 0.05 mg/l  
 GW-29 - 0.04 mg/l
- (3) GWPL established at 5 pCi/l for all the compliance monitor wells except as follows:
- GW-20 - 10.78 pCi/l    GW-28 - 6.31 pCi/l    GW-38 - 6.79 pCi/l  
 GW-24 - 5.97 pCi/l    GW-29 - 6.26 pCi/l    GW-58 - 6.31 pCi/l  
 GW-25 - 6.58 pCi/l    GW-37 - 7.33 pCi/l  
 GW-26 - 5.52 pCi/l
- (4) GWPL established at 5.33 pCi/l for all the compliance monitor wells except as follows:
- GW-26 - 7.04 pCi/l    GW-27 - 6.69 pCi/l    GW-57 - 6.23 pCi/l
- (5) GWPL set for Ra-226 plus Ra-228.

**TABLE 2**  
**PROPOSED GROUNDWATER PROTECTIONS LEVELS**  
**11e.(2) Compliance Monitor Wells**  
**( in ug/l unless noted otherwise )**

Page 3 of 3

PARAMETERS	Proposed GWPL
<b>VOLATILE ORGANICS</b>	
Acetone	3700 (1)
2-Butanone	22 (4)
Chloroform	100 (2)
Carbon disulfide	21 (1)
1,2-Dichloroethane	5 (2)
Methylene Chloride	5 (5)
Naphthalene	14000 (3)
<b>SEMI-VOLATILE ORGANICS</b>	
Diethylphthalate	5000 (6)
2-Methylnaphthalene	5.0 (4)

- (1) U.S. EPA, Region III, guidelines only; not regulatory standards, October 1993.
- (2) Federal maximum contaminant level (MCL), promulgated under the Safe Drinking Water Act.
- (3) Utah Division of Environmental Response and Remediation (DERR) groundwater protection standards for underground storage tank (UST) sites.
- (4) GWPL established at 10 percent of the detection limit.
- (5) Federal MCL (Proposed).
- (6) Federal MCL (Goal).

**TABLE 3**  
**PROPOSED GROUNDWATER PROTECTION LEVELS**  
**Compliance Monitor Wells**  
**( in mg/l unless noted otherwise )**

Page 1 of 1

WELL IDENTIFICATION	PROPOSED GWPL (1)	
	Molybdenum *	Fluorine
GW-19A	0.90	7.72
GW-20	0.31	0.76
GW-24	0.32	0.8
GW-25	0.29	6.02
GW-26	0.71	5.18
GW-27	1.36	6.88
GW-28	0.79	6.87
GW-29	0.37	6.85
GW-36	0.44	6.01
GW-37	0.46	3.45
GW-38	0.36	5.15
GW-58	0.36	6.88

(1) GWPL based on Mean + 2(s) for samples collected between April 1991 and November 1993, for each compliance monitor well.

\* Based on samples collected between April 1991 and May 1993 because elevated concentrations for these constituents in August and November 1993 are apparently due to corrosion of the stainless steel sampling pumps.



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ATTACHMENT 1

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# DRILL HOLE LOG

DRILL HOLE NO.: GW-60

PROJECT: Envirocare Landfill  
 CLIENT/OWNER: Envirocare of Utah  
 HOLE LOCATION: 10 feet west of GW-1  
 DRILLER: Overland Drilling Inc.  
 DRILL RIG: CME 750  
 DEPTH TO WATER: 23.46'

PROJECT NO.: 1416-045  
 DATE: 2-2-93  
 TOC ELEV.: 4274.50  
 GS ELEV.: 4272.7  
 LOGGED BY: DCH  
 HOLE NO.: GW-60

ELEVATION DEPTH	WELL DETAILS	SOIL SYMBOLS, SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Sample Number	Sample Depth (ft)	Recovery (in/in)
0			CL	SILTY CLAY: Tan, roots in upper 12-inches, soft to medium stiff, moist.			
4270							
5				...grades with iron oxide staining.	B-1	5-7	24/24
		3/12 2/6 3/6		...grades to light gray very, thin horizontal bedding.	B-2	7-9	24/24
4265							
		5/12 4/6 4/6			B-3	9-11	24/24
10			SM	SILTY SAND: Tan, fine to medium, medium dense to dense, moist.	B-4	11-13	23/24
		11/12 9/6 11/6			B-5	13-15	12/24
4260							
		23/12 12/6 11/6			B-6	15-17	24/24
15							
		13/12 13/6 30/6			B-7	17-19	23/24
4255							
		51/12 26/6 24/6		...grades reddish tan.	B-8	19-21	24/24
20							
		17/12 8/6 14/6		...grades clayey.	B-9	21-23	24/24
4250			CL	SILTY CLAY: Reddish tan, sandy, fine, stiff, moist.	B-10	23-25	24/24
		27/12 19/6 22/6		...grades wet.	B-11	25-27	24/24
25							
		20/12 8/6 7/6			B-12	27-28	12/12
4245							
		17/12 9/6 10/6					
30							
		13/12 8/6 15/6					
4240							
		13/6 8/6					
35							

# DRILL HOLE LOG

## DRILL HOLE NO.: GW-63

PROJECT: Envirocare Landfill  
 CLIENT/OWNER: Envirocare of Utah  
 HOLE LOCATION: 12' East of DH-59  
 DRILLER: Overland Drilling Inc.  
 DRILL RIG: CME 75  
 DEPTH TO WATER: 20.03'

PROJECT NO.: 1416-045  
 DATE: 7-7-93  
 TOC ELEV.: 4271.84  
 GS ELEV.: 4269.9  
 LOGGED BY: DEW  
 HOLE NO.: GW-63

ELEVATION DEPTH	WELL DETAILS	SCIL SYMBOLS, SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Sample Number	Sample Depth (ft)	Recovery (in/in)	
0			CL	SILTY CLAY: tan, some roots, dry, grades to moist at 1', stiff low-plasticity.  ...grades to light gray, grades to moderate plasticity. ...grades to tan with some iron oxide staining.  ...very moist, soft to very soft.	B-1	0-2	20/24	
4265					5	B-2	2-4	15/24
						B-3	4-6	18/24
						B-4	6-8	24/24
						B-5	8-10	24/24
4260					10	B-6	10-12	24/24
						B-7	12-14	24/24
						B-8	14-16	24/24
4255					15	B-9	16-18	24/24
						B-10	18-20	22/24
4250					20	B-11	20-22	20/24
						B-12	22-24	24/24
4245					25	B-13	24-26	24/24
						B-14	26-28	24/24
4240					30	B-15	28-30	24/24
4235	35							

# KEY TO SYMBOLS

Symbol Description

## Strata symbols



Silty clay



Silty sand

## Misc. Symbols



Water table



Drill hole completion depth

## Soil Samplers



Standard split spoon sampler (SPT)

## Monitor Well Details



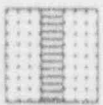
Locked cover set in concrete,  
2-inch blank PVC pipe



Bentonite hole plug, 2-inch  
blank PVC pipe



#16-40 Colorado silica sand,  
2-inch blank PVC pipe



#16-40 Colorado silica sand, 0.01 machine  
slotted 2-inch PVC pipe



Bentonite slurry,  
2-inch blank PVC pipe



Bentonite pellet plug, 2 ft. thick  
located immediately above sand pack

## KEY TO SYMBOLS

### Notes:

1. Monitor wells GW-60 and GW-63 were drilled on February 2, 1993 and July 7, 1993, respectively. GW-60 was drilled utilizing a CME 750 all-terrain drill rig with 7.75-inch diameter (OD) continuous hollow stem auger. GW-63 was drilled utilizing a CME 75 drill rig with 8.25-inch diameter (OD) continuous hollow stem auger.
2. Soil samples for soil identification were collected with the use of a standard split spoon samplers (SPT).
3. The monitor wells were surveyed to determine horizontal coordinates and vertical elevations, based on State Plane and USGS dataums located at the southwest corner of Section 32.
4. These logs are subject to the limitations, conclusions, and recommendations in this report.

TABLE 1

ENVIROCARE OF UTAH  
SUMMARY OF WELL  
LOCATIONS AND ELEVATIONS

WELL ID#	STATE PLANE COORDINATES		ELEV. GROUND SURFACE (feet)	ELEV. TOP PROTECTIVE CASING W/O LID (feet)	ELEV. TOP OF PVC W/O CAP (feet)	ELEV. OF MARKER CAP (feet)
	Northing (feet)	Easting (feet)				
SC-1	861,926.2	1,552,264.5	4275.4	4278.88	4276.69	NA
SC-2	859,552.0	1,549,899.6	4268.7	4272.08	4271.46	NA
SC-3	859,445.6	1,554,613.9	4277.1	4280.35	4279.73	NA
SC-4	864,211.5	1,554,800.3	4280.5	4284.53	4284.52	NA
SC-5	864,273.4	1,549,949.9	4273.5	4276.10	4275.53	NA
SC-6 *	862,919.1	1,549,841.6	4272.5	4276.96	4276.24	NA
SC-9 *	862,992.0	1,553,137.1	4278.8	4283.20	NA	NA
SC-10	864,206.8	1,553,152.2	4279.8	4284.41	428.72	NA
SC-11 *	864,278.4	1,551,419.8	4275.8	4280.81	4280.50	NA
SC-12 *	862,912.7	1,551,480.3	4274.9	4277.50	NA	NA
SC-13	861,449.1	1,551,546.7	4274.1	4277.08	4276.82	NA
SLC-201	863,094.6	1,550,650.2	4274.0	4275.69	4275.65	NA
SLC-202	863,032.6	1,551,125.5	4274.4	4275.81	4275.78	NA
SLC-203	862,914.0	1,552,014.8	4276.0	4277.42	4277.39	NA
SLC-204	861,565.2	1,550,447.4	4271.8	4273.21	4273.18	NA
SLC-205	861,560.7	1,551,051.1	4273.8	4275.45	4275.44	NA
SLC-206	861,655.2	1,551,988.8	4274.8	4275.94	4275.95	NA
GW-1	859,278.5	1,551,641.1	4273.0	4275.06	4274.91	NA
GW-2	860,773.5	1,554,887.2	4277.9	4279.98	4279.88	NA
GW-3	862,016.5	1,549,956.0	4271.0	4273.14	4272.97	NA
GW-4	861,292.9	1,552,841.8	4274.3	4276.57	4276.46	NA
GW-5	862,724.7	1,552,330.5	4276.6	4278.64	4278.48	NA
GW-6	863,088.9	1,554,967.4	4279.8	4282.01	4281.91	NA
GW-8	864,417.6	1,553,081.7	4280.0	4282.03	4281.93	NA
GW-9	864,027.4	1,552,466.3	4278.8	4281.47	4280.82	NA
GW-11	859,935.8	1,553,702.9	4276.6	4280.17	4279.54	4277.17
GW-12	859,977.9	1,553,892.1	4276.9	4279.95	4279.33	4277.25
GW-13	859,962.0	1,554,214.3	4277.2	4280.11	4279.48	4277.61
GW-16	861,349.8	1,553,727.4	4277.6	4279.76	4279.36	NA
DH-16A	861,335.7	1,553,741.5	4277.6	NA	NA	NA
GW-16R	861,222.8	1,553,727.2	4279.2	4281.14	4281.05	NA
GW-17A	861,507.2	1,552,426.1	4276.5	4278.64	4278.22	NA
GW-18	859,283.1	1,552,418.2	4274.3	4276.61	4276.17	NA
GW-19A	859,343.7	1,549,663.7	4268.9	4270.83	4270.41	NA
GW-19B	859,335.9	1,549,663.2	4268.9	4270.77	4270.43	NA
GW-20	860,324.8	1,552,415.8	4275.0	4276.67	4276.59	NA
GW-21	864,463.3	1,555,001.0	4280.5	4283.23	4282.80	NA
GW-22	861,266.0	1,553,261.4	4275.5	4277.28	4277.19	NA
GW-23	861,270.7	1,552,851.4	4274.7	4276.69	4276.51	NA
GW-24	861,174.2	1,552,435.0	4274.9	4276.74	4276.59	NA
GW-25	861,399.5	1,551,452.1	4274.0	4276.22	4275.74	NA
GW-26	861,412.3	1,550,713.3	4272.7	4274.62	4274.16	NA
GW-27	861,430.8	1,549,878.3	4270.1	4272.44	4272.05	NA
GW-28	860,488.3	1,549,862.6	4269.4	4271.38	4271.13	NA
GW-29	859,435.7	1,552,400.9	4275.0	4276.67	4276.59	NA

WELL ID#	STATE PLANE COORDINATES		ELEV. GROUND SURFACE (feet)	ELEV. TOP PROTECTIVE CASING W/O LID (feet)	ELEV. TOP OF PVC W/O CAP (feet)	ELEV. OF MARKER CAP (feet)
	Northing (feet)	Easting (feet)				
(Continued)						
DH-30	859,402.9	1,553,573.0	4276.3	NA	NA	NA
DH-31	861,255.0	1,554,402.1	4278.3	4280.95	4279.76	NA
GW-32	859,949.5	1,553,703.1	4276.7	4278.46	4278.50	NA
DH-33	860,518.6	1,554,624.4	4277.9	4280.23	4279.72	NA
DH-34	859,445.7	1,554,630.5	4277.3	4279.88	4279.81	NA
GW-36	859,978.3	1,550,498.7	4269.8	4271.98	4271.58	NA
GW-37	860,361.9	1,551,055.1	4268.8	4270.99	4270.48	NA
GW-38	860,745.5	1,551,611.6	4270.8	4273.39	4273.28	NA
GW-41	859,716.8	1,554,661.7	4277.0	4279.52	4279.37	NA
GW-42	859,856.4	1,554,665.0	4277.2	4279.30	4279.16	NA
GW-43	859,974.8	1,554,549.7	4278.2	4280.42	4280.25	NA
GW-44	859,967.8	1,554,370.7	4277.3	4279.14	4278.89	NA
GW-45	859,970.7	1,554,220.7	4277.6	4279.44	4279.25	NA
GW-46	859,978.2	1,554,075.1	4277.2	4279.47	4279.26	NA
DH-47	862,031.5	1,549,956.0	4271.0	NA	NA	NA
DH-48	859,609.0	1,553,855.2	4277.0	NA	NA	NA
DH-49	859,598.9	1,554,641.2	4276.9	NA	NA	NA
DH-50	859,986.5	1,553,863.0	4277.0	NA	NA	NA
DH-51	859,985.5	1,554,677.8	4277.8	NA	NA	NA
DH-52	859,241.5	1,553,692.0	4276.3	NA	NA	NA
DH-53	859,600.8	1,554,314.9	4277.0	NA	NA	NA
DH-54	859,212.2	1,554,698.7	4277.1	NA	NA	NA
GW-55	859,892.6	1,553,858.3	4277.9	4279.93	4279.79	NA
GW-56	860,914.2	1,553,834.9	4275.9	4278.05	4277.90	NA
GW-56R	860,827.6	1,553,750.5	4277.2	4279.20	4279.12	NA
GW-57	860,964.9	1,549,871.2	4269.3	4271.93	4271.57	NA
GW-58	860,015.3	1,549,883.4	4268.9	4271.17	4271.01	NA
DH-59	859,307.6	1,550,721.7	4270.2	4272.06	4272.01	NA
GW-60	859,279.3	1,551,630.5	4272.7	4274.64	4274.5	NA
DH-61	859,965.8	1,551,626.0	4273.5	4275.49	4275.37	NA
DH-62	860,708.3	1,551,616.2	4270.8	4272.98	4272.78	NA
GW-63	859,307.2	1,550,735.5	4269.9	4272.00	4271.84	NA
GW-64	859,959.6	1,553,702.9	4276.7	4278.81	4278.73	NA
DH-65	859,942.7	1,553,703.0	4276.7	NA	NA	NA
I-1-30 (NE)	859,237.0	1,553,994.7	4276.7	4279.44	4278.82	4277.26
I-1-50 (NW)	859,236.79	1,553,989.82	4276.9	4279.19	4278.60	4277.15
I-1-100 (S)	859,232.5	1,553,992.9	4276.6	4279.33	4278.72	4277.25
I-2-30 (S)	860,484.4	1,553,712.2	4277.2	4279.93	4279.30	4277.72
I-2-50 (N)	860,489.2	1,553,714.5	4277.2	4279.87	4279.24	4277.72
I-3-30 (SW)	861,259.1	1,554,388.2	4278.4	4281.42	4280.78	4278.46
I-3-50 (SE)	861,261.2	1,554,392.4	4278.4	4281.46	4280.84	4278.58
I-3-100 (N)	861,264.19	1,554,388.43	4278.4	4281.55	4280.92	4278.7
I-4-30 (E)	859,925.7	1,554,725.5	4277.6	4280.67	4280.03	4278.1
I-4-50 (W)	859,926.3	1,554,720.6	4277.7	4280.72	4280.09	4278.15

\* Based on previous survey.

10/28/93

NA - Not available or applicable.



# State of Utah

## DEPARTMENT OF HEALTH

Michael C. Lovett  
 Governor  
 Rod L. Smith  
 Executive Director  
 A. Richard Melton, Dm. P.H.  
 Director

Division of Laboratory Services  
 48 N. Medical Drive  
 Salt Lake City, Utah 84113-1108  
 (801) 584-8400

NOV 08 1993

STEVEN GETZ  
 AMERICAN WEST ANALYTICAL LABORATORIES  
 463 WEST 3600 SOUTH  
 SALT LAKE CITY, UT 84115-4246

Certificate No.: E-90  
 Account No: 8012638686

On the basis of your most recent audit results, the laboratory listed is hereby certified to perform environmental monitoring under the Clean Water Act for the following parameters:

**METALS**

- \* ALUMINUM 200.7
- ANTIMONY 200.7
- ARSENIC 206.2
- BARIUM 200.7
- \* BERYLLIUM 200.7
- CADMIUM 200.7
- CHROMIUM 200.7
- CHROMIUM VI 307B
- \* COBALT 200.7
- COPPER 200.7
- IRON 200.7
- LEAD 200.7
- LEAD 239.2
- MANGANESE 200.7
- MERCURY 245.2
- MOLYBDENUM 200.7
- NICKEL 200.7
- SELENIUM 270.2
- SILVER 200.7
- SILVER 272.2
- VANADIUM 200.7
- ZINC 200.7

**MINERALS**

- ACIDITY 305.1
- BORON 200.7
- CALCIUM 200.7
- \* CHLORIDE 4500CL B
- FLUORIDE 340.1
- HARDNESS 130.2
- \* MAGNESIUM 200.7
- PH 150.1

- SULFATE 375.4
- \* SULFIDE 376.2
- \* SULFITE 377.1

**NUTRIENTS**

- AMMONIA 350.1
- NITRATE/NITRITE 353.2
- ORTHOPHOSPHATE 345.1
- PHOSPHORUS 345.4
- \* TKN 351.2

**RESIDUE**

- RESIDUE FILTERABLE 160.1
- RESIDUE NONFILTER TSS 160.2
- RESIDUE TOTAL 160.3
- RESIDUE VOLATILE 160.4

**DEMAND**

- BOD 405.1
- \* COD NACH
- DISSOLVED OXYGEN 360.2
- TOC 415.1

**ORGANIC**

- BASE/NEUTRALS & ACIDS 625
- \* ORGANOCHLOR PEST 608
- \* PCB 608
- PHENOXY ACID HERBICIDES 509B
- PURGEABLE AROMATIC 602
- PURGEABLES 624

**INORGANIC**

- COLOR 2102B



Page Two

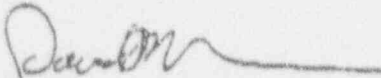
* POTASSIUM 200.7	CYANIDE 335.3
SILICA 200.7	OIL AND GREASE 413.1
SODIUM 200.7	PHENOLS 420.2
SPECIFIC CONDUCTANCE 120.1	TURBIDITY 180.1

\* Provisional Certification

The expiration date for this certificate is MAY 18 1994.

The parameters for which a laboratory is certified at any given time will be those indicated in the most recent letter of certification. Please review for completeness and accuracy. Any discrepancies must be documented and notice received by this bureau within 15 days of receipt. Copies of this letter will be on file in (1) the Bureau of Laboratory Improvement, Division of Laboratory Services and (2) in the Department of Environmental Quality. The certification will be recalled in the event that your Laboratory's certification is revoked.

Respectfully,



David B. Mendenhall  
Interim Director

cc. Richard Denton  
Dennis Downs  
U.S. EPA Region VIII QAO  
Management Services Coordinator



## DEPARTMENT OF HEALTH

Norman H. Bangerter  
Governor  
A. Richard Melton, Dr. P.H.  
AUG 28 <sup>Dir</sup> 1992

Division of Laboratory Services  
46 N. Medical Drive  
Salt Lake City, Utah 84113-1105  
(801) 584-8400

STEVEN GETZ, DIRECTOR  
AMERICAN WEST ANALYTICAL LABORATORIES  
463 WEST 3600 SOUTH  
SALT LAKE CITY, UT 84115-4246

Certificate No.: E-90  
Account No: 8012638686

On the basis of your most recent audit results, the laboratory listed is hereby certified to perform environmental monitoring under the Clean Water Act and Resource Conservation and Recovery Act for the following parameters:

Aluminum *	Polychlorinated Biphenyls - Water *
Ammonia *	Polynuclear Aromatic Hydrocarbons *
Antimony	Potassium *
Aromatic Volatiles *	Reactivity *
Arsenic *	Selenium *
Barium	Semi-Volatiles
Beryllium	Silver *
Cadmium *	Sodium
Calcium *	Specific Conductance *
Chemical Oxygen Demand *	Strontium *
Chloride	TCLP - Inorganics *
Chlorinated Herbicides *	TCLP - Organics *
Chromium *	Thallium *
Cobalt *	Titanium *
Copper	Total Alkalinity *
Corrosivity	Total Dissolved Solids *
Cyanide *	Total Hardness *
Fluoride *	Total Kjeldahl Nitrogen *
Halogenated Volatiles *	Total Oil & Grease *
Ignitability *	Total Organic Halides
Iron *	Total Phenolics *
Lead *	Total Phosphorus *
Manganese *	Total Suspended Solids *
Molybdenum *	Total Volatile Solids
Nickel *	Vanadium *
Orthophosphate *	Zinc *
Phthalate Esters/Adipate	pH *
Polychlorinated Biphenyls - Oil *	

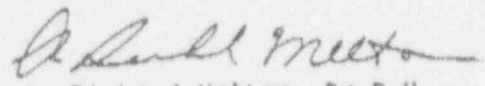
\* Provisionally Certified

Page Two

The expiration date for this certificate is MAY 18 1994. To avoid interruption of your certification, you must submit a written request for recertification to the Bureau of Laboratory Improvement at least three months prior to the expiration date indicated above. This time period should be sufficient to cover the clerical work associated with the application for recertification, travel authorization and scheduling of the on-site visit of your laboratory.

The parameters for which a laboratory is certified at any given time will be those indicated in the most recent certified letter. Please review for completeness and accuracy. Any discrepancies must be documented and notice received by this bureau within 15 days of receipt. Copies of this letter will be on file in (1) the Bureau of Laboratory Improvement, Division of Laboratory Services and (2) the Department of Environmental Quality. The certification will be recalled in the event that your laboratory's certification is revoked.

Respectfully,



A. Richard Melton, Dr.P.H.  
Director

- cc. Richard Denton
- Dennis Downs
- U.S. EPA Region VIII QAO
- Management Services Coordinator



DEPARTMENT OF HEALTH

Norman H. Bengtson

Governor

Suzanne Harlow, M.D., MPH  
Executive Director

A. Richard Nelson, Dr. PH

Utah Health Laboratory

44 Medical Drive

Salt Lake City, Utah 84143

(801) 533-8131

January 22, 1991

Ralph E. Meibos, Director  
American West Analytical Laboratories  
3999 South Main Street, Suite N8  
Salt Lake City, Utah -84106

Certificate No.: E-90  
Laboratory Class: I

Mr. Meibos:

On the basis of your most recent audit results, the laboratory listed is hereby certified to perform environmental monitoring under the Clean Water Act and Resource Conservation and Recovery Act for the following parameters:

Metals

- \* Aluminium
- \* Antimony
- \* Arsenic
- \* Beryllium
- \* Cadmium
- \* Chromium
- \* Cobalt
- Copper
- Iron
- \* Lead
- Manganese
- Mercury
- \* Molybdenum
- \* Nickel
- Selenium
- Silver
- \* Thallium
- \* Vanadium
- Zinc

Demand

- Chemical Oxygen Demand (COD)
- Biochemical Oxygen Demand (BOD<sub>5</sub>)
- Total Organic Carbon (TOC)

Minerals

- Calcium
- Chloride
- Fluoride
- Magnesium
- pH
- \* Potassium
- Sodium
- Specific Conductance
- Sulfate
- Total Alkalinity
- \* Total Hardness
- Total Dissolved Solids (TDS)

Nutrients

- Ammonia
- Nitrate
- Orthophosphate
- Total Phosphorus
- Total Kjeldahl Nitrogen

Residue

- Total Dissolved Solids (TDS)
- Total Suspended Solids (TSS)
- Total Volatile Solids (TVS)

\* Provisional Certification

Ralph E. Meibos  
Page Two  
January 22, 1991

Organic Residue

Organochlorine Pesticides  
Chlorinated Herbicides  
Polychlorinated Biphenyls Oil  
Polychlorinated Biphenyls-Water  
Semi-Volatiles  
Total Organic Halides (TOX)

Miscellaneous

- \* Cyanide, Total
- Oil & Grease
- Phenolics, Total

Volatile Organic Compounds

- Halogenated Volatiles
- \* Aromatic Volatiles

Hazardous Waste Characteristics

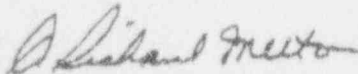
Ignitability  
Corrosivity  
Reactivity  
TCLP-Inorganics  
TCLP-Organics

\* Provisional Certification

The expiration date for your certification is May 16, 1992. To avoid interruption of your certification, you must submit a written request for recertification to the Bureau of Laboratory Improvement at least three months prior to the expiration date indicated above. This time period should be sufficient to cover the clerical work associated with the application for recertification, travel authorization and scheduling of the on-site visit of your laboratory.

The parameters for which a laboratory is certified at any given time will be those indicated in the most recent certification letter. Copies of this letter will be on file in (1) the Bureau of Laboratory Improvement, State Health Laboratory and (2) the Division of Environmental Health. The certificate will be recalled in the event that your laboratory's certification is revoked.

Respectfully,



A. Richard Melton, Dr.P.H.  
Director

cc: Richard Denton  
Brent Bradford  
U.S. EPA Region VIII QAO  
Management Services Coordinator



DEPARTMENT OF HEALTH

Norman H. Banister  
Director  
Suzanne Dando, M.D., S.P.H.  
Assistant Director  
A. Richard Mohr, Jr., P.H.  
Deputy

State Health Laboratory  
34 Medical Drive  
Salt Lake City, Utah 84143  
(801) 573 6131

Amended  
May 13, 1991

Mark R. Burkhardt, Ph.D., Director  
Barringer Laboratories, Inc.  
15000 West 6th Avenue, Suite 300  
Golden, Colorado 80401

Certificate No.: E-147  
Laboratory Class: I

Dr. Burkhardt:

On the basis of your most recent audit results, the laboratory listed is hereby certified to perform environmental monitoring under the Safe Drinking Water Act for the following parameters:

Metals

Antimony  
Arsenic  
Barium  
Beryllium  
\* Cadmium  
Chromium  
Copper  
Lead  
Mercury  
Selenium  
Silver  
Thallium

Miscellaneous

Chlorine, Residual Free  
Turbidity  
Total Filterable Residue (TDS)  
Calcium  
pH  
Alkalinity  
Corrosivity  
Sodium  
Sulfate

Organic Residue

\* Polychlorinated Biphenyls

Nitrate/Nitrite/Fluoride

Nitrate  
Nitrite  
Fluoride

Radiologics

Gross Alpha  
Gross Beta  
Radium-226  
Radium-228  
Uranium

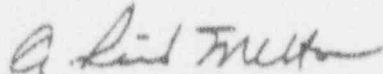
\* Provisional Certification

Mark R. Burkhardt, Ph.D.  
Page Two  
May 13, 1991

The expiration date for your certification is March 11, 1993. To avoid interruption of your certification, you must submit a written request for recertification to the Bureau of Laboratory Improvement at least three months prior to the expiration date indicated above. This time period should be sufficient to cover the clerical work associated with the application for recertification, travel authorization and scheduling of the on-site visit of your laboratory.

The parameters for which a laboratory is certified at any given time will be those indicated in the most recent certification letter. Copies of this letter will be on file in (1) the Bureau of Laboratory Improvement, State Health Laboratory and (2) the Division of Environmental Health. The certificate will be recalled in the event that your laboratory's certification is revoked.

Respectfully,



A. Richard Melton, Dr.P.H.  
Director

cc: Kenneth H. Bousfield  
Richard Denton  
U.S. EPA Region VIII OAO  
Management Services Coordinator



# State of Utah

DEPARTMENT OF HEALTH

Norman H. Barringer  
GOVERNOR

Suzanne Dandoy, M.D., M.P.H.  
Executive Director

A. Richard Melton, Dr. P.H.  
Director

Division of Laboratory Services  
46 N. Medical Drive  
SAR Lake City 84119-1100  
(801) 704-0400

FEB 20 1992

MARK BURKHARDT, PH.D.  
BARRINGER LABORATORIES, INC.  
15000 W. 6TH AVE. SUITE 300  
GOLDEN, CO 80401

Certificate No.: E-147  
Account No: 3032771687

On the basis of your most recent audit results, the laboratory listed is hereby certified to perform environmental monitoring under the Clean Water Act and Resource Conservation and Recovery Act for the following parameters:

- |                           |                                     |
|---------------------------|-------------------------------------|
| Aluminum                  | Orthophosphate                      |
| Ammonia                   | Phuric *                            |
| Antimony                  | Polychlorinated Biphenyls - Oil     |
| Aromatic Volatiles        | Polychlorinated Biphenyls - Water * |
| Arsenic                   | Potassium                           |
| Berium                    | Radium 226                          |
| Beryllium                 | Radium 228                          |
| Cesium                    | Selenium                            |
| Calcium                   | Silver                              |
| Chloride                  | Sodium *                            |
| Chromium                  | Strontium                           |
| Cobalt                    | Strontium 90                        |
| Copper                    | Sulfate                             |
| Fluoride                  | TCLP - Inorganics                   |
| Gross Alpha               | Thallium                            |
| Gross Beta                | Titanium                            |
| Halogenated Volatiles     | Total Alkalinity *                  |
| Iron                      | Total Dissolved Solids              |
| Lead                      | Total Hardness                      |
| Magnesium                 | Total Oil & Grease                  |
| Manganese                 | Total Suspended Solids              |
| Mercury                   | Uranium                             |
| Molybdenum                | Vanadium                            |
| Nickel                    | Zinc                                |
| Nitrate                   | pH                                  |
| Organochlorine Pesticides |                                     |

\* Provisionally Certified

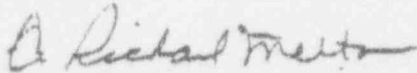


Page Two

The expiration date for this certificate is MAR 09 1993. To avoid interruption of your certification, you must submit a written request for recertification to the Bureau of Laboratory Improvement at least three months prior to the expiration date indicated above. This time period should be sufficient to cover the clerical work associated with the application for recertification, travel authorization and scheduling of the on-site visit of your laboratory.

The parameters for which a laboratory is certified at any given time will be those indicated in the most recent certified letter. Copies of this letter will be on file in (1) the Bureau of Laboratory Improvement, Division of Laboratory Services and (2) the Department of Environmental Quality. The certification will be recalled in the event that your laboratory's certification is revoked.

Respectfully,



A. Richard Melton, Dr. P.H.  
Director

cc. Richard Denton  
Dennis Downs  
U.S. EPA Region VIII QAO  
Management Services Coordinator



# State of Utah

## DEPARTMENT OF HEALTH

Michael O. LeVill  
 Director

Rod L. Bett  
 Executive Director

A. Richard Milton, Dr. P.H.  
 Director

Division of Laboratory Services  
 48 N. Medical Drive  
 Salt Lake City, Utah 84143-1105  
 (801) 564-8400

APR 13 1993

STEVEN L. SINCOFF  
 BARRINGER LABORATORIES, INC.  
 15000 W. 6TH AVE. SUITE 300  
 GOLDEN, CO 80401

Certificate No.: E-147

Account No: 3032771687

On the basis of your most recent audit results, the laboratory listed is hereby certified to perform environmental monitoring under the safe Drinking Water Act for the following parameters:

MISCELLANEOUS  
 ODOR 140.1

VOC'S 502.2-RG  
 VOC'S 524.2 - RG

ORGANICS UNREGULATED  
 BASE/NEUTRALS-ACIDS 525.1 - UN  
 VOC'S 502.2-UN  
 VOC'S 524.2 - UN

RADIOLOGICS  
 GROSS ALPHA  
 GROSS BETA  
 RADIUM - 226  
 STRONTIUM - 89/90  
 TRITIUM

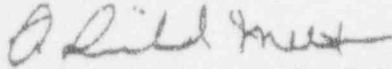
ORGANICS REGULATED  
 BASE/NEUTRALS-ACIDS 525.1-RG

The expiration date for this certificate is MAR 08 1995. To avoid interruption of your certification, you must submit a written request for recertification to the Bureau of Laboratory Improvement at least three months prior to the expiration date indicated above. This time period should be sufficient to cover the clerical work associated with the application for recertification, travel authorization and scheduling of the on-site visit of your laboratory.

Page Two

The parameters for which a laboratory is certified at any given time will be those indicated in the most recent certified letter. Please review for completeness and accuracy. Any discrepancies must be documented and notice received by this bureau within 15 days of receipt. Copies of this letter will be on file in (1) the Bureau of Laboratory Improvement, Division of Laboratory Services and (2) in the Department of Environmental Quality. The certification will be recalled in the event that your Laboratory's certification is revoked.

Respectfully,



A. Richard Melton, Dr.P.H.  
Director

cc. Richard Denton  
Dennis Downs  
U.S. EPA Region VIII QAO  
Management Services Coordinator



# State of Utah

## DEPARTMENT OF HEALTH

Michael U. Leavitt  
Governor

Rod L. Betit  
Executive Director

A. Richard Melton, Dr. P.H.  
Director

Division of Laboratory Services  
46 N. Medical Drive  
Salt Lake City, Utah 84143-1105  
(801) 584-8400

APR 13 1993

STEVEN L. SINCOFF  
BARRINGER LABORATORIES, INC.  
15000 W. 6TH AVE. SUITE 300  
GOLDEN, CO 80401

Certificate No.: E-147  
Account No: 3032771687

On the basis of your most recent audit results, the laboratory listed is hereby certified to perform environmental monitoring under the Clean Water Act for the following parameters:

#### METALS

ANTIMONY 204.2  
ARSENIC 206.2  
BARIUM 200.7  
BERYLIUM 200.7  
CADMIUM 213.2  
CHROMIUM 200.7  
COBALT 200.7  
COPPER 200.7  
LEAD 239.2

MANGANESE 200.7  
MERCURY 245.1  
MOLYBDENUM 200.7  
NICKEL 200.7  
SELENIUM 270.2  
SILVER 200.7  
THALLIUM 279.2  
VANADIUM 200.7  
ZINC 200.7

#### MINERALS

ALKALINITY 310.1  
CALCIUM 200.7  
CHLORIDE 325.2  
FLUORIDE 340.2  
MAGNESIUM 200.7  
PH 150.1  
POTASSIUM 200.7  
SODIUM 200.7  
SPECIFIC CONDUCTANCE 120.1  
SULFATE 375.3

#### NUTRIENTS

AMMONIA 350.1

NITRATE/NITRITE 355.1  
ORTHOPHOSPHATE 365.1  
PHOSPHORUS 365.1  
TKN 351.1

#### RESIDUE

RESIDUE FILTERABLE 160.1  
RESIDUE NONFILTER TSS 160.2  
RESIDUE VOLATILE 160.4

#### DEMAND

COD 410.1  
TOC 415.1

#### ORGANIC

BASE/NEUTRALS & ACIDS 625  
ORGANOCHLOR PEST 608  
PURGEABLE AROMATIC 602  
PURGEABLE HALOCARBONS 601  
PURGEABLES 624

#### INORGANIC

COLOR 110.2  
CYANIDE 335.2  
OIL AND GREASE 413.1  
PHENOLS 420.1  
TURBIDITY 180.1

#### RADIOLOGICS

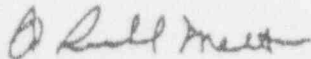
GROSS ALPHA 900.0  
GROSS BETA 900.0  
RADIUM 226 706  
TOTAL RADIUM 705

Page Two

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Respectfully,



A. Richard Melton, Dr.P.H.  
Director

cc. Richard Denton  
Dennis Downs  
U.S. EPA Region VIII QAO  
Management Services Coordinator



# State of Utah

## DEPARTMENT OF HEALTH

Norman H. Bangerser  
Governor

A. Richard Melton, Dr. P.H.  
Director

Division of LABORATORY SERVICES  
46 N. Medical Drive  
Salt Lake City, Utah 84113-1106  
(801) 584-8400

April 9, 1993

Gary Zito, QA Coordinator  
Barringer Laboratories, Inc.  
15000 W 6th Avenue, Suite 300  
Golden, CO 80401

Dear Mr. Zito,

Enclosed are the results for the State of Utah Herbicides Performance Evaluation Audit. The results are acceptable. I will update your Resource Conservation and Recovery Act certificate to reflect provisional status on method 8150 Chlorinated Herbicides.

If you have any questions, please contact me at (801) 584-8469.

Sincerely,

A handwritten signature in cursive script, appearing to read "Gilberto C. Lopez".

Gilberto C. Lopez  
Laboratory Certification Officer  
Bureau of Laboratory Improvement

## State of Utah Herbicides PE Audit

<u>Parameters</u>	<u>Reported Value</u>	<u>True Value</u>	<u>95% CI</u>	<u>Result</u>
2,4-D	72.35 $\mu\text{g/L}$	90.0 $\mu\text{g/L}$	31-117	Acceptable
2,4,5-TP	5.785 $\mu\text{g/L}$	7.00 $\mu\text{g/L}$	2.2-9.6	Acceptable



# State of Utah

## DEPARTMENT OF HEALTH

Michael O. Leavitt  
GOVERNOR  
Rand L. Bechtel  
Executive Director  
A. Richard Melton, Dr. P.H.L.  
Director

Division of Laboratory Services  
46 N. Medical Drive  
Salt Lake City, Utah 84143-1105  
(801) 504-0400

SEP 23 1993

STEVEN L. SINCOFF  
BARRINGER LABORATORIES, INC.  
15000 W. 6TH AVE. SUITE 300  
GOLDEN, CO 80401

Certificate No.: E-147  
Account No: 3032771687

On the basis of your most recent audit results, the laboratory listed is hereby certified to perform environmental monitoring under the Clean Water Act for the following parameters:

#### METALS

ANTHONY 204.2  
ARSENIC 206.2  
BARIUM 200.7  
BERYLLIUM 200.7  
CADMIUM 213.2  
CHROMIUM 200.7  
COBALT 200.7  
COPPER 200.7  
LEAD 239.2  
MANGANESE 200.7  
MERCURY 245.1  
MOLYBDENUM 200.7  
NICKEL 200.7  
SELENIUM 270.2  
SILVER 200.7  
THALLIUM 279.2  
VANADIUM 200.7  
ZINC 200.7

#### MINERALS

ALKALINITY 310.1  
CALCIUM 200.7  
CHLORIDE 325.2  
FLUORIDE 340.2  
MAGNESIUM 200.7  
PH 150.1  
POTASSIUM 200.7  
SODIUM 200.7  
\* SPECIFIC CONDUCTANCE 120.1  
SULFATE 375.3

#### NUTRIENTS

Ammonia 350.1

NITRATE/NITRITE 353.1  
ORTHOPHOSPHATE 365.1  
PHOSPHORUS 365.1  
\* TKN 351.1

#### RESIDUE

RESIDUE FILTERABLE 160.1  
RESIDUE NONFILTER TSS 160.2  
RESIDUE VOLATILE 160.4

#### DEMAND

COD 410.1  
TOC 415.1

#### ORGANIC

BASE/NEUTRALS & ACIDS 625  
ORGANOCHLOR PEST 608  
\* PCB 608  
PURGEABLE AROMATIC 602  
PURGEABLE HALOCARBOHS 601  
PURGEABLES 624

#### INORGANIC

COLOR 110.2  
CYANIDE 335.2  
OIL AND GREASE 413.1  
\* PHENOLS 420.1  
TURBIDITY 180.1

#### RADIOLOGICS

GROSS ALPHA 900.0  
GROSS BETA 900.0  
RADIUM 226 706  
TOTAL RADIUM 705

\*Provisional Certification

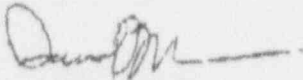


Page Two

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Respectfully,



David S. Mendenhall  
Interim Director

cc. Richard Denton  
Dennis Downs  
U.S. EPA Region VIII QAO  
Management Services Coordinator



# State of Utah

## DEPARTMENT OF HEALTH

Michael O. Louvick  
 Governor  
 Rod L. Roth  
 Executive Director  
 A. Reinhard Minkton, Dm P.H.  
 Director

Division of Laboratory Services  
 46 N. Medical Drive  
 Salt Lake City, Utah 84113-1105  
 (801) 584-8400

JAN 18 1994

STEVEN L. SINCOFF  
 BARRINGER LABORATORIES INC.  
 15000 W. 6TH AVE. SUITE 300  
 GOLDEN, CO 80401

Certificate No.: E-147  
 Account No: 3032771687

On the basis of your most recent audit results, the laboratory listed is hereby certified to perform environmental monitoring under the Resource Conservation and Recovery Act for the following parameters:

#### METALS

ARSENIC 7060  
 BARIUM 6010  
 CADMIUM 6010  
 CHROMIUM 6010  
 MERCURY 7470  
 SELENIUM 7740  
 SILVER 6010  
 ZINC 6010

#### MINERALS

SODIUM 6010

#### MISCELLANEOUS

AROMATIC VOLATILE ORG 8020  
 \* CHLORINATED HERBICIDES 8150  
 CYANIDE TOTAL/AMENABLE 9010  
 HALOGENATED VOLATILE ORG 8010  
 IGNITABILITY 1010  
 ORGANIC PEST 8080

#### PAINT FILTER LIQUID TST 9095

PCB 8080  
 PH 9060  
 PH 9045  
 REACTIVITY SEC 8.3  
 SEMI-VOLATILES 8270  
 \* SPECIFIC CONDUCTANCE 9050  
 TCLP METAL 1311  
 \* TCLP SEMI-VOLATILE 1311  
 \* TCLP VOLATILE 1311  
 TOTAL ORGANIC CARBON 9060  
 TOTAL ORGANIC HALIDES 9020  
 VOLATILES 8240  
 VOLATILES 8260

#### RADIOLOGICS

ALPHA-EMIT RADIUM ISOTOPE 9315  
 GROSS ALPHA & BETA 9310  
 RADIUM 228 - 9320

\* Provisional Certification

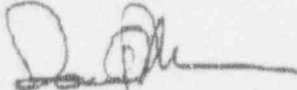
The expiration date for this certificate is MAR 08 1995.

The effective date of this certification is DEC 15 1993.

Page Two

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Respectfully,



David B. Mendenhall  
Interim Director

cc. Richard Denton  
Dennis Downs  
U.S. EPA Region VIII QAC  
Management Services Coordinator



**PROJECT MEMORANDUM**

**TO:** Jay Vance - Envirocare of Utah  
Loren Morton - Utah Division of Water Quality

**FROM:** Stan Plaisier - Bingham Environmental, Inc.  
Mark Taggart - Bingham Environmental, Inc.

**DATE:** January 14, 1994

**SUBJECT:** Results of 4th Quarter of 1993 Groundwater Sampling  
LARW Compliance Monitor Wells  
Groundwater Quality Discharge Permit No. UGW450005  
Envirocare LARW Disposal Facility  
South Clive, Utah



**INTRODUCTION**

Provided with this project memorandum are the results of the 4th Quarter of 1993 compliance groundwater and pore water monitoring performed in November 1993 at the Envirocare of Utah (Envirocare) LARW disposal facility located in South Clive, Utah. In addition, we have summarized the groundwater elevations, freshwater equivalent heads and specific gravity data. We have also provided a review of the sampling activities, a summary of the data validation and compared the results to current Ground Water Protection Levels (GWPL).

**FIELD ACTIVITIES**

**Groundwater Sampling**

Envirocare personnel performed groundwater sampling of the 21 LARW monitor wells identified on Figure 1. Eleven of these wells, identified as I-2-30, GW-16R, GW-20, GW-22, GW-23, GW-24, GW-25, GW-29, GW-56R, GW-63 and GW-64 are designated as compliance monitoring wells for the Existing LARW Cell. The remaining ten wells, identified as GW-19A, GW-26, GW-27, GW-28, GW-36, GW-37, GW-38, GW-57, GW-58 and GW-60, are designated as background monitoring wells for the Future LARW Cells. In addition, monitor well GW-3 was sampled to satisfy the Division of Water Quality's (DWQ) request for further groundwater quality characterization. The majority of the 4th Quarter of groundwater sampling was performed between November 2 and November 5, 1993. GW-20 and GW-24 were re-sampled on November 22, 1993 for radiologic analysis because some or all of the sample was lost during shipment to the laboratory. GW-29 was

also re-sampled on December 22, 1993 for TOX analysis due to invalid laboratory analysis. The Envirocare personnel sampling team consisted of Jeff Low, Greg Copeland and Steve Singledecker.

Based on conversations with Jeff Low and review of the field data sheets it appears that the sampling event was performed according to the requirements outlined in the Ground Water Monitoring Quality Assurance (GWMQA) Plan. Sampling activities and measurements were documented on field data sheets which are provided in Attachment 1.

Groundwater samples designated for chemical analyses were hand delivered to American West Analytical Laboratories (AWAL) located in Salt Lake City, Utah and groundwater samples collected for radiological analyses were shipped via UPS to Barringer Laboratories, Inc. (Barringer) located in Golden, Colorado.

#### Water Level Measurements

Groundwater level measurements were obtained during the sampling event prior to sampling each monitor well to determine groundwater flow directions. These measurements have been converted to groundwater elevations and freshwater equivalent heads and are summarized in Table 1. The freshwater equivalent heads have been determined based on the mean specific gravity values provided in Table 2 which are based on specific gravity measurements obtained between December 1991 and May 1993. A freshwater equivalent head potentiometric map has been developed for the shallow, unconfined aquifer and is provided as Figure 2.

The direction of flow and gradient below the existing LARW Disposal Cell is generally toward the northeast with a minor component near the south central part of the existing LARW Disposal Cell toward the east and southeast.

The direction of flow and gradient below the Future Disposal Cells is quite variable and in April and May the freshwater equivalent head in GW-37 and GW-38 rose significantly, on the order of three to five feet. Based on the November 1993 measurements a localized mound still appears in the area of GW-37 and GW-38 but freshwater equivalent heads have decreased by a few feet since April 1993.

#### Specific Gravity Testing

Specific gravity (SG) samples were obtained and determined by Envirocare during the 4th quarter groundwater sampling event and have been summarized in Table 2. Review of the 4th quarter values indicate an apparent significant increase in SG. Since this was the first time Envirocare performed SG determinations, Bingham tested one available sample and obtained a lower value that appeared to be more comparable to the mean value. The increase in SG appears to be the results of equipment rather than an actual increase in SG and Envirocare will further evaluate this discrepancy during the 1st quarter of 1994.

### Suction Lysimeter Sampling

Suction lysimeters SL-1, SL-2 and SL-3 were activated on November 1, 1993 by applying a vacuum of between 18 and 21 inches of mercury. Evacuation of the lysimeter with pressure was initiated on November 5, 1993 where approximately 10 pounds per square inch was applied to each lysimeter. Approximately 50 ml, 20 ml and 30 ml were collected from SL-1, SL-2 and SL-3, respectively. All of the field parameters were measured with the exception of specific conductance in SL-2, due to insufficient quantities. The sample quantities obtained did not allow for any additional laboratory analysis. A summary of the lysimeter sampling activities and field parameter results are provided in Table 6 and the field notes are provided in Attachment 1.

### Field QA/QC Samples

Trip Blanks - Envirocare used trip blanks throughout the sampling event to monitor the potential for cross contamination during sampling, storage and shipment of the samples. The trip blanks, were analyzed for TOC, TOX, carbon-14 and tritium.

Field Duplicates - Envirocare also collected at least one (1) field duplicate sample for every ten samples collected in the field, for a total of three (3) duplicates for the sampling event. Two additional field duplicate samples were collected during re-sampling events. Field duplicate samples were arbitrarily obtained from different monitor wells which produced adequate volumes of water. The duplicate samples and their identification have been summarized in Table 3.

### DATA VALIDATION

The analytical data generated during the 4th quarter of the compliance and background sampling has been reviewed and evaluated for quality, accuracy and precision according to EPA data validation general guidelines and requirements set forth in the GWMQA Plan. In general, the data passes the QC review and can be used as reliable data. Some of the data has been flagged with qualifiers which typically designates the value as an estimate or rejects the data. The following qualifiers have been used in this review:

- J - The reported value is an estimated quantity because the amount detected in the sample is at or below the laboratory detection limit.
- JS - The reported value is an estimated quantity because the matrix spike recovery were outside of the control limits.
- JFD - The reported value is qualified because the associated field duplicate sample analysis control limits were exceeded.
- R - Rejected

The laboratory analysis reports are provided in Attachment 2 and the results are

summarized on Table 5. Laboratory Quality Assurance/Quality Control documentation is provided in Attachment 3.

### Chemical Analyses

Holding Times - All applicable holding times for the chemical analyses were met. Holding time information has been summarized in Table 4.

Trip Blanks - All of the trip blank results were within acceptable limits.

Field Duplicates - Field duplicate analysis can provide the means to monitor the performance of the laboratory's precision. Precision is a measure of the reproducibility of the data. For inorganic and organic parameters precision is calculated as relative percent difference (RPD) as follows:

$$RPD = \frac{(S-D)}{(S+D)/2} \times 100$$

Where:

S = Sample Result  
D = Duplicate Result

The acceptance criteria is defined as using a control limit of +/- 20% for the RPD for sample values > 5 times the laboratory detection limit (LDL). If the sample values are less than 5 times the LDL a control limit of +/- the LDL shall be used.

If field duplicate analysis results for a particular analyte fall outside the control windows of +/- 20% or +/- LDL, which ever is appropriate, the results for that analyte in all other samples associated with that laboratory set should be flagged as estimated.

It should be noted that field QA/QC samples should not be the basis of accepting or rejecting data, but rather as additional evidence in support of the conclusions arrived at by a review of the total data package. Actions taken as a result of duplicate sample analysis must be weighed carefully since it may be difficult to determine if poor precision is a result of sample non-homogeneity, method defects or laboratory technique. In general, the results of duplicate analysis should be used to support conclusions drawn about the quality of the data rather than as a basis for these conclusions.

All field duplicate results were within acceptable limits with the exception of copper, zinc and nitrate in duplicate sample comparison GW-16R/GW-70 and sulfate in duplicate sample comparison GW-20/GW-71. The associated results have been flagged "JFD" as estimated.

### Laboratory Matrix Spike Analysis

The matrix spiked sample analysis is to provide information about the effect of the sample

matrix on the digestion and measurement methodology.

All laboratory matrix spike recovery results were within acceptable limits with the exception of arsenic and selenium in laboratory set number 16470 and 16511 and arsenic, beryllium, selenium and silver in laboratory set number 16534. The associated results have been flagged "JS" as estimated.

Ion Balance - The ion balance for all inorganic laboratory results were within the +/-10 % criteria.

Methods and Detection Limits - All chemical results met the detection limit requirements of the GWMQA Plan. All methods used in the chemical analyses of the 4th quarter's sampling are EPA approved methods.

### Radiological Analyses

Holding Times - All applicable holding times for the radiological analyses were met. Holding time information has been provided in Table 4.

Trip Blanks - The trip blank results are within acceptable limits.

Field Duplicates - For radiochemistry parameters, precision is measured by the replicate error ratio (RER) which is calculated as follows:

$$RER = \frac{(S-D)}{(2\sigma_s + 2\sigma_D)}$$

Where:

S	=	Sample Value
D	=	Duplicate Value
$2\sigma_s$	=	Sample Error at 95% Confidence Interval
$2\sigma_D$	=	Duplicate Error at 95% Confidence Interval

All RER values  $\leq 1.0$  are within acceptable limits. If the RER for a particular nuclide is calculated to be greater than 1.0, the results for that nuclide in all other samples associated with that laboratory set should be flagged as estimated.

All field duplicate results were found to be within the acceptable limits.

Methods and Detection Limits - All of the detection limits achieved in the analyses are below the Groundwater Protection Levels.

It should be noted that Barringer reports values even though they are below the required detection limits. In chemical analysis these values would normally not be reported but would be indicated as less than the detection limit. All values, therefore, which have been reported below the required detection limits have been flagged "J" as an estimate.



## GROUNDWATER PROTECTION LEVELS

The 4th Quarter of groundwater sampling results were compared to the modified Ground Water Quality Discharge Permit's (Permit) GWPL. The GWPL are based on six months of accelerated background sampling data. The 4th Quarter sampling data indicate that protection levels have been exceeded in most of the compliance and/or background monitoring wells for one or more of the following constituents: arsenic, cadmium, chromium, nickel, fluoride, TDS, gross alpha, gross beta and potassium-40. Based on the Permit requirements, several of the compliance monitor wells have constituents in exceedance of the conditions outlined in sections I.G.1(a) and I.G.1(b) of the Permit and are summarized in the following table:

CONSTITUENTS	EXISTING LARW COMPLIANCE MONITORING WELLS	
	Exceed GWPL One Sampling Event (I.G.1.a.1.)	Exceed GWPL Two Consecutive Sampling Events (I.G.1.b.1. & 2.)
Cadmium	GW-16R, GW-23, GW-29	GW-20, GW-22, GW-24, I-2-30
Chromium	GW-16R, GW-23	GW-20, GW-22, GW-24, GW-29, I-2-30
Nickel	GW-20	
Fluoride	GW-23	GW-16R
TDS		GW-16R, GW-20
Potassium-40	GW-16R, GW-23	

Envirocare is concerned that the majority of the constituents exhibit significant variability in the groundwater which may have not been fully defined by the background monitoring over the previous year. The DWQ is in the process of reviewing and revising the GWPL which may change the exceedance status for these wells. In addition, Envirocare is presently evaluating whether the elevated levels of metals is due to corrosion of the dedicated sampling pumps.

## CONCLUSIONS AND RECOMMENDATIONS

The field and laboratory data meets the requirements of the GWMQA Plan and all results above laboratory detection limits are acceptable in determining groundwater quality of the shallow, unconfined aquifer.

The direction of groundwater flow in the area of the existing LARW Disposal Cell, appears to be generally toward the northeast with a minor component toward the east and southeast near the south central part of the existing LARW Disposal Cell.

A general upward trend in the concentration of several dissolved metals has been observed over the past several months of accelerated sampling. The November 1993 sampling results have also indicated this upward trend with significant increases in cadmium, chromium, copper, nickel and zinc. As indicated in the summary table, cadmium, chromium, nickel, fluoride, TDS and/or potassium-40 exceed the GWPL in compliance monitoring wells GW-16R, GW-20, GW-22, GW-23, GW-24, GW-29, and I-2-30 and exceed the conditions outlined in sections I.G.1(a) and I.G.1(b) of the Permit.

It is our conclusion that wells showing constituents in probable or out-of-compliance status may be due to a combination of (1) corrosion of the sampling pumps, (2) variability of concentrations in the well which does not allow the GWPL's to be appropriately established, and (3) GWPL's being established with only part of the accelerated background data. Until these issues are resolved it is our recommendation that the wells identified in the summary table continue to be sampled on a monthly basis and analyzed for the parameters identified in that table. It is recommend that Fnvirocare schedule and meet with DWQ as soon as possible to discuss how to address the out-of-compliance wells.

TABLE 1

FRESHWATER EQUIVALENT HEADS  
SOUTH CLIVE SITE  
ENVIROCARE OF UTAH

WELL ID #	GRDWTR SURFACE ELEVATION	FRESHWATER EQUIVALENT ELEVATION	GRDWTR SURFACE ELEVATION	FRESHWATER EQUIVALENT ELEVATION	GRDWTR SURFACE ELEVATION	FRESHWATER EQUIVALENT ELEVATION
	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)
	August (3-6) 1993		November (2-5) 1993			
SC-1	NA	NA	NA	NA	NA	NA
SC-2	NA	NA	NA	NA	NA	NA
SC-3	NA	NA	NA	NA	NA	NA
SC-4	NA	NA	NA	NA	NA	NA
SC-5	4248.68	4249.00	NA	NA	NA	NA
SC-6	NA	NA	NA	NA	NA	NA
SC-9	NA	NA	NA	NA	NA	NA
SC-10	NA	NA	NA	NA	NA	NA
SC-11	4248.45	4248.73	NA	NA	NA	NA
SC-12	NA	NA	NA	NA	NA	NA
SC-13	NA	NA	NA	NA	NA	NA
SLC-201	NA	NA	NA	NA	NA	NA
SLC-202	NA	NA	NA	NA	NA	NA
SLC-203	NA	NA	NA	NA	NA	NA
SLC-204	NA	NA	NA	NA	NA	NA
SLC-205	NA	NA	NA	NA	NA	NA
SLC-206	NA	NA	NA	NA	NA	NA
GW-1	NA	NA	NA	NA	NA	NA
GW-2	NA	NA	NA	NA	NA	NA
GW-3	4248.65	4248.85	4248.64	4248.84	NA	NA
GW-4	NA	NA	NA	NA	NA	NA
GW-5	4249.17	4249.22	NA	NA	NA	NA
GW-6	4247.69	4247.75	NA	NA	NA	NA
GW-8	4248.01	4248.10	NA	NA	NA	NA
GW-9	NA	NA	NA	NA	NA	NA
GW-11	NA	NA	NA	NA	NA	NA
GW-12	NA	NA	NA	NA	NA	NA
GW-13	NA	NA	NA	NA	NA	NA
GW-16	NA	NA	NA	NA	NA	NA
GW-16R	4248.8	4248.88	4248.85	4248.93	NA	NA
GW-17A	4249.99	4249.99	NA	NA	NA	NA
GW-18	NA	NA	NA	NA	NA	NA
GW-19A	4249.03	4249.15	4249.57	4249.71	NA	NA
GW-19B	4249.58	4250.58	NA	NA	NA	NA
GW-20	4250.19	4250.30	4250.20	4250.31	NA	NA
GW-21	4247.14	4247.26	NA	NA	NA	NA
GW-22	4249.05	4249.14	4249.03	4249.11	NA	NA
GW-23	4249.53	4249.63	4249.41	4249.51	NA	NA
GW-24	4250.10	4250.14	4249.92	4249.95	NA	NA
GW-25	4249.74	4249.87	4249.73	4249.86	NA	NA
GW-26	4248.98	4248.99	4249.02	4249.03	NA	NA
GW-27	4248.37	4248.44	4248.55	4248.63	NA	NA
GW-28	4248.86	4248.97	4249.39	4249.52	NA	NA

TABLE 1

**FRESHWATER EQUIVALENT HEADS  
SOUTH CLIVE SITE  
ENVIROCARE OF UTAH**

(Continued)

WELL ID #	GRDWTR SURFACE ELEVATION	FRESHWATER EQUIVALENT ELEVATION	GRDWTR SURFACE ELEVATION	FRESHWATER EQUIVALENT ELEVATION	GRDWTR SURFACE ELEVATION	FRESHWATER EQUIVALENT ELEVATION
	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)
	August (3-6) 1993		November (2-5) 1993			
GW-29	4250.03	4250.06	4250.07	4250.10	NA	NA
DH-31	NA	NA	NA	NA	NA	NA
DH-32	4249.45	4249.48	NA	NA	NA	NA
DH-33	4248.68	4248.72	NA	NA	NA	NA
DH-34	4248.89	4248.90	NA	NA	NA	NA
GW-36	4250.79	4250.94	4250.84	4250.99	NA	NA
GW-37	4252.69	4252.93	4251.90	4252.12	NA	NA
GW-38	4251.72	4251.85	4251.24	4251.36	NA	NA
GW-56	NA	NA	NA	NA	NA	NA
GW-56R	4248.96	4249.06	4248.98	4249.08	NA	NA
GW-57	4248.56	4248.65	4249.16	4249.27	NA	NA
GW-58	4249.32	4249.45	4249.68	4249.82	NA	NA
DH-59	4250.03	4250.04	NA	NA	NA	NA
GW-60	4249.89	4249.92	4250.00	4250.03	NA	NA
DH-61	4251.51	4251.55	NA	NA	NA	NA
DH-62	4251.78	4251.87	NA	NA	NA	NA
GW-63	4249.98	4250.08	4250.25	4250.36	NA	NA
GW-64	NA	NA	4249.38	4249.41	NA	NA
I-1-30 (NE)	4249.19	4249.23	NA	NA	NA	NA
I-1-50 (NW)	NA	NA	NA	NA	NA	NA
I-1-100 (S)	4249.53	4250.47	NA	NA	NA	NA
I-2-30 (S)	4249.16	4249.22	4249.15	4249.21	NA	NA
I-2-50 (N)	NA	NA	NA	NA	NA	NA
I-3-30 (SW)	4248.53	4248.58	NA	NA	NA	NA
I-3-50 (SE)	NA	NA	NA	NA	NA	NA
I-3-100 (N)	4248.85	4249.61	NA	NA	NA	NA
I-4-30 (E)	4248.70	4248.71	NA	NA	NA	NA
I-4-50 (W)	NA	NA	NA	NA	NA	NA

12/8/93

TABLE 2

SPECIFIC GRAVITY  
SUMMARY

Well ID#	Average Specific Gravity (Dec. 1991 - May 1993)	3rd Quarter Sampling Event August 1993	4rd Quarter Sampling Event November 1993
GW-1	1.0301		
GW-2	1.0231		
GW-3	1.0306	1.0201	1.0254
GW-4/10	1.0308		
GW-5	1.0319	1.0306	
GW-6	1.0153	1.0205	
GW-8	1.0238	1.0231	
GW-9			
GW-11	1.0173		
GW-12	1.0187		
GW-13	1.0180		
GW-16	1.0163		
GW-16R	1.0292	1.0271	1.0357
GW-17A	1.0208	1.0196	
GW-18	1.0301		
GW-19A	1.0353	1.0346	1.0400
GW-19B	1.0144	1.0146	
GW-20	1.0337	1.0321	1.0405
GW-21	1.0282	1.0266	
GW-22	1.0306	1.0286	1.0373
GW-23	1.0364	1.0296	1.0373
GW-24	1.0338	1.0326	1.0396
GW-25	1.0338	1.0332	1.0387
GW-26	1.0341	1.0332	1.0383
GW-27	1.0302	1.0297	1.0353
GW-28	1.0314	1.0301	1.0343
GW-29	1.0346	1.0331	1.0389
DH-31	1.0222		
GW-32	1.0282		
DH-33	1.0301	1.0320	
DH-34	1.0271	1.0265	
GW-36	1.0299	1.0281	1.0321
GW-37	1.0330	1.0346	1.0391
GW-38	1.0273	1.0261	1.0323
GW-56	1.0315		
GW-56R	1.0287	1.0276	1.0321
GW-57	1.0306	1.0291	1.0349
GW-58	1.0285	1.0266	1.0314
DH-59	1.0309	1.0296	
GW-60	1.0299	1.0282	1.0336
DH-61	1.0278	1.0296	
DH-62	1.0279	1.0281	
GW-63	1.0266	1.0266	1.0314
GW-64			1.0259
I-1-30 (NE)	1.0179	1.0150	
I-1-50 (NW)	1.0171		
I-1-100 (S)	1.0158	1.0135	
I-2-30 (S)	1.0236	1.0231	1.0282
I-2-50 (N)	1.0206		
I-3-30 (SW)	1.0200	1.0185	
I-3-50 (SE)	1.0161		
I-3-100 (N)	1.0133	1.0126	
I-4-30 (E)	1.0243	1.0230	
I-4-50 (W)	1.0217		

TABLE 3

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FIELD DUPLICATE IDENTIFICATION  
LARW QUARTERLY GROUNDWATER SAMPLING

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SAMPLING EVENT	LAB SET NUMBER*	DUPLICATE SAMPLE ID	ORIGINAL SAMPLE ID
November 4, 1993	16511/8977	GW-70	GW-16R
November 4, 1993	16511/8977	GW-71	GW-20
November 5, 1993	16534/8977	GW-72	GW-29
November 22, 1993	/9063	GW-82	GW-20
December 22, 1993	17136/	GW-1	GW-29

\* LAB SET NUMBER - American West Analytical Laboratories/Barringer Laboratories

TABLE 4

HOLDING TIMES  
LARW QUARTERLY SAMPLING  
NOVEMBER 1993

LAB SET NUMBER	WELLS INCLUDED	DATE SAMPLED	DATE RECEIVED	TYPE of ANALYSIS	HOLDING TIME	DATE ANALYZED	No. of DAYS ELAPSED
16470	GW-38	11/2/93	11/2/93	Metals	6 months	11/11 - 11/29	27
				TOX/TOC	28 days	11/3, 11/9	1, 7
				TDS	7 days	11/3	1
				Others	14/28 days	11/5 - 11/16	14
8977		11/2/93	11/15/93	Radiologics	6 months	11/17 - 01/3	62
16511	GW-19A,28, 36,37,57,58, 60,63	11/3/93	11/4/93	Metals	6 months	11/11 - 11/29	26
				TOX/TOC	28 days	11/10, 11/9	7, 6
				TDS	7 days	11/8	5
				Others	14/28 days	11/5 - 11/16	13
8977		11/3/93	11/15/93	Radiologics	6 months	11/17 - 01/3	61
16511	GW-16R,20, 24,56R,70,71, I-2-30	11/4/93	11/4/93	Metals	6 months	11/11 - 11/29	25
				TOX/TOC	28 days	11/10, 11/11	6, 7
				TDS	7 days	11/8	4
				Others	14/28 days	11/8 - 11/16	12
8977		11/4/93	11/15/93	Radiologics	6 months	11/17 - 01/3	60
16534	GW-3,22,23, 25,26,27,29, 64,72	11/5/93	11/8/93	Metals	6 months	11/11 - 11/29	24
				TOX/TOC	28 days	11/10, 11/11	5, 6
				TDS	7 days	11/8	3
				Others	14/28 days	11/8 - 11/16	11
8977		11/5/93	11/15/93	Radiologics	6 months	11/17 - 01/3	59
9063	GW-80 (GW-24), GW-81 (GW-20), GW-82	11/22/93	11/23/93	Radiologics	6 months	11/29 - 12/30	38
17136	GW-29	12/22/93	12/22/93	TOX	28 days	12/28	6

1/11/94

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
**LARW Compliance Monitor Wells**  
 ( in mg/l unless noted otherwise )

Well Identification: GW-3

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-3-93)	4th Quarter (11-5-93)
<b>DISSOLVED METALS</b>			
Arsenic		0.075	[0.059]JS
Barium		0.018	0.032
Beryllium		ND	[ND]JS
Cadmium		0.009	0.028
Chromium		0.053	0.08
Copper		0.02	0.024
Lead		ND	ND
Mercury		ND	ND
Molybdenum		0.2	0.2
Nickel		0.043	0.092
Selenium		ND	[ND]JS
Silver		ND	ND
Zinc		[0.013]JFD	0.045
<b>ANIONS</b>			
Bicarbonate		140	130
Carbonate		ND	ND
Chloride		16000	14000
Sulfate		1900	1500
<b>CATIONS</b>			
Calcium		380	420
Magnesium		470	470
Potassium		360	380
Sodium		9500	9300
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride		2.6	2.3
Nitrate		ND	ND
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)		ND	ND
Total Dissolved Solids		29000	27000
Conductivity (umhos/cm)		49000	52000
pH (units)		7.4	7.5
<b>ORGANICS</b>			
Total Organic Carbon (TOC)		ND	ND
Total Organic Halogens (TOX)		ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.76	7.33
Conductivity (umhos/cm)		55600	53500
Temperature (Deg. C)		13.3	11.6

ND Not Detected



**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-3

Page 2 of 2

PARAMETERS	SAMPLING DATE	
	8-3-93	11-5-93
<b>DISSOLVED RADIOLOGICS</b>		
Gross Alpha	0+/-240	350+/-170
Gross Beta	320+/-180	470+/-130
Total Uranium (mg/l)	0.0451	0.0276
Beryllium-7	<25	<17
Cadmium-109	<55	<33
Carbon-14	0+/-10	[7+/-12]J
Cobalt-60	<2.3	<1.9
Iodine-129	0.0+/-1.6	0.0+/-0.9
Manganese-54	<2.5	<1.8
Neptunium-237	[0.3+/-0.4]J	[0.2+/-0.8]J
Potassium-40	280+/-90	530+/-50
Radium-226	0.6+/-0.4	[0.5+/-0.5]J
Radium-228	1.3+/-0.5	1.2+/-0.5
Strontium-90	0.0+/-0.8	[0.7+/-0.8]J
Technetium-99	0.0+/-7.3	[0.1+/-3.9]J
Thorium-230	[0.4+/-2.3]J	0.0+/-1.7
Thorium-232	0.0+/-1.9	0.0+/-2.1
Tritium	0+/-290	0+/-309

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
**LARW Compliance Monitor Wells**  
 ( in mg/l unless noted otherwise )

Well Identification: GW-16R

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-4-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	0.014	[0.014]JS
Barium	1	0.026	0.032
Beryllium		ND	ND
Cadmium	0.01	0.006	0.031
Chromium	0.05	0.043	0.082
Copper	1	[0.012]JFD	[0.042]JFD
Lead	0.05	ND	ND
Mercury	0.002	ND	0.0003
Molybdenum		ND	[0.1]J
Nickel	0.15	0.028	0.096
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	0.012	[0.027]JFD
<b>ANIONS</b>			
Bicarbonate		330	320
Carbonate		ND	ND
Chloride		25000	22000
Sulfate		2100	[1500]JFD
<b>CATIONS</b>			
Calcium		370	360
Magnesium		540	460
Potassium		530	480
Sodium		15000	14000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	2.4	2.7	2.9
Nitrate		0.05	[0.04]JFD
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	10	0.05	[0.04]JFD
Total Dissolved Solids	24445	41000	42000
Conductivity (umhos/cm)		67000	73000
pH (units)	6.5-8.5	7.6	7.2
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	1.14	ND	ND
Total Organic Halogens (TOX)	0.2	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.2	7.45
Conductivity (umhos/cm)		64700	68867
Temperature (Deg. C)		12.8	11.8

ND Not Detected

Shaded areas indicate values above GWPL.

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in pCi/l unless noted otherwise )

Well Identification: GW-16R

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-4-93)
DISSOLVED RADIOLOGICS			
Gross Alpha	90	92+/-180	40+/-160
Gross Beta	376	0+/-140	520+/-190
Total Uranium (mg/l)	0.02	0.0138	0.0139
Beryllium-7		<24	<18
Cadmium-109		<46	<37
Carbon-14	2133	0+/-10	[1+/-19]J
Cobalt-60		<2.2	<1.9
Iodine-129	4	0.0+/-1.9	[0.2+/-1.0]J
Manganese-54		<2.5	<2.0
Neptunium-237	8	[0.2+/-0.3]J	0.0+/-0.7
Potassium-40	312	490+/-100	330+/-70
Radium-226	(Ra-226+Ra-228) 5	0.4+/-0.4	[0.6+/-0.4]J
Radium-228		1.7+/-0.5	1.4+/-1.5
Strontium-90	8	0.0+/-0.8	[0.2+/-1.2]J
Technetium-99	800	0.0+/-9.1	[1.3+/-3.8]J
Thorium-230	5.33	[0.4+/-2.3]J	0.0+/-1.9
Thorium-232	5.33	0.0+/-1.9	0.0+/-2.1
Tritium		[170+/-290]J	0+/-309

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-19A

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	[0.021]JFD	[0.021]JS
Barium	1	0.015	0.027
Beryllium		ND	ND
Cadmium	0.01	0.015	0.046
Chromium	0.05	0.077	0.12
Copper	1	[0.025]JFD	[0.033]JFD
Lead	0.05	ND	ND
Mercury	0.002	0.0002	0.0005
Molybdenum		0.5	0.6
Nickel	0.15	[0.072]JFD	0.15
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	6.25	0.023	[0.029]JFD
<b>ANIONS</b>			
Bicarbonate		180	160
Carbonate		ND	ND
Chloride		23000	24000
Sulfate		5600	[4400]JFD
<b>CATIONS</b>			
Calcium		810	680
Magnesium		1200	910
Potassium		520	460
Sodium		16000	16000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	4.54	4.6	4.2
Nitrate		ND	ND
Nitrates (NO3-N + NO2-N)	10	ND	ND
Total Dissolved Solids	52013	50000	53000
Conductivity (umhos/cm)		66000	82000
pH	6.5-8.5	7.4	7.3
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	13.15	ND	ND
Total Organic Halogens (TOX)	0.03	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH		7.25	7.0
Conductivity (umhos/cm)		71800	76933
Temperature (Deg. C)		12.7	12.0

ND Not Detected

Shaded areas indicate values above GWPL.

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in pCi/l unless noted otherwise )

Well Identification: GW-19A

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
DISSOLVED RADIOLOGICS			
Gross Alpha	160	0+/-160	70+/-190
Gross Beta	692	260+/-170	270+/-190
Total Uranium (mg/l)	0.02	0.0008	0.0029
Beryllium-7		<24	<16
Cadmium-109		<47	<36
Carbon-14	2133.00	[3+/-12]J	[18+/-14]J
Cobalt-60		<2.8	<1.6
Iodine-129	7	0.0+/-1.4	0.0+/-2.0
Manganese-54		<2.4	<1.8
Neptunium-237	8	[0.1+/-0.3]J	0.0+/-0.7
Potassium-40	372	610+/-90	590+/-60
Radium-226	(Ra-226+Ra-228) 5	0.5+/-0.4	[0.4+/-0.4]J
Radium-228		[0.9+/-0.5]J	1.1+/-0.5
Strontium-90	8	0.0+/-0.8	1.2+/-1.6
Technetium-99	800	0.0+/-7.2	0.0+/-4.4
Thorium-230	5.33	0.0+/-0.8	[0.4+/-2.3]J
Thorium-232	5.33	0.0+/-1.5	0.0+/-2.4
Tritium		[10+/-290]J	0+/-309

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
**LARW Compliance Monitor Wells**  
**( in mg/l unless noted otherwise )**

Well Identification: GW-20

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-4-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	0.029	[0.024]JS
Barium	1	0.019	0.025
Beryllium		ND	ND
Cadmium	0.01	0.014	0.035
Chromium	0.05	0.063	0.12
Copper	1	0.017	[0.03]JFD
Lead	0.05	ND	ND
Mercury	0.002	ND	0.0004
Molybdenum		0.2	0.3
Nickel	0.15	0.079	0.17
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	[0.014]JFD	[0.026]JFD
<b>ANIONS</b>			
Bicarbonate		220	210
Carbonate		ND	ND
Chloride		22000	24000
Sulfate		3500	[4000]JFD
<b>CATIONS</b>			
Calcium		410	410
Magnesium		840	820
Potassium		670	550
Sodium		15000	17000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Flouride	3.36	3.4	2.4
Nitrate		0.1	[0.1]JFD
Nitrates (NO3-N + NO2-N)	10	0.11	[0.1]JFD
Total Dissolved Solids	49225	61000	52000
Conductivity (umhos/cm)		73000	83000
pH (units)	6.5-8.5	7.4	7.2
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	2.08	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.31	7.6
Conductivity (umhos/cm)		71100	74067
Temperature (Deg. C)		13.1	12.2

ND Not Detected

Shaded areas indicate values above GWPL.

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in pCi/l unless noted otherwise )

Well Identification: GW-20

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-4-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	98	0 +/-130	70 +/-190
Gross Beta	722	440 +/-170	470 +/-200
Total Uranium (mg/l)	0.02	0.0092	0.0081
Beryllium-7		<20	<19
Cadmium-109		<46	<39
Carbon-14	2133	0 +/-12	[8+/- 12]J
Cobalt-60		<2.6	<2.1
Iodine-129	8	0.0 +/-1.8	[0.7 +/-5.9]J
Manganese-54		<2.2	<2.0
Neptunium-237	8	[0.1 +/-0.2]J	[0.4 +/-0.6]J
Potassium-40	509	240 +/-110	500 +/-80
Radium-226	(Ra-226+Ra-228) 5	1.3 +/-0.7	1.5 +/-0.8
Radium-228		1.5 +/-0.5	3.0 +/-1.2
Strontium-90	8	0.0 +/-1.1	[1.0 +/-1.1]J
Technetium-99	800	0.0 +/-8.8	[0.3 +/-2.8]J
Thorium-230	5.33	0.0 +/-1.2	0.0 +/-0.4
Thorium-232	5.33	0.0 +/-1.0	0.0 +/-0.3
Tritium		0 +/-290	[20 +/-290]J

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-22

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-5-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	0.016	[0.017]JS
Barium	1	0.043	0.037
Beryllium		ND	[ND]JS
Cadmium	0.01	0.011	0.031
Chromium	0.05	0.055	0.095
Copper	1	0.022	0.032
Lead	0.05	ND	ND
Mercury	0.002	ND	ND
Molybdenum		[0.1]J	[0.1]J
Nickel	0.15	0.054	0.12
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	[0.01]JFD	0.022
<b>ANIONS</b>			
Bicarbonate		310	300
Carbonate		ND	ND
Chloride		26000	21000
Sulfate		2500	2000
<b>CATIONS</b>			
Calcium		430	500
Magnesium		640	730
Potassium		580	510
Sodium		16000	14000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	2.87	2.8	3
Nitrate		0.05	0.04
Nitrates (NO3-N + NO2-N)	10	0.05	0.04
Total Dissolved Solids	45201	42000	45000
Conductivity (umhos/cm)		69000	78000
pH (units)	6.5-8.5	7.6	7.4
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	1.75	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.10	7.05
Conductivity (umhos/cm)		67700	74200
Temperature (Deg. C)		13.1	11.7

ND Not Detected

Shaded areas indicate values above GWPL.



**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
**LARW Compliance Monitor Wells**  
(in pCi/l unless noted otherwise )

Well Identification: GW-22

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-5-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	264	150+/-190	160+/-190
Gross Beta	695	670+/-210	460+/-190
Total Uranium (mg/l)	0.02	0.0159	0.0196
Beryllium-7		<27	<15
Cadmium-109		<49	<30
Carbon-14	2133	0+/-13	[22+/-20]J
Cobalt-60		<2.7	<1.7
Iodine-129	5	[0.1+/-2.2]J	[0.8+/-0.9]J
Manganese-54		<2.5	<1.4
Neptunium-237	8	[0.2+/-0.4]J	1.4+/-1.3
Potassium-40	469	630+/-80	432+/-60
Radium-226	(Ra-226+Ra-228) J	1.0+/-0.6	[0.3+/-0.4]J
Radium-228		2.7+/-0.6	2.2+/-0.5
Strontium-90	8	0.0+/-0.8	0.0+/-1.4
Technetium-99	800	0.0+/-8.3	[2.2+/-7.1]J
Thorium-230	5.33	0.0+/-0.8	0.0+/-2.1
Thorium-232	5.33	0.0+/-1.0	0.0+/-1.8
Tritium		0+/-290	[30+/-310]J

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
**LARW Compliance Monitor Wells**  
(in mg/l unless noted otherwise)

Well Identification: GW-23

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-5-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	0.021	[0.02]JS
Barium	1	0.025	0.029
Beryllium		ND	[ND]JS
Cadmium	0.01	0.009	0.032
Chromium	0.05	0.048	0.091
Copper	1	0.016	0.033
Lead	0.05	ND	ND
Mercury	0.002	ND	ND
Molybdenum		0.2	0.2
Nickel	0.15	0.046	0.12
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	[0.008]JED	0.021
<b>ANIONS</b>			
Bicarbonate		300	290
Carbonate		ND	ND
Chloride		23000	22000
Sulfate		3100	2500
<b>CATIONS</b>			
Calcium		440	490
Magnesium		670	710
Potassium		570	500
Sodium		16000	14000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	3.14	3.2	3.3
Nitrate		0.09	0.09
Nitrates (NO3-N + NO2-N)	10	0.1	0.09
Total Dissolved Solids	44333	42000	44000
Conductivity (umhos/cm)		68000	75000
pH (units)	6.5-8.5	7.5	7.4
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	1.99	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.14	7.06
Conductivity (umhos/cm)		65750	71833
Temperature (Deg. C)		13.3	12.0

ND Not Detected

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-23

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-5-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	155	20+/-110	20+/-160
Gross Beta	851	470+/-190	550+/-190
Total Uranium (mg/l)	0.02	0.0167	0.0137
Beryllium-7		<25	<16
Cadmium-109		<49	<34
Carbon-14	2133	0+/-17	[7+/-18]J
Cobalt-60		<2.8	<1.9
Iodine-129	4	0.0+/-1.7	0.0+/-0.9
Manganese-54		<2.0	<1.5
Neptunium-237	8	0.0+/-0.1	[0.7+/-1.1]J
Potassium-40	447	540+/-90	510+/-70
Radium-226	(Ra-226+Ra228) 5	0.9+/-0.6	[0.5+/-0.4]J
Radium-228		1.4+/-0.5	2.2+/-0.5
Strontium-90	8	0.0+/-1.0	[0.4+/-1.4]J
Technetium-99	800	0.0+/-7.4	[4.0+/-7.5]J
Thorium-230	5.33	0.0+/-0.8	0.0+/-1.5
Thorium-232	5.33	0.0+/-1.0	0.0+/-2.1
Tritium		[60+/-290]J	0+/-309

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
**LARW Compliance Monitor Wells**  
 ( in mg/l unless noted otherwise )

Well Identification: GW-24

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-4-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	0.024	[0.02]JS
Barium	1	0.026	0.032
Beryllium		ND	ND
Cadmium	0.01	0.012	0.035
Chromium	0.05	0.057	0.11
Copper	1	0.018	[0.033]JFD
Lead	0.05	ND	ND
Mercury	0.002	ND	0.0003
Molybdenum		0.2	0.3
Nickel	0.15	0.079	0.15
Selenium	0.01	ND	[0.006]JS
Silver	0.05	ND	ND
Zinc	5	[0.014]JFD	[0.029]JFD
<b>ANIONS</b>			
Bicarbonate		220	220
Carbonate		ND	ND
Chloride		24000	25000
Sulfate		2700	[3300]JFD
<b>CATIONS</b>			
Calcium		460	470
Magnesium		740	740
Potassium		610	520
Sodium		16000	17000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	3.11	3.4	2.8
Nitrate		0.1	[0.09]JFD
Nitrates (NO3-N + NO2-N)	10	0.11	[0.09]JFD
Total Dissolved Solids	49616	48000	48000
Conductivity (umhos/cm)		73000	84000
pH (units)	6.5-8.5	7.5	7.3
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	2.32	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.32	7.59
Conductivity (umhos/cm)		71350	73633
Temperature (Deg. C)		13.6	12.5

ND Not Detected

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-24

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-4-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	498	90+/-180	120+/-200
Gross Beta	904	670+/-220	420+/-190
Total Uranium (mg/l)	0.02	0.0159	0.0118
Beryllium-7		<23	<15
Cadmium-109		<49	<34
Carbon-14	2133	0+/-17	[10+/-11]J
Cobalt-60		<2.6	<1.6
Iodine-129	11	0.0+/-1.5	[1.0+/-5.5]J
Manganese-54		<2.5	<1.4
Neptunium-237	8	[0.2+/-0.3]J	[0.3+/-0.6]J
Potassium-40	476	620+/-90	410+/-60
Radium-226	(Ra-226+Ra-228) 5	1.7+/-0.8	0.9+/-0.5
Radium-228		2.4+/-0.6	3.5+/-1.2
Strontium-90	8	0.0+/-0.9	[1.3+/-1.0]J
Technetium-99	800	0.0+/-7.3	[1.2+/-3.0]J
Thorium-230	5.33	0.0+/-1.2	0.0+/-0.4
Thorium-232	5.33	0.0+/-1.0	0.0+/-0.4
Tritium		0+/-290	[180+/-290]J

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-25

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-3-93)	4th Quarter (11-5-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.075	0.081	[0.066]JS
Barium	1	0.016	0.03
Beryllium		ND	[ND]JS
Cadmium	0.014	0.008	0.036
Chromium	0.058	0.063	0.11
Copper	1	0.022	0.03
Lead	0.05	ND	ND
Mercury	0.002	ND	ND
Molybdenum		0.2	0.3
Nickel	0.15	0.04	0.12
Selenium	0.01	ND	[ND]JS
Silver	0.082	ND	ND
Zinc	5	[0.021]JFD	0.025
<b>ANIONS</b>			
Bicarbonate		200	190
Carbonate		ND	ND
Chloride		21000	24000
Sulfate		4400	3500
<b>CATIONS</b>			
Calcium		540	560
Magnesium		870	930
Potassium		640	590
Sodium		15000	16000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	3.68	3.8	3.5
Nitrate		0.05	0.08
Nitrates (NO3-N + NO2-N)	10	0.05	0.08
Total Dissolved Solids	49736	47000	49000
Conductivity (umhos/cm)		70000	80000
pH (units)	6.5-8.5	7.4	7.4
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	20.32	ND	ND
Total Organic Halogens (TOX)	0.21	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.24	7.25
Conductivity (umhos/cm)		71800	73700
Temperature (Deg. C)		13.0	11.2

ND Not Detecte

Shaded areas indicate values above GWPL.

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in pCi/l unless noted otherwise )

Well Identification: GW-25

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-3-93)	4th Quarter (11-5-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	141	0+/-230	140+/-200
Gross Beta	829	460+/-190	570+/-200
Total Uranium (mg/l)	0.1298	0.117	0.0955
Beryllium-7		<25	<17
Cadmium-109		<55	<35
Carbon-14	15	10+/-13	[7+/-18]J
Cobalt-60		<2.3	<2.2
Iodine-129	2	0.0+/-1.5	0.0+/-0.9
Manganese-54		<2.5	<1.9
Neptunium-237	8	[0.3+/-0.4]J	2.4+/-1.6
Potassium-40	603	710+/-90	520+/-80
Radium-226	(Ra-226+Ra-228) 5	1.9+/-0.8	1.4+/-0.7
Radium-228		2.2+/-0.6	2.8+/-0.5
Strontium-90	8	0.0+/-1.0	[0.8+/-1.3]J
Technetium-99	800	0.0+/-7.1	[6.8+/-8.8]J
Thorium-230	5.33	2.2+/-2.9	1.2+/-2.5
Thorium-232	5.33	0.0+/-2.4	0.0+/-1.8
Tritium		0+/-290	0+/-309

Shaded areas indicate values above GWPL.

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in mg/l unless noted otherwise )

Well Identification: GW-26

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-3-93)	4th Quarter (11-5-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.1107	0.13	[0.12]JS
Barium	1	0.027	0.033
Beryllium		ND	[ND]JS
Cadmium	0.01	0.014	0.04
Chromium	0.05	0.073	0.12
Copper	1	0.024	0.035
Lead	0.05	ND	ND
Mercury	0.002	ND	ND
Molybdenum		0.6	0.6
Nickel	0.15	0.06	0.14
Selenium	0.0103	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	[0.02]JFD	0.024
<b>ANIONS</b>			
Bicarbonate		120	100
Carbonate		ND	ND
Chloride		23000	23000
Sulfate		4600	4000
<b>CATIONS</b>			
Calcium		680	670
Magnesium		960	970
Potassium		600	500
Sodium		16000	15000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	3.85	3.6	3.3
Nitrate		1.1	0.97
Nitrates (NO3-N + NO2-N)	10	1.1	0.97
Total Dissolved Solids	49831	48000	48000
Conductivity (umhos/cm)		71000	77000
pH (units)	6.5-8.5	7.4	7.4
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	2.57	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.48	7.43
Conductivity (umhos/cm)		71650	75400
Temperature (Deg. C)		13.3	11.8

ND Not Detected

Shaded areas indicate values above GWPL.



**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-26

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-3-93)	4th Quarter (11-5-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	44	0+/-200	190+/-210
Gross Beta	895	450+/-180	520+/-200
Total Uranium (mg/l)	0.031	0.0254	0.0168
Beryllium-7		<25	<16
Cadmium-109		<55	<32
Carbon-14	2133	5+/-10	[4+/-11]J
Cobalt-60		<2.3	<1.6
Iodine-129	3	0.0+/-1.5	0.0+/-0.9
Manganese-54		<2.5	<1.6
Neptunium-237	8	[0.1+/-0.3]J	1.6+/-1.4
Potassium-40	462	280+/-110	320+/-70
Radium-226	(Ra-226+Ra-228) 5	0.4+/-0.4	[0.4+/-0.4]J
Radium-228		1.9+/-0.5	1.8+/-0.5
Strontium-90	8	0.0+/-0.9	[1.0+/-1.2]J
Technetium-99	800	0.0+/-6.8	0.0+/-7.8
Thorium-230	5.33	[0.4+/-2.3]J	0.0+/-1.7
Thorium-232	5.33	0.0+/-1.9	0.0+/-2.4
Tritium		[30+/-290]J	0+/-309

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in mg/l unless noted otherwise )

Well Identification: GW-27

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-3-93)	4th Quarter (11-5-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	0.035	[0.038]JS
Barium	1	0.028	0.037
Beryllium		ND	[ND]JS
Cadmium	0.01	0.013	0.037
Chromium	0.05	0.068	0.1
Copper	1	0.025	0.028
Lead	0.05	ND	ND
Mercury	0.002	ND	0.0003
Molybdenum		0.5	0.5
Nickel	0.15	0.057	0.12
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	[0.016]JFD	0.029
<b>ANIONS</b>			
Bicarbonate		150	150
Carbonate		ND	ND
Chloride		20000	20000
Sulfate		4100	3000
<b>CATIONS</b>			
Calcium		550	620
Magnesium		830	970
Potassium		590	530
Sodium		13000	13000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	3.71	3.7	3.3
Nitrate		ND	0.03
Nitrates (NO3-N + NO2-N)	10	ND	0.03
Total Dissolved Solids	43443	42000	43000
Conductivity (umhos/cm)		64000	71000
pH (units)	6.5-8.5	7.4	7.6
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	2.7	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.66	7.33
Conductivity (umhos/cm)		63600	67933
Temperature (Deg. C)		17.0	10.6

ND Not Detected

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-27

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-3-93)	4th Quarter (11-5-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	94	0 +/- 200	0 +/- 169
Gross Beta	750	360 +/- 180	680 +/- 200
Total Uranium (mg/l)	0.02	0.0069	0.0051
Beryllium-7		<25	<16
Cadmium-109		<55	<33
Carbon-14	2133	[3 +/- 10]J	0 +/- 13
Cobalt-60		<2.3	<1.8
Iodine-129	1	0.0 +/- 1.4	0.0 +/- 0.8
Manganese-54		<2.5	<1.7
Neptunium-237	8	0.0 +/- 0.1	1.8 +/- 1.4
Potassium-40	468	280 +/- 100	790 +/- 60
Radium-226	(Ra-226 + Ra-228) 5	[0.3 +/- 0.4]J	[0.3 +/- 0.4]J
Radium-228		1.2 +/- 0.5	1.4 +/- 0.4
Strontium-90	8	0.0 +/- 0.9	0.0 +/- 1.3
Technetium-99	800	0.0 +/- 7.6	[2.3 +/- 7.6]J
Thorium-230	5.33	0.9 +/- 2.5	0.0 +/- 1.9
Thorium-232	5.33	[0.1 +/- 2.7]J	0.0 +/- 1.8
Tritium		[20 +/- 290]J	0 +/- 309

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-28

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3:d Quarter (8-3-93)	4th Quarter (11-3-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	0.058	[0.049]JS
Barium	1	0.017	0.03
Beryllium		ND	ND
Cadmium	0.01	0.01	0.033
Chromium	0.05	0.064	0.095
Copper	1	0.029	[0.031]JFD
Lead	0.05	ND	ND
Mercury	0.002	ND	0.0005
Molybdenum		0.3	0.4
Nickel	0.15	0.061	0.13
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	[0.015]JFD	[0.026]JFD
<b>ANIONS</b>			
Bicarbonate		160	150
Carbonate		ND	ND
Chloride		21000	22000
Sulfate		4000	[3200]JFD
<b>CATIONS</b>			
Calcium		450	480
Magnesium		740	730
Potassium		540	490
Sodium		15000	15000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	3.41	3.3	2.8
Nitrate		0.31	[0.32]JFD
Nitrates (NO3-N + NO2-N)	1.0	0.31	[0.32]JFD
Total Dissolved Solids	46215	44000	45000
Conductivity (umhos/cm)		69000	77000
pH (units)	6.5-8.5	7.4	8
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	2.7	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.46	7.48
Conductivity (umhos/cm)		62900	71800
Temperature (Deg. C)		12.6	12.2

ND Not Detected

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-28

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-3-93)	4th Quarter (11-3-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	351	0+/-130	110+/-180
Gross Beta	625	370+/-180	380+/-190
Total Uranium (mg/l)	0.02	0.0079	0.0090
Beryllium-7		<18	<15
Cadmium-109		<46	<31
Carbon-14	2133	[2+/-12]J	0+/-20
Cobalt-60		<2.1	<1.7
Iodine-129	5	0.0+/-1.4	0.0+/-1.1
Manganese-54		<2.0	<1.4
Neptunium-237	8	[0.1+/-0.3]J	[0.2+/-0.8]J
Potassium-40	407	450+/-90	420+/-60
Radium-226	(Ra-226+Ra-228) 5	[0.3+/-0.4]J	[0.6+/-0.5]J
Radium-228		1.5+/-0.5	1.2+/-0.5
Strontium-90	8	0.0+/-0.7	[0.4+/-1.3]J
Technetium-99	800	0.0+/-7.0	[3.1+/-3.8]J
Thorium-230	5.33	0.0+/-1.2	0.0+/-1.9
Thorium-232	5.33	0.0+/-1.0	0.0+/-1.8
Tritium		0+/-290	0+/-309

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-29

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-5-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	[0.015]JFD	[0.018]JS
Barium	1	0.019	0.028
Beryllium		ND	[ND]JS
Cadmium	0.01	0.009	0.037
Chromium	0.05	0.056	0.11
Copper	1	[0.022]JFD	0.032
Lead	0.05	ND	ND
Mercury	0.002	0.0002	ND
Molybdenum		0.2	0.3
Nickel	0.15	[0.043]JFD	0.12
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	0.02	0.023
<b>ANIONS</b>			
Bicarbonate		310	300
Carbonate		ND	ND
Chloride		24000	24000
Sulfate		4100	3300
<b>CATIONS</b>			
Calcium		530	560
Magnesium		830	860
Potassium		610	560
Sodium		17000	16000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	3.35	3.6	3.3
Nitrate		ND	[0.01]J
Nitrates (NO3-N + NO2-N)	10	ND	[0.01]J
Total Dissolved Solids	50956	47000	48000
Conductivity (umhos/cm)		66000	82000
pH (units)	6.5-8.5	7.5	7.5
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	2.02	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.21	7.07
Conductivity (umhos/cm)		74500	76900
Temperature (Deg. C)		13.1	11.8

ND Not Detected

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-29

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-5-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	144	0 +/- 200	90 +/- 190
Gross Beta	793	390 +/- 190	500 +/- 190
Total Uranium (mg/l)	0.036	0.0197	0.0252
Beryllium-7		<26	<18
Cadmium-109		<55	<40
Carbon-14	2133	[1 +/- 17]J	[25 +/- 30]J
Cobalt-60		<2.3	<2.0
Iodine-129	5	0.0 +/- 1.7	0.0 +/- 1.0
Manganese-54		<2.6	<2.0
Neptunium-237	8	[0.1 +/- 0.2]J	4.9 +/- 2.2
Potassium-40	545	410 +/- 100	480 +/- 100
Radium-226	(Ra-226+Ra-228) 5	1.1 +/- 0.6	1.0 +/- 0.5
Radium-228		2.6 +/- 0.6	2.9 +/- 0.5
Strontium-90	8	0.0 +/- 0.9	[1.8 +/- 1.4]J
Technetium-99	800	0.0 +/- 8.6	[3.6 +/- 7.2]J
Thorium-230	5.33	0.0 +/- 1.2	2.5 +/- 2.9
Thorium-232	5.33	0.0 +/- 1.5	0.0 +/- 2.1
Tritium		0 +/- 290	0 +/- 309

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-36

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	[0.037]JFD	[0.043]JS
Barium	1	0.019	0.031
Beryllium		ND	ND
Cadmium	0.01	0.008	0.032
Chromium	0.05	0.069	0.091
Copper	1	[0.028]JFD	[0.028]JFD
Lead	0.05	ND	ND
Mercury	0.002	0.0002	0.0004
Molybdenum		0.3	0.3
Nickel	0.15	[0.22]JFD	0.12
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	0.022	[0.027]JFD
<b>ANIONS</b>			
Bicarbonate		140	150
Carbonate		ND	ND
Chloride		20000	21000
Sulfate		3400	[3500]JFD
<b>CATIONS</b>			
Calcium		450	440
Magnesium		650	570
Potassium		460	480
Sodium		14000	15000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	3.29	3.2	3
Nitrate		0.51	[0.54]JFD
Nitrates (NO3-N + NO2-N)	10	0.51	[0.54]JFD
Total Dissolved Solids	43426	40000	40000
Conductivity (umhos/cm)		58000	71000
pH (units)	6.5-8.5	7.3	7.2
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	1.66	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.57	7.34
Conductivity (umhos/cm)		64700	66600
Temperature (Deg. C)		12.8	12.2

ND Not Detected

Shaded areas indicate values above GWPL.



TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in pCi/l unless noted otherwise )

Well Identification: GW-36

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
DISSOLVED RADICLOGICS			
Gross Alpha	199	0+/-170	170+/-190
Gross Beta	674	370+/-180	660+/-200
Total Uranium (mg/l)	0.0533	0.0460	0.0411
Beryllium-7		<20	<16
Cadmium-109		<51	<35
Carbon-14	2133	4+/-12	[18+/-17]J
Cobalt-60		<2.7	<1.6
Iodine-129	5	0.0+/-1.8	0.0+/-0.9
Manganese-54		<2.1	<1.7
Neptunium-237	8	[0.2+/-0.3]J	[0.5+/-1.0]J
Potassium-40	405	580+/-80	590+/-60
Radium-226	(Ra-226+Ra-228) 5	1.0+/-0.6	0.8+/-0.5
Radium-228		2.0+/-0.5	2.7+/-0.6
Strontium-90	8	[0.2+/-1.0]J	[0.6+/-1.4]J
Technetium-99	800	0.0+/-7.4	[1.4+/-3.9]J
Thorium-230	5.33	0.0+/-0.8	0.0+/-1.9
Thorium-232	5.33	0.0+/-1.0	0.0+/-1.8
Tritium		0+/-290	0+/-309

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-37

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	[0.035]JFD	[0.033]JS
Barium	1	0.02	0.033
Beryllium		ND	ND
Cadmium	0.01	0.01	0.037
Chromium	0.05	0.072	0.12
Copper	1	[0.017]JFD	[0.033]JFD
Lead	0.05	ND	ND
Mercury	0.002	0.0002	0.0005
Molybdenum		0.3	0.4
Nickel	0.15	[0.072]JFD	0.24
Selenium	0.01	ND	[0.008]JS
Silver	0.05	ND	ND
Zinc	5	0.023	[0.027]JFD
<b>ANIONS</b>			
Bicarbonate		120	96
Carbonate		ND	ND
Chloride		26000	26000
Sulfate		4900	[3500]JFD
<b>CATIONS</b>			
Calcium		570	550
Magnesium		860	830
Potassium		590	530
Sodium		17000	18000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	2.97	3.3	2.8
Nitrate		1.1	[0.87]JFD
Nitrites (NO3-N + NO2-N)	10	1.1	[0.87]JFD
Total Dissolved Solids	47136	50000	51000
Conductivity (umhos/cm)		70000	87000
pH (units)	6.5-8.5	7.4	7.4
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	12.62	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.22	7.42
Conductivity (umhos/cm)		75700	78500
Temperature (Deg. C)		13.3	11.3

ND Not Detected

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-37

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	286	0+/-230	220+/-220
Gross Beta	746	390+/-190	660+/-200
Total Uranium (mg/l)	0.02	0.0166	0.0127
Beryllium-7		<21	<18
Cadmium-109		<48	<36
Carbon-14	2133	[3+/-10]J	0+/-10
Cobalt-60		<2.5	<1.8
Iodine-129	1	0.0+/-2.2	0.0+/-1.0
Manganese-54		<2.2	<1.7
Neptunium-237	8	[0.3+/-0.4]J	[0.2+/-0.8]J
Potassium-40	457	640+/-90	520+/-70
Radium-226	(Ra-226+Ra-228) 6	0.6+/-0.5	0.7+/-0.5
Radium-228		2.6+/-0.5	2.5+/-0.6
Strontium-90	8	[0.1+/-0.9]J	[1.6+/-1.3]J
Technetium-99	800	0.0+/-8.2	[1.3+/-4.5]J
Thorium-230	5.33	0.0+/-1.2	0.0+/-2.1
Thorium-232	5.33	0.0+/-1.0	0.0+/-2.4
Tritium		0+/-290	0+/-309

Shaded areas indicate values above GWPL.

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in mg/l unless noted otherwise )

Well Identification: GW-38

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-2-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	[0.032]JFD	[0.034]JS
Barium	1	0.022	0.034
Beryllium		ND	ND
Cadmium	0.013	0.007	0.029
Chromium	0.057	0.045	0.085
Copper	1	[0.035]JFD	0.031
Lead	0.05	ND	ND
Mercury	0.002	0.0002	ND
Molybdenum		0.2	0.3
Nickel	0.15	[0.036]JFD	0.1
Selenium	0.01	ND	[0.009]JS
Silver	0.082	ND	ND
Zinc	5	0.072	0.03
<b>ANIONS</b>			
Bicarbonate		160	160
Carbonate		ND	ND
Chloride		18000	20000
Sulfate		2800	2700
<b>CATIONS</b>			
Calcium		380	410
Magnesium		590	640
Potassium		430	460
Sodium		13000	12000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	2.62	2.7	2.2
Nitrate		0.52	0.57
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	10	0.52	0.57
Total Dissolved Solids	38333	37000	39000
Conductivity (umhos/cm)		56000	69000
pH (units)	6.5-8.5	7.4	7.3
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	2.05	ND	ND
Total Organic Halogens (TOH)	0.21	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.35	7.16
Conductivity (umhos/cm)		62200	60100
Temperature (Deg. C)		12.1	11.2

ND Not Detected

Shaded areas indicate values above GWPL.

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in pCi/l unless noted otherwise )

Well Identification: GW-38

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-2-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	216	0+/-170	140+/-180
Gross Beta	538	200+/-170	510+/-190
Total Uranium (mg/l)	0.03009	0.0230	0.0252
Beryllium-7		<17	<18
Cadmium-109		<21	<37
Carbon-14	2133	[2+/-11]J	[8+/-26]J
Cobalt-60		<2.0	<1.9
Iodine-129	4	0.0+/-1.5	[0.7+/-1.0]J
Manganese-54		<1.5	<1.7
Neptunium-237	8	0.0+/-0.2	0.0+/-0.5
Potassium-40	428	170+/-70	380+/-70
Radium-226	(Ra-226+Ra-228) 6	1.0+/-0.8	1.9+/-0.8
Radium-228		2.9+/-0.6	2.7+/-0.6
Strontium-90	8	0.0+/-1.0	[1.1+/-1.3]J
Technetium-99	800	0.0+/-7.2	0.0+/-4.5
Thorium-230	5.33	0.0+/-0.8	0.0+/-1.9
Thorium-232	5.33	0.0+/-1.0	0.0+/-2.1
Tritium		0+/-290	0+/-309

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-56R

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-4-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	0.01	[0.009]JS
Barium	1	0.049	0.054
Beryllium		ND	ND
Cadmium	0.012	0.01	0.033
Chromium	0.053	0.052	0.087
Copper	1	0.016	[0.029]JFD
Lead	0.05	ND	ND
Mercury	0.002	ND	0.0007
Molybdenum		ND	[0.1]J
Nickel	0.15	0.042	0.11
Selenium	0.05	ND	[ND]JS
Silver	0.083	ND	ND
Zinc	5	[0.008]JFD	[0.029]JFD
<b>ANIONS</b>			
Bicarbonate		330	380
Carbonate		ND	ND
Chloride		21000	22000
Sulfate		2200	[1600]JFD
<b>CATIONS</b>			
Calcium		370	370
Magnesium		540	470
Potassium		570	490
Sodium		14000	15000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	2.77	2.5	2.9
Nitrate		0.04	[0.04]JFD
Nitrate (NO3-N + NO2-N)	10	0.04	[0.04]JFD
Total Dissolved Solids	47117	39000	41000
Conductivity (umhos/cm)		66000	76000
pH (units)	6.5-8.5	7.6	7.2
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	2.36	ND	ND
Total Organic Halogens (TOX)	0.21	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.10	7.37
Conductivity (umhos/cm)		64700	68800
Temperature (Deg. C)		12.9	11.9

ND Not Detected

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-56R

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-4-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	198	0+/-190	40+/-160
Gross Beta	778	330+/-180	510+/-190
Total Uranium (mg/l)	0.02	0.0140	0.0130
Beryllium-7		<20	<14
Cadmium-109		<45	<32
Carbon-14	2133	0+/-13	[15+/-20]J
Cobalt-60		<2.7	<1.6
Iodine-129	4	0.0+/-1.4	0.0+/-0.9
Manganese-54		<2.2	<1.4
Neptunium-237	8	[0.2+/-0.3]J	[0.7+/-1.1]J
Potassium-40	464	370+/-80	450+/-60
Radium-226	(Ra-226+Ra-228) 6	1.3+/-0.7	1.6+/-0.8
Radium-228		1.9+/-0.5	3.0+/-1.6
Strontium-90	8	0.0+/-1.0	0.0+/-1.4
Technetium-99	800	0.0+/-8.3	[1.5+/-3.7]J
Thorium-230	5.33	0.0+/-0.8	0.0+/-1.7
Thorium-232	5.33	0.0+/-1.0	0.0+/-1.8
Tritium		[110+/-290]J	[5+/-309]J

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-57

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-3-93)	4th Quarter (11-3-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	0.022	[0.018]JS
Barium	1	0.022	0.037
Beryllium		ND	ND
Cadmium	0.01	0.014	0.035
Chromium	0.05	0.072	0.1
Copper	1	0.024	[0.037]JFD
Lead	0.05	ND	ND
Mercury	0.002	ND	0.0005
Molybdenum		0.4	0.4
Nickel	0.15	0.07	0.17
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	[0.019]JFD	[0.027]JFD
<b>ANIONS</b>			
Bicarbonate		130	120
Carbonate		ND	ND
Chloride		18000	21000
Sulfate		4600	[3500]JFD
<b>CATIONS</b>			
Calcium		640	630
Magnesium		800	750
Potassium		500	450
Sodium		13000	14000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	3.59	3.6	3.2
Nitrate		0.38	[0.35]JFD
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	10	0.38	[0.35]JFD
Total Dissolved Solids	43610	42000	42000
Conductivity (umhos/cm)		64000	74000
pH (units)	6.5-8.5	7.3	7.4
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	2.57	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.43	7.32
Conductivity (umhos/cm)		69800	62700
Temperature (Deg. C)		13.5	12.1

ND Not Detected

Shaded areas indicate values above GWPL.



**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-57

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-3-93)	4th Quarter (11-3-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	186	0+/-170	70+/-160
Gross Beta	723	440+/-180	550+/-200
Total Uranium (mg/l)	0.02	0.0032	0.0047
Beryllium-7		<23	<15
Cadmium-109		<44	<30
Carbon-14	2133	11+/-14	[11+/-14]J
Cobalt-60		<2.0	<1.5
Iodine-129	4	0.0+/-1.6	0.0+/-1.1
Manganese-54		<2.2	<1.4
Neptunium-237	8	[0.5+/-0.5]J	0.0+/-0.7
Potassium-40	486	460+/-90	380+/-60
Radium-226	(Ra-226+Ra-228) 5	0.9+/-0.5	[0.6+/-0.5]J
Radium-228		1.4+/-0.5	1.8+/-0.5
Strontium-90	8	0.0+/-0.9	[1.3+/-1.4]J
Technetium-99	800	0.0+/-7.1	[3.0+/-3.9]J
Thorium-230	5.33	1.7+/-2.8	0.0+/-2.1
Thorium-232	5.33	0.0+/-1.9	0.0+/-2.4
Tritium		0+/-290	0+/-309

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-58

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.0637	[0.082]JFD	[0.075]JS
Barium	1	0.029	0.041
Beryllium		ND	ND
Cadmium	0.01	0.008	0.03
Chromium	0.05	0.051	0.089
Copper	1	[0.15]JFD	[0.1]JFD
Lead	0.05	ND	ND
Mercury	0.002	0.0004	0.0004
Molybdenum		0.2	0.3
Nickel	0.15	[0.052]JFD	0.14
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	0.37	[0.073]JFD
<b>ANIONS</b>			
Bicarbonate		130	140
Carbonate		ND	ND
Chloride		19000	20000
Sulfate		2800	[2700]JFD
<b>CATIONS</b>			
Calcium		390	440
Magnesium		650	630
Potassium		450	500
Sodium		13000	13000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	2.87	2.9	2.4
Nitrate		0.69	[0.57]JFD
Nitrates (NO3-N + NO2-N)	10	0.69	[0.57]JFD
Total Dissolved Solids	42708	38000	39000
Conductivity (umhos/cm)		57000	69000
pH (units)	6.5-8.5	7.6	7.3
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	1.74	ND	ND
Total Organic Halogens (TOX)	0.01	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.54	7.29
Conductivity (umhos/cm)		62800	64700
Temperature (Deg. C)		13.0	12.6

ND Not Detected

Shaded areas indicate values above GWPL.

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in pCi/l unless noted otherwise )

Well Identification: GW-58

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
DISSOLVED RADIOLOGICS			
Gross Alpha	225	0+/-160	90+/-170
Gross Beta	739	250+/-170	730+/-200
Total Uranium (mg/l)	0.03512	0.0287	0.0300
Beryllium-7		<20	<17
Cadmium-109		<49	<36
Carbon-14	2133	0+/-11	[4+/-19]J
Cobalt-60		<2.6	<1.7
Iodine-129	4	0.0+/-1.7	0.0+/-1.0
Manganese-54		<2.0	<1.6
Neptunium-237	8	[0.3+/-0.4]	[1.0+/-1.2]J
Potassium-40	394	490+/-80	310+/-70
Radium-226	(Ra-226+Ra-228) 5	1.8+/-0.7	[0.6+/-0.5]J
Radium-228		2.5+/-0.6	3.1+/-0.6
Strontium-90	8	0.0+/-0.9	[0.5+/-1.0]J
Technetium-99	800	0.0+/-7.2	0.0+/-3.9
Thorium-230	5.33	0.0+/-1.9	0.0+/-2.1
Thorium-232	5.33	0.0+/-1.9	0.0+/-1.8
Tritium		0+/-290	0+/-309

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in mg/l unless noted otherwise )

Well Identification: GW-60

Page 1 of 2

PARAMETERS	SAMPLING DATE	
	GWPL	
	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
<b>DISSOLVED METALS</b>		
Arsenic	[0.019]JFD	[0.021]JS
Barium	0.019	0.03
Beryllium	ND	ND
Cadmium	0.009	0.03
Chromium	0.053	0.087
Copper	[0.024]JFD	[0.024]JFD
Lead	ND	ND
Mercury	0.0002	0.0004
Molybdenum	0.2	0.3
Nickel	[0.038]JFD	0.095
Selenium	ND	[0.009]JS
Silver	ND	ND
Zinc	0.012	[0.023]JFD
<b>ANIONS</b>		
Bicarbonate	190	190
Carbonate	ND	ND
Chloride	20000	21000
Sulfate	3400	[3700]JFD
<b>CATIONS</b>		
Calcium	430	460
Magnesium	670	650
Potassium	480	450
Sodium	14000	15000
<b>OTHER CHEMISTRIES</b>		
Cyanide	ND	ND
Fluoride	3	2.8
Nitrate	0.16	[0.16]JFD
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	0.16	[0.16]JFD
Total Dissolved Solids	41000	42000
Conductivity (umhos/cm)	60000	74000
pH (units)	7.3	7.3
<b>ORGANICS</b>		
Total Organic Carbon (TOC)	ND	ND
Total Organic Halogens (TOX)	ND	ND
<b>FIELD MEASUREMENTS</b>		
pH (units)	7.32	7.06
Conductivity (umhos/cm)	73300	69000
Temperature (Deg. C)	13.2	11.9

ND Not Detected

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in pCi/l unless noted otherwise )

Well Identification: GW-60

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
DISSOLVED RADIOLOGICS			
Gross Alpha		0 +/-180	80 +/-170
Gross Beta		300 +/-180	330 +/-190
Total Uranium (mg/l)		0.0154	0.0196
Beryllium-7		<26	<19
Cadmium-109		<55	<34
Carbon-14		0 +/-15	[5 +/-16]J
Cobalt-60		<2.3	<2.1
Iodine-129		0.0 +/-1.7	1.8 +/-2.0
Manganese-54		<2.6	<1.7
Neptunium-237		[0.2 +/-0.3]J	0.0 +/-0.5
Potassium-40		380 +/-100	400 +/-70
Radium-226		1.4 +/-0.7	0.8 +/-0.5
Radium-228		2.2 +/-0.6	1.6 +/-0.5
Strontium-90		0.0 +/-0.9	[1.0 +/-1.3]J
Technetium-99		0.0 +/-8.2	[5.6 +/-7.8]J
Thorium-230		0.0 +/-1.2	0.0 +/-2.1
Thorium-232		0.0 +/-1.0	0.0 +/-1.8
Tritium		[10 +/-290]J	0 +/-309

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in mg/l unless noted otherwise )

Well Identification: GW-63

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
<b>DISSOLVED METALS</b>			
Arsenic		ND	[0.018]JS
Barium		0.08	0.052
Beryllium		ND	ND
Cadmium		0.009	0.033
Chromium		0.049	0.091
Copper		[0.026]JFD	[0.027]JFD
Lead		ND	ND
Mercury		0.0002	0.0004
Molybdenum		0.2	0.3
Nickel		[0.046]JFD	0.1
Selenium		ND	[ND]JS
Silver		ND	ND
Zinc		0.012	[0.03]JFD
<b>ANIONS</b>			
Bicarbonate		150	140
Carbonate		ND	ND
Chloride		19000	20000
Sulfate		3100	[2700]JFD
<b>CATIONS</b>			
Calcium		410	380
Magnesium		640	850
Potassium		450	460
Sodium		13000	13000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride		3.1	2.7
Nitrate		0.45	[0.6]JFD
Nitrates (NO3-N + NO2-N)		0.45	[0.6]JFD
Total Dissolved Solids		38000	47000
Conductivity (umhos/cm)		56000	72000
pH (units)		7.4	7.4
<b>ORGANICS</b>			
Total Organic Carbon (TOC)		ND	ND
Total Organic Halogens (TOX)		ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.40	7.29
Conductivity (umhos/cm)		65200	66400
Temperature (Deg. C)		13.3	11.8

ND Not Detected

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: GW-63

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-4-93)	4th Quarter (11-3-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha		0+/-180	40+/-150
Gross Beta		270+/-180	580+/-190
Total Uranium (mg/l)		0.0103	0.0097
Beryllium-7		<27	<16
Cadmium-109		<55	<33
Carbon-14		5+/-12	[4+/-13]J
Cobalt-60		<2.3	<1.9
Iodine-129		0.0+/-1.6	0.0+/-1.1
Manganese-54		<2.6	<1.7
Neptunium-237		0.0+/-0.3	[0.2+/-0.8]J
Potassium-40		450+/-90	580+/-60
Radium-226		1.1+/-0.6	[0.5+/-0.4]J
Radium-228		2.7+/-0.6	2.1+/-0.2
Strontium-90		0.0+/-0.9	[1.0+/-1.3]J
Technetium-99		0.0+/-9.0	[0.3+/-3.9]J
Thorium-230		1.2+/-1.8	2.1+/-2.8
Thorium-232		0.0+/-1.0	0.0+/-201
Tritium		[50+/-290]J	1200+/-300

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in mg/l unless noted otherwise )

Well Identification: GW-64

Page 1 of 2

PARAMETERS	SAMPLING DATE	
		4th Quarter (11-5-93)
<b>DISSOLVED METALS</b>		
Arsenic		[ND]JS
Barium		0.15
Beryllium		[ND]JS
Cadmium		0.025
Chromium		0.073
Copper		0.025
Lead		ND
Mercury		[0.0002]J
Molybdenum		[0.1]J
Nickel		0.084
Selenium		[ND]JS
Silver		ND
Zinc		0.049
<b>ANIONS</b>		
Bicarbonate		220
Carbonate		ND
Chloride		18000
Sulfate		1500
<b>CATIONS</b>		
Calcium		360
Magnesium		430
Potassium		440
Sodium		12000
<b>OTHER CHEMISTRIES</b>		
Cyanide		ND
Fluoride		2.3
Nitrate		ND
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)		ND
Total Dissolved Solids		34000
Conductivity (umhos/cm)		61000
pH (units)		7.4
<b>ORGANICS</b>		
Total Organic Carbon (TOC)		ND
Total Organic Halogens (TOX)		ND
<b>FIELD MEASUREMENTS</b>		
pH (units)		7.29
Conductivity (umhos/cm)		59200
Temperature (Deg. C)		11.8

ND Not Detected



TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in pCi/l unless noted otherwise )

Well Identification: GW-64

Page 2 of 2

PARAMETERS	SAMPLING DATE	
	GWPL	4th Quarter (11-5-93)
DISSOLVED RADIOLOGICS		
Gross Alpha		120+/-140
Gross Beta		400+/-130
Total Uranium (mg/l)		0.0126
Beryllium-7		<14
Cadmium-109		<30
Carbon-14		[25+/-16]J
Cobalt-60		<1.6
Iodine-129		0.0+/-0.9
Manganese-54		<1.3
Neptunium-237		0.0+/-0.5
Potassium-40		550+/-50
Radium-226		1.6+/-0.7
Radium-228		4.1+/-0.7
Strontium-90		[1.2+/-1.3]J
Technetium-99		[1.1+/-4.2]J
Thorium-230		0.0+/-1.7
Thorium-232		0.0+/-2.1
Tritium		0+/-309

TABLE 5  
SUMMARY OF WATER QUALITY DATA  
LARW Compliance Monitor Wells  
( in mg/l unless noted otherwise )

Well Identification: I-2-30

Page 1 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-4-93)
<b>DISSOLVED METALS</b>			
Arsenic	0.05	0.015	[0.014]JS
Barium	1	0.033	0.035
Beryllium		ND	ND
Cadmium	0.01	0.015	0.028
Chromium	0.05	0.051	0.071
Copper	1	0.027	[0.023]JFD
Lead	0.05	ND	ND
Mercury	0.002	ND	0.0004
Molybdenum		ND	ND
Nickel	0.15	0.042	0.079
Selenium	0.01	ND	[ND]JS
Silver	0.05	ND	ND
Zinc	5	[0.014]JFD	[0.023]JFD
<b>ANIONS</b>			
Bicarbonate		250	240
Carbonate		ND	ND
Chloride		18000	19000
Sulfate		1800	[1300]JFD
<b>CATIONS</b>			
Calcium		320	270
Magnesium		430	340
Potassium		390	370
Sodium		12000	13000
<b>OTHER CHEMISTRIES</b>			
Cyanide		ND	ND
Fluoride	2.49	2.4	2.7
Nitrate		0.02	ND
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	10	0.02	ND
Total Dissolved Solids	34685	34000	34000
Conductivity (umhos/cm)		58000	63000
pH (units)	6.5-8.5	7.7	7.3
<b>ORGANICS</b>			
Total Organic Carbon (TOC)	1.06	ND	ND
Total Organic Halogens (TOX)	0.23	ND	ND
<b>FIELD MEASUREMENTS</b>			
pH (units)		7.32	7.52
Conductivity (umhos/cm)		56100	60000
Temperature (Deg. C)		13.3	12.2

ND Not Detected

Shaded areas indicate values above GWPL.

**TABLE 5**  
**SUMMARY OF WATER QUALITY DATA**  
 LARW Compliance Monitor Wells  
 ( in pCi/l unless noted otherwise )

Well Identification: I-2-30

Page 2 of 2

PARAMETERS	SAMPLING DATE		
	GWPL	3rd Quarter (8-5-93)	4th Quarter (11-4-93)
<b>DISSOLVED RADIOLOGICS</b>			
Gross Alpha	44	0+/-130	30+/-120
Gross Beta	699	260+/-130	310+/-130
Total Uranium (mg/l)	0.02	0.0092	0.0112
Beryllium-7		<19	<14
Cadmium-109		<45	<31
Carbon-14	2133	15+/-25	[2+/-17]J
Cobalt-60		<2.3	<1.6
Iodine-129	2	0.0+/-1.4	0.0+/-1.9
Manganese-54		*<2.1	<1.6
Neptunium-237	8	[0.3+/-0.4]J	[0.2+/-0.8]J
Potassium-40	380	370+/-80	460+/-60
Radium-226	(Ra-226+Ra-228) 5	1.0+/-0.6	0.7+/-0.5
Radium-228		1.8+/-0.5	1.5+/-0.5
Strontium-90	8	[0.8+/-1.0]J	[1.3+/-1.5]J
Technetium-99	800	0.0+/-9.1	[1.9+/-7.5]J
Thorium-230	5.33	0.0+/-1.8	0.0+/-2.1
Thorium-232	5.33	0.0+/-1.0	0.0+/-1.8
Tritium		0+/-290	0+/-309

TABLE 6

## SUCTION LYSIMETER SAMPLING SUMMARY

NOVEMBER 1993

Item	Lysimeter I. D. #		
	SL-1	SL-2	SL-3
<b>SAMPLING ACTIVITY</b>			
Date/Time Vacuum Applied	Nov. 1 / 13:30	Nov. 1 / 13:25	Nov. 1 / 13:00
Date/Time Pressure Applied	Nov. 5 / 11:45	Nov. 5 / 12:15	Nov. 5 / 12:45
Sample Volume	50 ml.	20 ml.	30 ml.
<b>FIELD MEASUREMENTS</b>			
pH (units)	6.14	6.98	6.78
Specific Conductivity (umhos/cm)	34479	NA*	32594
Temperature (Deg. C)	13.9	12.7	13.2
Eh (mV)	-55.2	-55.9	-45.4

\* Insufficient sample volume.

ATTACHMENT 1

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FIELD DATA SHEETS

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# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-3 DATE 11/5/93 TIME OF ARRIVAL AT SAMPLING POINT 1750

From Ground Water Monitoring Field Notebook Page No. 46 SAMPLING TEAM MEMBERS: (Indicate the team leader.)

WALE COPOLANO (TL) 1988 LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure (locked), general condition, note presence of cracks or any evidence of tampering.)

- |                                    |                                    |  |                         |                                    |   |
|------------------------------------|------------------------------------|--|-------------------------|------------------------------------|---|
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Generally in Good Condition?                             | <input type="radio"/> Y | <input checked="" type="radio"/> N | Is the well in need of repairs?           |
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Is the well fully operational?                           | <input type="radio"/> Y | <input checked="" type="radio"/> N | Is there a marked change in pumping rate? |
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Was the lock secure when team arrived?                   |                         |                                    |   |
| <input type="radio"/> Y            | <input checked="" type="radio"/> N | Is there evidence of tampering or vandalism?             |                         |                                    |   |
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Are sandy or silty materials present in the well?        |                         |                                    |   |
| <input type="radio"/> Y            | <input checked="" type="radio"/> N | Is there any standing water in or around the well?       |                         |                                    |   |
| <input type="radio"/> Y            | <input checked="" type="radio"/> N | Are there cracks or breaks in the concrete or casings?   |                         |                                    |   |
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Has the annual depth of the well bottom been determined? |                         |                                    |   |

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>b.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>c.</u>	b. TOX	500ml/Glass Amber, T-cap
3. <u>Organic</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>e.</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>Metals</u>	e. Metals/Inorganics	500ml/T,G
6. <u>S/S</u>	f. TDS, TSS	500ml/T,P
7. <u>h</u>	g. Cations/Anions	500ml/P,G
8. <u>SL</u>	h. Radiologics	500ml/P,G
		3.5 gal/P (H-3+C-14/G)

Explain any problems. old cal chg

7.05 / 24.10C BEFORE 75,800 APRIL 10000

C0004  
GROUND-WATER FIELD ANALYSIS RESULTS.

pH	Pre-sampling / Post-sampling	1	<u>7.42</u> / <u>7.32</u>	Temperature	Pre-sampling / Post-sampling	1	<u>12.1</u> / <u>11.4</u>	°F C
		2	<u>7.44</u> / <u>7.33</u>			2	<u>11.9</u> / <u>11.7</u>	
		3	<u>7.44</u> / <u>7.34</u>			3	<u>11.7</u> / <u>11.4</u>	
EH	Pre-sampling / Post-sampling	1	<u>-45.8/10.5</u> / <u>-38.7/11.5</u>	Specific Conductivity	Pre-sampling / Post-sampling	1	<u>51,100</u> / <u>53,700</u>	µmhos
		2	<u>-45.9/10.9</u> / <u>-38.9/11.6</u>			2	<u>51,700</u> / <u>53,500</u>	
		3	<u>-46.0/11.1</u> / <u>-39.4/11.7</u>			3	<u>51,900</u> / <u>53,300</u>	

WEATHER.

Wind Direction N/NW Speed (est.) 5-10 mph Temp. 31 °F Cloud Cover CLEAR/DARK

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other NONE

WELL INFORMATION. Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times (D_w \text{ (ft)} - D_c \text{ (ft)})$   
For 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times (D_w \text{ (ft)} - D_c \text{ (ft)})$

Depth to Well Bottom ( $D_w$ ): 42.72 ft. Depth to Ground Water ( $D_c$ ): 24.49/24.49 ft. 24.5 ADJUSTED  
Calculated Purge Volume: 9.11 gal lit. Time Pump On 1754 Time Pump Off 1820 24.5  
Total Amount of Ground Water Purged: 9.5 gal lit. 1st Flow Rate of Purge: .33 gal/min lit/min  
Height of Well from Base: 1.97 in. 2nd Flow Rate of Purge: .3 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600  
Chem Lab AWA Delivery Date/Time 11/8/93 1253

Monitoring Parameters: \_\_\_\_\_

WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS AW Others \_\_\_\_\_

# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT

GW-16R

DATE

11/4/93

TIME OF ARRIVAL AT SAMPLING POINT

1255

From Ground Water Monitoring Field Notebook Page No.

37

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

GREG COPELAND (TL) 1850 LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?      Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?      Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

Explain any problems.

mid day cal

pH 7.10 / 17.9 °C      Before      After  
102,500      100,000

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>b</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>c</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>Cyanide</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>e</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>nutrient</u>	e. Metals/Inorganics	500ml/T,G
6. <u>8/g</u>	f. TDS, TSS	500ml/T,P
7. <u>h</u>	g. Cations/Anions	500ml/P,G
8. <u>56</u>	h. Radiologics	500ml/P,G
		3.5 gal/P (H-3+C-14/G)

GROUND-WATER FIELD ANALYSIS RESULTS.

Pre-sampling / Post-sampling		Pre-sampling / Post-sampling			
pH	<u>7.48</u> / 1	<u>7.48</u>	Temperature	<u>11.7</u> / 1	<u>11.7</u> °F C
	<u>7.43</u> / 2	<u>7.45</u>		<u>12.1</u> / 2	<u>11.7</u> 4. 11.9
	<u>7.42</u> / 3	<u>7.42</u>		<u>12.1</u> / 3	<u>11.9</u>
EH	<u>-32.4/12.7</u> / 1	<u>-32.3/11.9</u>	Specific Conductivity	<u>67,800</u> / 1	<u>69,900</u> uhos
	<u>-32.1/12.1</u> / 2	<u>-32.2/11.8</u>		<u>67,600</u> / 2	<u>68,900</u>
	<u>-32.0/12.1</u> / 3	<u>-31.6/11.8</u>		<u>67,600</u> / 3	<u>68,800</u>

WEATHER.

Wind Direction N/NW Speed (est.) 5-10 mph Temp. 47 °F Cloud Cover CLEAR

Precipitation (Circle all that apply.) Present Recent Rain Snow Other NONE

WELL INFORMATION.

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times [D_w \text{ (ft)} - D_b \text{ (ft)}]$   
for 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times [D_w \text{ (ft)} - D_b \text{ (ft)}]$

Depth to Well Bottom (D<sub>b</sub>): 37.64 ft.      Depth to Ground Water (D<sub>w</sub>): 32.27/32.27 ft.      ADJUSTED  
Calculated Purge Volume: 2.7 gal. lit.      Time Pump On 1256      Time Pump Off 1304      32.29  
Total Amount of Ground Water Purged: 31 gal lit.      1st Flow Rate of Purge: .39 gal/min lit/min  
Height of Well from Base: 1.56 ft.      2nd Flow Rate of Purge: .4 gal/min lit/min      FILTERED

Analytical Laboratories and Delivery Data:

Rad Lab Barringer      Delivery Date/Time 11/11/93 1600  
Chem Lab AWAC      Delivery Date/Time 11/4/93 1815

Monitoring Parameters:

Duplicate = GW-70

WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS

GC

Others

GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-19A DATE 11/3/93 TIME OF ARRIVAL AT SAMPLING POINT 1258

From Ground Water Monitoring Field Notebook Page No. 30 SAMPLING TEAM MEMBERS: (Indicate the team leader.)

(REG COPPERO (TL) JEFF LOW)

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass
2. <u>b.</u>	b. TOX	teflon-l-cap
3. <u>c.</u>	c. TOC	500ml/Glass
4. <u>Cyanide</u>	d. Base/Neutral/Acid Extractables	Amber, T-caps
5. <u>d.</u>	e. Metals/Inorganics	125ml/Glass
6. <u>e.</u>	f. TDS, TSS	Amber, T-caps
7. <u>Mutualist</u>	g. Cations/Anions	500ml/Glass, Teflon
8. <u>2/5</u>	h. Radiologics	500ml/T, G
9. <u>h</u>		500ml/T, P
10. <u>SG</u>		500ml/P, G
		500ml/P, G
		500ml/P, G

Explain any problems. \_\_\_\_\_

pH cal check 7.00 / 17.2 °C

GROUND-WATER FIELD ANALYSIS RESULTS.

	Pre-sampling / Post-sampling		Pre-sampling / Post-sampling	
pH	<u>7.08</u> / <u>7.06</u>	Temperature	<u>11.9</u> / <u>11.9</u>	<input checked="" type="checkbox"/> Y
	<u>7.11</u> / <u>6.87</u>		<u>12.0</u> / <u>11.9</u>	4.12.1
	<u>7.12</u> / <u>6.91</u>		<u>12.1</u> / <u>12.0</u>	5.11.9
EH	<u>-21.3/12.2</u> / <u>-19.0/11.9</u>	Specific Conductivity	<u>77,100</u> / <u>76,700</u>	6.12.0
	<u>-21.5/12.1</u> / <u>-19.0/12.0</u>		<u>77,300</u> / <u>77,100</u>	7.12.1
	<u>-21.6/12.2</u> / <u>-19.7/12.0</u>		<u>77,300</u> / <u>77,000</u>	

WEATHER.

Wind Direction S/SW Speed (est.) 5-10 mph Temp. ~40 °F Cloud Cover OVERCAST

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other None

WELL INFORMATION. Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} * (D_w \text{ (ft)} - D_c \text{ (ft)})$   
 For 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} * (D_w \text{ (ft)} - D_c \text{ (ft)})$

Depth to Well Bottom ( $D_w$ ): 29.83 ft. Depth to Ground Water ( $D_w$ ): 21.25/21.25 ft. ADJUSTED 21.26 21.26

Calculated Purge Volume: 4.3 gal. lit. Time Pump On 1301 Time Pump Off 1313

Total Amount of Ground Water Purged: 4.5 gal. lit. 1st Flow Rate of Purge: 38 gal/min lit/min

Height of Well from Base: 1.37 ft. in. 2nd Flow Rate of Purge: 36 gal/min lit/min Filtered

Analytical Laboratories and Delivery Data: Rad Lab Branigan Delivery Date/Time 11/11/93 1600  
 Chem Lab AWAC Delivery Date/Time 11/4/93 1815

Monitoring Parameters: Reduce Purge = 70 ml/min

WATER LEVEL INDICATOR ADJUSTMENT FACTOR 1.0005

SAMPLING TEAM LEADER'S INITIALS [Signature] Others \_\_\_\_\_



GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-20

DATE 11/4/93

TIME OF ARRIVAL AT SAMPLING POINT 1355

From Ground Water Monitoring Field Notebook Page No. 38

SAMPLING TEAM MEMBERS: (Indicate the team leader.)

Greg Copeland (TL) Jeff Low

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>b.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>c.</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>Cyanide</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>d.</u>	e. Metals/Inorganics	500ml/T, G
6. <u>e.</u>	f. TDS, TSS	500ml/T, P
7. <u>nutrient</u>	g. Cations/Anions	500ml/P, G
8. <u>flg</u>	h. Radiologics	500ml/P, G
9. <u>h.</u>		3.5 gal/P
10. <u>SG</u>		(H-3+C-14/G

Explain any problems. \_\_\_\_\_

GROUND-WATER FIELD ANALYSIS RESULTS.

Pre-sampling / Post-sampling		Pre-sampling / Post-sampling	
PH <u>7.65</u> 1 <u>7.56</u>		Temperature <u>12.2</u> 1 <u>12.3</u>	°F <input checked="" type="radio"/> C
<u>7.67</u> 2 <u>7.63</u>	4. <u>7.63</u>	<u>12.3</u> 2 <u>12.2</u>	<u>4.120</u>
<u>7.62</u> 3 <u>7.63</u>		<u>12.4</u> 3 <u>12.1</u>	
EH <u>-42.8/12.3</u> 1 <u>-43.8/12.0</u>		Specific Conductivity <u>70,000</u> 1 <u>73,900</u>	umhos
<u>-42.5/12.2</u> 2 <u>-43.2/12.0</u>		<u>70,600</u> 2 <u>74,300</u>	<u>4.74,200</u>
<u>-42.2/12.2</u> 3 <u>-42.7/12.0</u>		<u>71,000</u> 3 <u>74,000</u>	

WEATHER.

Wind Direction N/NE Speed (est.) 45 mph Temp. 47 °F Cloud Cover CLEAR

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other NONE

WELL INFORMATION. Bunge-Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} * (D_w \text{ (ft)} - D_c \text{ (ft)})$   
for 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} * (D_w \text{ (ft)} - D_c \text{ (ft)})$

Depth to Well Bottom (D<sub>w</sub>): 36.62 ft. Depth to Ground Water (D<sub>g</sub>): 26.42/26.44/26.46/26.46 ft. ADJUSTED

Calculated Purge Volume: 5.1 gal. lit. Time Pump On 1400 Time Pump Off 1415

Total Amount of Ground Water Purged: 5.1 gal. lit. 1st Flow Rate of Purge: .34 gal/min lit/min 26.47

Height of Well from Base: 1.32 ft. in. 2nd Flow Rate of Purge: .36 gal/min lit/min 26.47 FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Bammy Delivery Date/Time 11/11/93 1600  
Chem Lab AWAL Delivery Date/Time 11/18/93 1815

Monitoring Parameters: REDUCED Purge Rate = 80 ml/min DUPLICATE = GW-71  
WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS GC Others \_\_\_\_\_

Red-dogic samples not analyzed. Labels not received. Recv. 12/2/93

GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. GW-20  
OR SAMPLING POINT

DATE 11/22/93

TIME OF ARRIVAL 0906  
AT SAMPLING POINT

From Ground Water Monitoring Field Notebook Page No. 51

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

Jeff Low T.C. Steve Singalecka T.M.

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1.	3-gal Cube filtered / filtered	
	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2.	2-1 L plastic filtered / Raw	500ml/Glass Amber, T-caps
	b. TOX	125ml/Glass Amber, T-caps
3.	1-500 mL Amber Glass Raw	500ml/Glass, Teflon
	c. TOC	
4.		
	d. Base/Neutral/Acid Extractables	
5.		
	e. Metals/Inorganics	500ml/T,G
6.		500ml/T,P
	f. TDS, TSS	500ml/P,G
7.		500ml/P,G
	g. Cations/Anions	500ml/P,G
8.		
	h. Radiologics	3.5 gal/P (K-3+C-14/G)

Explain any problems. \_\_\_\_\_

GROUND-WATER FIELD ANALYSIS RESULTS

6.91 & 13.8 c JGL

1000 ml check 11/22/93

	Pre-sampling / Post-sampling			Pre-sampling / Post-sampling	
pH	<u>7.05</u> 1	<u>7.27</u>	Temperature	<u>12.1</u> 1	<u>11.3</u> °F <input checked="" type="checkbox"/> C
	<u>7.07</u> 2	<u>7.29</u>	4- <u>12.1</u>	<u>12.2</u> 2	<u>11.9</u>
	<u>7.09</u> 3	<u>7.30</u>	5- <u>12.1</u>	<u>12.2</u> 3	<u>12.0</u>
EH	<u>-8.2/11.9</u> 1	<u>-14.5/11.9 c</u>	6- <u>12.1</u>	Specific Conductivity	<u>74,900</u> 1 <u>74,500</u> umhos
	<u>-8.6/12.1</u> 2	<u>-15.5/11.9 c</u>	Calibration check 102,000	<u>74,900</u> 2	<u>74,400</u>
	<u>-8.9/12.1</u> 3	<u>-15.6/11.9 c</u>	re calibration to 102,000	<u>75,200</u> 3	<u>74,400</u>

0926 JGL 11/22/93

WEATHER. Wind Direction South Speed (est.) 0-5 mph Temp. 55 °F Cloud Cover 0VC

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other None

WELL INFORMATION.

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times (D_w \text{ (ft)} - D_c \text{ (ft)})$   
 (for 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times (D_w \text{ (ft)} - D_c \text{ (ft)})$ )

Depth to Well Bottom ( $D_w$ ): 36.62 ft.  
 Calculated Purge Volume: 5.1 gal. lit.  
 Total Amount of Ground Water Purged: 5.2 gal lit.  
 Height of Well from Base: 1.32 ft. in.

Water level indicator adjustment  
 factor = 1.000  
 Depth to Ground Water ( $D_w$ ): 26.47 26.47 ft. 26.48 26.48  
 Time Pump On 0913 Time Pump Off 0926  
 1st Flow Rate of Purge: 0.40 gal/min lit/min  
 2nd Flow Rate of Purge: 0.13 gal/min lit/min  
 0935 = 100%

Analytical Laboratories and Delivery Data: Rad Lab Bourlinger Delivery Date/Time \_\_\_\_\_  
 Chem Lab NA Delivery Date/Time NA

Monitoring Parameters: GW-20 was resampled to replace sample compromised. GW-20 will be designated GW-51 on sample bottles. Duplicate based designated GW-82

SAMPLING TEAM LEADER'S INITIALS JGL Others \_\_\_\_\_

**GROUND-WATER MONITORING DATA SHEET**

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-22

DATE 11/5/93

TIME OF ARRIVAL AT SAMPLING POINT 0847

From Ground Water Monitoring Field Notebook Page No. 40

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

GREG COPELAND (TL) JEFF LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?  Y  N there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>b.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>c.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>Cyanide</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>e.</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>nutrient</u>	e. Metals/Inorganics	500ml/T, G
6. <u>Flg</u>	f. TDS, TSS	500ml/T, P
7. <u>h</u>	g. Cations/Anions	500ml/P, G
8. <u>SG</u>	h. Radiologics	500ml/P, G

Explain any problems. \_\_\_\_\_

MILDLY CLOUDY

**GROUND-WATER FIELD ANALYSIS RESULTS.**

	Pre-sampling	Post-sampling
pH	<u>7.02</u>	<u>7.04</u>
	<u>7.04</u>	<u>7.02</u>
	<u>7.06</u>	<u>7.07</u>
EH	<u>-25.1/11.8</u>	<u>-25.9/11.8</u>
	<u>-25.7/11.8</u>	<u>-27.7/11.4</u>
	<u>-26.1/11.8</u>	<u>-28.6/10.9</u>

	Pre-sampling	Post-sampling
Temperature	<u>11.2</u>	<u>11.8</u>
	<u>11.3</u>	<u>11.8</u>
	<u>11.6</u>	<u>11.7</u>
Specific Conductivity	<u>77,760</u>	<u>75,200</u>
	<u>75,100</u>	<u>74,000</u>
	<u>74,600</u>	<u>73,300</u>

**WEATHER.**

Wind Direction Calm Speed (est.) \_\_\_\_\_ mph Temp. 34 °F Cloud Cover CLEAR

Precipitation (Circle all that apply.) Present \_\_\_\_\_ Recent \_\_\_\_\_ Rain \_\_\_\_\_ Snow \_\_\_\_\_ Other None

WELL INFORMATION. Purge Volume Formulas:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} * (D_w \text{ (ft)} - D_c \text{ (ft)})$   
for 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} * (D_w \text{ (ft)} - D_c \text{ (ft)})$

Depth to Well Bottom ( $D_c$ ): 33.78 ft. Depth to Ground Water ( $D_w$ ): 28.21/28.27/28.22/28.23 ft. ADJUSTED 28.25/28.25

Calculated Purge Volume: 2.77 gal lit. Time Pump On 0855 Time Pump Off 0902

Total Amount of Ground Water Purged: 3 gal lit. 1st Flow Rate of Purge: 43 gal/min lit/min

Height of Well from Base: .95 ft. in. 2nd Flow Rate of Purge: 33 gal/min lit/min

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600  
Chem Lab AWM Delivery Date/Time 11/8/93 1253

**Monitoring Parameters:**

Water Level (INDICATOR ADJUSTMENT FACTOR = 1.0005)

SAMPLING TEAM LEADER'S INITIALS GL Others \_\_\_\_\_

GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-23

DATE 11/5/93

TIME OF ARRIVAL 0705  
AT SAMPLING POINT

From Ground Water Monitoring Field Notebook Page No. 39

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

IRREG COPELAND (TL) TELL LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure (locked), general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>b.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>c.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>Cyanide</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>e.</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>Metals</u>	e. Metals/Inorganics	500ml/F,G
6. <u>d/g</u>	f. TDS, TSS	500ml/T,P
7. <u>h.</u>	g. Cations/Anions	500ml/P,G
8. <u>SG</u>	h. Radiologics	500ml/P,G
		3.5 gal/P (H-3+C-14/G)

Explain any problems. 0751-COMPRESSOR CONTROLLER COULD MILDLY-CLOUDY WARMED UP IN CAB OF PICKUP 0804-COMPRESSOR RESTARTED

GROUND-WATER FIELD ANALYSIS RESULTS.

	Pre-sampling	Post-sampling
pH	<u>7.05</u>	<u>7.03</u>
	<u>7.09</u>	<u>7.07</u>
	<u>7.10</u>	<u>7.09</u>
EH	<u>-22.4</u>	<u>-26.4</u>
	<u>-21.5</u>	<u>-26.5</u>
	<u>-21.3</u>	<u>-26.5</u>

	Pre-sampling	Post-sampling
Temperature	<u>11.8</u>	<u>12.0</u>
	<u>11.8</u>	<u>11.9</u>
	<u>12.0</u>	<u>12.0</u>
Specific Conductivity	<u>77,500</u>	<u>71,000</u>
	<u>77,600</u>	<u>71,900</u>
	<u>78,400</u>	<u>72,000</u>

WEATHER. Wind Direction S/SE Speed (est.) < 5 mph Temp. 16 °F Cloud Cover CLEAR

Precipitation (Circle all that apply.) Present Recent Rain Snow Other None

WELL INFORMATION. Purge Volume Formula: V<sub>p</sub> (lit) = 1.87 lit/ft \* (D<sub>w</sub>(ft) - D<sub>c</sub>(ft)) for 2"-I.D. PVC only V<sub>p</sub> (gal) = 0.5 gal/ft \* (D<sub>w</sub>(ft) - D<sub>c</sub>(ft))

Depth to Well Bottom (D<sub>w</sub>): 33.89 ft. Depth to Ground Water (D<sub>g</sub>): 27.26/27.27/27.27 ft. ADJUSTED

Calculated Purge Volume: 3.32 gal lit. Time Pump On 0711 Time Pump Off 0720

Total Amount of Ground Water Purged: 4.0 gal lit. 1st Flow Rate of Purge: .44 gal/min lit/min

Height of Well from Base: 1.4 ft. 2nd Flow Rate of Purge: .4 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Bamizer Delivery Date/Time 11/11/93 1600  
Chem Lab AWAR Delivery Date/Time 11/8/93 1253

Monitoring Parameters: WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS [Signature] Others \_\_\_\_\_

**GROUND-WATER MONITORING DATA SHEET**

(Rev. April 1993)

GROUND-WATER WELL NO. GW-24 DATE 11/4/93 TIME OF ARRIVAL 1117  
 OR SAMPLING POINT AT SAMPLING POINT

From Ground Water Monitoring Field Notebook Page No. 36 SAMPLING TEAM MEMBERS:  
 (Indicate the team leader.)

GREG COPELAND (TL) JEFF LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?  Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?  Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?  Y  N Has the annual depth of the well bottom been determined?

Explain any problems. \_\_\_\_\_

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>b.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>c.</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>cyanide</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>d.</u>	e. Metals/Inorganics	500ml/T, G
6. <u>e.</u>	f. TDS, TSS	500ml/T, P
7. <u>Nutrient</u>	g. Cations/Anions	500ml/P, G
8. <u>f/g</u>	h. Radiologics	500ml/P, G
9. <u>h.</u>		3.5 gal/P
10. <u>SG</u>		(H-3+C-14/G)

GROUND-WATER FIELD ANALYSIS RESULTS.

	Pre-sampling / Post-sampling			Pre-sampling / Post-sampling		
pH	<u>7.64</u> / 1	<u>7.63</u> / 4.	<u>7.55</u>	Temperature	<u>12.8</u> / 1	<u>12.4</u> / 4. <u>12.6</u>
	<u>7.60</u> / 2	<u>7.57</u>			<u>12.8</u> / 2	<u>12.5</u> / 4. <u>12.6</u>
	<u>7.58</u> / 3	<u>7.57</u>			<u>12.9</u> / 3	<u>12.5</u>
EH	<u>-39.4/13.0</u> / 1	<u>-39.6/12.6</u>		Specific Conductivity	<u>73,700</u> / 1	<u>73,600</u> / 4. <u>72,800</u>
	<u>-39.2/13.9</u> / 2	<u>-39.1/12.5</u>			<u>73,400</u> / 2	<u>73,400</u>
	<u>-38.1/13.0</u> / 3	<u>-38.7/12.7</u>			<u>73,400</u> / 3	<u>72,900</u>

WEATHER.

Wind Direction N Speed (est.) 45 mph Temp. 43 °F Cloud Cover CLEAR

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other NONE

WELL INFORMATION.

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} * [D_w \text{ (ft)} - D_c \text{ (ft)}]$   
 For 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} * [D_w \text{ (ft)} - D_c \text{ (ft)}]$

Depth to Well Bottom ( $D_w$ ): 33.64 ft. Depth to Ground Water ( $D_g$ ): 26.80/26.81/26.81 ft. ADS  
 Calculated Purge Volume: 3.41 gal lit. Time Pump On: 1121 Time Pump Off: 1141 26.82  
 Total Amount of Ground Water Purged: 4.10 gal lit. 1st Flow Rate of Purge: 0.2 gal/min lit/min 26.82  
 Height of Well from Base: 1.56 ft in. 2nd Flow Rate of Purge: 1.16 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600  
 Chem Lab AWA Delivery Date/Time 11/4/93 1515

Monitoring Parameters: REDUCED PURGE RATE = 60 gal/min  
WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS GC Others \_\_\_\_\_

# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. GW-24  
OR SAMPLING POINT

DATE 11/22/93 TIME OF ARRIVAL 0730  
AT SAMPLING POINT

From Ground Water Monitoring Field Notebook Page No. 50

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

Jeff Low TL Steve Singledecker TM

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- |                                    |                                    |  |                         |                                    |   |
|------------------------------------|------------------------------------|--|-------------------------|------------------------------------|---|
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Generally in Good Condition?                             | <input type="radio"/> Y | <input checked="" type="radio"/> N | Is the well in need of repairs?           |
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Is the well fully operational?                           | <input type="radio"/> Y | <input checked="" type="radio"/> N | Is there a marked change in pumping rate? |
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Was the lock secure when team arrived?                   |                         |                                    |   |
| <input type="radio"/> Y            | <input checked="" type="radio"/> N | Is there evidence of tampering or vandalism?             |                         |                                    |   |
| <input type="radio"/> Y            | <input checked="" type="radio"/> N | Are sandy or silty materials present in the well?        |                         |                                    |   |
| <input type="radio"/> Y            | <input checked="" type="radio"/> N | Is there any standing water in or around the well?       |                         |                                    |   |
| <input type="radio"/> Y            | <input checked="" type="radio"/> N | Are there cracks or breaks in the concrete or casings?   |                         |                                    |   |
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Has the annual depth of the well bottom been determined? |                         |                                    |   |

Explain any problems. \_\_\_\_\_

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1.	<u>A. see above</u> a. Volatile Organics	2x40ml/Glass
2.	<u>3-16oz Amber glass bottles</u> b. TOX	teflon-1-cap 500ml/Glass
3.	<u>2-1 L plastic bottles</u> c. TOC	Amber, T-caps 125ml/Glass
4.	<u>1.500 mL Amber glass bottles</u> d. Base/Neut/Pal/Acid Extractables	Amber, T-caps 500ml/Glass, Teflon
5.	_____	
6.	e. Metals/Inorganics	500ml/T, G
7.	f. TDS, TSS	500ml/T, P
8.	g. Cations/Anions	500ml/P, G
	h. Radiologics	500ml/P, G

GROUND-WATER FIELD ANALYSIS RESULTS.

Pre-sampling / Post-sampling			Pre-sampling / Post-sampling		
pH	<u>7.08</u>	1 <u>7.04</u>	Temperature	<u>12.1</u>	1 <u>12.3</u> °F <input checked="" type="radio"/> C
	<u>7.08</u>	2 <u>7.04</u>		<u>12.5</u>	2 <u>12.4</u>
	<u>7.08</u>	3 <u>7.05</u>		<u>12.2</u>	3 <u>12.4</u>
EH	<u>4.4</u>	1 <u>-2.2</u> <u>12.1 C</u>	Specific Conductivity	<u>76,800</u>	1 <u>77300</u> uMhos
	<u>4.5</u>	2 <u>-2.3</u> <u>12.2 C</u>		<u>76,500</u>	2 <u>77400</u>
	<u>4.6</u>	3 <u>-2.1</u> <u>12.2 C</u>		<u>76,500</u>	3 <u>77400</u>

WEATHER.

Wind Direction South Speed (est.) 5-10 mph Temp. 40 °F Cloud Cover OVC

Precipitation (Circle all that apply.) Present Recent Rain Snow Other None

WELL INFORMATION.

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times (D_w \text{ (ft)} - D_c \text{ (ft)})$   
 $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times (D_w \text{ (ft)} - D_c \text{ (ft)})$   
 water level indicator adjustment factor = 1.0005  
 Ad)

Depth to Well Bottom ( $D_w$ ): 33.64 ft. Depth to Ground Water ( $D_c$ ): 26.51, 26.58 ft. 26.82  
26.82

Calculated Purge Volume: 553.42 gal lit. Time Pump On 0738 Time Pump Off 0750

Total Amount of Ground Water Purged: 3.5 gal lit. 1st Flow Rate of Purge: 0.29 gal/min lit/min

Height of Well from Base: 1.56 ft. in. 2nd Flow Rate of Purge: 0.17 gal/min lit/min

Analytical Laboratories and Delivery Data: Rad Lab Bowring Delivery Date/Time \_\_\_\_\_  
 Chem Lab N/A Delivery Date/Time N/A

Monitoring Parameters: Resampling Radiologic parameter suite for November CAPC sampling. these samples will be designated GW-90

SAMPLING TEAM LEADER'S INITIALS \_\_\_\_\_ Others \_\_\_\_\_

# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-25 DATE 11/5/93 TIME OF ARRIVAL AT SAMPLING POINT 1321

From Ground Water Monitoring Field Notebook Page No. 43 SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)  
GREG COPELANDO (TL) JEFF LOW STEVE SINGLEDECKER

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?      Y  N  N Is the well in need of repairs?
- Y  N Is the well fully operational?      Y  N  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N  N Is there evidence of tampering or vandalism?
- Y  N  N Are sandy or silty materials present in the well?
- Y  N  N Is there any standing water in or around the well?
- Y  N  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>b.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>c.</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>Cyanide</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>d.</u>	e. Metals/Inorganics	500ml/T,G
6. <u>e.</u>	f. TDS, TSS	500ml/T,P
7. <u>maint</u>	g. Cations/Anions	500ml/P,G
8. <u>f/g</u>	h. Radiologics	500ml/P,G
9. <u>h.</u>		3.5 gal/P
10. <u>SG</u>		(M-3+C-14/G)

Explain any problems. MID DAY CAL CAL  
pH 7.04 / 15.8 °C      Before 103,100      After 100,000

GROUND-WATER FIELD ANALYSIS RESULTS.

Pre-sampling / Post-sampling <u>11/5/93</u>		Pre-sampling / Post-sampling	
pH	<u>7.19</u> / 1 <u>7.25</u> / 2	Temperature	<u>12.1</u> / 1 <u>11.0</u> °F <u>12.0</u> / 2 <u>11.3</u> °C
	<u>7.19</u> / 2 <u>7.25</u>		<u>11.8</u> / 3 <u>11.4</u>
	<u>7.22</u> / 3 <u>7.25</u>		
EH	<u>-33.5</u> / 11.5 <u>-33.9</u> / 11.4	Specific Conductivity	<u>75,500</u> / 1 <u>73,600</u> umhos
	<u>-33.8</u> / 11.6 <u>-34.3</u> / 11.8		<u>75,100</u> / 2 <u>73,700</u>
	<u>-33.7</u> / 11.7 <u>-34.3</u> / 11.9		<u>75,700</u> / 3 <u>73,700</u>

WEATHER. Wind Direction N Speed (est.) 5 mph Temp. 43 °F Cloud Cover CLEAR

Precipitation (Circle all that apply.) Present    Recent    Rain    Snow    Other None

WELL INFORMATION. Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times (D_w \text{ (ft)} - D_b \text{ (ft)})$   
for 2"-I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times (D_w \text{ (ft)} - D_b \text{ (ft)})$

35.09  
Depth to Well Bottom (D<sub>b</sub>): 36.22 ft.      Depth to Ground Water (D<sub>w</sub>): 26.48/26.48 ft.      ADJUSTED  
Calculated Purge Volume: 4.87 gal lit.      \*Time Pump On 1323      Time Pump Off 1348      26.49  
Total Amount of Ground Water Purged: 6.5 gal lit.      1st Flow Rate of Purge: 38.85 gal/min lit/min  
Height of Well from Base: 1.70 ft.      2nd Flow Rate of Purge: 0.38 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600  
Chem Lab AWARE Delivery Date/Time 11/8/93 1253

Monitoring Parameters: RECOVER PAGE RATE = 50 ml/min @ 1/2" / 13.95 ml/min \* TOTAL TIME  
WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005      INCLUDES SERIES

SAMPLING TEAM LEADER'S INITIALS GC Others \_\_\_\_\_      43      SAMPLES

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# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-26 DATE 11/5/93 TIME OF ARRIVAL AT SAMPLING POINT 1430

From Ground Water Monitoring Field Notebook Page No. 44 SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)  
GREG COPELAND (TL) JEFF LOW STEW SINGLEDECKER

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?       Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?       Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>b.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>c.</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>Organic</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>d.</u>	e. Metals/Inorganics	500ml/T,G
6. <u>e.</u>	f. TDS, TSS	500ml/T,P
7. <u>Metals</u>	g. Cations/Anions	500ml/P,G
8. <u>f/g</u>	h. Radiologics	500ml/P,G
9. <u>h.</u>		3.5 gal/P
10. <u>g.</u>		(H-3+C-14/G)

Explain any problems. \_\_\_\_\_

**GROUND-WATER FIELD ANALYSIS RESULTS.**

<p>Pre-sampling / Post-sampling</p> <p>pH <u>7.28</u> 1 <u>7.43</u></p> <p><u>7.29</u> 2 <u>7.43</u></p> <p><u>7.30</u> 3 <u>7.44</u></p> <p>EH <u>-38.8/12.1</u> 1 <u>-44.8/11.3</u></p> <p><u>-29.1/12.0</u> 2 <u>-44.9/11.7</u></p> <p><u>-39.7/12.0</u> 3 <u>-45.0/11.9</u></p>	<p>Pre-sampling / Post-sampling</p> <p>Temperature <u>12.1</u> 1 <u>11.5</u> °F <input checked="" type="radio"/> C</p> <p><u>12.3</u> 2 <u>12.0</u></p> <p><u>12.3</u> 3 <u>12.0</u></p> <p>Specific Conductivity <u>71,900</u> 1 <u>75,700</u> <math>\mu</math>hos</p> <p><u>72,000</u> 2 <u>75,400</u></p> <p><u>72,100</u> 3 <u>75,200</u></p>
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WEATHER. Wind Direction N/NW Speed (est.) < 5 mph Temp. 44 °F Cloud Cover CLEAR

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other NONE

WELL INFORMATION. Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} * (D_w \text{ (ft)} - D_b \text{ (ft)})$   
 For 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} * (D_w \text{ (ft)} - D_b \text{ (ft)})$  ADJUSTED

Depth to Well Bottom ( $D_b$ ): 31.82 ft.      Depth to Ground Water ( $D_w$ ): 25.59/25.59 ft. 25.6  
25.6

Calculated Purge Volume: 3.11  gal lit.      \*Time Pump On 1435      Time Pump Off 1459

Total Amount of Ground Water Purged: 3.33  gal lit.      1st Flow Rate of Purge: .116  gal/min lit/min

Height of Well from Base: 1.74  in.      2nd Flow Rate of Purge: .14  gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600  
 Chem Lab AWAC Delivery Date/Time 11/8/93 1253

Monitoring Parameters: REDUCES PURGE RATE = 80 ml/min      \*TOTAL TIME INCLUDES WATER LEVEL ADJUSTMENT FACTOR = 1.0005      SERIES SAMPLES

SAMPLING TEAM LEADER'S INITIALS GW Others \_\_\_\_\_



# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-27

DATE 11/5/93

TIME OF ARRIVAL AT SAMPLING POINT 1608

From Ground Water Monitoring Field Notebook Page No. 45

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

MAELO COPELANDO (TL) JEFF LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- N Generally in Good Condition?      Y  N Is the well in need of repairs?
- N Is the well fully operational?      Y  N Is there a marked change in pumping rate?
- N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- N Has the annual depth of the well bottom been determined?

Explain any problems. \_\_\_\_\_

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>b.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>c.</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>capacit</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>d.</u>	e. Metals/Inorganics	500ml/T, G
6. <u>e.</u>	f. TDS, TSS	500ml/T, P
7. <u>nutrient</u>	g. Cations/Anions	500ml/P, G
8. <u>f/g</u>	h. Radiologics	500ml/P, G
9. <u>h</u>		3.5 gal/P
10. <u>sh</u>		(K-3+C-14/G

GROUND-WATER FIELD ANALYSIS RESULTS.

Pre-sampling / Post-sampling		Pre-sampling / Post-sampling	
pH <u>7.21</u> 1	<u>7.32</u>	Temperature <u>16.0</u> 1	<u>16.5</u> °F <input checked="" type="checkbox"/>
<u>7.30</u> 2	<u>7.32</u>	<u>10.6</u> 2	<u>10.8</u>
<u>7.31</u> 3	<u>7.34</u>	<u>10.7, 10.7</u> 3	<u>10.8</u>
EH <u>32.20/10.1</u> 1	<u>-39.0/10.3</u>	Specific Conductivity <u>21,000</u> 1	<u>68,000</u> umhos
<u>-37.84/10.2</u> 2	<u>-39.2/10.4</u>	<u>20,200</u> 2	<u>62,900</u>
<u>-38.00/10.3</u> 3	<u>-39.5/10.4</u>	<u>69,900</u> 3	<u>67,900</u>
		<u>69,800</u>	

WEATHER.

Wind Direction N/NW Speed (est.) ~5 mph Temp. 35 °F Cloud Cover CLEAR

Precipitation (Circle all that apply.) Present    Recent    Rain    Snow    Other NONE

WELL INFORMATION.

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times [D_w \text{ (ft)} - D_c \text{ (ft)}]$   
 for 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times [D_w \text{ (ft)} - D_c \text{ (ft)}]$

Depth to Well Bottom ( $D_c$ ): 32.54 ft.      Depth to Ground Water ( $D_w$ ): 23.88/23.89 ft. <sup>ADJUSTED</sup> 23.89  
 Calculated Purge Volume: 4.33 gal lit.      Time Pump On 1611      Time Pump Off 1635  
 Total Amount of Ground Water Purged: 4.5 gal lit.      1st Flow Rate of Purge: .19 gal/min lit/min  
 Height of Well from Base: 1.73 ft in.      2nd Flow Rate of Purge: .1 gal/min lit/min EXTRUSO

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600  
 Chem Lab AWAL Delivery Date/Time 11/8/93 1253

Monitoring Parameters: RSQUESSO PUMP RATE = 95 ml/min  
WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS ML Others \_\_\_\_\_

# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-28

DATE 11/3/93

TIME OF ARRIVAL AT SAMPLING POINT 1506

From Ground Water Monitoring Field Notebook Page No. 32

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

GREG LOVELAND (TL) JEFF LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- |                                    |  |                                    |   |
|------------------------------------|--|------------------------------------|---|
| <input checked="" type="radio"/> N | Generally in Good Condition?                             | <input checked="" type="radio"/> N | Is the well in need of repairs?           |
| <input checked="" type="radio"/> N | Is the well fully operational?                           | <input checked="" type="radio"/> N | Is there a marked change in pumping rate? |
| <input checked="" type="radio"/> N | Was the lock secure when team arrived?                   |                                    |   |
| <input checked="" type="radio"/> N | Is there evidence of tampering or vandalism?             |                                    |   |
| <input checked="" type="radio"/> N | Are sandy or silty materials present in the well?        |                                    |   |
| <input checked="" type="radio"/> N | Is there any standing water in or around the well?       |                                    |   |
| <input checked="" type="radio"/> N | Are there cracks or breaks in the concrete or casings?   |                                    |   |
| <input checked="" type="radio"/> N | Has the annual depth of the well bottom been determined? |                                    |   |

SAMPLE COLLECTION ORDER		Minimum Vol./ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>b.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>c.</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>capade</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>d.</u>	e. Metals/Inorganics	500ml/T,G
6. <u>e.</u>	f. TDS, TSS	500ml/T,P
7. <u>nutrit</u>	g. Cations/Anions	500ml/P,G
8. <u>g/a</u>	h. Radiologics	500ml/P,G
9. <u>h.</u>		3.5 gal/P (H-3+C-14/G)
10. <u>sg</u>		

Explain any problems. \_\_\_\_\_

pH cal 4.0 / 15.9 °C 7.04 / 17.0 °C  
10.1 / 16.9 °C

GROUND-WATER FIELD ANALYSIS RESULTS.

Pre-sampling / Post-sampling		Pre-sampling / Post-sampling	
pH <u>7.32</u> 1 <u>7.22</u> + <u>7.49</u>		Temperature <u>12.5</u> 1 <u>11.5</u> °F C	
<u>7.36</u> 2 <u>7.43</u> 5.7.19		<u>12.5</u> 2 <u>12.1</u> 4.12.1	
<u>7.36</u> 3 <u>7.46</u>		<u>12.6</u> 3 <u>12.2</u> 5.12.2	
EH <u>-29.8/12.4</u> <u>-35.4/12.2</u>		Specific Conductivity <u>71,200</u> 1 <u>71,900</u> us/cm	
<u>-23.7/12.5</u> 2 <u>-36.2/12.1</u>		<u>71,200</u> 2 <u>71,800</u> 4.71,800	
<u>-23.3/12.43</u> 3 <u>-34.5/12.1</u>		<u>71,200</u> 3 <u>71,700</u>	

WEATHER.

Wind Direction S/SE Speed (est.) 45 mph Temp. 45-50 °F Cloud Cover OVERCAST

Precipitation (Circle all that apply.) Present \_\_\_\_\_ Recent \_\_\_\_\_ Rain \_\_\_\_\_ Snow \_\_\_\_\_ Other NONE

WELL INFORMATION.

Purge Volume Formula:  $V_p (lit) = 1.87 lit/ft * (D_w(ft) - D_c(ft))$   
 (For 2" I.D. PVC only  $V_p (gal) = 0.5 gal/ft * (D_w(ft) - D_c(ft))$ )

Depth to Well Bottom ( $D_b$ ): 31.98 ft. Depth to Ground Water ( $D_w$ ): 21.98/21.99 ft. ADJUSTED  
 Calculated Purge Volume: 5.0 gal. lit. Time Pump On 1510 Time Pump Off 1523  
 Total Amount of Ground Water Purged: 5.0 gal. lit. 1st Flow Rate of Purge: .39 gal/min lit/min  
 Height of Well from Base: 1.61 ft. in. 2nd Flow Rate of Purge: .35 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Barnes Delivery Date/Time 11/11/93 1600  
 Chem Lab AWAC Delivery Date/Time 11/4/93 1815

Monitoring Parameters: REDUCED PURGE RATE = 80 ml/min

WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS GL Others \_\_\_\_\_

GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-29 DATE 11/4/93 TIME OF ARRIVAL AT SAMPLING POINT 0750

From Ground Water Monitoring Field Notebook Page No. 47 SAMPLING TEAM MEMBERS: (Indicate the team leader.)

Wesley Copeland (TL) Jeff Low

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- N Generally in Good Condition?  Y  N Is the well in need of repairs?
- N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1.	<u>b.</u>	
2.	a. Volatile Organics	2x40ml/Glass teflon-l-cap
3.	b. TOX	500ml/Glass Amber, T-caps
4.	c. TOC	125ml/Glass Amber, T-caps
5.	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
6.	e. Metals/Inorganics	500ml/T,G
7.	f. TDS, TSS	500ml/T,P
8.	g. Cations/Anions	500ml/P,G
9.	h. Radiologics	500ml/P,G

Explain any problems. Cold air lines and controller slowed the initial purge.

GROUND-WATER FIELD ANALYSIS RESULTS.

	Pre-sampling / Post-sampling		Pre-sampling / Post-sampling			
PH	<u>7.0</u>	1	<u>7.02</u> / <u>7.09</u>	°F C		
	<u>7.03</u>	2	<u>7.08</u> / <u>7.10</u>			
	<u>7.04</u>	3	<u>7.09</u>			
EH	<u>-19.2/11.8</u>	1	<u>-20.6</u> / <u>10.7</u>	mhos		
	<u>-19.4/11.9</u>	2	<u>-20.9</u> / <u>11.2</u>			
	<u>-19.5/11.9</u>	3	<u>-21.3</u> / <u>11.2</u>			
			Specific Conductivity			
			<u>78,000</u>	1	<u>82,400</u>	40,500
			<u>77,800</u>	2	<u>81,200</u>	
			<u>77,600</u>	3	<u>80,700</u>	

\*UNVALIDATED SAMPLES DUE TO DROPPING THE SAMPLE CONTAINER INTO THE BUCKET 11/12/93

WEATHER. Wind Direction Calm Speed (est.) — mph Temp. 11 °F Cloud Cover Clean

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other None

WELL INFORMATION. Purge Volume Formula:  $V_p (lit) = 1.07 lit/ft * (D_w (ft) - D_o (ft))$   
 for 2" I.D. PVC only  $V_p (gal) = 0.5 gal/ft * (D_w (ft) - D_o (ft))$

Depth to Well Bottom (D<sub>w</sub>): 33.62 ft. Depth to Ground Water (D<sub>g</sub>): 26.55 / 26.55 ft.

Calculated Purge Volume: 3.53 gal. lit. Time Pump On 0753 Time Pump Off 0813

Total Amount of Ground Water Purged: 4.0 gal. lit. 1st Flow Rate of Purge: 2.1 gal/min lit/min

Height of Well from Base: 1.57 ft. 2nd Flow Rate of Purge: — gal/min lit/min

ADJUSTED 26.56 26.56

Analytical Laboratories and Delivery Date: Rad Lab — Delivery Date/Time \*  
 Chem Lab AWAL Delivery Date/Time \*

Monitoring Parameters: DUPLICATE = GW-72 Sampled for TOX only to replace previous sample which was broken while in storage

WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS — Others —

# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. GW-29  
OR SAMPLING POINT

DATE 11/10/93

TIME OF ARRIVAL 0943  
AT SAMPLING POINT

From Ground Water Monitoring Field Notebook Page No. 48

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

Jeff Low (TL) Steve Singledecker (TM)

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casing?
- Y  N Has the annual depth of the well bottom been determined?

Explain any problems. \_\_\_\_\_

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>6</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. _____	b. TOX	500ml/Glass Amber, T-caps
3. _____	c. TOC	125ml/Glass Amber, T-caps
4. _____	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. _____	e. Metals/Inorganics	500ml/T,G
6. _____	f. TDS, TSS	500ml/T,P
7. _____	g. Cations/Anions	500ml/P,G
8. _____	h. Radiologics	500ml/P,G
		3.5 gal/P (H-3+C-14/G)

GROUND-WATER FIELD ANALYSIS RESULTS.

Pre-sampling / Post-sampling		Pre-sampling / Post-sampling	
pH	<u>6.97 / 6.92</u>	1	<u>7.05</u>
	<u>7.09 / 7.01</u>	2	<u>7.01</u>
	<u>6.87 / 7.03</u>	3	<u>7.01</u>
EH	1	<u>-13.5</u>	<u>11.0</u>
	2	<u>-13.8</u>	<u>11.2</u>
	3	<u>-11.0</u>	<u>11.1</u>
Temperature	<u>12.57 / 12.2 / 12.0</u>	1	<u>11.5</u>
	<u>12.3 / 12.1</u>	2	<u>11.4</u>
	<u>12.3 / 12.1</u>	3	<u>11.5</u>
Specific Conductivity	<u>77,000</u>	1	<u>81,460</u>
	<u>77,800</u>	2	<u>81,000</u>
	<u>77,800</u>	3	<u>80,700</u>

\*INITIALIZED SAMPLES  
 DUE TO FAILURE TO RECORD  
 PRE-SAMPLE GWS 11/2/93

WEATHER.

Wind Direction Calm Speed (est.) 0 mph Temp. 45 °F Cloud Cover 000

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other None

WELL INFORMATION.

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times (D_w \text{ (ft)} - D_c \text{ (ft)})$   
for 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times (D_w \text{ (ft)} - D_c \text{ (ft)})$

Depth to Well Bottom ( $D_c$ ): 33.62 ft.

Depth to Ground Water ( $D_w$ ): 26.57 / 26.55 / 26.05 ft.

Calculated Purge Volume: 3.6 gal lit.

Time Pump On 0948 Time Pump Off 0958

Total Amount of Ground Water Purged: 3.8 gal lit.

1st Flow Rate of Purge: 0.38 gal/min lit/min

Height of Well From Base: 1.57 ft. in.

2nd Flow Rate of Purge: \_\_\_\_\_ gal/min lit/min

Analytical Laboratories and Delivery Data:

Rad Lab NA Delivery Date/Time \* NA  
Chem Lab AWAL Delivery Date/Time \*

Monitoring Parameters: Duplicate = 22 (parameter = TOX)

SAMPLING TEAM LEADER'S INITIALS \_\_\_\_\_ Others \_\_\_\_\_

GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-29

DATE 11/12/93

TIME OF ARRIVAL AT SAMPLING POINT 1302

From Ground Water Monitoring Field Notebook Page No. 49

SAMPLING TEAM MEMBERS: (Indicate the team leader.)

GREG COLEMAN (TL) STEVE SINGLEBRECKE

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- N  Y Has the annual depth of the well bottom been determined?

Explain any problems. Samples only for TOX to replace previous sample which was broken while in storage.

SAMPLE COLLECTION ORDER		Minimum Vol/Container
1. <u>b.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>e.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>e.</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>e.</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>e.</u>	e. Metals/Inorganics	500ml/T,G
6. <u>e.</u>	f. TDS, TSS	500ml/T,P
7. <u>e.</u>	g. Cations/Anions	500ml/P,G
8. <u>e.</u>	h. Radiologics	500ml/P,G

GROUND-WATER FIELD ANALYSIS RESULTS.

	Pre-sampling	Post-sampling
pH	<u>7.32</u>	<u>7.31</u>
	<u>7.35</u>	<u>7.31</u>
	<u>7.35</u>	<u>7.34</u>
EH	<u>-27/12.7</u>	<u>-26/12.6</u>
	<u>-30/12.7</u>	<u>-27/12.6</u>
	<u>-32/12.7</u>	<u>-28/12.3</u>

	Pre-sampling	Post-sampling
Temperature	<u>12.7</u>	<u>12.7</u>
	<u>12.7</u>	<u>12.4</u>
	<u>12.7</u>	<u>12.4</u>
Specific Conductivity	<u>76,200</u>	<u>77,300</u>
	<u>76,500</u>	<u>77,300</u>
	<u>76,600</u>	<u>77,500</u>

WEATHER.

Wind Direction W Speed (est.) 25 mph Temp. 44 °F Cloud Cover OVERCAST

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other

WELL INFORMATION.

Purge Volume Formulas:  $V \text{ (lit)} = 1.87 \text{ lit/ft} \cdot D_w \text{ (ft)} \cdot D_c \text{ (ft)}$   
 for 2"-I.D. PVC only  $V \text{ (gal)} = 0.5 \text{ gal/ft} \cdot D_w \text{ (ft)} \cdot D_c \text{ (ft)}$

Depth to Well Bottom (D<sub>w</sub>): 33.62 ft. Depth to Ground Water (D<sub>g</sub>): 26.55/26.55 ft. ADJ. 76.56  
 Calculated Purge Volume: 3.53 gal lit. Time Pump On 1308 Time Pump Off 1317 26.56  
 Total Amount of Ground Water Purged: 4.0 gal lit. 1st Flow Rate of Purge: .44 gal <sup>at 1 min</sup> /min  
 Height of Well from Base: 1.57 in. \*2nd Flow Rate of Purge: N/A gal <sup>at 1 min</sup> /min

Analytical Laboratories and Delivery Data:

Rad Lab N/A Delivery Date/Time N/A  
 Chem Lab AWAL Delivery Date/Time 11/12/93 1500

Monitoring Parameters: DUPLICATE GW-72 (TOX ONLY) \*2<sup>nd</sup> flow rate not determined  
WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005 due to only filling bottles.

SAMPLING TEAM LEADER'S INITIALS GC

Others \_\_\_\_\_

*11/12/93 two bottles.*

# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-29

DATE 11/5/93

TIME OF ARRIVAL AT SAMPLING POINT 1109

From Ground Water Monitoring Field Notebook Page No. 42

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

Greg Cochran (TL) Jeff Low

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>b.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>c.</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>Cyanide</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>d.</u>	e. Metals/Inorganics	500ml/T, G
6. <u>e.</u>	f. TDS, TSS	500ml/T, P
7. <u>Not used</u>	g. Cations/Anions	500ml/P, G
8. <u>f/g</u>	h. Radiologics	500ml/P, G
9. <u>g.</u>		3.5 gal/P
10. <u>SG</u>		(N-3+C-14/G)

Explain any problems. AND DAY CAL = ghw 11/5/93

GROUND-WATER ANALYSIS RESULTS.

Pre-sampling / Post-sampling			Pre-sampling / Post-sampling		
pH	1	<u>7.03</u>	Temperature	1	<u>11.9</u>
	2	<u>7.06</u>		2	<u>11.7</u>
	3	<u>7.02</u>		3	<u>11.9</u>
EH	1	<u>-26.9/10.1</u>	Specific Conductivity	1	<u>76,600</u>
	2	<u>-25.0/11.5</u>		2	<u>75,900</u>
	3	<u>-25.1/11.5</u>		3	<u>76,500</u>
				4	<u>73,200</u>
				5	<u>74,600</u>
				6	<u>77,000</u>
				7	<u>76,900</u>
				8	<u>76,700</u>

WEATHER.

Wind Direction calm Speed (est.) — mph Temp. 40 °F Cloud Cover clear

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other None

WELL INFORMATION.

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times [D_w \text{ (ft)} - D_c \text{ (ft)}]$   
 For 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times [D_w \text{ (ft)} - D_c \text{ (ft)}]$

Depth to Well Bottom (D<sub>w</sub>): 33.62 ft. Depth to Ground Water (D<sub>g</sub>): 26.59/26.59 ft. ADJUSTED  
26.60  
26.60

Calculated Purge Volume: 3.51 gal lit. Time Pump On 1113 Time Pump Off 1122

Total Amount of Ground Water Purged: 3.7 gal lit. 1st Flow Rate of Purge: .41 gal/min lit/min

Height of Well from Base: 1.57 ft. in. 2nd Flow Rate of Purge: .4 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600  
 Chem Lab AWAV Delivery Date/Time 11/8/93 1253

Monitoring Parameters: REDUCED PURGE RATE = 75 ml/min DUPLICATE = GW-72  
WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS GL Others —

# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. GW-36  
ON SAMPLING POINT

DATE 11/3/97

TIME OF ARRIVAL 1155  
AT SAMPLING POINT

From Ground Water Monitoring Field Notebook Page No. 29

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

Gilg Coppens (TL) Jeff Low

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?       Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?       Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum vol./ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>b.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>c.</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>cyanide</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>d.</u>	e. Metals/Inorganics	500ml/T,G
6. <u>e.</u>	f. TDS, TSS	500ml/T,P
7. <u>nutrient</u>	g. Cations/Anions	500ml/P,G
8. <u>fa</u>	h. Radiologics	500ml/P,G
9. <u>h.</u>		3.5 gal/P
10. <u>sg</u>		(H-3+C-14/G)

Explain any problems. MID DAY CALIBRATIONS:

pH 7.04 / 20.0 °C      360ml / 100,700      perme / 100,000  
4.0/cm

GROUND-WATER FIELD ANALYSIS RESULTS.

Pre-sampling / Post-sampling		Pre-sampling / Post-sampling	
pH	<u>7.18</u> / <u>7.25</u> <u>4.7.34</u>	Temperature	<u>11.8</u> / <u>12.2</u> °F °C
u. 7.24	<u>7.24</u> / <u>7.31</u>	4.12.4	<u>11.9</u> / <u>12.2</u> 4.12.2
	<u>7.27</u> / <u>7.34</u>		<u>12.3</u> / <u>12.2</u>
EH	<u>-31.3/12.4</u> / <u>-35.6/12.2</u>	Specific Conductivity	<u>66,000</u> / <u>66,460</u> umhos
	<u>-32.3/12.2</u> / <u>-35.5/12.2</u>	4.66,400	<u>66,200</u> / <u>66,700</u>
	<u>-32.4/12.4</u> / <u>-36.4/12.0</u>		<u>66,400</u> / <u>66,700</u>

WEATHER.

Wind Direction S/SW      Speed (est.) 5-10 mph      Temp. 40 °F      Cloud Cover OVERCAST

Precipitation (Circle all that apply.)      Present      Recent      Rain      Snow      Other NONE

WELL INFORMATION.

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} * (D_w \text{ (ft)} - D_b \text{ (ft)})$   
For 2"-1.0. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} * (D_w \text{ (ft)} - D_b \text{ (ft)})$

Depth to Well Bottom (D<sub>b</sub>): 32.18 ft.      Depth to Ground Water (D<sub>w</sub>): 21.18/21.13/21.13 ft. ADJUSTED 21.14

Calculated Purge Volume: 5.52 (gal) lit.      Time Pump On 1158      Time Pump Off 1214

Total Amount of Ground Water Purged: 6 (gal) lit.      1st Flow Rate of Purge: 0.38 (gal/min) lit/min

Height of Well from Base: 1.73 (ft) in.      2nd Flow Rate of Purge: 0.33 (gal/min) lit/min FILTRATED

Analytical Laboratories and Delivery Data:  
Rad Lab BALWIN      Delivery Date/Time 11/11/93 1600  
Chem Lab AWA      Delivery Date/Time 11/4/93 1815

Monitoring Parameters: REDUCED PURGE = 70 ml/min

NATURAL WELL INDICATOR ADJUSTMENT FACTOR 1.0005

SAMPLING TEAM LEADER'S INITIALS AK      Others \_\_\_\_\_

GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT

GW-37

DATE

11/3/93

TIME OF ARRIVAL AT SAMPLING POINT

1055

From Ground Water Monitoring Field Notebook Page No.

28

SAMPLING TEAM MEMBERS: (Indicate the team leader.)

Greg Corrado (TL) Jeff Low

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  M Generally in Good Condition? Y  N Is the well in need of repairs?
Y  M Is the well fully operational? Y  N Is there a marked change in pumping rate?
Y  M Was the lock secure when team arrived?
Y  M Is there evidence of tampering or vandalism?
Y  M Are sandy or silty materials present in the well?
Y  M Is there any standing water in or around the well?
Y  M Are there cracks or breaks in the concrete or casings?
Y  M Has the annual depth of the well bottom been determined?

Explain any problems.

Table with 3 columns: SAMPLE COLLECTION ORDER, Minimum Vol/Container, and list of samples (a-h) including Volatile Organics, TOX, TOC, Base/Neutral/Acid Extractables, Metals/Inorganics, TDS, TSS, Cations/Anions, Radiologics.

GROUND-WATER FIELD ANALYSIS RESULTS.

Table with 4 columns: Parameter (PH, Temperature, Specific Conductivity, EH), Pre-sampling, Post-sampling, and units. Includes handwritten notes like '2.11.4' and '4.11.3'.

WEATHER.

Wind Direction S/SE Speed (est.) ~5 mph Temp. 35 °F Cloud Cover OVERCAST

Precipitation (Circle all that apply.) Present Recent Rain Snow Other None

WELL INFORMATION.

Purge Volume Formulas: Vp (lit) = 1.27 (lit/ft \* Dp(ft) - Dw(ft)) For 2"-I.D. PVC only Vp (gal) = 0.5 gal/ft \* Dp(ft) - Dw(ft)

Depth to Well Bottom (Dp): 31.09 ft. Depth to Ground Water (Dw): 19.08/19.28 ft.
Calculated Purge Volume: 6 gal lit. Time Pump On 1058 Time Pump Off 1113
Total Amount of Ground Water Purged: 6 gal lit. 1st Flow Rate of Purge: .4 gal/min lit/min
Height of Well from Base: 1.75 ft. 2nd Flow Rate of Purge: .37 gal/min lit/min

Analytical Laboratories and Delivery Data: Rad Lab BARRINGER Delivery Date/Time 11/11/93 1600 Chem Lab ANAL Delivery Date/Time 11/4/93 1515

Monitoring Parameters: REDUCED PURGE = 75 ml/min WATER LEVEL INDICATOR ADJUSTMENT FACTOR 1.0005

SAMPLING TEAM LEADER'S INITIALS gc Others \_\_\_\_\_



GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT

GW-38

DATE

11/2/93

TIME OF ARRIVAL AT SAMPLING POINT

1410

From Ground Water Monitoring Field Notebook Page No.

25

SAMPLING TEAM MEMBERS: (Indicate the team leader.)

GREG COPELAND (TL)

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- N Generally in Good Condition?  Y  N Is the well in need of repairs?
- N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- N Are there cracks or breaks in the concrete or casings?
- N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>b.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>c.</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>Cyanide</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>d.</u>	e. Metals/Inorganics	500ml/T, G
6. <u>e.</u>	f. TDS, TSS	500ml/T, P
7. <u>Nutrient</u>	g. Cations/Anions	500ml/P, G
8. <u>f/c</u>	h. Radiologics	500ml/P, G
<del>9. <u>h.</u></del>		3.5 gal/P (H-3+C-14/G)

Explain any problems. NO PROBLEMS pH 6.99 13.8°C

SC 100.5

GROUND-WATER FIELD ANALYSIS RESULTS.

	Pre-sampling	Post-sampling
pH	<u>7.13</u>	<u>7.14</u>
	<u>7.15</u>	<u>7.16</u>
	<u>7.16</u>	<u>7.17</u>
EH	<u>-22.7</u>	<u>-22.6</u>
	<u>-23.0</u>	<u>-22.9</u>
	<u>-23.5</u>	<u>-23.2</u>

	Pre-sampling	Post-sampling	
Temperature	<u>11.2</u>	<u>11.0</u>	°F °C
	<u>11.3</u>	<u>11.3</u>	
	<u>11.3</u>	<u>11.3</u>	
Specific Conductivity	<u>60,000</u>	<u>60,200</u>	µmhos
	<u>60,000</u>	<u>60,000</u>	
	<u>60,000</u>	<u>60,000</u>	

WEATHER.

Wind Direction SOUTH Speed (est.) 45 mph Temp. ~50 °F Cloud Cover OVERCAST

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other NONE

WELL INFORMATION.

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \cdot (D_w \text{ (ft)} - D_c \text{ (ft)})$   
 for 2"-I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \cdot (D_w \text{ (ft)} - D_c \text{ (ft)})$

Depth to Well Bottom ( $D_w$ ): 32.39 ft.

Depth to Ground Water ( $D_g$ ): 22.14/22.14/22.14 ft.

Calculated Purge Volume: 5.12 gal lit.

Time Pump On 1416 Time Pump Off 1430

Total Amount of Ground Water Purged: 5.2 gal lit.

1st Flow Rate of Purge: .4 gal/min lit/min

Height of Well from Base: 2.06 ft in.

2nd Flow Rate of Purge: .35 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data:

Red Lab Barringer  
Chem Lab AWAL

Delivery Date/Time 11/2/93 11/1/93 1600  
Delivery Date/Time 11/2/93 1730

Monitoring Parameters: REDUCED PURGE 90 ml/min

WATER LOW INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS GC

Others \_\_\_\_\_

# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. GW-56R DATE 11/4/93 TIME OF ARRIVAL 1030  
 OR SAMPLING POINT AT SAMPLING POINT

From Ground Water Monitoring Field Notebook Page No. 35 SAMPLING TEAM MEMBERS:  
 (Indicate the team leader.)

BRETT COPPOLANO (TL) JEFF LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Generally in Good Condition?   Is the well in need of repairs?
- Is the well fully operational?   Is there a marked change in pumping rate?
- Was the lock secure when team arrived?
- Is there evidence of tampering or vandalism?
- Are sandy or silty materials present in the well?
- Is there any standing water in or around the well?
- Are there cracks or breaks in the concrete or casings?
- Has the annual depth of the well bottom been determined?

Explain any problems. \_\_\_\_\_

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1.	<u>b.</u>	2x40ml/Glass
2.	<u>c.</u>	teflon-l-cap
3.	<u>Cyanide</u>	500ml/Glass
4.	<u>ve</u>	Amber, T-caps
5.	<u>Mutuant</u>	125ml/Glass
6.	<u>f/g</u>	Amber, T-caps
7.	<u>h.</u>	500ml/Glass,
8.	<u>SO</u>	Teflon
	a. Volatile Organics	500ml/T,G
	b. TOX	500ml/T,P
	c. TOC	500ml/P,G
	d. Base/Neutral/Acid Extractables	500ml/P,G
	e. Metals/Inorganics	500ml/P,G
	f. TDS, TSS	3.5 gal/P
	g. Cations/Anions	(H-3+C-14/G
	h. Radiologics	

**GROUND-WATER FIELD ANALYSIS RESULTS.**

Pre-sampling / Post-sampling		Pre-sampling / Post-sampling	
pH	<u>7.22</u>	1	<u>7.46</u> <u>4.7</u> <sup>74</sup>
	<u>7.26</u>	2	<u>7.39</u>
	<u>7.27</u>	3	<u>7.37</u>
EH	<u>-24.8/11.4</u>	1	<u>-27.7/11.7</u>
	<u>-24.9/11.4</u>	2	<u>-26.9/11.8</u>
	<u>-24.1/11.5</u>	3	<u>-26.8/11.8</u>
			<u>4.71,000</u>
			<u>4.71,000</u>
			<u>4.71,000</u>

**WEATHER.**

Wind Direction N Speed (est.) 5-10 mph Temp. 43 °F Cloud Cover CLEAR

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other NONE

**WELL INFORMATION.**

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times (D_p \text{ (ft)} - D_w \text{ (ft)})$   
 for 2"-I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times (D_p \text{ (ft)} - D_w \text{ (ft)})$

Depth to Well Bottom ( $D_p$ ): 37.00 ft. Depth to Ground Water ( $D_w$ ): 30.20/30.21/30.21 ft. ADJUSTED  
 Calculated Purge Volume: 3.4 gal lit. Time Pump On 1032 Time Pump Off 1042  
 Total Amount of Ground Water Purged: 4.0 gal lit. 1st Flow Rate of Purge: 4.25 gal/min lit/min  
 Height of Well from Base: 1.63 in. 2nd Flow Rate of Purge: .33 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600  
 Chem Lab Awar Delivery Date/Time 11/4/93 1515

Monitoring Parameters: \_\_\_\_\_

Water level indicator adjustment factor = 1.0005

SAMPLING TEAM LEADER'S INITIALS BL Others \_\_\_\_\_

# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-57

DATE 11/3/93

TIME OF ARRIVAL AT SAMPLING POINT 1630

From Ground Water Monitoring Field Notebook Page No. 33

SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

Garth Copeland (TL) Jeff Low

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- |                                    |                                    |  |                         |                                    |   |
|------------------------------------|------------------------------------|--|-------------------------|------------------------------------|---|
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Generally in Good Condition?                             | <input type="radio"/> Y | <input checked="" type="radio"/> N | Is the well in need of repairs?           |
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Is the well fully operational?                           | <input type="radio"/> Y | <input checked="" type="radio"/> N | Is there a marked change in pumping rate? |
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Was the lock secure when team arrived?                   |                         |                                    |   |
| <input type="radio"/> Y            | <input checked="" type="radio"/> N | Is there evidence of tampering or vandalism?             |                         |                                    |   |
| <input type="radio"/> Y            | <input type="radio"/> N            | Are sandy or silty materials present in the well?        |                         |                                    |   |
| <input type="radio"/> Y            | <input checked="" type="radio"/> N | Is there any standing water in or around the well?       |                         |                                    |   |
| <input type="radio"/> Y            | <input checked="" type="radio"/> N | Are there cracks or breaks in the concrete or casings?   |                         |                                    |   |
| <input checked="" type="radio"/> Y | <input type="radio"/> N            | Has the annual depth of the well bottom been determined? |                         |                                    |   |

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1.	<u>a.</u>	2x40ml/Glass
2.	<u>b.</u>	teflon-l-cap
3.	<u>c.</u>	500ml/Glass
4.	<u>Cyanide</u>	Amber, T-caps
5.	<u>d.</u>	125ml/Glass
6.	<u>e.</u>	Amber, T-caps
7.	<u>Ammonia</u>	500ml/Glass, Teflon
8.	<u>9/9</u>	500ml/T, G
9.	<u>h.</u>	500ml/T, P
10.	<u>SG</u>	500ml/P, G

Explain any problems. \_\_\_\_\_

pH cal 7.02 / 13.4 °C <sup>BEFORE</sup> 109,600 <sup>AFTER</sup> 100,000

GROUND-WATER FIELD ANALYSIS RESULTS.

	Pre-sampling	Post-sampling	Date		Pre-sampling	Post-sampling	Date
pH	<u>7.23</u>	<u>7.17</u>	<u>11/3/93</u>	Temperature	<u>12.0</u>	<u>11.4</u>	
	<u>7.42</u>	<u>7.23</u>			<u>12.0</u>	<u>12.0</u>	<u>12.1</u>
	<u>7.45</u>	<u>7.30</u>			<u>12.1</u>	<u>11.2</u>	<u>5.12.1</u>
EH	<u>-34.1/12.1</u>	<u>-30.3/12.0</u>		Specific Conductivity	<u>61,500</u>	<u>62,800</u>	<u>12.0</u>
	<u>-35.1/12.2</u>	<u>-35.1/12.0</u>			<u>60,900</u>	<u>62,700</u>	<u>12.0</u>
	<u>-19.7/12.3</u>	<u>-35.1/12.0</u>			<u>61,000</u>	<u>62,700</u>	

WEATHER.

Wind Direction S/SW Speed (est.) <5 mph Temp. 45-50 °F Cloud Cover OVERCAST

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other None

WELL INFORMATION.

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times M \text{ (ft)} - D \text{ (ft)}$   
 for 2"-I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times [D_1 \text{ (ft)} - D_2 \text{ (ft)}]$

Depth to Well Bottom (D<sub>w</sub>): 32.63 ft. Depth to Ground Water (D<sub>g</sub>): 22.73/22.76 ft. ADJUSTED  
 Calculated Purge Volume: 4.93 gal lit. Time Pump On 1635 Time Pump Off 1651  
 Total Amount of Ground Water Purged: 5 gal lit. 1st Flow Rate of Purge: .31 gal/min lit/min  
 Height of Well from Base: 2.14 ft. in. 2nd Flow Rate of Purge: .12 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600  
 Chem Lab AWAL Delivery Date/Time 11/4/93 1815

Monitoring Parameters: Revers Purge RATE = 98 ml/min

WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS GC Others \_\_\_\_\_

# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-58 DATE 11/3/93 TIME OF ARRIVAL AT SAMPLING POINT 1407

From Ground Water Monitoring Field Notebook Page No. 31 SAMPLING TEAM MEMBERS: (Indicate the team leader.)  
GREG COPPELAND (TL) Jeff Low

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?      Y  N  Is the well in need of repairs?
- Y  N Is the well fully operational?      Y  N  Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER	Minimum Vol/Container
1. <u>a.</u>	a. Volatile Organics 2x40ml/Glass
2. <u>b.</u>	teflon-l-cap 500ml/Glass
3. <u>c.</u>	b. TOX Amber, T-caps 125ml/Glass
4. <u>organic</u>	c. TOC Amber, T-caps 500ml/Glass, Teflon
5. <u>d.</u>	d. Base/Neutral/Acid Extractables 500ml/T, G
6. <u>e.</u>	e. Metals/Inorganics 500ml/T, P
7. <u>nutrient</u>	f. TDS, TSS 500ml/P, G
8. <u>f/g</u>	g. Cations/Anions 500ml/P, G
9. <u>h.</u>	h. Radiologics 3.5 gal/P
10. <u>30</u>	(H-3+C-14/G)

Explain any problems. pH calc'd 4.0 / 17.5 °C  
6.99 / 14.4 °C

**GROUND-WATER FIELD ANALYSIS RESULTS.**

	Pre-sampling / Post-sampling			Pre-sampling / Post-sampling			
pH	<u>7.22</u>	1	<u>7.26</u>	<u>12.5</u>	1	<u>12.5</u> °F °C	
	<u>7.26</u>	2	<u>7.30</u>	<u>12.5</u>	2	<u>12.6</u>	
	<u>7.31</u>	3	<u>7.31</u>	<u>12.5</u>	3	<u>12.6</u>	
EH	<u>-36.3/12.7</u>	1	<u>-17.1/12.7</u>	Specific Conductivity	<u>64,700</u>	1	<u>64,700</u> umhos
	<u>-36.4/12.4</u>	2	<u>-18.7/12.7</u>		<u>64,700</u>	2	<u>64,800</u>
	<u>-36.8/12.4</u>	3	<u>-19.1/12.6</u>		<u>64,600</u>	3	<u>64,700</u>

WEATHER. Wind Direction S/SE Speed (est.) ~5 mph Temp. ~43 °F Cloud Cover OVERCAST

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other NONE

WELL INFORMATION. Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times (D_w \text{ (ft)} - D_b \text{ (ft)})$   
 for 2" I.D. PVC ONLY  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times (D_w \text{ (ft)} - D_b \text{ (ft)})$

Depth to Well Bottom ( $D_b$ ): 32.27 ft.      Depth to Ground Water ( $D_w$ ): 21.46/21.48 ft. ADJUSTED 21.49  
 Calculated Purge Volume: 5.4 gal. lit.      Time Pump On 1407      Time Pump Off 1423 21.49  
 Total Amount of Ground Water Purged: 5.5 gal. lit.      1st Flow Rate of Purge: .34 gal/min lit/min  
 Height of Well from Base: 1.92 in.      2nd Flow Rate of Purge: .33 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Bannigan Delivery Date/Time 11/11/93 1600  
 Chem Lab AWAC Delivery Date/Time 11/4/93 1815

Monitoring Parameters: REDUCES PURGE RATE = 90 ml/min  
WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS GLC Others \_\_\_\_\_

GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT Gw-60 DATE 11/3/93 TIME OF ARRIVAL 0711  
AT SAMPLING POINT

From Ground Water Monitoring Field Notebook Page No. 26 SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)

GREG COPPELAND (TL) JEFF LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

Explain any problems. \_\_\_\_\_

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>b.</u>	b. TOX	500ml/Glass
3. <u>c.</u>	c. TOC	Amber, T-caps 125ml/Glass
4. <u>Cyanide</u>	d. Base/Neutral/Acid Extractables	Amber, T-caps 500ml/Glass, Teflon
5. <u>d.</u>	e. Metals/Inorganics	500ml/T,G
6. <u>e.</u>	f. TDS, TSS	500ml/T,P
7. <u>nutrient</u>	g. Cations/Anions	500ml/P,G
8. <u>P/g</u>	h. Radiologics	500ml/P,G
9. <u>h.</u>		3.5 gal/P
10. <u>ss</u>		(N-3-C-14/G)

GROUND-WATER FIELD ANALYSIS RESULTS.

	Pre-sampling / Post-sampling		Pre-sampling / Post-sampling	
4. <u>7.07</u> pH	<u>7.08</u> / <u>7.04</u>	1	<u>11.09</u> / <u>11.7</u>	°F <input checked="" type="radio"/> C
5. <u>7.08</u>	<u>7.00</u> / <u>7.04</u>	2	<u>12.0</u> / <u>12.0</u>	
	<u>7.07</u> / <u>7.08</u>	3	<u>12.0</u> / <u>12.0</u>	
	<u>-21.5</u> / <u>-20.8</u>	1	<u>69,700</u> / <u>69,000</u>	umhos
	<u>-20.7</u> / <u>-21.5</u>	2	<u>68,500</u> / <u>69,800</u>	
	<u>-20.7</u> / <u>-21.8</u>	3	<u>69,200</u> / <u>69,300</u>	
			<u>69,300</u> / <u>69,300</u>	

WEATHER. Wind Direction NE Speed (est.) 45 mph Temp. 28 °F Cloud Cover Broken

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other NONE

WELL INFORMATION. Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \cdot [D_w \text{ (ft)} - D_b \text{ (ft)}]$   
For 2"-I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \cdot [D_w \text{ (ft)} - D_b \text{ (ft)}]$

Depth to Well Bottom (D<sub>b</sub>): 29.69 ft. Depth to Ground Water (D<sub>w</sub>): 24.63/24.63 ft. ADJUSTED  
24.64  
24.64  
Calculated Purge Volume: 2.53 gal lit. Time Pump On 0725 Time Pump Off 0730  
Total Amount of Ground Water Purged: 2.6 gal lit. 1st Flow Rate of Purge: .52 gal/min lit/min  
Height of Well from Base: 1.66 ft. in. 2nd Flow Rate of Purge: .52 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Bowling Delivery Date/Time 11/11/93 1600  
Chem Lab Awar Delivery Date/Time 11/4/93 1815

Monitoring Parameters: REDUCED Purge 50 ml/min

WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS GL Others \_\_\_\_\_

**GROUND-WATER MONITORING DATA SHEET**

0820 (Rev. April 1993)

GROUND-WATER WELL NO. GW-63 DATE 11/3/93 TIME OF ARRIVAL 0720 AT SAMPLING POINT 11/3/93  
OR SAMPLING POINT

From Ground Water Monitoring Field Notebook Page No. 27 SAMPLING TEAM MEMBERS:  
(Indicate the team leader.)  
GREG COPELAND (TL) JEFF LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?  Y  N Is the well in need of repairs?
- Y  N Is the well fully operational?  Y  N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>a.</u>	a. Volatile Organics	2x40ml/Glass
2. <u>b.</u>	b. TOX	teflon-l-cap
3. <u>c.</u>	c. TOC	500ml/Glass
4. <u>Cyanide</u>	d. Base/Neutral/Acid Extractables	Amber, T-caps
5. <u>d.</u>	e. Metals/Inorganics	125ml/Glass
6. <u>e.</u>	f. TDS, TSS	Amber, T-caps
7. <u>nutrient</u>	g. Cations/Anions	500ml/Glass,
8. <u>f/g.</u>	h. Radiologics	Teflon
9. <u>h.</u>		500ml/T,G
10. <u>SG</u>		500ml/T,P
		500ml/P,G
		500ml/P,G
		500ml/P,G
		3.5 gal/P
		(N-3+C-14/G)

Explain any problems. \_\_\_\_\_

**GROUND-WATER FIELD ANALYSIS RESULTS.**

	Pre-sampling	Post-sampling		Pre-sampling	Post-sampling	
4. 7.19 5. 7.20	pH <u>7.06</u>	1 <u>7.45</u>	Temperature 4. 7.04 5. 7.19 6. 7.29 7. 7.29	<u>12.1</u>	1 <u>11.9</u>	4. 12.2 5. 12.0 6. 11.9
	<u>7.08</u>	2 <u>7.16</u>		<u>12.3</u>	2 <u>12.1</u>	
	<u>7.15</u>	3 <u>7.24</u>		<u>12.4</u>	3 <u>12.2</u>	
EH	<u>-21.6</u>	1 <u>-30.4</u>	Specific Conductivity	<u>67400</u>	1 <u>67,600</u>	units 4. 66,300 5. 66,500 6. 66,300
	<u>-24.6</u>	2 <u>-30.0</u>		<u>67,500</u>	2 <u>67,000</u>	
	<u>-25.5</u>	3 <u>-27.7</u>		<u>66,900</u>	3 <u>66,600</u>	

**WEATHER.**

Wind Direction S/SW Speed (est.) < 1 mph Temp. 33 °F Cloud Cover BROKEN

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other NONE

**WELL INFORMATION.**

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \cdot (D_w \text{ (ft)} - D_c \text{ (ft)})$   
for 2"-I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \cdot (D_w \text{ (ft)} - D_c \text{ (ft)})$

Depth to Well Bottom ( $D_w$ ): 32.10 ft. Depth to Ground Water ( $D_c$ ): 21.74 / 21.74 / 21.74 ft. ADJUSTED  
21.75  
21.75

Calculated Purge Volume: 5.2 gal lit. Time Pump On 0828 Time Pump Off 0842

Total Amount of Ground Water Purged: 5.3 gal lit. 1st Flow Rate of Purge: .38 gal/min lit/min

Height of Well from Base: 1.79 ft. in. 2nd Flow Rate of Purge: .4 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab BARNHILL Delivery Date/Time 11/11/93 1600  
Chem Lab AWAL Delivery Date/Time 11/4/93 1815

Monitoring Parameters: REDUCED PRESS 60 ml/min

WATER USE INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS GC Others \_\_\_\_\_

FIRST TIME SAMPLED

GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW-235 GW-64 DATE 11/5/93 TIME OF ARRIVAL AT SAMPLING POINT 1020

From Ground Water Monitoring Field Notebook Page No. 41 SAMPLING TEAM MEMBERS: (Indicate the team leader.) GREG COPLAND (TL) JEFF LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition? Y  N Is the well in need of repairs?
Y  N Is the well fully operational? Y  N Is there a marked change in pumping rate?
Y  N Was the lock secure when team arrived?
Y  N Is there evidence of tampering or vandalism?
Y  N Are sandy or silty materials present in the well?
Y  N Is there any standing water in or around the well?
Y  N Are there cracks or breaks in the concrete or casings?
Y  N Has the annual depth of the well bottom been determined?

Explain any problems. INSTALLED PUMP - DETERMINED

WELL DEPTH = 36.89

Table with 2 columns: SAMPLE COLLECTION ORDER and Minimum Vol/Container. Rows include Volatile Organics, TOX, TOC, Base/Neutral/Acid Extractables, Metals/Inorganics, TDS, TSS, Cations/Anions, Radiologics.

GROUND-WATER FIELD ANALYSIS RESULTS.

Table with 4 columns: Parameter, Pre-sampling, Post-sampling, and Units. Rows include pH, Temperature, Specific Conductivity, and EH.

WEATHER.

Wind Direction CALM Speed (est.) — mph Temp. 37 °F Cloud Cover CLEAR

Precipitation (Circle all that apply.) Present Recent Rain Snow Other NONE

WELL INFORMATION. Purge Volume Formulas: Vp (lit) = 1.87 lit/ft \* (Dw(ft) - Dc(ft)) For 2"-I.D. PVC only Vp (gal) = 0.5 gal/ft \* (Dw(ft) - Dc(ft))

Depth to Well Bottom (Dc): 36.89 ft. Depth to Ground Water (Dw): 29.29/29.45/29.42/29.42 ft.
Calculated Purge Volume: 3.75 gal. lit. Time Pump On 1025 Time Pump Off 1035
Total Amount of Ground Water Purged: 4.0 gal. lit. 1st Flow Rate of Purge: .4 gal/min
Height of Well from Base: 1.62 ft. 2nd Flow Rate of Purge: .36 gal/min

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600 Chem Lab Anion Delivery Date/Time 11/8/93 1253

Monitoring Parameters: WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005

SAMPLING TEAM LEADER'S INITIALS gmc Others \_\_\_\_\_

FIRST TIME SAMPLED

GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT GW 232-64 Jc 11/5/93 DATE 11/5/93 TIME OF ARRIVAL AT SAMPLING POINT 1020

From Ground Water Monitoring Field Notebook Page No. 41 SAMPLING TEAM MEMBERS: (Indicate the team leader.)  
Greg Copeland (TL) Jeff Low

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?      Y  N  Is the well in need of repairs?
- Y  N Is the well fully operational?      Y  N  Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  N Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1. <u>b.</u>	a. Volatile Organics	2x40ml/Glass teflon-l-cap
2. <u>c.</u>	b. TOX	500ml/Glass Amber, T-caps
3. <u>copied</u>	c. TOC	125ml/Glass Amber, T-caps
4. <u>e.</u>	d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5. <u>nutrient</u>	e. Metals/Inorganics	500ml/T, G
6. <u>flg.</u>	f. TDS, TSS	500ml/T, P
7. <u>h.</u>	g. Cations/Anions	500ml/P, G
8. <u>sl.</u>	h. Radiologics	500ml/P, G

Explain any problems. INSTALLED PUMP - DETERMINED WELL DEPTH = 36.89

GROUND-WATER FIELD ANALYSIS RESULTS.

	Pre-sampling / Post-sampling		Pre-sampling / Post-sampling	
pH	<u>7.18</u> 1	<u>7.19</u>	Temperature	<u>11.7</u> 1
	<u>7.24</u> 2	<u>7.22</u>		<u>11.7</u> 2
	<u>7.24</u> 3	<u>7.27</u>		<u>12.0</u> 3
EH	<u>-35.9/11.9</u> 1	<u>-36.6/11.0</u>	Specific Conductivity	<u>60,500</u> 1
	<u>-34.7/11.8</u> 2	<u>-35.9/12.0</u>		<u>60,700</u> 2
	<u>-35.0/11.8</u> 3	<u>-36.4/12.0</u>		<u>60,800</u> 3

WEATHER. Wind Direction CALM Speed (est.) — mph Temp. 37 °F Cloud Cover CLEAR  
 Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other NONE

WELL INFORMATION. Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times (D_w \text{ (ft)} - D_c \text{ (ft)})$   
 for 2"-I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times (D_w \text{ (ft)} - D_c \text{ (ft)})$

Depth to Well Bottom ( $D_w$ ): 36.89 ft.      Depth to Ground Water ( $D_c$ ): 29.29/29.45/29.42/29.42 ft.  
 Calculated Purge Volume: 3.75 gal. lit.      Time Pump On 1025      Time Pump Off 1035 ADJUSTED  
 Total Amount of Ground Water Purged: 4.0 gal. lit.      1st Flow Rate of Purge: .4 gal/min 29.43 lit/min  
 Height of Well from Base: 1.62 ft. in.      2nd Flow Rate of Purge: .36 gal/min 29.43 lit/min FILTERED

Analytical Laboratories and Delivery Data: Rad Lab Barringer Delivery Date/Time 11/11/93 1600  
 Chem Lab AWAR Delivery Date/Time 11/8/93 1253

Monitoring Parameters: WATER LEVEL INDICATOR ADJUSTMENT FACTOR = 1.0005  
 SAMPLING TEAM LEADER'S INITIALS GL Others \_\_\_\_\_



# GROUND-WATER MONITORING DATA SHEET

(Rev. April 1993)

GROUND-WATER WELL NO. OR SAMPLING POINT I-2-30 DATE 11/4/93 TIME OF ARRIVAL AT SAMPLING POINT 0750

From Ground Water Monitoring Field Notebook Page No. 34 SAMPLING TEAM MEMBERS: (Indicate the team leader.)

GREG COPELAND (TL) JEFF LOW

DESCRIPTION OF WELL (CONDITION). (Note the condition of the well at the time of arrival, whether the well is secure [locked], general condition, note presence of cracks or any evidence of tampering.)

- Y  N Generally in Good Condition?      Y   N Is the well in need of repairs?
- Y  N Is the well fully operational?      Y   N Is there a marked change in pumping rate?
- Y  N Was the lock secure when team arrived?
- Y  M Is there evidence of tampering or vandalism?
- Y  N Are sandy or silty materials present in the well?
- Y  N Is there any standing water in or around the well?
- Y  N Are there cracks or breaks in the concrete or casings?
- Y  N Has the annual depth of the well bottom been determined?

SAMPLE COLLECTION ORDER		Minimum Vol/ Container
1.	b. <u>brak</u> 11/4/93	2x40ml/Glass reflow-1-cap
2.	a. Volatile Organics c. <u>brak</u> 11/4/93	500ml/Glass Amber, T-caps
3.	b. TOX c. <u>brak</u> 11/4/93	125ml/Glass Amber, T-caps
4.	c. TOC d. Base/Neutral/Acid Extractables	500ml/Glass, Teflon
5.	e. <u>nutrient</u>	500ml/T, G
6.	f. <u>f.g.</u>	500ml/T, P
7.	g. <u>h.</u>	500ml/P, G
8.	h. <u>sg.</u>	500ml/P, G
		3.5 gal/P (H-3+C-14/G)

Explain any problems. Temp probe Broken - replaced.

pH cal 4.0/9.2 °C 10.21 g/L 11/4/93  
4.0/13.2 °C 10.12/15.0 °C

**GROUND-WATER FIELD ANALYSIS RESULTS.**

	Pre-sampling / Post-sampling
pH	<u>7.38</u> 1 <u>7.54</u>
	<u>7.35</u> 2 <u>7.53</u>
	<u>7.34</u> 3 <u>7.50</u>
EH	<u>-34.2/11.5</u> 1 <u>-38.4/12.1</u>
	<u>-34.4/11.4</u> 2 <u>-37.3/12.2</u>
	<u>-34.6/11.4</u> 3 <u>-37.4/12.2</u>

	Pre-sampling / Post-sampling	
Temperature	<u>11.5</u> 1 <u>12.0</u>	°F <input checked="" type="checkbox"/> C
	<u>11.5</u> 2 <u>12.3</u>	
	<u>11.2</u> 3 <u>12.2</u>	
Specific Conductivity	<u>60,200</u> 1 <u>60,300</u>	µmhos
	<u>60,700</u> 2 <u>59,800</u>	
	<u>60,200</u> 3 <u>59,900</u>	11/4/93 59,800

**WEATHER.**

Wind Direction N/NW Speed (est.) 5-10 mph Temp. 38 °F Cloud Cover clear

Precipitation (Circle all that apply.) Present  Recent  Rain  Snow  Other None

**WELL INFORMATION.**

Purge Volume Formula:  $V_p \text{ (lit)} = 1.87 \text{ lit/ft} \times (D_s \text{ (ft)} - D_w \text{ (ft)})$   
for 2" I.D. PVC only  $V_p \text{ (gal)} = 0.5 \text{ gal/ft} \times (D_s \text{ (ft)} - D_w \text{ (ft)})$

Depth to Well Bottom (D<sub>s</sub>): 40.13 ft.      Depth to Ground Water (D<sub>w</sub>): 30.72/30.77/30.77 ft. ADJUSTED 30.78 30.78

Calculated Purge Volume: 4.7 gal lit.      Time Pump On 0758      Time Pump Off 0823

Total Amount of Ground Water Purged: 5 gal lit.      1st Flow Rate of Purge: 0.2 gal/min lit/min

Height of Well from Base: 2.21 ft. in.      2nd Flow Rate of Purge: 0.16 gal/min lit/min FILTERED

Analytical Laboratories and Delivery Data:      Rad Lab Barringer      Delivery Date/Time 11/11/93 1600  
Chem Lab Awar      Delivery Date/Time 11/4/93 1815

Monitoring Parameters: Adjusted Purge Volume = 9.5 11/4/93  
Water Level Indicator Adjustment Factor = 1.0005

SAMPLING TEAM LEADER'S INITIALS [Signature] Others \_\_\_\_\_

11/1/93

SL-3 moisture block reading

21.5 = 99  
22.0 = 99  
22.5 = 101

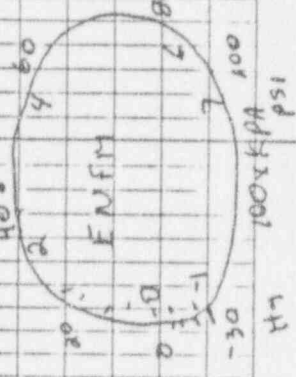
SL-3 - applied vacuum at 1:00 p.m.  
applied 18-21 in mercury

21.5 = 100  
22.0 = 99  
22.5 = 100

SL-2 - applied vacuum at 1:25  
applied 18-21 in mercury

SL-1  
21.5 = 100  
22.0 = 100  
22.5 = 100  
applied vacuum at 1:30  
applied 18-21 in mercury

SL-1  
vacuum applied at 1:30  
40.0  
applied 18-21 in mercury



11/5/93

Clear, sunny, no wind, around 55°F

Environcare Hydrimeter Sampling

SL-1 - approx 50 ml of sample

pH - 6.14

Temp - 13.9

SC - 27.000

[11:45]

MV = ~~55.2~~ - 55.2

applied 9-10 psi

SL-2 - approx 20 ml of sample

pH - 6.98

Temp - 12.7

MV = 55.9

not enough sample for SC reading

[12:15]

applied 9-10 psi

SL-3 - approx 30 ml of sample

pH - 6.78

Temp - 13.2

SC - 24.900

MV = 45.4

[12:45]

applied 9-10 psi

SL-1

SL-2

SL-3

Checked all air pressure gauges they seem to work when there is more water available in system.

**ATTACHMENT 2**

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**NOVEMBER 1993**

**GROUNDWATER QUALITY ANALYSES**

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CHEMICAL ANALYSES



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 8, 1993  
Lab Sample ID Number: 16534-02  
Field Sample ID: November LARW Sampling/GW-3

Contact: Jeff Lowe  
Received By: Elona Hayward

### Analytical Results

	<u>Method Used:</u>	<u>Detection Limit:</u> mg/L	<u>Amount Detected:</u> mg/L	<u>Date Analyzed</u>
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.059] <sup>±s</sup>	11/16/93
Barium	6010	0.002	0.032	11/29/93
Beryllium	6010	0.005	[ND] <sup>±s</sup>	11/29/93
Cadmium	6010	0.004	0.028	11/29/93
Calcium	6010	0.01	420	11/29/93
Chromium	6010	0.005	0.08	11/29/93
Copper	6010	0.005	0.024	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	470	11/29/93
Mercury	7471	0.0002	ND	11/11/93
Molybdenum	6010	0.1	0.2	11/29/93
Nickel	6010	0.01	0.092	11/29/93
Potassium	6010	0.01	380	11/29/93
Selenium	7740	0.005	[ND] <sup>±s</sup>	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	9300	11/29/93
Zinc	6010	0.002	0.045	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	130	11/10/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Chloride	325.3	0.5	14000	11/8/93
Conductivity <sup>†</sup>	120.1	N/A	52000	11/10/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.3	11/15/93
Nitrate (as N)	353.2	0.01	ND	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	ND	11/9/93
pH	150.1	0.1	7.5	11/10/93
Sulfate	375.4	0.5	1500	11/8/93
TDS	160.1	10.	27000	11/8/93
TOC	415.2	1.0	ND	11/11/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			4.8	

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<sup>†</sup> Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

Released by: \_\_\_\_\_

Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-12  
Field Sample ID: November LARW Sampling GW-16R

Contact: Jeff Lowe  
Received By: Jennifer Habel

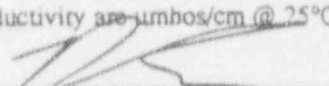
### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.014] JS	11/16/93
Barium	6010	0.002	0.032	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.031	11/29/93
Calcium	6010	0.01	360	11/29/93
Chromium	6010	0.005	0.082	11/29/93
Copper	6010	0.005	[0.042] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	460	11/29/93
Mercury	7471	0.0002	0.0003	11/11/93
Molybdenum	6010	0.1	[0.1] J	11/29/93
Nickel	6010	0.01	0.096	11/29/93
Potassium	6010	0.01	480	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	14000	11/29/93
Zinc	6010	0.002	[0.027] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	320	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	22000	11/5/93
Conductivity†	120.1	N/A	73000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.9	11/15/93
Nitrate (as N)	353.2	0.01	[0.04] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.04] JFD	11/9/93
pH	150.1	0.1	7.2	11/6/93
Sulfate	375.4	0.5	[1500] JFD	11/5/93
TDS	160.1	10.	42000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			1.09	

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† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

Released by:   
Laboratory Supervisor

Report Date 12/9/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-15  
Field Sample ID: November LARW Sampling/GW-19A

Contact: Jeff Lowe  
Received By: Jennifer Habel

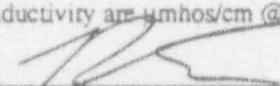
### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.021] JS	11/16/93
Barium	6010	0.002	0.027	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.046	11/29/93
Calcium	6010	0.01	680	11/29/93
Chromium	6010	0.005	0.12	11/29/93
Copper	6010	0.005	[0.033] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	910	11/29/93
Mercury	7471	0.0002	0.0005	11/11/93
Molybdenum	6010	0.1	0.6	11/29/93
Nickel	6010	0.01	0.15	11/29/93
Potassium	6010	0.01	460	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	16000	11/29/93
Zinc	6010	0.002	[0.029] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	160	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	24000	11/5/93
Conductivity†	120.1	N/A	82000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	4.2	11/15/93
Nitrate (as N)	353.2	0.01	ND	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	ND	11/9/93
pH	150.1	0.1	7.3	11/6/93
Sulfate	375.4	0.5	[4400] JFD	11/5/93
TDS	160.1	10.	53000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			2.68	

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† Units for conductivity are umhos/cm @ 25°C

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

463 West 3600 South  
Salt Lake City, Utah  
84115

(801) 263-8686  
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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-04 R  
Field Sample ID: November LARW Sampling/GW-20

Contact: Jeff Lowe  
Received By: Jennifer Habel

### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.024] JS	11/16/93
Barium	6010	0.002	0.025	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.035	11/29/93
Calcium	6010	0.01	410	11/29/93
Chromium	6010	0.005	0.12	11/29/93
Copper	6010	0.005	[0.03] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	820	11/29/93
Mercury	7471	0.0002	0.0004	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.17	11/29/93
Potassium	6010	0.01	550	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	17000	11/29/93
Zinc	6010	0.002	[0.026] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	210	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	24000	11/5/93
Conductivity†	120.1	N/A	83000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.4	11/15/93
Nitrate (as N)	353.2	0.01	[0.1] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.1] JFD	11/9/93
pH	150.1	0.1	7.2	11/6/93
Sulfate	375.4	0.5	[4000] JFD	11/5/93
TDS	160.1	10.	52000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			4.61	

† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

R = Reissue of previously generated report. Information has been added, updated, or revised. Information here in supersedes that of previously issued reports.

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 8, 1993  
Lab Sample ID Number: 16534-06  
Field Sample ID: November LARW Sampling/GW-22

Contact: Jeff Lowe  
Received By: Elona Hayward

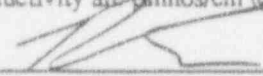
### Analytical Results

	<u>Method Used:</u>	<u>Detection Limit:</u> mg/L	<u>Amount Detected:</u> mg/L	<u>Date Analyzed</u>
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.017] JS	11/16/93
Barium	6010	0.002	0.037	11/29/93
Beryllium	6010	0.005	[ND] JS	11/29/93
Cadmium	6010	0.004	0.031	11/29/93
Calcium	6010	0.01	500	11/29/93
Chromium	6010	0.005	0.095	11/29/93
Copper	6010	0.005	0.032	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	730	11/29/93
Mercury	7471	0.0002	ND	11/11/93
Molybdenum	6010	0.1	[0.1] J	11/29/93
Nickel	6010	0.01	0.12	11/29/93
Potassium	6010	0.01	510	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	14000	11/29/93
Zinc	6010	0.002	0.022	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	300	11/10/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Chloride	325.3	0.5	21000	11/8/93
Conductivity†	120.1	N/A	78000	11/10/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	3	11/15/93
Nitrate (as N)	353.2	0.01	0.04	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	0.04	11/9/93
pH	150.1	0.1	7.4	11/10/93
Sulfate	375.4	0.5	2000	11/8/93
TDS	160.1	10.	45000	11/8/93
TOC	415.2	1.0	ND	11/11/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			4.66	

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† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 8, 1993  
Lab Sample ID Number: 16534-05  
Field Sample ID: November LARW Sampling/GW-23

Contact: Jeff Lowe  
Received By: Elona Hayward

### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.02] JS	11/16/93
Barium	6010	0.002	0.029	11/29/93
Beryllium	6010	0.005	[ND] JS	11/29/93
Cadmium	6010	0.004	0.032	11/29/93
Calcium	6010	0.01	490	11/29/93
Chromium	6010	0.005	0.091	11/29/93
Copper	6010	0.005	0.033	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	710	11/29/93
Mercury	7471	0.0002	ND	11/11/93
Molybdenum	6010	0.1	0.2	11/29/93
Nickel	6010	0.01	0.12	11/29/93
Potassium	6010	0.01	500	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	14000	11/29/93
Zinc	6010	0.002	0.021	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	290	11/10/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Chloride	325.3	0.5	22000	11/8/93
Conductivity†	120.1	N/A	75000	11/10/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	3.3	11/15/93
Nitrate (as N)	353.2	0.01	0.09	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	0.09	11/9/93
pH	150.1	0.1	7.4	11/10/93
Sulfate	375.4	0.5	2500	11/8/93
TDS	160.1	10.	44000	11/8/93
TOC	415.2	1.0	ND	11/11/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			1.61	

† Units for conductivity are umhos/cm @ 25°C

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-02  
Field Sample ID: November LARW Sampling/GW-24

Contact: Jeff Lowe  
Received By: Jennifer Habel

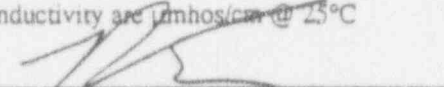
### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.02] JS	11/16/93
Barium	6010	0.002	0.032	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.035	11/29/93
Calcium	6010	0.01	470	11/29/93
Chromium	6010	0.005	0.11	11/29/93
Copper	6010	0.005	[0.033] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	740	11/29/93
Mercury	7471	0.0002	0.0003	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.15	11/29/93
Potassium	6010	0.01	520	11/29/93
Selenium	7740	0.005	[0.006] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	17000	11/29/93
Zinc	6010	0.002	[0.029] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	220	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	25000	11/5/93
Conductivity†	120.1	N/A	84000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.8	11/15/93
Nitrate (as N)	353.2	0.01	[0.09] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.09] JFD	11/9/93
pH	150.1	0.1	7.3	11/6/93
Sulfate	375.4	0.5	[3300] JFD	11/5/93
TDS	160.1	10.	48000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			3.45	

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## INORGANIC ANALYSIS REPORT

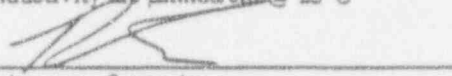
Client: EnviroCare  
Date Received: November 8, 1993  
Lab Sample ID Number: 16534-09  
Field Sample ID: November LARW Sampling/GW-25

Contact: Jeff Lowe  
Received By: Elona Hayward

### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.066] $\mu$ s	11/16/93
Barium	6010	0.002	0.03	11/29/93
Beryllium	6010	0.005	[ND] $\mu$ s	11/29/93
Cadmium	6010	0.004	0.036	11/29/93
Calcium	6010	0.01	560	11/29/93
Chromium	6010	0.005	0.11	11/29/93
Copper	6010	0.005	0.03	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	930	11/29/93
Mercury	7471	0.0002	ND	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.12	11/29/93
Potassium	6010	0.01	590	11/29/93
Selenium	7740	0.005	[ND] $\mu$ s	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	16000	11/29/93
Zinc	6010	0.002	0.025	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	190	11/10/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Chloride	325.3	0.5	24000	11/8/93
Conductivity <sup>†</sup>	120.1	N/A	80000	11/10/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	3.5	11/15/93
Nitrate (as N)	353.2	0.01	0.08	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	0.08	11/9/93
pH	150.1	0.1	7.4	11/10/93
Sulfate	375.4	0.5	3500	11/8/93
TDS	160.1	10.	49000	11/8/93
TOC	415.2	1.0	ND	11/11/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			3.77	

<sup>†</sup> Units for conductivity are  $\mu$ mhos/cm @ 25°C

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 8, 1993  
Lab Sample ID Number: 16534-08  
Field Sample ID: November LARW Sampling/GW-26

Contact: Jeff Lowe  
Received By: Elona Hayward

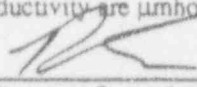
### Analytical Results

	<u>Method Used:</u>	<u>Detection Limit: mg/L</u>	<u>Amount Detected: mg/L</u>	<u>Date Analyzed</u>
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.12] $\geq$ s	11/16/93
Barium	6010	0.002	0.033	11/29/93
Beryllium	6010	0.005	[ND] $\geq$ s	11/29/93
Cadmium	6010	0.004	0.04	11/29/93
Calcium	6010	0.01	670	11/29/93
Chromium	6010	0.005	0.12	11/29/93
Copper	6010	0.005	0.035	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	970	11/29/93
Mercury	7471	0.0002	ND	11/11/93
Molybdenum	6010	0.1	0.6	11/29/93
Nickel	6010	0.01	0.14	11/29/93
Potassium	6010	0.01	500	11/29/93
Selenium	7740	0.005	[ND] $\geq$ s	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	15000	11/29/93
Zinc	6010	0.002	0.024	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	100	11/10/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Chloride	325.3	0.5	23000	11/8/93
Conductivity <sup>†</sup>	120.1	N/A	77000	11/10/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	3.3	11/15/93
Nitrate (as N)	353.2	0.01	0.97	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	0.97	11/9/93
pH	150.1	0.1	7.4	11/10/93
Sulfate	375.4	0.5	4000	11/8/93
TDS	160.1	10.	48000	11/8/93
TOC	415.2	1.0	ND	11/11/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			2.84	

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<sup>†</sup> Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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## INORGANIC ANALYSIS REPORT


Client: EnviroCare  
Date Received: November 8, 1993  
Lab Sample ID Number: 16534-03  
Field Sample ID: November LARW Sampling/GW-27

Contact: Jeff Lowe  
Received By: Elona Hayward

### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.038] <sup>SS</sup>	11/16/93
Barium	6010	0.002	0.037	11/29/93
Beryllium	6010	0.005	[ND] <sup>SS</sup>	11/29/93
Cadmium	6010	0.004	0.037	11/29/93
Calcium	6010	0.01	620	11/29/93
Chromium	6010	0.005	0.1	11/29/93
Copper	6010	0.005	0.028	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	970	11/29/93
Mercury	7471	0.0002	0.0003	11/11/93
Molybdenum	6010	0.1	0.5	11/29/93
Nickel	6010	0.01	0.12	11/29/93
Potassium	6010	0.01	530	11/29/93
Selenium	7740	0.005	[ND] <sup>SS</sup>	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	13000	11/29/93
Zinc	6010	0.002	0.029	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	150	11/10/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Chloride	325.3	0.5	20000	11/8/93
Conductivity <sup>†</sup>	120.1	N/A	71000	11/10/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	3.3	11/15/93
Nitrate (as N)	353.2	0.01	0.03	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	0.03	11/9/93
pH	150.1	0.1	7.6	11/10/93
Sulfate	375.4	0.5	3000	11/8/93
TDS	160.1	10.	43000	11/8/93
TOC	415.2	1.0	ND	11/11/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			4.4	

<sup>†</sup> Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-07  
Field Sample ID: November LARW Sampling/GW-28

Contact: Jeff Lowe  
Received By: Jennifer Habel

### Analytical Results

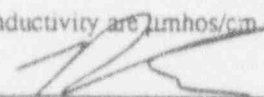
	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.049] JS	11/16/93
Barium	6010	0.002	0.03	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.033	11/29/93
Calcium	6010	0.01	480	11/29/93
Chromium	6010	0.005	0.095	11/29/93
Copper	6010	0.005	[0.031] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	730	11/29/93
Mercury	7471	0.0002	0.0005	11/11/93
Molybdenum	6010	0.1	0.4	11/29/93
Nickel	6010	0.01	0.13	11/29/93
Potassium	6010	0.01	490	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	15000	11/29/93
Zinc	6010	0.002	[0.026] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	150	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	22000	11/5/93
Conductivity†	120.1	N/A	77000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.8	11/15/93
Nitrate (as N)	353.2	0.01	[0.32] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.32] JFD	11/9/93
pH	150.1	0.1	8	11/6/93
Sulfate	375.4	0.5	[3200] JFD	11/5/93
IDS	160.1	10.	45000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			3.94	

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† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 8, 1993  
Lab Sample ID Number: 16534-04  
Field Sample ID: November LARW Sampling/GW-29

Contact: Jeff Lowe  
Received By: Elona Hayward

### Analytical Results

	<u>Method Used:</u>	<u>Detection Limit:</u> mg/L	<u>Amount Detected:</u> mg/L	<u>Date Analyzed</u>
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.018] <sup>IS</sup>	11/16/93
Barium	6010	0.002	0.028	11/29/93
Beryllium	6010	0.005	[ND] <sup>IS</sup>	11/29/93
Cadmium	6010	0.004	0.037	11/29/93
Calcium	6010	0.01	560	11/29/93
Chromium	6010	0.005	0.11	11/29/93
Copper	6010	0.005	0.032	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	860	11/29/93
Mercury	7471	0.0002	ND	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.12	11/29/93
Potassium	6010	0.01	560	11/29/93
Selenium	7740	0.005	[ND] <sup>IS</sup>	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	16000	11/29/93
Zinc	6010	0.002	9.023	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	300	11/10/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Chloride	325.3	0.5	24000	11/8/93
Conductivity <sup>†</sup>	120.1	N/A	82000	11/10/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	3.3	11/15/93
Nitrate (as N)	353.2	0.01	[0.01] <sup>IS</sup>	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.01] <sup>J</sup>	11/9/93
pH	150.1	0.1	7.5	11/10/93
Sulfate	375.4	0.5	3300	11/8/93
TDS	160.1	10.	48000	11/8/93
TOC	415.2	1.0	ND	11/11/93
TOX	9020	0.005	[ND] <sup>R</sup>	11/10/93
Ion Balance			3.4	

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<sup>†</sup> Units for conductivity are umhos/cm @ 25°C

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Laboratory Supervisor<sup>††</sup>

Report Date 12/9/93

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## INORGANIC ANALYSIS REPORT

Client: Envirocare of Utah  
Date Received: December 22, 1993  
Lab Sample ID. Number: 17136-04  
Field Sample ID.: Clive/GW-29

Contact: Jeff Low  
Received By: Jennifer Habel  
Date Analyzed: December 28, 1993

### Analytical Results

463 West 3600 South Salt Lake City, Utah 84115	<u>Method Used:</u>	<u>Detection Limit:</u> mg/L	<u>Amount Detected:</u> mg/L
TOX	9020	0.005	<0.005

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*Steve [Signature]*  
Laboratory Supervisor

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## INORGANIC ANALYSIS REPORT

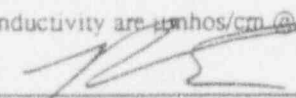
Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-14  
Field Sample ID: November LARW Sampling/GW-36

Contact: Jeff Lowe  
Received By: Jennifer Habel

### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[ 0.043 ] JS	11/16/93
Barium	6010	0.002	0.031	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.032	11/29/93
Calcium	6010	0.01	440	11/29/93
Chromium	6010	0.005	0.091	11/29/93
Copper	6010	0.005	[ 0.028 ] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	570	11/29/93
Mercury	7471	0.0002	0.0004	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.12	11/29/93
Potassium	6010	0.01	480	11/29/93
Selenium	7740	0.005	[ ND ] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	15000	11/29/93
Zinc	6010	0.002	[ 0.027 ] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	150	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	21000	11/5/93
Conductivity†	120.1	N/A	71000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	3	11/15/93
Nitrate (as N)	353.2	0.01	[ 0.54 ] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[ 0.54 ] JFD	11/9/93
pH	150.1	0.1	7.2	11/6/93
Sulfate	375.4	0.5	[ 3500 ] JFD	11/5/93
TDS	160.1	10.	40000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			4.51	

† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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## INORGANIC ANALYSIS REPORT

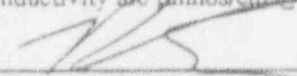
Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-01  
Field Sample ID: November LARW Sampling/GW-37

Contact: Jeff Lowe  
Received By: Jennifer Habel

### Analytical Results

	<u>Method Used:</u>	<u>Detection Limit:</u> mg/L	<u>Amount Detected:</u> mg/L	<u>Date Analyzed</u>
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.033] JS	11/16/93
Barium	6010	0.002	0.033	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.037	11/29/93
Calcium	6010	0.01	550	11/29/93
Chromium	6010	0.005	0.12	11/29/93
Copper	6010	0.005	[0.033] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	830	11/29/93
Mercury	7471	0.0002	0.0005	11/11/93
Molybdenum	6010	0.1	0.4	11/29/93
Nickel	6010	0.01	0.24	11/29/93
Potassium	6010	0.01	530	11/29/93
Selenium	7740	0.005	[0.008] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	18000	11/29/93
Zinc	6010	0.002	[0.027] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	96	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	26000	11/5/93
Conductivity†	120.1	N/A	87000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.8	11/15/93
Nitrate (as N)	353.2	0.01	[0.87] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.87] JFD	11/9/93
pH	150.1	0.1	7.4	11/6/93
Sulfate	375.4	0.5	[3500] JFD	11/5/93
TDS	160.1	10.	51000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			4.86	

† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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## INORGANIC ANALYSIS REPORT

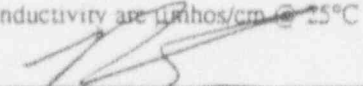
Client: EnviroCare  
Date Received: November 2, 1993  
Lab Sample ID Number: 16470-01  
Field Sample ID: November LARW Sampling/GW-38

Contact: Jeff Lowe  
Received By: Jennifer Habel

### Analytical Results

	<u>Method Used:</u>	<u>Detection Limit: mg/L</u>	<u>Amount Detected: mg/L</u>	<u>Date Analyzed</u>
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.034] $\mu$ s	11/16/93
Barium	6010	0.002	0.034	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.029	11/29/93
Calcium	6010	0.01	410	11/29/93
Chromium	6010	0.005	0.085	11/29/93
Copper	6010	0.005	0.031	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	640	11/29/93
Mercury	7471	0.0002	ND	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.1	11/29/93
Potassium	6010	0.01	460	11/29/93
Selenium	7740	0.005	[0.009] $\mu$ s	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	12000	11/29/93
Zinc	6010	0.002	0.03	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	160	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	20000	11/5/93
Conductivity <sup>†</sup>	120.1	N/A	69000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.2	11/15/93
Nitrate (as N)	353.2	0.01	0.57	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	0.57	11/9/93
pH	150.1	0.1	7.3	11/6/93
Sulfate	375.4	0.5	2700	11/5/93
TDS	160.1	10.	39000	11/3/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/3/93
Ion Balance			-1.53	

<sup>†</sup> Units for conductivity are  $\mu$ mhos/cm @ 25°C

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-11  
Field Sample ID: November LARW Sampling/GW-56R

Contact: Jeff Lowe  
Received By: Jennifer Habel

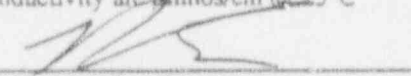
### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.009] JS	11/16/93
Barium	6010	0.002	0.054	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.033	11/29/93
Calcium	6010	0.01	370	11/29/93
Chromium	6010	0.005	0.087	11/29/93
Copper	6010	0.005	[0.029] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	470	11/29/93
Mercury	7471	0.0002	0.0007	11/11/93
Molybdenum	6010	0.1	[0.1] JS	11/29/93
Nickel	6010	0.01	0.11	11/29/93
Potassium	6010	0.01	490	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	15000	11/29/93
Zinc	6010	0.002	[0.029] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	380	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	22000	11/5/93
Conductivity†	120.1	N/A	76000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.9	11/15/93
Nitrate (as N)	353.2	0.01	[0.04] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.04] JFD	11/9/93
pH	150.1	0.1	7.2	11/6/93
Sulfate	375.4	0.5	[1600] JFD	11/5/93
TDS	160.1	10.	41000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			4	

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† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-08  
Field Sample ID: November LARW Sampling/GW-57

Contact: Jeff Lowe  
Received By: Jennifer Habel

### Analytical Results

	<u>Method Used:</u>	<u>Detection Limit:</u> mg/L	<u>Amount Detected:</u> mg/L	<u>Date Analyzed</u>
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.018] JS	11/16/93
Barium	6010	0.002	0.037	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.035	11/29/93
Calcium	6010	0.01	630	11/29/93
Chromium	6010	0.005	0.1	11/29/93
Copper	6010	0.005	[0.037] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	750	11/29/93
Mercury	7471	0.0002	0.0005	11/11/93
Molybdenum	6010	0.1	0.4	11/29/93
Nickel	6010	0.01	0.17	11/29/93
Potassium	6010	0.01	450	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	14000	11/29/93
Zinc	6010	0.002	[0.027] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	120	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	21000	11/5/93
Conductivity†	120.1	N/A	74000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	3.2	11/15/93
Nitrate (as N)	353.2	0.01	[0.35] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.35] JFD	11/9/93
pH	150.1	0.1	7.4	11/6/93
Sulfate	375.4	0.5	[3500] JFD	11/5/93
TDS	160.1	10.	42000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			3.21	

† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-06  
Field Sample ID: November LARW Sampling/GW-58

Contact: Jeff Lowe  
Received By: Jennifer Habel

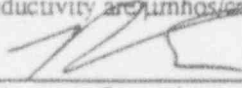
### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.075] JS	11/16/93
Barium	6010	0.002	0.041	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.03	11/29/93
Calcium	6010	0.01	440	11/29/93
Chromium	6010	0.005	0.089	11/29/93
Copper	6010	0.005	[0.1] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	630	11/29/93
Mercury	7471	0.0002	0.0004	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.14	11/29/93
Potassium	6010	0.01	500	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	13000	11/29/93
Zinc	6010	0.002	[0.073] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	140	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	20000	11/5/93
Conductivity†	120.1	N/A	69000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.4	11/15/93
Nitrate (as N)	353.2	0.01	[0.57] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.57] JFD	11/9/93
pH	150.1	0.1	7.3	11/6/93
Sulfate	375.4	0.5	[2700] JFD	11/5/93
TDS	160.1	10.	39000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			2.11	

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† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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## INORGANIC ANALYSIS REPORT

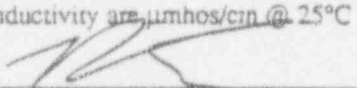
Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-09  
Field Sample ID: November LARW Sampling/GW-60

Contact: Jeff Lowe  
Received By: Jennifer Habel

### Analytical Results

	<u>Method Used:</u>	<u>Detection Limit:</u> mg/L	<u>Amount Detected:</u> mg/L	<u>Date Analyzed</u>
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.021] JS	11/16/93
Barium	6010	0.002	0.03	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.03	11/29/93
Calcium	6010	0.01	460	11/29/93
Chromium	6010	0.005	0.087	11/29/93
Copper	6010	0.005	[0.024] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	650	11/29/93
Mercury	7471	0.0002	0.0004	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.095	11/29/93
Potassium	6010	0.01	450	11/29/93
Selenium	7740	0.005	[0.009] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	15000	11/29/93
Zinc	6010	0.002	[0.023] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	190	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	21000	11/5/93
Conductivity†	120.1	N/A	74000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.8	11/15/93
Nitrate (as N)	353.2	0.01	[0.16] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.16] JFD	11/9/93
pH	150.1	0.1	7.3	11/6/93
Sulfate	375.4	0.5	[3700] JFD	11/5/93
TDS	160.1	10.	42000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			4.57	

† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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Salt Lake City, Utah  
84115

(801) 263-8686  
Fax (801) 263-8687

## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-03  
Field Sample ID: November LARW Sampling/GW-63

Contact: Jeff Lowe  
Received By: Jennifer Habel

### Analytical Results

	<u>Method Used:</u>	<u>Detection Limit:</u> mg/L	<u>Amount Detected:</u> mg/L	<u>Date Analyzed</u>
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.018] JS	11/16/93
Barium	6010	0.002	0.052	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.033	11/29/93
Calcium	6010	0.01	380	11/29/93
Chromium	6010	0.005	0.091	11/29/93
Copper	6010	0.005	[0.027] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	850	11/29/93
Mercury	7471	0.0002	0.0004	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.1	11/29/93
Potassium	6010	0.01	460	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	13000	11/29/93
Zinc	6010	0.002	[0.03] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	140	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	20000	11/5/93
Conductivity†	120.1	N/A	72000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.7	11/15/93
Nitrate (as N)	353.2	0.01	[0.6] JFD	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	[0.6] JFD	11/9/93
pH	150.1	0.1	7.4	11/6/93
Sulfate	375.4	0.5	[2700] JFD	11/5/93
TDS	160.1	10.	47000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			3.18	

† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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Laboratory Supervisor

Report Date 12/9/93

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare

Date Received: November 8, 1993

Lab Sample ID Number: 16534-07

Field Sample ID: November LARW Sampling/~~GW-32~~ ~~GW-64~~

Contact: Jeff Lowe

Received By: Elona Hayward

### Analytical Results

	<u>Method Used:</u>	<u>Detection Limit:</u> mg/L	<u>Amount Detected:</u> mg/L	<u>Date Analyzed</u>
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[ND] JS	11/16/93
Barium	6010	0.002	0.15	11/29/93
Beryllium	6010	0.005	[ND] JS	11/29/93
Cadmium	6010	0.004	0.025	11/29/93
Calcium	6010	0.01	360	11/29/93
Chromium	6010	0.005	0.073	11/29/93
Copper	6010	0.005	0.025	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	430	11/29/93
Mercury	7471	0.0002	[0.0002] J	11/11/93
Molybdenum	6010	0.1	[0.1] J	11/29/93
Nickel	6010	0.01	0.084	11/29/93
Potassium	6010	0.01	440	11/29/93
Selenium	7740	0.005	[ND] JS	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	12000	11/29/93
Zinc	6010	0.002	0.049	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	220	11/10/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Chloride	325.3	0.5	18000	11/8/93
Conductivity†	120.1	N/A	61000	11/10/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.3	11/15/93
Nitrate (as N)	353.2	0.01	ND	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	ND	11/9/93
pH	150.1	0.1	7.4	11/10/93
Sulfate	375.4	0.5	1500	11/8/93
TDS	160.1	10.	34000	11/8/93
TOC	415.2	1.0	ND	11/11/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			3.55	

† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-13  
Field Sample ID: November LARW Sampling/1-2-30

Contact: Jeff Lowe  
Received By: Jennifer Habel

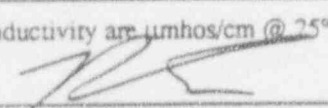
### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[0.014] JS	11/16/93
Barium	6010	0.002	0.035	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.028	11/29/93
Calcium	6010	0.01	270	11/29/93
Chromium	6010	0.005	0.071	11/29/93
Copper	6010	0.005	[0.023] JFD	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	340	11/29/93
Mercury	7471	0.0002	0.0004	11/11/93
Molybdenum	6010	0.1	ND	11/29/93
Nickel	6010	0.01	0.079	11/29/93
Potassium	6010	0.01	370	11/29/93
Selenium	7740	0.005	ND	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	13000	11/29/93
Zinc	6010	0.002	[0.023] JFD	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	240	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	19000	11/5/93
Conductivity†	120.1	N/A	63000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.7	11/15/93
Nitrate (as N)	353.2	0.01	ND	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	ND	11/9/93
pH	150.1	0.1	7.3	11/6/93
Sulfate	375.4	0.5	[1300] JFD	11/5/93
TDS	160.1	10.	34000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			3.82	

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† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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**RADIOLOGICAL ANALYSES**



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Jan-94

ENVIROCARE OF UTAH, INC.  
46 West Broadway, Suite 240  
Salt Lake City, UT 84101

Page: 1  
Copy: 1 of 3

Attn: Project: LARW Groundwater

PO #:

Received: 15-Nov-93 09:30

Job: 938977E

Status: Final

## AMENDED REPORT

### CASE NARRATIVE

A total of 22 Water samples were received on 15-Nov-93. All were properly preserved and in good condition. As stated in the chain of custody, the samples were run for the following analyses: Fluorine, Gross Alpha, Gross Beta, Ra-226, Ra-228, Th-230, Th-232, U, Be-7, Cd-109, C-14, Co-60, I-129, Pb-210, Mn-54, Np-237, Po-210, K-40, Sr-90, Tc-99 and Tritium. Our procedures are summarized on the Quality Control Data Sheet. All samples were extracted and analyzed within the proper holding times.

Quality control standards for organic and inorganic analyses followed the appropriate SW-846 or EPA methodology. For radiochemistry, the acceptance criteria for spikes and laboratory control standards is fifteen percent, plus the counting error. Duplicates will pass if the Replicate Error Ratio (RER) is 1.00 or less. The RER is defined as follows.

$$RER = \frac{ABS(R2 - R1)}{SQRT(ERROR1^2 + ERROR2^2)}$$

where: R1/R2 = original/duplicate sample result  
ERROR1/ERROR2 = total 2 sigma uncertainty of R1/R2

All QC checks, including duplicates, spikes, and blanks, passed.

Amended report to remove sample id's GW-20, GW-24 and GW-71.

Signed:

*Steven L. Sincoff*  
Steven L. Sincoff, Ph.D.  
Director of Operations



# BARRINGER LABORATORIES INC.

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12-Jan-94

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Status: Final

## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Fluorine  
Fraction: Dissolved  
Method: 300.0

Project: LARW Groundwater  
Date Analyzed: 17-Nov-93  
Units: mg/l

Lab Id	Date Sampled	Matrix	Sample Id	Concentration	MDL
938977-1	5-Nov-93	Water	GW-3	8	0.1
938977-2	3-Nov-93	Water	GW-58	8	0.1
938977-3	3-Nov-93	Water	GW-57	7	0.1
938977-4	4-Nov-93	Water	GW-56R	9	0.1
938977-5	4-Nov-93	Water	GW-70	9	0.1
938977-6	3-Nov-93	Water	GW-36	7	0.1
938977-7	3-Nov-93	Water	GW-19A	9	0.1
938977-8	5-Nov-93	Water	GW-32	7	0.1
938977-9	5-Nov-93	Water	GW-37	4	0.1
938977-10	2-Nov-93	Water	GW-38	6	0.1
938977-11	3-Nov-93	Water	GW-63	6	0.1
938977-12	4-Nov-93	Water	GW-16R	9	0.1
938977-13	3-Nov-93	Water	GW-28	8	0.1
938977-14	4-Nov-93	Water	I-2-30	9	0.1
938977-15	3-Nov-93	Water	GW-60	6	0.1
938977-16	5-Nov-93	Water	GW-72	7	0.1
938977-17	5-Nov-93	Water	GW-29	7	0.1
938977-18	5-Nov-93	Water	GW-22	9	0.1
938977-19	5-Nov-93	Water	GW-23	9	0.1
938977-20	5-Nov-93	Water	GW-25	7	0.1
938977-21	5-Nov-93	Water	GW-26	6	0.1
938977-24	5-Nov-93	Water	GW-27	8	0.1



# BARRINGER LABORATORIES INC.

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ENVIROCARE OF UTAH, INC.

## AMENDED REPORT

Analyte: Gross Alpha  
Fraction: Dissolved  
Method: 900.0  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/29-12/02  
LLD: 2

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	350±170
938977-2	3-Nov-93	Water	GW-58	90±170
938977-3	3-Nov-93	Water	GW-57	70±160
938977-4	4-Nov-93	Water	GW-56R	40±160
938977-5	4-Nov-93	Water	GW-70	40±160
938977-6	3-Nov-93	Water	GW-36	170±190
938977-7	3-Nov-93	Water	GW-19A	70±190
938977-8	5-Nov-93	Water	GW-32	120±140
938977-9	5-Nov-93	Water	GW-37	220±220
938977-10	2-Nov-93	Water	GW-38	140±180
938977-11	3-Nov-93	Water	GW-63	40±150
938977-12	4-Nov-93	Water	GW-16R	40±160
938977-13	3-Nov-93	Water	GW-28	110±180
938977-14	4-Nov-93	Water	I-2-30	30±120
938977-15	3-Nov-93	Water	GW-60	80±170
938977-16	5-Nov-93	Water	GW-72	0±160
938977-17	5-Nov-93	Water	GW-29	90±190
938977-18	5-Nov-93	Water	GW-22	160±190
938977-19	5-Nov-93	Water	GW-23	20±160
938977-20	5-Nov-93	Water	GW-25	140±200
938977-21	5-Nov-93	Water	GW-26	190±210
938977-24	5-Nov-93	Water	GW-27	0±169





# BARRINGER LABORATORIES INC.

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12-Jan-94  
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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Gross Beta  
Fraction: Dissolved  
Method: 900.0  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/29-12/02  
LLD: 4

Lab Id	Date Sampled	Matrix	Sample Id	Concentration± 2σ
938977-1	5-Nov-93	Water	GW-3	470±130
938977-2	3-Nov-93	Water	GW-58	720±200
938977-3	3-Nov-93	Water	GW-57	550±200
938977-4	4-Nov-93	Water	GW-56R	510±190
938977-5	4-Nov-93	Water	GW-70	310±190
938977-6	3-Nov-93	Water	GW-36	660±200
938977-7	3-Nov-93	Water	GW-19A	270±190
938977-8	5-Nov-93	Water	GW-32	400±130
938977-9	5-Nov-93	Water	GW-37	660±200
938977-10	2-Nov-93	Water	GW-38	510±190
938977-11	3-Nov-93	Water	GW-63	580±190
938977-12	4-Nov-93	Water	GW-16R	520±190
938977-13	3-Nov-93	Water	GW-28	790±190
938977-14	4-Nov-93	Water	I-2-30	310±130
938977-15	3-Nov-93	Water	GW-60	330±190
938977-16	5-Nov-93	Water	GW-72	480±200
938977-17	5-Nov-93	Water	GW-29	500±190
938977-18	5-Nov-93	Water	GW-22	460±190
938977-19	5-Nov-93	Water	GW-23	550±190
938977-20	5-Nov-93	Water	GW-25	570±200
938977-21	5-Nov-93	Water	GW-26	520±200
938977-24	5-Nov-93	Water	GW-27	680±200



# BARRINGER LABORATORIES INC

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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Ra-226  
Fraction: Dissolved  
Method: SM-705  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 12/03-12/08  
LLD: 0.6

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	[0.5±0.5] J
938977-2	3-Nov-93	Water	GW-58	[0.6±0.5] J
938977-3	3-Nov-93	Water	GW-57	[0.6±0.5] J
938977-4	4-Nov-93	Water	GW-56R	1.6±0.8
938977-5	4-Nov-93	Water	GW-70	[0.6±0.5] J
938977-6	3-Nov-93	Water	GW-36	0.8±0.5
938977-7	3-Nov-93	Water	GW-19A	[0.4±0.4] J
938977-8	5-Nov-93	Water	GW-32	1.6±0.7
938977-9	5-Nov-93	Water	GW-37	0.7±0.5
938977-10	2-Nov-93	Water	GW-38	1.9±0.8
938977-11	3-Nov-93	Water	GW-63	[0.5±0.4] J
938977-12	4-Nov-93	Water	GW-16R	[0.6±0.4] J
938977-13	3-Nov-93	Water	GW-28	[0.6±0.5] J
938977-14	4-Nov-93	Water	I-2-30	0.7±0.5
938977-15	3-Nov-93	Water	GW-60	0.8±0.5
938977-16	5-Nov-93	Water	GW-72	1.0±0.8
938977-17	5-Nov-93	Water	GW-29	1.0±0.7
938977-18	5-Nov-93	Water	GW-22	[0.3±0.4] J
938977-19	5-Nov-93	Water	GW-23	[0.5±0.4] J
938977-20	5-Nov-93	Water	GW-25	1.4±0.7
938977-21	5-Nov-93	Water	GW-26	[0.4±0.4] J
938977-24	5-Nov-93	Water	GW-27	[0.3±0.4] J



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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Ra-228  
Fraction: Dissolved  
Method: Perc/Brooks  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/24-12/10  
LLD: 0.6

Lab Id	Date Sampled	Matrix	Sample Id	Concentration± 2σ
938977-1	5-Nov-93	Water	GW-3	1.2±0.5
938977-2	3-Nov-93	Water	GW-58	3.1±0.6
938977-3	3-Nov-93	Water	GW-57	1.8±0.5
938977-4	4-Nov-93	Water	GW-56R	3.0±0.6
938977-5	4-Nov-93	Water	GW-70	1.9±0.6
938977-6	3-Nov-93	Water	GW-36	2.7±0.6
938977-7	3-Nov-93	Water	GW-19A	1.1±0.5
938977-8	5-Nov-93	Water	GW-32	4.1±0.7
938977-9	5-Nov-93	Water	GW-37	2.5±0.6
938977-10	2-Nov-93	Water	GW-38	2.7±0.6
938977-11	3-Nov-93	Water	GW-63	2.1±0.6
938977-12	4-Nov-93	Water	GW 16R	1.4±0.5
938977-13	3-Nov-93	Water	GW-28	1.2±0.5
938977-14	4-Nov-93	Water	I-2-30	1.5±0.5
938977-15	3-Nov-93	Water	GW-60	1.6±0.5
938977-16	5-Nov-93	Water	GW-72	2.9±0.6
938977-17	5-Nov-93	Water	GW-29	2.9±0.5
938977-18	5-Nov-93	Water	GW-22	2.2±0.5
938977-19	5-Nov-93	Water	GW-23	2.2±0.5
938977-20	5-Nov-93	Water	GW-25	2.8±0.5
938977-21	5-Nov-93	Water	GW-26	1.8±0.5
938977-24	5-Nov-93	Water	GW-27	1.4±0.4



# BARRINGER LABORATORIES INC.

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12-Jan-94  
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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Th-230  
Fraction: Dissolved  
Method: USAEC  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 12/01-12/21  
LLD: 0.4

Lab Id	Date Sampled	Matrix	Sample Id	Concentration± 2σ
938977-1	5-Nov-93	Water	GW-3	0.0±1.7
938977-2	3-Nov-93	Water	GW-58	0.0±2.1
938977-3	3-Nov-93	Water	GW-57	0.0±2.1
938977-4	4-Nov-93	Water	GW-56R	0.0±1.7
938977-5	4-Nov-93	Water	GW-70	[0.4±2.3]J
938977-6	3-Nov-93	Water	GW-36	0.0±1.9
938977-7	3-Nov-93	Water	GW-19A	[0.4±2.3]J
938977-8	5-Nov-93	Water	GW-32	0.0±2.1
938977-9	5-Nov-93	Water	GW-37	0.0±2.1
938977-10	2-Nov-93	Water	GW-38	0.0±1.9
938977-11	3-Nov-93	Water	GW-63	2.1±2.8
938977-12	4-Nov-93	Water	GW-16R	0.0±1.9
938977-13	3-Nov-93	Water	GW-28	0.0±1.9
938977-14	4-Nov-93	Water	I-2-30	0.0±2.1
938977-15	3-Nov-93	Water	GW-60	0.0±2.1
938977-16	5-Nov-93	Water	GW-72	0.8±2.4
938977-17	5-Nov-93	Water	GW-29	2.5±2.9
938977-18	5-Nov-93	Water	GW-22	0.0±2.1
938977-19	5-Nov-93	Water	GW-23	0.0±1.5
938977-20	5-Nov-93	Water	GW-25	1.2±2.5
938977-21	5-Nov-93	Water	GW-26	0.0±1.7
938977-24	5-Nov-93	Water	GW-27	0.0±1.9



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ENVIROCARE OF UTAH, INC.

## AMENDED REPORT

Analyte: Th-232  
Fraction: Dissolved  
Method: USAEC  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 12/01-12/21  
LLD: 0.4

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	0.0±2.1
938977-2	3-Nov-93	Water	GW-58	0.0±1.8
938977-3	3-Nov-93	Water	GW-57	0.0±2.4
938977-4	4-Nov-93	Water	GW-56R	0.0±1.8
938977-5	4-Nov-93	Water	GW-70	0.0±1.8
938977-6	3-Nov-93	Water	GW-36	0.0±1.8
938977-7	3-Nov-93	Water	GW-19A	0.0±2.4
938977-8	5-Nov-93	Water	GW-32	0.0±1.8
938977-9	5-Nov-93	Water	GW-37	0.0±2.4
938977-10	2-Nov-93	Water	GW-38	0.0±2.1
938977-11	3-Nov-93	Water	GW-63	0.0±2.1
938977-12	4-Nov-93	Water	GW-16R	0.0±2.1
938977-13	3-Nov-93	Water	GW-28	0.0±1.8
938977-14	4-Nov-93	Water	I-2-30	0.0±1.8
938977-15	3-Nov-93	Water	GW-60	0.0±1.8
938977-16	5-Nov-93	Water	GW-72	0.0±2.4
938977-17	5-Nov-93	Water	GW-29	0.0±2.1
938977-18	5-Nov-93	Water	GW-22	0.0±1.8
938977-19	5-Nov-93	Water	GW-23	0.0±2.1
938977-20	5-Nov-93	Water	GW-25	0.0±1.8
938977-21	5-Nov-93	Water	GW-26	0.0±2.4
938977-24	5-Nov-93	Water	GW-27	0.0±1.8



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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: U  
Fraction: Dissolved  
Method: ASTM D2907  
Units: mg/l

Project: LARW Groundwater  
Date Analyzed: 12/08-12/10  
LLD: 0.0003

Lab Id	Date Sampled	Matrix	Sample Id	Concentration
938977-1	5-Nov-93	Water	GW-3	0.0276
938977-2	3-Nov-93	Water	GW-58	0.0300
938977-3	3-Nov-93	Water	GW-57	0.0047
938977-4	4-Nov-93	Water	GW-56R	0.0130
938977-5	4-Nov-93	Water	GW-70	0.0129
938977-6	3-Nov-93	Water	GW-36	0.0411
938977-7	3-Nov-93	Water	GW-19A	0.0029
938977-8	5-Nov-93	Water	GW-32	0.0126
938977-9	5-Nov-93	Water	GW-37	0.0172
938977-10	2-Nov-93	Water	GW-38	0.0252
938977-11	3-Nov-93	Water	GW-63	0.0097
938977-12	4-Nov-93	Water	GW-16R	0.0139
938977-13	3-Nov-93	Water	GW-28	0.0090
938977-14	4-Nov-93	Water	I-2-30	0.0112
938977-15	3-Nov-93	Water	GW-60	0.0196
938977-16	5-Nov-93	Water	GW-72	0.0268
938977-17	5-Nov-93	Water	GW-29	0.0252
938977-18	5-Nov-93	Water	GW-22	0.0196
938977-19	5-Nov-93	Water	GW-23	0.0137
938977-20	5-Nov-93	Water	GW-25	0.0955
938977-21	5-Nov-93	Water	GW-26	0.0168
938977-24	5-Nov-93	Water	GW-27	0.0051



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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Be-7  
Fraction: Gamma Spec.  
Method: 901.1  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/24-12/10  
LLD: ---

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	<17
938977-2	3-Nov-93	Water	GW-58	<17
938977-3	3-Nov-93	Water	GW-57	<15
938977-4	4-Nov-93	Water	GW-56R	<14
938977-5	4-Nov-93	Water	GW-70	<20
938977-6	3-Nov-93	Water	GW-36	<16
938977-7	3-Nov-93	Water	GW-19A	<16
938977-8	5-Nov-93	Water	GW-32	<14
938977-9	5-Nov-93	Water	GW-37	<18
938977-10	2-Nov-93	Water	GW-38	<18
938977-11	3-Nov-93	Water	GW-63	<16
938977-12	4-Nov-93	Water	GW-16R	<18
938977-13	3-Nov-93	Water	GW-28	<15
938977-14	4-Nov-93	Water	I-2-30	<14
938977-15	3-Nov-93	Water	GW-60	<19
938977-16	5-Nov-93	Water	GW-72	<20
938977-17	5-Nov-93	Water	GW-29	<18
938977-18	5-Nov-93	Water	GW-22	<15
938977-19	5-Nov-93	Water	GW-23	<16
938977-20	5-Nov-93	Water	GW-25	<17
938977-21	5-Nov-93	Water	GW-26	<16
938977-24	5-Nov-93	Water	GW-27	<16



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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Cd-109  
Fraction: Gamma Spec.  
Method: 901.1  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/24-12/10  
LLD: ---

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	<33
938977-2	3-Nov-93	Water	GW-58	<36
938977-3	3-Nov-93	Water	GW-57	<30
938977-4	4-Nov-93	Water	GW-56R	<32
938977-5	4-Nov-93	Water	GW-70	<35
938977-6	3-Nov-93	Water	GW-36	<35
938977-7	3-Nov-93	Water	GW-19A	<36
938977-8	5-Nov-93	Water	GW-32	<30
938977-9	5-Nov-93	Water	GW-37	<36
938977-10	2-Nov-93	Water	GW-38	<37
938977-11	3-Nov-93	Water	GW-63	<33
938977-12	4-Nov-93	Water	GW-16R	<37
938977-13	3-Nov-93	Water	GW-28	<31
938977-14	4-Nov-93	Water	I-2-30	<31
938977-15	3-Nov-93	Water	GW-60	<34
938977-16	5-Nov-93	Water	GW-72	<37
938977-17	5-Nov-93	Water	GW-29	<40
938977-18	5-Nov-93	Water	GW-22	<30
938977-19	5-Nov-93	Water	GW-23	<34
938977-20	5-Nov-93	Water	GW-25	<35
938977-21	5-Nov-93	Water	GW-26	<32
938977-24	5-Nov-93	Water	GW-27	<33





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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: C-14  
Fraction: Dissolved  
Method: 520-84-006  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/29-12/09  
LLD: 215

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	[7±12] J
938977-2	3-Nov-93	Water	GW-58	[4±19] J
938977-3	3-Nov-93	Water	GW-57	[11±14] J
938977-4	4-Nov-93	Water	GW-56R	[15±20] J
938977-5	4-Nov-93	Water	GW-70	[15±19] J
938977-6	3-Nov-93	Water	GW-36	[18±17] J
938977-7	3-Nov-93	Water	GW-19A	[18±14] J
938977-8	5-Nov-93	Water	GW-32	[25±16] J
938977-9	5-Nov-93	Water	GW-37	0±10
938977-10	2-Nov-93	Water	GW-38	[8±26] J
938977-11	3-Nov-93	Water	GW-63	[4±13] J
938977-12	4-Nov-93	Water	GW-16R	[1±19] J
938977-13	3-Nov-93	Water	GW-28	0±20
938977-14	4-Nov-93	Water	I-2-30	[2±17] J
938977-15	3-Nov-93	Water	GW-60	[5±16] J
938977-16	5-Nov-93	Water	GW-72	[1±19] J
938977-17	5-Nov-93	Water	GW-29	[25±30] J
938977-18	5-Nov-93	Water	GW-22	[22±20] J
938977-19	5-Nov-93	Water	GW-23	[7±18] J
938977-20	5-Nov-93	Water	GW-25	[10±19] J
938977-21	5-Nov-93	Water	GW-26	[4±11] J
938977-24	5-Nov-93	Water	GW-27	0±13



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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Co-60  
Fraction: Gamma Spec.  
Method: 901.1  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/24-12/10  
LLD: ---

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	<1.9
938977-2	3-Nov-93	Water	GW-58	<1.7
938977-3	3-Nov-93	Water	GW-57	<1.5
938977-4	4-Nov-93	Water	GW-56R	<1.6
938977-5	4-Nov-93	Water	GW-70	<2.0
938977-6	3-Nov-93	Water	GW-36	<1.6
938977-7	3-Nov-93	Water	GW-19A	<1.6
938977-8	5-Nov-93	Water	GW-32	<1.6
938977-9	5-Nov-93	Water	GW-37	<1.8
938977-10	2-Nov-93	Water	GW-38	<1.9
938977-11	3-Nov-93	Water	GW-63	<1.9
938977-12	4-Nov-93	Water	GW-16R	<1.9
938977-13	3-Nov-93	Water	GW-28	<1.7
938977-14	4-Nov-93	Water	I-2-30	<1.6
938977-15	3-Nov-93	Water	GW-60	<2.1
938977-16	5-Nov-93	Water	GW-72	<1.9
938977-17	5-Nov-93	Water	GW-29	<2.0
938977-18	5-Nov-93	Water	GW-22	<1.7
938977-19	5-Nov-93	Water	GW-23	<1.9
938977-20	5-Nov-93	Water	GW-25	<2.2
938977-21	5-Nov-93	Water	GW-26	<1.6
938977-24	5-Nov-93	Water	GW-27	<1.8



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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: I-129  
Fraction: Dissolved  
Method: 902.0  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 12/08-12/22  
LLD: 1.0

Lab Id	Date Sampled	Matrix	Sample Id	Concentration ± 2σ
938977-1	5-Nov-93	Water	GW-3	0.0±0.9
938977-2	3-Nov-93	Water	GW-58	0.0±1.0
938977-3	3-Nov-93	Water	GW-57	0.0±1.1
938977-4	4-Nov-93	Water	GW-56R	0.0±0.9
938977-5	4-Nov-93	Water	GW-70	0.0±1.0
938977-6	3-Nov-93	Water	GW-36	0.0±0.9
938977-7	3-Nov-93	Water	GW-19A	0.0±2.0
938977-8	5-Nov-93	Water	GW-32	0.0±0.9
938977-9	5-Nov-93	Water	GW-37	0.0±1.0
938977-10	2-Nov-93	Water	GW-38	[0.7±1.0] 4
938977-11	3-Nov-93	Water	GW-63	0.0±1.1
938977-12	4-Nov-93	Water	GW-16R	[0.2±1.0] 4
938977-13	3-Nov-93	Water	GW-28	0.0±1.1
938977-14	4-Nov-93	Water	I-2-30	0.0±1.9
938977-15	3-Nov-93	Water	GW-60	1.8±2.0
938977-16	5-Nov-93	Water	GW-72	0.0±0.9
938977-17	5-Nov-93	Water	GW-29	0.0±1.0
938977-18	5-Nov-93	Water	GW-22	[0.8±0.2] 4
938977-19	5-Nov-93	Water	GW-23	0.0±0.9
938977-20	5-Nov-93	Water	GW-25	0.0±0.9
938977-21	5-Nov-93	Water	GW-26	0.0±0.9
938977-24	5-Nov-93	Water	GW-27	0.0±0.8



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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Pb-210  
Fraction: Dissolved  
Method: UFGS  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/22-12/06  
LLD: 2.0

Lab Id	Date Sampled	Matrix	Sample Id	Concentration ± 2σ
938977-1	5-Nov-93	Water	GW-3	2.3±1.6
938977-2	3-Nov-93	Water	GW-58	[1.5±1.5] J
938977-3	3-Nov-93	Water	GW-57	[1.1±1.6] J
938977-4	4-Nov-93	Water	GW-56R	[1.2±1.6] J
938977-5	4-Nov-93	Water	GW-70	[1.2±1.6] J
938977-6	3-Nov-93	Water	GW-36	3.0±1.6
938977-7	3-Nov-93	Water	GW-19A	[1.6±1.8] J
938977-8	5-Nov-93	Water	GW-32	[1.2±1.4] J
938977-9	5-Nov-93	Water	GW-37	[1.2±1.4] J
938977-10	2-Nov-93	Water	GW-38	[1.4±1.6] J
938977-11	3-Nov-93	Water	GW-63	2.2±1.6
938977-12	4-Nov-93	Water	GW-16R	2.2±1.7
938977-13	3-Nov-93	Water	GW-28	[1.0±1.6] J
938977-14	4-Nov-93	Water	I-2-30	[2.0±1.4] J
938977-15	3-Nov-93	Water	GW-60	[0.8±1.4] J
938977-16	5-Nov-93	Water	GW-72	2.3±1.6
938977-17	5-Nov-93	Water	GW-29	[2.0±1.5] J
938977-18	5-Nov-93	Water	GW-22	[1.9±2.3] J
938977-19	5-Nov-93	Water	GW-23	3.0±2.2
938977-20	5-Nov-93	Water	GW-25	2.7±2.0
938977-21	5-Nov-93	Water	GW-26	[1.1±2.2] J
938977-24	5-Nov-93	Water	GW-27	[1.9±2.3] J



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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Mn-54  
Fraction: Gamma Spec.  
Method: 901.1  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/24-12/10  
LLD: ---

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	<1.8
938977-2	3-Nov-93	Water	GW-58	<1.6
938977-3	3-Nov-93	Water	GW-57	<1.4
938977-4	4-Nov-93	Water	GW-56R	<1.4
938977-5	4-Nov-93	Water	GW-70	<1.8
938977-6	3-Nov-93	Water	GW-36	<1.7
938977-7	3-Nov-93	Water	GW-19A	<1.8
938977-8	5-Nov-93	Water	GW-32	<1.3
938977-9	5-Nov-93	Water	GW-37	<1.7
938977-10	2-Nov-93	Water	GW-38	<1.7
938977-11	3-Nov-93	Water	GW-63	<1.7
938977-12	4-Nov-93	Water	GW-16R	<2.0
938977-13	3-Nov-93	Water	GW-28	<1.4
938977-14	4-Nov-93	Water	I-2-30	<1.6
938977-15	3-Nov-93	Water	GW-60	<1.7
938977-16	5-Nov-93	Water	GW-72	<2.1
938977-17	5-Nov-93	Water	GW-29	<2.0
938977-18	5-Nov-93	Water	GW-22	<1.4
938977-19	5-Nov-93	Water	GW-23	<1.5
938977-20	5-Nov-93	Water	GW-25	<1.9
938977-21	5-Nov-93	Water	GW-26	<1.6
938977-24	5-Nov-93	Water	GW-27	<1.7

ENVIROCARE OF UTAH, INC.

AMENDED REPORT

Analyte: Np-237  
 Fraction: Dissolved  
 Method: 907.0  
 Units: pCi/l

Project: LARW Groundwater  
 Date Analyzed: 11/22-12/16  
 LLD: 1

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	[0.2±0.8] J
938977-2	3-Nov-93	Water	GW-58	[1.0±1.2]
938977-3	3-Nov-93	Water	GW-57	0.0±0.7
938977-4	4-Nov-93	Water	GW-56R	[0.7±1.1] J
938977-5	4-Nov-93	Water	GW-70	[0.9±1.1] J
938977-6	3-Nov-93	Water	GW-36	[0.5±1.0] J
938977-7	3-Nov-93	Water	GW-19A	0.0±0.7
938977-8	5-Nov-93	Water	GW-32	0.0±0.5
938977-9	5-Nov-93	Water	GW-37	[0.2±0.8] J
938977-10	2-Nov-93	Water	GW-38	0.0±0.5
938977-11	3-Nov-93	Water	GW-63	[0.2±0.8] J
938977-12	4-Nov-93	Water	GW-16R	0.0±0.7
938977-13	3-Nov-93	Water	GW-28	[0.2±0.8] J
938977-14	4-Nov-93	Water	I-2-30	[0.2±0.8] J
938977-15	3-Nov-93	Water	GW-60	0.0±0.5
938977-16	5-Nov-93	Water	GW-72	0.0±0.5
938977-17	5-Nov-93	Water	GW-29	4.9±2.2
938977-18	5-Nov-93	Water	GW-22	1.4±1.3
938977-19	5-Nov-93	Water	GW-23	[0.7±1.1] J
938977-20	5-Nov-93	Water	GW-25	2.4±1.6
938977-21	5-Nov-93	Water	GW-26	1.6±1.4
938977-24	5-Nov-93	Water	GW-27	1.8±1.4



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## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Po-210  
Fraction: Dissolved  
Method: UKAEA  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 12/06-12/08  
LLD: 1

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	0.0±0.2
938977-2	3-Nov-93	Water	GW-58	[1.0±0.5] J
938977-3	3-Nov-93	Water	GW-57	[0.3±0.3] J
938977-4	4-Nov-93	Water	GW-56R	0.0±0.3
938977-5	4-Nov-93	Water	GW-70	[0.1±0.3] J
938977-6	3-Nov-93	Water	GW-36	0.0±0.2
938977-7	3-Nov-93	Water	GW-19A	1.2±0.5
938977-8	5-Nov-93	Water	GW-32	0.0±0.2
938977-9	5-Nov-93	Water	GW-37	0.0±0.2
938977-10	2-Nov-93	Water	GW-38	[1.0±0.4] J
938977-11	3-Nov-93	Water	GW-63	4.8±0.8
938977-12	4-Nov-93	Water	GW-16R	[0.2±0.3] J
938977-13	3-Nov-93	Water	GW-28	[0.1±0.3] J
938977-14	4-Nov-93	Water	I-2-30	[0.1±0.3] J
938977-15	3-Nov-93	Water	GW-60	[0.2±0.3] J
938977-16	5-Nov-93	Water	GW-72	14±1
938977-17	5-Nov-93	Water	GW-29	0.0±0.3
938977-18	5-Nov-93	Water	GW-22	[0.1±0.3] J
938977-19	5-Nov-93	Water	GW-23	0.0±0.3
938977-20	5-Nov-93	Water	GW-25	1.1±0.5
938977-21	5-Nov-93	Water	GW-26	[0.1±0.3] J
938977-24	5-Nov-93	Water	GW-27	[0.1±0.3] J



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Jan-94  
Page: R-18  
Copy: 1 of 3  
Status: Final

## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: K-40  
Fraction: Gamma Spec.  
Method: 901.1  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/24-12/10  
LLD: ---

Lab Id	Date Sampled	Matrix	Sample Id	Concentration ± 2σ
938977-1	5-Nov-93	Water	GW-3	530±50
938977-2	3-Nov-93	Water	GW-58	310±70
938977-3	3-Nov-93	Water	GW-57	380±60
938977-4	4-Nov-93	Water	GW-56R	450±60
938977-5	4-Nov-93	Water	GW-70	530±70
938977-6	3-Nov-93	Water	GW-36	590±60
938977-7	3-Nov-93	Water	GW-19A	590±60
938977-8	5-Nov-93	Water	GW-32	550±50
938977-9	5-Nov-93	Water	GW-37	520±70
938977-10	2-Nov-93	Water	GW-38	380±70
938977-11	3-Nov-93	Water	GW-63	580±60
938977-12	4-Nov-93	Water	GW-16R	330±70
938977-13	3-Nov-93	Water	GW-28	420±60
938977-14	4-Nov-93	Water	I-2-30	460±60
938977-15	3-Nov-93	Water	GW-60	400±70
938977-16	5-Nov-93	Water	GW-72	480±70
938977-17	5-Nov-93	Water	GW-29	480±70
938977-18	5-Nov-93	Water	GW-22	432±60
938977-19	5-Nov-93	Water	GW-23	510±70
938977-20	5-Nov-93	Water	GW-25	520±80
938977-21	5-Nov-93	Water	GW-26	320±70
938977-24	5-Nov-93	Water	GW-27	790±60





# BARRINGER LABORATORIES INC.

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Status: Final

## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Sr-90  
Fraction: Dissolved  
Method: 905.0  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 11/17-12/01  
LLD: 2.0

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	[0.7±0.8] J
938977-2	3-Nov-93	Water	GW-58	[0.5±1.0] J
938977-3	3-Nov-93	Water	GW-57	[1.3±1.4] J
938977-4	4-Nov-93	Water	GW-56R	0.0±1.4
938977-5	4-Nov-93	Water	GW-70	[0.5±1.4] J
938977-6	3-Nov-93	Water	GW-36	[0.6±1.4] J
938977-7	3-Nov-93	Water	GW-19A	[1.2±1.6] J
938977-8	5-Nov-93	Water	GW-32	[1.2±1.3] J
938977-9	5-Nov-93	Water	GW-37	[1.6±1.3] J
938977-10	2-Nov-93	Water	GW-38	[1.1±1.3] J
938977-11	3-Nov-93	Water	GW-63	[1.0±1.3] J
938977-12	4-Nov-93	Water	GW-16R	[0.2±1.2] J
938977-13	3-Nov-93	Water	GW-28	[0.4±1.3] J
938977-14	4-Nov-93	Water	I-2-30	[1.3±1.5] J
938977-15	3-Nov-93	Water	GW-60	[1.0±1.3] J
938977-16	5-Nov-93	Water	GW-72	0.0±1.3
938977-17	5-Nov-93	Water	GW-29	[1.8±1.4] J
938977-18	5-Nov-93	Water	GW-22	0.0±1.4
938977-19	5-Nov-93	Water	GW-23	[0.4±1.4] J
938977-20	5-Nov-93	Water	GW-25	[0.8±1.3] J
938977-21	5-Nov-93	Water	GW-26	[1.0±1.2] J
938977-24	5-Nov-93	Water	GW-27	0.0±1.3



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1887 FAX (303) 277-1889

12-Jan-94  
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Status: Final

## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Tc-99  
Fraction: Dissolved  
Method: 901.1  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 12/08-01/03  
LLD: 80

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	[0.1±3.9] J
938977-2	3-Nov-93	Water	GW-58	0.0±3.9
938977-3	3-Nov-93	Water	GW-57	[3.0±3.9] J
938977-4	4-Nov-93	Water	GW-56R	[1.5±3.7] J
938977-5	4-Nov-93	Water	GW-70	[3.4±3.9] J
938977-6	3-Nov-93	Water	GW-36	[1.4±3.9] J
938977-7	3-Nov-93	Water	GW-19A	0.0±4.4
938977-8	5-Nov-93	Water	GW-32	[1.1±4.2] J
938977-9	5-Nov-93	Water	GW-37	[1.3±4.5] J
938977-10	2-Nov-93	Water	GW-38	0.0±4.5
938977-11	3-Nov-93	Water	GW-63	[0.3±3.9] J
938977-12	4-Nov-93	Water	GW-16R	[1.3±3.8] J
938977-13	3-Nov-93	Water	GW-28	[3.1±3.8] J
938977-14	4-Nov-93	Water	I-2-30	[1.9±7.5] J
938977-15	3-Nov-93	Water	GW-60	[5.6±7.8] J
938977-16	5-Nov-93	Water	GW-72	[2.3±7.2] J
938977-17	5-Nov-93	Water	GW-29	[3.6±7.2] J
938977-18	5-Nov-93	Water	GW-22	[2.2±7.1] J
938977-19	5-Nov-93	Water	GW-23	[4.0±7.5] J
938977-20	5-Nov-93	Water	GW-25	[6.8±8.8] J
938977-21	5-Nov-93	Water	GW-26	0.0±7.8
938977-24	5-Nov-93	Water	GW-27	[2.3±7.6] J



# BARRINGER LABORATORIES INC.

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Status: Final

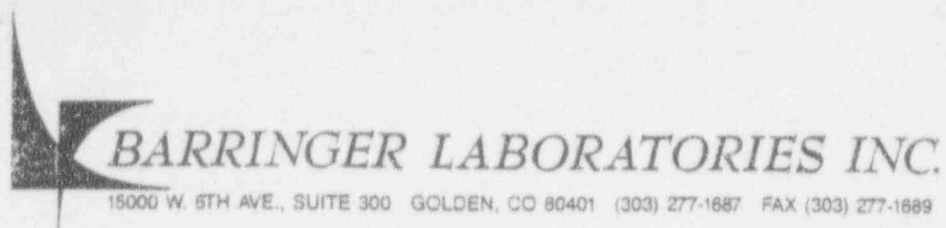
## ENVIROCARE OF UTAH, INC.

### AMENDED REPORT

Analyte: Tritium  
Fraction: Dissolved  
Method: 906.0  
Units: pCi/l

Project: LARW Groundwater  
Date Analyzed: 12/04-12/10  
LLD: 460

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2σ
938977-1	5-Nov-93	Water	GW-3	0±309
938977-2	3-Nov-93	Water	GW-58	0±309
938977-3	3-Nov-93	Water	GW-57	0±309
938977-4	4-Nov-93	Water	GW-56R	[5±309]J
938977-5	4-Nov-93	Water	GW-70	0±309
938977-6	3-Nov-93	Water	GW-36	0±309
938977-7	3-Nov-93	Water	GW-19A	0±309
938977-8	5-Nov-93	Water	GW-32	0±309
938977-9	5-Nov-93	Water	GW-37	0±309
938977-10	2-Nov-93	Water	GW-38	0±309
938977-11	3-Nov-93	Water	GW-63	1200±300
938977-12	4-Nov-93	Water	GW-16R	0±309
938977-13	3-Nov-93	Water	GW-28	0±309
938977-14	4-Nov-93	Water	I-2-30	0±309
938977-15	3-Nov-93	Water	GW-60	0±309
938977-16	5-Nov-93	Water	GW-72	[100±310]J
938977-17	5-Nov-93	Water	GW-29	0±309
938977-18	5-Nov-93	Water	GW-22	[30±310]J
938977-19	5-Nov-93	Water	GW-23	0±309
938977-20	5-Nov-93	Water	GW-25	0±309
938977-21	5-Nov-93	Water	GW-26	0±309
938977-24	5-Nov-93	Water	GW-27	0±309



ENVIROCARE OF UTAH, INC.  
46 West Broadway, Suite 240  
Salt Lake City, UT 84101

30-Dec-93

Page: i  
Copy: 1 of 2

Attn:  
Project: LARW

PO #:

Received: 23-Nov-93 11:00

Job: 939063E

Status: Final

### CASE NARRATIVE

A total of 3 Water samples were received on 23-Nov-93. All were properly preserved and in good condition. As stated in the chain of custody, the samples were run for the following analyses: Fluorine, Gross Alpha, Gross Beta, Ra-226, Ra-228, Th-230, Th-232, U, Be-7, Cd-109, C-14, Co-60, I-129, Pb-210, Mn-54, Np-237, Po-210, K-40, Sr-90, Tc-99 and Tritium. Our procedures are summarized on the Quality Control Data Sheet. All samples were extracted and analyzed within the proper holding times.

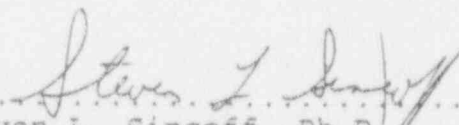
Quality control standards for organic and inorganic analyses followed the appropriate SW-846 or EPA methodology. For radiochemistry, the acceptance criteria for spikes and laboratory control standards is fifteen percent, plus the counting error. Duplicates will pass if the Replicate Error Ratio (RER) is 1.00 or less. The RER is defined as follows:

$$RER = \frac{ABS(R2 - R1)}{SQRT(ERROR1^2 + ERROR2^2)}$$

where: R1/R2 = original/duplicate sample result  
ERROR1/ERROR2 = total 2 sigma uncertainty of R1/R2

All QC checks, including duplicates, spikes, and blanks, passed.

Signed:

  
.....  
Steven L. Sincoff, Ph.D.  
Director of Operations



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Dec-93

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Status: Final

## ENVIROCARE OF UTAH, INC.

Analyte: Fluorine  
Fraction:  
Method: 300.0

Project: LARW  
Date Analyzed: 7-Dec-93  
Units: mg/l

Lab Id	Date Sampled	Matrix	Sample Id	Concentration	MDL
939063-1	22-Nov-93	Water	GW-80 (GW-24)	0.6	0.1
939063-2	22-Nov-93	Water	GW-81 (GW-25)	0.7	0.1
939063-3	22-Nov-93	Water	GW-82 (Dup of GW-20)	0.7	0.1



# BARRINGER LABORATORIES INC.

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Status: Final

## ENVIROCARE OF UTAH, INC.

Sample Id: GW-80 (GW-24)

Lab Id: 939063-1

Date Sampled: 22-Nov-93

Project: LARW

Matrix: Water

Analyte	Fraction	Conc. + 2σ	LLD	Date Analyzed
Gross Alpha	Dissolved	120±200 pCi/l	2	12/08-12/15
Gross Beta	Dissolved	420±190 pCi/l	4	12/08-12/15
Ra-226	Dissolved	0.9±0.5 pCi/l	0.3	12/15-12/17
Ra-228	Dissolved	3.5±1.2 pCi/l	1	12/06-12/14
Th-230	Dissolved	0.0±0.4 pCi/l	0.4	12/14-12/16
Th-232	Dissolved	0.0±0.4 pCi/l	0.4	12/14-12/16
U	Dissolved	0.0118 mg/l	0.0003	12/08-12/10
Be-7	Gamma Spe	<15 pCi/l	---	12/15-12/16
Cd-109	Gamma Spe	<34 pCi/l	---	12/15-12/16
C-14	Dissolved	10±11 pCi/l	3	12/02-12/09
Co-60	Gamma Spe	<1.6 pCi/l	---	12/15-12/16
I-129	Dissolved	[1.0±5.5] pCi/l	1	12/08-12/30
Pb-210	Dissolved	0.7±1.4 pCi/l	2	11/29-12/10
Mn-54	Gamma Spe	<1.4 pCi/l	---	12/15-12/16
Np-237	Dissolved	[0.3±0.6] pCi/l	0.5	12/17-12/29
Po-210	Dissolved	[0.1±0.3] pCi/l	1	12/14-12/16
K-40	Gamma Spe	410±60 pCi/l	---	12/15-12/16
Sr-90	Dissolved	1.3±1.0 pCi/l	1	12/01-12/13
Tc-99	Dissolved	1.2±3.0 pCi/l	1	12/11-12/16
Tritium	Dissolved	[180±290] pCi/l	460	12/15-12/16



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

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Copy: 1 of 2  
Status: Final

## ENVIROCARE OF UTAH, INC.

Sample Id: GW-81 (GW-2e)  
Lab Id: 939063-2  
Date Sampled: 22-Nov-93

Project: LARW  
Matrix: Water

Analyte	Fraction	Conc. + 2σ	LLD	Date Analyzed
Gross Alpha	Dissolved	70±190 pCi/l	2	12/08-12/15
Gross Beta	Dissolved	470±200 pCi/l	4	12/08-12/15
Ra-226	Dissolved	1.5±0.8 pCi/l	0.3	12/15-12/17
Ra-228	Dissolved	3.0±1.2 pCi/l	1	12/06-12/14
Th-230	Dissolved	0.0±0.4 pCi/l	0.4	12/14-12/16
Th-232	Dissolved	0.0±0.3 pCi/l	0.4	12/14-12/16
U	Dissolved	0.0081 mg/l	0.0003	12/08-12/10
Be-7	Gamma Spe	<19 pCi/l	---	12/15-12/16
Cd-109	Gamma Spe	<39 pCi/l	---	12/15-12/16
C-14	Dissolved	8±12 pCi/l	3	12/02-12/09
Co-60	Gamma Spe	<2.1 pCi/l	---	12/15-12/16
I-129	Dissolved	[0.7±5.9] pCi/l	1	12/08-12/30
Pb-210	Dissolved	[1.1±1.4] pCi/l	2	11/29-12/10
Mn-54	Gamma Spe	<2.0 pCi/l	---	12/15-12/16
Np-237	Dissolved	[0.4±0.6] pCi/l	0.5	12/17-12/29
Po-210	Dissolved	[0.4±0.3] pCi/l	1	12/14-12/16
K-40	Gamma Spe	500±80 pCi/l	---	12/15-12/16
Sr-90	Dissolved	[1.0±1.1] pCi/l	1	12/01-12/13
Tc-99	Dissolved	[0.3±2.8] pCi/l	1	12/11-12/16
Tritium	Dissolved	[20±290] pCi/l	460	12/15-12/16



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Dec-93

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Status: Final

## ENVIROCARE OF UTAH, INC.

Sample Id: GW-82 (Duplicate of 6w-20)

Lab Id: 939063-3

Project: LARW

Date Sampled: 22-Nov-93

Matrix: Water

Analyte	Fraction	Conc. + 2σ	LLD	Date Analyzed
Gross Alpha	Dissolved	0±178 pCi/l	2	12/08-12/15
Gross Beta	Dissolved	790±210 pCi/l	4	12/08-12/15
Ra-226	Dissolved	1.1±0.6 pCi/l	0.3	12/15-12/17
Ra-228	Dissolved	2.6±1.2 pCi/l	1	12/06-12/14
Th-230	Dissolved	0.2±0.5 pCi/l	0.4	12/14-12/16
Th-232	Dissolved	0.0±0.3 pCi/l	0.4	12/14-12/16
U	Dissolved	0.0088 mg/l	0.0003	12/08-12/10
Be-7	Gamma Spe	<16 pCi/l	---	12/15-12/16
Cd-109	Gamma Spe	<35 pCi/l	---	12/15-12/16
C-14	Dissolved	4±15 pCi/l	3	12/02-12/09
Co-60	Gamma Spe	<2.0 pCi/l	---	12/15-12/16
I-129	Dissolved	0.3±5.3 pCi/l	1	12/08-12/30
Pb-210	Dissolved	0.3±1.4 pCi/l	2	11/29-12/10
Mn-54	Gamma Spe	<1.9 pCi/l	---	12/15-12/16
Np-237	Dissolved	0.1±0.5 pCi/l	0.5	12/17-12/29
Po-210	Dissolved	0.2±0.3 pCi/l	1	12/14-12/16
K-40	Gamma Spe	520±70 pCi/l	---	12/15-12/16
Sr-90	Dissolved	0.6±1.1 pCi/l	1	12/01-12/13
Tc-99	Dissolved	2.3±3.1 pCi/l	1	12/11-12/16
Tritium	Dissolved	0±290 pCi/l	460	12/15-12/16



ATTACHMENT 3

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QUALITY ASSURANCE/QUALITY CONTROL  
DOCUMENTATION

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FIELD DUPLICATES OF GW-16R, GW-20 AND GW-29



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-10  
Field Sample ID: November LARW Sampling/GW-70 (Field Duplicate of GW-162)

Contact: Jeff Lowe  
Received By: Jennifer Habel

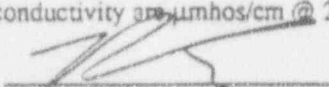
### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	0.013	11/16/93
Barium	6010	0.002	0.036	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.035	11/29/93
Calcium	6010	0.01	400	11/29/93
Chromium	6010	0.005	0.084	11/29/93
Copper	6010	0.005	0.031	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	550	11/29/93
Mercury	7471	0.0002	0.0004	11/11/93
Molybdenum	6010	0.1	0.1	11/29/93
Nickel	6010	0.01	0.1	11/29/93
Potassium	6010	0.01	490	11/29/93
Selenium	7740	0.005	ND	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	16000	11/29/93
Zinc	6010	0.002	0.038	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	290	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	24000	11/5/93
Conductivity†	120.1	N/A	78000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	3	11/15/93
Nitrate (as N)	353.2	0.01	0.01	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	0.01	11/9/93
pH	150.1	0.1	7.4	11/6/93
Sulfate	375.4	0.5	1800	11/5/93
TDS	160.1	10.	41000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			3.31	

463 West 3600 South  
Salt Lake City, Utah  
84115

(801) 263-8686  
Fax (801) 263-8687

† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

Released by:   
Laboratory Supervisor

Report Date 12/9/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 4, 1993  
Lab Sample ID Number: 16511-05  
Field Sample ID: November LARW Sampling/GW-71 (Field Duplicate of GW-20)

Contact: Jeff Lowe  
Received By: Jennifer Habel

### Analytical Results

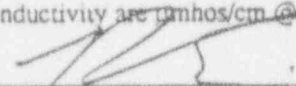
	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	0.026	11/16/93
Barium	6010	0.002	0.025	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.034	11/29/93
Calcium	6010	0.01	410	11/29/93
Chromium	6010	0.005	0.12	11/29/93
Copper	6010	0.005	0.029	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	820	11/29/93
Mercury	7471	0.0002	0.0004	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.17	11/29/93
Potassium	6010	0.01	560	11/29/93
Selenium	7740	0.005	ND	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	16000	11/29/93
Zinc	6010	0.002	0.025	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	200	11/6/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/6/93
Chloride	325.3	0.5	24000	11/5/93
Conductivity†	120.1	N/A	83000	11/5/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	2.9	11/15/93
Nitrate (as N)	353.2	0.01	0.1	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	0.1	11/9/93
pH	150.1	0.1	7.3	11/6/93
Sulfate	375.4	0.5	3100	11/5/93
TDS	160.1	10.	48000	11/8/93
TOC	415.2	1.0	ND	11/9/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			3.23	

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84115

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† Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 8, 1993  
Lab Sample ID Number: 16534-01  
Field Sample ID: November LARW Sampling/GW-72 (Field Duplicate of GW-29)

Contact: Jeff Lowe  
Received By: Elona Hayward

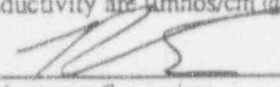
### Analytical Results

	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	0.017	11/16/93
Barium	6010	0.002	0.027	11/29/93
Beryllium	6010	0.005	ND	11/29/93
Cadmium	6010	0.004	0.036	11/29/93
Calcium	6010	0.01	530	11/29/93
Chromium	6010	0.005	0.11	11/29/93
Copper	6010	0.005	0.03	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	810	11/29/93
Mercury	7471	0.0002	0.0003	11/11/93
Molybdenum	6010	0.1	0.3	11/29/93
Nickel	6010	0.01	0.12	11/29/93
Potassium	6010	0.01	540	11/29/93
Selenium	7740	0.005	ND	11/16/93
Silver	6010	0.005	ND	11/29/93
Sodium	6010	0.01	16000	11/29/93
Zinc	6010	0.002	0.024	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	300	11/10/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Chloride	325.3	0.5	23000	11/8/93
Conductivity†	120.1	N/A	78000	11/10/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	3.3	11/15/93
Nitrate (as N)	353.2	0.01	0.01	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	0.01	11/9/93
pH	150.1	0.1	7.4	11/10/93
Sulfate	375.4	0.5	3600	11/8/93
TDS	160.1	10.	49000	11/8/93
TOC	415.2	1.0	ND	11/11/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			4.5	

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† Units for conductivity are umhos/cm @ 25°C

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## INORGANIC ANALYSIS REPORT

Client: Envirocare of Utah  
Date Received: December 22, 1993  
Lab Sample ID. Number: 17136-05  
Field Sample ID.: Clive/GW-1 (Duplicate of 6w-27)

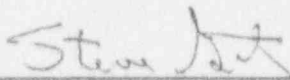
Contact: Jeff Low  
Received By: Jennifer Habel  
Date Analyzed: December 28, 1993

### Analytical Results

463 West 3600 South Salt Lake City, Utah 84115	<u>Method Used:</u>	<u>Detection Limit:</u> mg/L	<u>Amount Detected:</u> mg/L	
	TOX	9020	0.005	<0.005

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TRIP BLANK



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## INORGANIC ANALYSIS REPORT

Client: EnviroCare  
Date Received: November 8, 1993  
Lab Sample ID Number: 16534-10  
Field Sample ID: November LARW Sampling/Trip Blank

Contact: Jeff Lowe  
Received By: Elona Hayward

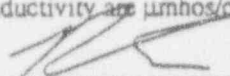
### Analytical Results

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84115

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	Method Used:	Detection Limit: mg/L	Amount Detected: mg/L	Date Analyzed
<b>DISSOLVED METALS</b>				
Arsenic	7060	0.005	[ND] $\leq 5$	11/16/93
Barium	6010	0.002	ND	11/29/93
Beryllium	6010	0.005	[ND] $\leq 5$	11/29/93
Cadmium	6010	0.004	ND	11/29/93
Calcium	6010	0.01	ND	11/29/93
Chromium	6010	0.005	ND	11/29/93
Copper	6010	0.005	ND	11/29/93
Lead	7421	0.005	ND	11/16/93
Magnesium	6010	0.01	ND	11/29/93
Mercury	7471	0.0002	ND	11/11/93
Molybdenum	6010	0.1	ND	11/29/93
Nickel	6010	0.01	ND	11/29/93
Potassium	6010	0.01	ND	11/29/93
Selenium	7740	0.005	[ND] $\leq 5$	11/16/93
Silver	6010	0.005	[ND] $\leq 5$	11/29/93
Sodium	6010	0.01	ND	11/29/93
Zinc	6010	0.002	0.007	11/29/93
<b>OTHER CHEMISTRIES</b>				
Bicarbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Carbonate (as CaCO <sub>3</sub> )	310.1	10.	ND	11/10/93
Chloride	325.3	0.5	ND	11/8/93
Conductivity <sup>†</sup>	120.1	N/A	ND	11/10/93
Cyanide	335.3	0.005	ND	11/16/93
Fluoride	340.1	0.1	ND	11/15/93
Nitrate (as N)	353.2	0.01	ND	11/9/93
Nitrate/Nitrite (as N)	353.2	0.01	ND	11/9/93
pH	150.1	0.1	5	11/10/93
Sulfate	375.4	0.5	ND	11/8/93
TDS	160.1	10.	ND	11/8/93
TOC	415.2	1.0	ND	11/11/93
TOX	9020	0.005	ND	11/10/93
Ion Balance			0.0	

<sup>†</sup> Units for conductivity are  $\mu\text{mhos/cm}$  @ 25°C

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CHEMICAL LABORATORY QUALITY CONTROL REPORT



## QUALITY CONTROL REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Sample Number: 16470

Contact: Jeff Lowe  
Received By: Jennifer Habel  
Set Description: One Water Sample

### Quality Control Results

Units = (ppm)

Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
16470-01	Arsenic	0.034	0.067	0.082	0.081	71.6	70.1	1.2
16470-01	Barium	0.034	1.1	1.01	1.02	88.7	89.6	-1.0
16470-01	Beryllium	0.0	1.1	0.92	0.93	83.6	84.5	-1.1
16470-01	Cadmium	0.029	1.1	0.97	0.98	85.5	86.5	-1.0
16470-01	Chromium	0.085	1.1	1.06	1.07	88.6	89.5	-0.9
16470-01	Copper	0.031	1.1	1.17	1.19	103.5	105.4	-1.7
16470-01	Lead	0.0	0.067	0.058	0.058	86.6	86.6	0.0
16511-01	Mercury	0.0005	0.005	0.0054	0.0053	97.1	93.1	3.8
16470-01	Molybdenum	0.3	1.1	1.29	1.30	90.0	90.9	-0.8
16470-01	Nickel	0.10	1.1	1.04	1.06	85.5	87.3	-1.9
16470-01	Selenium	0.009	0.067	0.057	0.057	71.6	71.6	0.0
16470-01	Silver	0.0	1.1	1.18	1.07	107.3	97.3	9.8
16470-01	Zinc	0.030	1.1	1.24	1.27	110.0	112.7	-2.4

$$RPD = \frac{(SSR - SDR)}{\frac{(SSR + SDR)}{2}} * 100$$

$$\%SR = \frac{(SSR - SR)}{SA} * 100$$

$$\%SDR = \frac{(SDR - SR)}{SA} * 100$$

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Report Date 12/9/93

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## QUALITY CONTROL REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Sample Number: 16470

Contact: Jeff Lowe  
Received By: Jennifer Habel  
Set Description: One Water Sample

### Quality Control Results

Units = (ppm)

Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
16511-01	Bicarb/Carb	322.16	125.	444.6	447.3	98.0	100.1	-0.6
16470-01	Chloride	19,739.	4,991.	24,617.	24,730.	97.7	100.0	-0.5
16470-01	Conductivity	68,992.	†	†	69,120.	†	†	-0.2
16511-15	Cyanide, Total	0.0	0.1	0.1086	0.1071	108.6	107.1	1.4
16511-01	Fluoride	2.78	10.	11.54	11.73	87.6	89.5	-1.6
16470-01	Sulfate	2,700.	4,000.	7,000.	7,000.	107.5	107.5	0.0
16470-01	TDS	38,663.	†	†	38,668.	†	†	-0.0
16470-01	TOC	0.0	401.	384.	391.	95.8	97.5	-1.8
16470-01	TOX	0.0	5.0	5.55	5.47	111.0	109.4	1.5

$$RPD = \frac{(SSR - SDR)}{\left(\frac{SSR + SDR}{2}\right)} * 100$$

$$\%SR = \frac{(SSR - SR)}{SA} * 100$$

$$\%SDR = \frac{(SDR - SR)}{SA} * 100$$

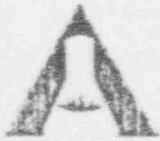
† Spikes not used for these parameters. Original and Duplicate results reported as spike & spike duplicate to calculate RPD value.

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Report Date 12/9/93

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## QUALITY CONTROL REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Sample Number: 16511

Contact: Jeff Lowe  
Received By: Jennifer Habel  
Set Description: Fifteen Water Samples

### Quality Control Results

Units = (ppm)

Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
16470-01	Arsenic	0.034	0.067	0.082	0.081	71.6	70.1	1.2
16470-01	Barium	0.034	1.1	1.01	1.02	88.7	89.6	-1.0
16470-01	Beryllium	0.0	1.1	0.92	0.93	83.6	84.5	-1.1
16470-01	Cadmium	0.029	1.1	0.97	0.98	85.5	86.5	-1.0
16470-01	Chromium	0.085	1.1	1.06	1.07	88.6	89.5	-0.9
16470-01	Copper	0.031	1.1	1.17	1.19	103.5	105.4	-1.7
16470-01	Lead	0.0	0.067	0.058	0.058	86.6	86.6	0.0
16511-01	Mercury	0.0005	0.005	0.0054	0.0053	97.1	93.1	3.8
16470-01	Molybdenum	0.3	1.1	1.29	1.30	90.0	90.9	-0.8
16470-01	Nickel	0.10	1.1	1.04	1.06	85.5	87.3	-1.9
16470-01	Selenium	0.009	0.067	0.057	0.057	71.6	71.6	0.0
16470-01	Silver	0.0	1.1	1.18	1.07	107.3	97.3	9.8
16470-01	Zinc	0.030	1.1	1.24	1.27	110.0	112.7	-2.4

$$RPD = \frac{(SSR - SDR)}{\left(\frac{SSR + SDR}{2}\right)} * 100$$

$$\%SR = \frac{(SSR - SR)}{SA} * 100$$

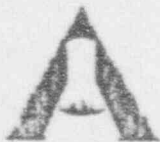
$$\%SDR = \frac{(SDR - SR)}{SA} * 100$$

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## QUALITY CONTROL REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Sample Number: 16511

Contact: Jeff Lowe  
Received By: Jennifer Habel  
Set Description: Fifteen Water Samples

### Quality Control Results

Units = (ppm)

Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
16511-12	Bicarb/Carb	322.16	125.	444.6	447.3	98.	100.1	-0.6
16470-01	Chloride	19,739.	5,000.	24,617.	24,730.	97.6	99.8	-0.5
16470-01	Conductivity	68,992.	†	†	69,120.	†	†	-0.2
16511-15	Cyanide, Total	0.0	0.1	0.1086	0.1071	108.6	107.1	1.4
16511-01	Fluoride	2.78	10.0	11.54	11.73	87.6	89.5	-1.6
16511-15	Nitrate	0.0	0.1	0.108	0.106	108.0	106.0	1.9
16470-01	Sulfate	2,700.	4,000.	7,000.	7,000.	107.5	107.5	0.0
16511-15	TDS	52,644.3	†	†	51,014.8	†	†	3.1
16470-01	TOC	0.0	400.	384.	391.	96.0	97.8	-1.8
16511-13	TOX	0.0	5.0	5.133	5.123	102.7	102.5	0.2

$$RPD = \frac{(SSR - SDR)}{\left(\frac{SSR + SDR}{2}\right)} * 100$$

$$\%SR = \frac{(SSR - SR)}{SA} * 100$$

$$\%SDR = \frac{(SDR - SR)}{SA} * 100$$

† Spikes not used for these parameters. Original and Duplicate results reported as spike & spike duplicate to calculate RPD value.

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Report Date 12/9/93

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## QUALITY CONTROL REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Sample Number: 16534

Contact: Jeff Lowe  
Received By: Elona Hayward  
Set Description: Eighteen Water Samples

### Quality Control Results

Units = (ppm)

Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
16534-01	Arsenic	0.020	0.067	0.068	0.067	71.6	70.1	1.5
16511-01	Barium	0.033	1.1	0.90	1.0	78.8	87.9	-10.
16511-01	Beryllium	0.0	1.1	0.81	0.90	73.6	81.8	-10.
16511-01	Cadmium	0.037	1.1	0.90	1.0	78.5	87.5	-10.
16511-01	Chromium	0.12	1.1	1.0	1.1	80.0	89.1	-9.5
16511-01	Copper	0.033	1.1	1.06	1.13	93.4	99.7	-6.4
16534-05	Lead	0.0	0.067	0.058	0.062	86.6	92.5	-6.7
16534-01	Mercury	0.0003	0.005	0.0055	0.0054	103.6	102.0	1.5
16511-01	Molybdenum	0.4	1.1	1.3	1.4	81.8	90.9	-7.4
16511-01	Nickel	0.24	1.1	1.1	1.2	78.2	87.3	-8.7
16534-05	Selenium	0.0	0.067	0.050	0.049	74.6	73.1	2.0
16511-01	Silver	0.0	1.1	1.3	1.4	118.2	127.3	-7.4
16511-01	Zinc	0.027	1.1	1.2	1.3	106.6	115.7	-8.0

$$RPD = \frac{(SSR - SDR)}{\frac{(SSR + SDR)}{2}} * 100$$

$$\%SR = \frac{(SSR - SR)}{SA} * 100$$

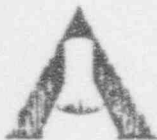
$$\%SDR = \frac{(SDR - SR)}{SA} * 100$$

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## QUALITY CONTROL REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Sample Number: 16534

Contact: Jeff Lowe  
Received By: Elona Hayward  
Set Description: Eighteen Water Samples

### Quality Control Results

Units = (ppm)


Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
16534-01	Bicarb/Carb	298.	250.	554.	551.	102.4	101.2	0.5
16534-01	Chloride	22,915.	5,000.	28,020.	27,906.	102.1	99.8	0.4
16534-01	Conductivity	77,868.	†	†	77,994.	†	†	-0.2
16534-09	Cyanide, Total	0.0	0.1	0.0987	0.1047	98.7	104.7	-5.9
16534-01	Fluoride	3.3	10.	11.93	12.13	85.9	87.9	-1.7
16564-01	Nitrate	0.013	0.1	0.110	0.1075	97.0	94.5	2.3
16534-02	Sulfate	1,500.	4,000.	5,500.	5,900.	100.0	110.0	-7.0
16534-09	TDS	49,028.	†	†	50,036.	†	†	-2.6
16534-01	TOC	0.0	400.	363.	379.	90.8	94.8	-4.3
16534-07	TOX	0.0	5.0	5.11	5.16	102.2	103.2	-1.0

$$RPD = \frac{(SSR - SDR)}{\left(\frac{SSR + SDR}{2}\right)} * 100$$

$$\%SR = \frac{(SSR - SR)}{SA} * 100$$

$$\%SDR = \frac{(SDR - SR)}{SA} * 100$$

† Spikes not used for these parameters. Original and Duplicate results reported as spike & spike duplicate to calculate RPD value.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

1 of 1



### QUALITY CONTROL REPORT

Client: Envirocare of Utah  
Date Received: December 22, 1993  
Sample Number: 17136

Contact: Jeff Low  
Received By: Jennifer Habel  
Set Description: Five Water Samples

#### Quality Control Results

Units = mg/L (ppm)

Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
17136-02	TDS	46,395.	†	†	48,428.	†	†	-4.3
17136-04	TOX	0.0	5.0	4.693	4.643	93.9	92.9	1.1

† Spikes not used for these parameters. Original and Duplicate results reported as spike & spike duplicate to calculate RPD value.

$$RPD = \frac{(SSR - SDR)}{\frac{(SSR + SDR)}{2}} \cdot 100$$

$$\%SR = \frac{(SSR - SR)}{SA} \cdot 100$$

$$\%SDR = \frac{(SDR - SR)}{SA} \cdot 100$$

Released by:

Laboratory Supervisor

Report Date 12/31/93

1 of 1



**RADIOLOGICAL LABORATORY QUALITY CONTROL REPORT**



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

10-Jan-94  
Page: Q-1  
Copy: 1 of 1  
Status: Final

## ENVIROCARE OF UTAH, INC.

### QUALITY CONTROL REPORT

<u>Sample Id</u>	<u>Fluorine Dissolved mg/l</u>
Duplicate	6
Duplicate	6
Duplicate % diff.	0.0
Std (found value)	4.6
Std (true value)	5.0
Std % rec.	92
Blank	U
Spike % rec.	81



# BARRINGER LABORATORIES INC.

15000 W. 8TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Jan-94  
Page: Q-1  
Copy: 1 of 3  
Status: Final

ENVIROCARE OF UTAH, INC.

## QUALITY CONTROL REPORT

<u>Sample Id</u>	<u>Fluorine Dissolved mg/l</u>
Duplicate	6
Duplicate	6
Duplicate % diff.	0.0
Std (found value)	4.6
Std (true value)	5.0
Std % rec.	92
Blank	U
Spike % rec.	81



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1887 FAX (303) 277-1889

12-Jan-94  
Page: Q-2  
Copy: 1 of 3  
Status: Final

## ENVIROCARE OF UTAH, INC.

### QUALITY CONTROL REPORT

Sample Id	Gross Alpha Dissolved		Gross Beta Dissolved	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	30	±120	310	±130
Duplicate	50	±130	230	±130
RER	0.09		0.32	
Std (found value)	213	±6	102	±2
Std (true value)	200		101	
Std % rec.	106		101	
Blank	0.0	±0.1	0.0	±0.3
Spike % rec.	106		86	

Sample Id	Ra-226 Dissolved		Ra-228 Dissolved	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	3.6	±1.0	0.6	±1.5
Duplicate	3.5	±1.0	0.9	±1.5
RER	0.04		0.13	
Std (found value)	83	±3	23	±1
Std (true value)	100		20	
Std % rec.	83		115	
Blank	0.0	±0.1	0.0	±0.7
Spike % rec.	91		105	

Sample Id	Th-230 Dissolved		Th-232 Dissolved		U Dissolved
	pCi/l	+ 2σ	pCi/l	+ 2σ	mg/l
Duplicate	0.0	±0.4	0.0	±0.5	0.0196
Duplicate	0.7	±0.8	0.0	±0.5	0.0188
RER	0.99		0.00		0.18
Std (found value)	97	±3	19	±4	0.0514
Std (true value)	101		18		0.0500
Std % rec.	96		106		103
Blank	0.1	±0.3	0.0	±0.2	U
Spike % rec.	85		---		96



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Jan-94  
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Status: Final

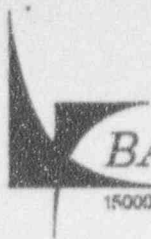
## ENVIROCARE OF UTAH, INC.

### QUALITY CONTROL REPORT

Sample Id	Be-7 Gamma Spec.		Cd-109 Gamma Spec.	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	<17		<33	
Duplicate	<16		<32	
RER	---		---	
Std (found value)	1730	±36	1730	±36
Std (true value)	1938		1938	
Std % rec.	89.3		89.3	
Blank	---		---	
Spike % rec.	---		---	

Sample Id	C-14 Dissolved		Co-60 Gamma Spec.	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	8	±26	<1.9	
Duplicate	8	±13	<1.9	
RER	0.00		---	
Std (found value)	1094	±17	1730	±36
Std (true value)	992		1938	
Std % rec.	110		89.3	
Blank	0.0	±2.0	---	
Spike % rec.	87		---	

Sample Id	I-129 Dissolved		Pb-210 Dissolved	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	0.8	±0.9	1.9	±2.3
Duplicate	0.0	±1.6	7.7	±5.1
RER	0.42		0.86	
Std (found value)	1133	±5	42.1	±1.4
Std (true value)	993		38.5	
Std % rec.	114		110	
Blank	0.0	±0.8	0.0	±0.8
Spike % rec.	104		105	



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Jan-94  
Page: Q-4  
Copy: 1 of 3  
Status: Final

## ENVIROCARE OF UTAH, INC.

### QUALITY CONTROL REPORT

Sample Id	Mn-54	Np-237
	Gamma Spec.	Dissolved
	pCi/l + 2σ	pCi/l + 2σ
Duplicate	<1.8	0.0 ±0.5
Duplicate	<1.6	0.0 ±0.7
RER	---	0.00
Std (found value)	1730 ±36	72 ±3
Std (true value)	1938	67
Std % rec.	89.3	107
Blank	---	0.2 ±0.2
Spike % rec.	---	86

Sample Id	Po-210	K-40
	Dissolved	Gamma Spec.
	pCi/l + 2σ	pCi/l + 2σ
Duplicate	0.0 ±0.3	530 ±50
Duplicate	0.1 ±0.3	480 ±60
RER	0.23	0.27
Std (found value)	91 ±2	1730 ±36
Std (true value)	92	1938
Std % rec.	99	89.3
Blank	0.0 ±0.1	---
Spike % rec.	106	---

Sample Id	Sr-90	Tc-99
	Dissolved	Dissolved
	pCi/l + 2σ	pCi/l + 2σ
Duplicate	1.2 ±1.3	1.9 ±7.5
Duplicate	2.6 ±2.7	2.3 ±7.2
RER	0.39	0.04
Std (found value)	50.4 ±1.5	91 ±3
Std (true value)	49.5	99.8
Std % rec.	102	91
Blank	0.9 ±0.6	0.2 ±0.7
Spike % rec.	95	99



# BARRINGER LABORATORIES INC.

16000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Jan-94  
Page: Q-5  
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Status: Final

## ENVIROCARE OF UTAH, INC.

### QUALITY CONTROL REPORT

Sample Id	Tritium Dissolved	
	pCi/l	+ 2σ
Duplicate	0	±309
Duplicate	0	±309
RER	0.00	
Std (found value)	18545	±690
Std (true value)	18260	
Std % rec.	102	
Blank	0	±307
Spike % rec.	106	



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Jan-94

ENVIROCARE OF UTAH, INC.  
46 West Broadway, Suite 240  
Salt Lake City, UT 84101

Page: Q-6  
Copy: 1 of 3

Attn:  
Project: LARW Groundwater

PO #:

Received: 15-Nov-93 09:30

Job: 938977E

Status: Final

### Abbreviations:

### Parameters:

Ra-226	:	Radium-226
Ra-228	:	Radium-228
Th-230	:	Thorium-230
Th-232	:	Thorium-232
U	:	Uranium
Be-7	:	Beryllium-7
Cd-109	:	Cadmium-109
C-14	:	Carbon-14
Co-60	:	Cobalt-60
I-129	:	Iodine-129
Pb-210	:	Lead-210
Mn-54	:	Manganese-54
Np-237	:	Neptunium-237
Po-210	:	Polonium-210
K-40	:	Potassium-40
Sr-90	:	Strontium -90
Tc-99	:	Technetium-99

### Methods:

Gamma Spec. : Gamma Spectroscopy

### Units:

mg/l	:	milligrams per liter
pCi/l	:	picoCuries per liter

### Quality codes:

<	:	Not Detected- below detection limit.
U	:	undetected





# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Jan-94

ENVIROCARE OF UTAH, INC.  
46 West Broadway, Suite 240  
Salt Lake City, UT 84101

Page: Q-7  
Copy: 1 of 3

Attn:  
Project: LARW Groundwater

PO #:

Received: 15-Nov-93 09:30

Job: 938977E

Status: Final

## AMENDED REPORT

### QUALITY CONTROL DATA SHEET

Received by: rc

Via: UPS

Sample Container Type: lg cu, 1l pl, 500 ml  
Additional Lab Preparation: None

Parameter	Method	Preservative	Analyst	Analysis Dates
Fluorine	300.0	None	Trulson	11/17
Gross Alpha	900.0	HNO3	Knox	11/29-12/02
Gross Beta	900.0	HNO3	Knox	11/29-12/02
Ra-226	SM-705	HNO3	Boucher	12/03-12/08
Ra-228	Perc/Brooks	HNO3	Seidel	11/24-12/10
Th-230	USAEC	HNO3	Ortiz	12/01-12/21
Th-232	USAEC	HNO3	Ortiz	12/01-12/21
U	ASTM D2907	HNO3	Meyer	12/08-12/10
Be-7	901.1	HNO3	Stringer	11/24-12/10
Cd-109	901.1	HNO3	Stringer	11/24-12/10
C-14	520-84-006	None	Myers	11/29-12/09
Co-60	901.1	HNO3	Stringer	11/24-12/10
I-129	902.0	HNO3	Boucher	12/08-12/22
Pb-210	USGS	HNO3	Wheeler	11/22-12/06
Mn-54	901.1	HNO3	Stringer	11/24-12/10
Np-237	907.0	HNO3	MFH	11/22-12/16
Po-210	UKAEA	HNO3	Ortiz	12/06-12/08
K-40	901.1	HNO3	Stringer	11/24-12/10
Sr-90	905.0	HNO3	Wheeler	11/17-12/01
Tc-99	901.1	HNO3	Preston	12/08-01/03
Tritium	906.0	None	Meyer	12/04-12/10



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Jan-94

ENVIROCARE OF UTAH, INC.  
46 West Broadway, Suite 240  
Salt Lake City, UT 84101

Page: Q-8  
Copy: 1 of 3

Attn: Project: LARW Groundwater

PO #:

Received: 15-Nov-93 09:30

Job: 938977E

Status: Final

Signed:

*Bill Myer* .....  
Inorganic / Radiochemical  
Laboratory Managers

Barringer Laboratories, Inc. will return or dispose of your samples 30 days from the date your final report is mailed, unless otherwise specified by contract. Barringer Laboratories, Inc. reserves the right to return samples prior to the 30 days if radioactive levels exceed our license.

cc: Jesse Garcia, ENVIROCARE OF UTAH, INC.



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1657 FAX (303) 277-1689

30-Dec-93

Page: Q-1

Copy: 1 of 2

Status: Final

## ENVIROCARE OF UTAH, INC.

### QUALITY CONTROL REPORT

#### Fluorine

<u>Sample Id</u>	<u>mg/l</u>
Duplicate	0.6
Duplicate	0.6
Duplicate % diff.	0.0
Std (found value)	5.0
Std (true value)	5.0
Std % rec.	100
Blank	U
Spike % rec.	78



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1667 FAX (303) 277-1689

30-Dec-93  
Page: Q-2  
Copy: 1 of 2  
Status: Final

## ENVIROCARE OF UTAH, INC.

### QUALITY CONTROL REPORT

Sample Id	Gross Alpha Dissolved		Gross Beta Dissolved	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	70	±190	470	±200
Duplicate	120	±200	420	±190
RER	0.17		0.13	
Std (found value)	221	±7	100	±2
Std (true value)	208		101	
Std % rec.	106		99	
Blank	0.1	±0.1	0.1	±0.3
Spike % rec.	107		85	

Sample Id	Ra-226 Dissolved		Ra-228 Dissolved	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	1.1	±0.8	1.9	±1.5
Duplicate	0.2	±0.6	2.6	±1.6
RER	0.75		0.26	
Std (found value)	214	±5	22	±1
Std (true value)	211		20	
Std % rec.	101		110	
Blank	0.0	±0.1	0.2	±0.7
Spike % rec.	85		107	

Sample Id	Th-230 Dissolved		Th-232 Dissolved		U Dissolved
	pCi/l	+ 2σ	pCi/l	+ 2σ	mg/l
Duplicate	0.0	±0.4	0.0	±0.3	0.0081
Duplicate	0.4	±0.6	0.0	±0.3	0.0084
RER	0.55		0.0		0.16
Std (found value)	102	±3	21	±4	0.0478
Std (true value)	100		18		0.0500
Std % rec.	102		119		96
Blank	0.0	±0.2	0.0	±0.1	U
Spike % rec.	104		---		96

ENVIROCARE OF UTAH, INC.

QUALITY CONTROL REPORT

Sample Id	Be-7 Gamma Spec.		Cd-109 Gamma Spec.	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	<15		<34	
Duplicate	<16		<32	
RER	---		---	
Std (found value)	1954	±44	1954	±44
Std (true value)	1938		1938	
Std % rec.	101		101	
Blank	---		---	
Spike % rec.	---		---	

Sample Id	C-14 Dissolved		Co-60 Gamma Spec.	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	4	±15	<1.6	
Duplicate	3.4	±7.6	<1.6	
RER	0.03		---	
Std (found value)	1111	±16	1954	±44
Std (true value)	992		1938	
Std % rec.	112		101	
Blank	0.7	±1.8	---	
Spike % rec.	108		---	

Sample Id	I-129 Dissolved		Pb-210 Dissolved	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	16	±37	3.1	±1.9
Duplicate	0	±45	1.3	±3.6
RER	0.27		0.41	
Std (found value)	1134	±5	43.7	±1.0
Std (true value)	993		38.4	
Std % rec.	114		114	
Blank	0.0	±0.8	0.0	±0.5
Spike % rec.	104		105	



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Dec-93

Page: Q-4

Copy: 1 of 2

Status: Final

## ENVIROCARE OF UTAH, INC.

### QUALITY CONTROL REPORT

Sample Id	Mn-54 Gamma Spec.		Np-237 Dissolved	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	<1.4		0.1	±0.5
Duplicate	<1.5		0.1	±0.5
RER	---		0.0	
Std (found value)	1954	±44	67.1	±3.0
Std (true value)	1938		66.9	
Std % rec.	101		100	
Blank	---		0.3	±0.2
Spike % rec.	---		110	

Sample Id	Po-210 Dissolved		K-40 Gamma Spec.	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	0.2	±0.3	410	±60
Duplicate	0.1	±0.3	560	±70
RER	0.22		0.76	
Std (found value)	88	±2	1954	±44
Std (true value)	92		1938	
Std % rec.	96		101	
Blank	0.1	±0.1	---	
Spike % rec.	98		---	

Sample Id	Sr-90 Dissolved		Tc-99 Dissolved	
	pCi/l	+ 2σ	pCi/l	+ 2σ
Duplicate	0.7	±0.8	1.2	±3.0
Duplicate	1.1	±2.4	1.2	±2.9
RER	0.14		0.02	
Std (found value)	52	±1	100	±3
Std (true value)	49		100	
Std % rec.	104		100	
Blank	0.0	±0.4	0.5	±1.1
Spike % rec.	90		103	



# BARRINGER LABORATORIES INC.

15000 W. 5TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Dec-93

Page: Q-5

Copy: 1 of 2

Status: Final

## ENVIROCARE OF UTAH, INC.

### QUALITY CONTROL REPORT

Sample Id	Tritium Dissolved	
	pCi/l	+ 2σ
Duplicate	0	±290
Duplicate	0	±290
RER	0.00	
Std (found value)	18151	±660
Std (true value)	18240	
Std % rec.	100	
Blank	0	±290
Spike % rec.	103	



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1887 FAX (303) 277-1889

30-Dec-93

ENVIROCARE OF UTAH, INC.  
46 West Broadway, Suite 240  
Salt Lake City, UT 84101

Page: Q-6  
Copy: 1 of 2

Attn:  
Project: LARW

PO #:

Received: 23-Nov-93 11:00

Job: 939063E

Status: Final

### Abbreviations:

### Parameters:

Ra-226	: Radium-226
Ra-228	: Radium-228
Th-230	: Thorium-230
Th-232	: Thorium-232
U	: Uranium
Be-7	: Beryllium-7
Cd-109	: Cadmium-109
C-14	: Carbon-14
Co-60	: Cobalt-60
I-129	: Iodine-129
Pb-210	: Lead-210
Mn-54	: Manganese-54
Np-237	: Neptunium-237
Po-210	: Polonium-210
K-40	: Potassium-40
Sr-90	: Strontium -90
Tc-99	: Technetium-99

### Methods:

Gamma Spec. : Gamma Spectroscopy

### Units:

mg/l	: milligrams per liter
pCi/l	: picoCuries per liter

### Quality codes:

<	: Not Detected- below detection limit.
U	: undetected





# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1688

30-Dec-93

ENVIROCARE OF UTAH, INC.  
46 West Broadway, Suite 240  
Salt Lake City, UT 84101

Page: Q-7  
Copy: 1 of 2

Attn: Project: LARW

PO #:

Received: 23-Nov-93 11:00

Job: 939063E

Status: Final

## QUALITY CONTROL DATA SHEET

Received by: rc

Via: Fed Ex

Sample Container Type: Lg cu, 1L pl, 500ml amber  
Additional Lab Preparation: None

Parameter	Method	Preservative	Analyst	Analysis Dates
Fluorine	300.0	None	Trulson	12/07
Gross Alpha	900.0	HNO3	Knox	12/08-12/15
Gross Beta	900.0	HNO3	Knox	12/08-12/15
Ra-226	SM-705	HNO3	Boucher	12/15-12/17
Ra-228	Perc/Brooks	HNO3	Seidel	12/06-12/14
Th-230	USAEC	HNO3	Ortiz	12/14-12/16
Th-232	USAEC	HNO3	Ortiz	12/14-12/16
U	ASTM D2907	HNO3	Meyer	12/08-12/10
Be-7	901.1	HNO3	Stringer	12/15-12/16
Cd-109	901.1	HNO3	Stringer	12/15-12/16
C-14	520-84-006	None	Myers	12/02-12/09
Co-60	901.1	HNO3	Stringer	12/15-12/16
I-129	902.0	HNO3	Boucher	12/08-12/30
Pb-210	USGS	HNO3	Wheeler	11/29-12/10
Mn-54	901.1	HNO3	Stringer	12/15-12/16
Np-237	907.0	HNO3	MFH	12/17-12/29
Po-210	UKAEA	HNO3	Ortiz	12/14-12/16
K-40	901.1	HNO3	Stringer	12/15-12/16
Sr-90	905.0	HNO3	Wheeler	12/01-12/13
Tc-99	HASL 300	HNO3	Myers	12/11-12/16
Tritium	906.0	None	Meyer	12/15-12/16



# BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

30-Dec-93

ENVIROCARE OF UTAH, INC.  
46 West Broadway, Suite 240  
Salt Lake City, UT 84101

Page: Q-8  
Copy: 1 of 2

Attn:  
Project: LARW

PO #:

Received: 23-Nov-93 11:00

Job: 939063E

Status: Final

Signed:

*Bill J. ...*  
Inorganic Radiochemical  
Laboratory Managers

Barringer Laboratories, Inc. will return or dispose of your samples 30 days from the date your final report is mailed, unless otherwise specified by contract. Barringer Laboratories, Inc. reserves the right to return samples prior to the 30 days if radioactive levels exceed our license.

## PROJECT MEMORANDUM

---

**TO:** Loren Morton - Utah Division of Water Quality  
Scott Hacking - Utah Division of Radiation Control

**FROM:** Stan Plaisier - Bingham Environmental, Inc.  
Mark Taggart - Bingham Environmental, Inc. *MT*

**DATE:** March 28, 1994

**SUBJECT:** Proposed Groundwater Protection Levels  
Compliance Monitor Wells  
Groundwater Quality Discharge Permit No. UGW450005  
Envirocare LARW and 11e.(2) Disposal Cells  
South Clive, Utah

---

On March 22, 1994, Envirocare representatives met with the Division of Water Quality (DWQ) and Division of Radiation Control (DRC) to discuss revising protection levels for the LARW and 11e.(2) compliance monitor wells at the Envirocare Disposal Facility located at South Clive, Utah. Agreements made in this meeting are listed as follows:

- Eliminate Probable Out-of-Compliance Status Criteria.
- Establish GWPL as GWQS or mean + 2 standard deviations whichever is greater.
- Out-of-Compliance Status defined as two consecutive quarterly samples in excess of the GWPL for any compliance monitor well. Envirocare would initiate monthly sampling for any out-of compliance status parameters/compliance monitor wells.
- Establish the mean and standard deviation based on samples collected between April 1991 and November 1993.

Transmitted with this Project Memorandum is the statistical analysis (Table 1) of samples collected between April 1991 and November 1993 from all of the compliance monitor wells. The majority of the GWPL proposed in Tables 2 and 3 are based on the Table 1 statistics with the exception of cadmium, chromium, molybdenum and nickel. These GWPL are based on samples collected between April 1991 and May 1993 (see Accelerated Background Groundwater Quality Report, July 1993, Table 4), because elevated concentrations for these constituents in August and November 1993 are apparently due to corrosion of the stainless steel pumps. A project memorandum addressing the corrosion issues will be submitted separately.

GWPL are proposed in Table 2, Page 3 of 3, for the volatile and semi-volatile organic constituents regulated by the NRC as part of the 11e.(2) Permit. These GWPL are based on EPA maximum contaminant levels (MCLs) for groundwater, Utah Division of Environmental Response and Remediation (DERR) protection standards for groundwater for UST release sites and U.S. EPA, Region III, guideline levels for organics in groundwater, October 1993.



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TABLE 1

SUMMARY OF WATER QUALITY STATISTICS

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**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-16R

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	6	0.05	0.013	0.004	0.022
Barium	6	1	0.029	0.010	0.049
Beryllium	6		0.005	0.000	0.005
Cadmium	6	0.01	0.009	0.010	0.029
Chromium	6	0.05	0.028	0.027	0.083
Copper	6	1	0.012	0.014	0.0394
Lead	6	0.05	0.005	0.000	0.005
Mercury	6	0.002	0.0003	0.0001	0.0005
Molybdenum	6		0.100	0.000	0.100
Nickel	6	0.15	0.024	0.033	0.091
Selenium	6	0.01	0.005	0.000	0.005
Silver	6	0.05	0.005	0.000	0.005
Zinc	6	5	0.010	0.008	0.027
<b>ANIONS</b>					
Bicarbonate	6		333.333	11.055	355
Carbonate	6		10.000	0.000	10
Chloride	6		22500.000	1258.306	25017
Sulfate	6		1733.333	188.562	2110
<b>CATIONS</b>					
Calcium	6		355.000	19.791	395
Magnesium	6		498.333	30.777	560
Potassium	6		486.667	32.998	553
Sodium	6		14333.333	471.405	15276
<b>OTHER CHEMISTRIES</b>					
Cyanide	6		0.005	0.000	0.005
Fluoride	6	2.40	2.783	0.241	3.27
Fluorine	6		2.250	3.020	8.29
Nitrate	6		0.028	0.019	0.066
Nitrates (NO3-N + NO2-N)	6	10	0.035	0.014	0.063
Total Dissolved Solids	6		40500.000	1258.306	43017
Conductivity (umhos/cm)	5		63200	9389	81979
pH (units)	6	6.5-8.5	7.533	0.236	8.00
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	6		0.270	0.000	0.270
Total Organic Halogens (TOX)	6		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	6		7.315	0.102	7.52
Conductivity (umhos/cm)	6		54611.167	21773.403	98158
Temperature (Deg. C)	6		12.233	0.478	13.19

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-16R

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	6	15	22.000	34.545	91.09
Gross Beta	6		345.000	188.834	722.67
Total Uranium (mg/l)	6	0.02	0.014	0.001	0.02
Beryllium-7	6		24.667	7.431	39.53
Cadmium-109	6		55.000	18.294	91.59
Carbon-14	6	2133	3.333	4.460	12.25
Cobalt-60	6		2.800	0.695	4.19
Iodine-129	5	1.07	0.040	0.080	0.20
Manganese-54	6		2.783	0.727	4.24
Neptunium-237	5		0.060	0.080	0.22
Potassium-40	6	48	465.000	96.566	658.13
Radium-226	6		0.617	0.358	1.33
Radium-228	6		1.467	0.442	2.35
Ra-226 + Ra-228	6	5	2.083	0.800	3.683
Strontium-90	6	8	0.200	0.263	0.77
Technetium-99	5	800	1.800	2.742	7.28
Thorium-230	6	5.33	1.917	2.371	6.66
Thorium-232	6	5.33	0.000	0.000	0.00
Tritium	6		28.333	63.355	155.04

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-19A

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	16	0.05	0.018	0.008	0.034
Barium	16	1	0.007	0.007	0.021
Beryllium	13		0.005	0.000	0.005
Cadmium	16	0.01	0.007	0.010	0.028
Chromium	16	0.05	0.033	0.032	0.096
Copper	16	1	0.007	0.008	0.0239
Lead	16	0.05	0.008	0.011	0.030
Mercury	16	0.002	0.0003	0.0002	0.0007
Molybdenum	14		0.493	0.205	0.903
Nickel	16	0.15	0.022	0.037	0.096
Selenium	16	0.01	0.005	0.000	0.005
Silver	16	0.05	0.006	0.002	0.009
Zinc	16	5	0.945	3.629	8.20
<b>ANIONS</b>					
Bicarbonate	16		173.125	37.536	248
Carbonate	16		10.000	0.000	10
Chloride	16		24125.000	1615.356	27356
Sulfate	16		4958.125	833.248	6625
<b>CATIONS</b>					
Calcium	16		769.375	69.053	907
Magnesium	16		1109.375	114.644	1339
Potassium	16		506.875	115.743	738
Sodium	16		15875.000	1218.349	18312
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	16	2.40	4.350	0.615	5.58
Fluorine	7		2.000	2.859	7.72
Nitrate	16		0.015	0.012	0.038
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	0.019	0.023	0.065
Total Dissolved Solids	16		49625.000	2712.817	55051
Conductivity (umhos/cm)	15		65428.571	8723.648	82876
pH	16	6.5-8.5	7.444	0.122	7.69
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		3.087	5.926	14.94
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH	16		7.251	0.127	7.50
Conductivity (umhos/cm)	16		69908.375	6960.259	83829
Temperature (Deg. C)	16		12.894	0.691	14.27

\* Based on samples collected between April 1991 and November 1993



**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-19A

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	16	15	66.250	78.492	223.23
Gross Beta	16		483.125	139.137	761.40
Total Uranium (mg/l)	16	0.02	0.002	0.002	0.01
Beryllium-7	15		58.533	35.415	129.36
Cadmium-109	15		64.200	15.359	94.92
Carbon-14	12	2133	4.692	5.005	14.70
Cobalt-60	15		6.233	3.040	12.31
Iodine-129	6	1.07	1.317	2.643	6.60
Manganese-54	15		6.147	3.258	12.66
Neptunium-237	6		0.020	0.040	0.10
Potassium-40	15	48	400.000	138.948	677.90
Radium-226	16		0.475	0.382	1.24
Radium-228	16		1.038	0.801	2.64
Ra-226 + Ra-228	16	5	1.513	1.183	3.879
Strontium-90	16	8	0.238	0.357	0.95
Technetium-99	6	800	1.200	2.086	5.37
Thorium-230	15	5.33	0.436	0.951	2.34
Thorium-232	15	5.33	0.000	0.000	0.00
Tritium	12		6.667	13.123	32.91

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-20

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.022	0.010	0.042
Barium	17	1	0.007	0.008	0.024
Beryllium	13		0.0050	0.0000	0.005
Cadmium	17	0.01	0.006	0.008	0.021
Chromium	17	0.05	0.021	0.029	0.080
Copper	17	1	0.006	0.007	0.0197
Lead	17	0.05	0.005	0.000	0.005
Mercury	17	0.002	0.0008	0.0023	0.0054
Molybdenum	13		0.175	0.066	0.307
Nickel	17	0.15	0.022	0.041	0.103
Selenium	17	0.01	0.005	0.001	0.007
Silver	17	0.05	0.005	0.001	0.008
Zinc	17	5	0.005	0.007	0.019
<b>ANIONS</b>					
Bicarbonate	17		221.176	14.093	249
Carbonate	17		10.000	0.000	10
Chloride	17		24529.412	1538.435	27606
Sulfate	17		3700.000	318.082	4336
<b>CATIONS</b>					
Calcium	17		425.882	33.617	493
Magnesium	17		732.341	66.577	866
Potassium	17		537.647	67.347	672
Sodium	17		16235.294	2044.488	20324
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Flouride	17	2.40	2.924	0.540	4.00
Fluorine	6		0.600	0.082	0.76
Nitrate	17		0.089	0.087	0.263
Nitrates (NO3-N + NO2-N)	17	10	0.098	0.085	0.268
Total Dissolved Solids	17		48588.235	3482.035	55552
Conductivity (umhos/cm)	16		63866.667	8451.840	80770
pH (units)	17	6.5-8.5	7.524	0.186	7.90
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		2.493	6.671	15.83
Total Organic Halogens (TOX)	17		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.416	0.106	7.63
Conductivity (umhos/cm)	17		70278.471	5388.838	81056
Temperature (Deg. C)	17		12.853	0.956	14.76

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-20

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	48.941	98.681	246.30
Gross Beta	17		511.765	142.962	797.69
Total Uranium (mg/l)	17	0.02	0.010	0.006	0.02
Beryllium-7	17		138.294	246.709	631.71
Cadmium-109	17		87.824	77.881	243.59
Carbon-14	12	2133	4.750	4.781	14.31
Cobalt-60	17		8.865	9.259	27.38
Iodine-129	6	1.07	2.233	3.111	8.45
Manganese-54	17		10.144	13.281	36.71
Neptunium-237	6		0.083	0.146	0.38
Potassium-40	17	48	420.294	116.541	653.38
Radium-226	17		2.012	2.351	6.71
Radium-228	17		2.241	0.915	4.07
Ra-226 + Ra-228	17	5	4.253	3.266	10.785
Strontium-90	17	8	0.329	0.469	1.27
Technetium-99	6	800	2.467	4.740	11.95
Thorium-230	17	5.33	0.171	0.405	0.98
Thorium-232	17	5.33	0.000	0.000	0.00
Tritium	12		30.000	47.434	124.87

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-22

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.014	0.006	0.025
Barium	17	1	0.022	0.022	0.065
Beryllium	13		0.005	0.000	0.005
Cadmium	17	0.01	0.006	0.006	0.019
Chromium	17	0.05	0.020	0.023	0.066
Copper	17	1	0.009	0.009	0.0268
Lead	17	0.05	0.005	0.001	0.007
Mercury	17	0.002	0.0003	0.0002	0.0006
Molybdenum	13		0.100	0.000	0.100
Nickel	17	0.15	0.016	0.028	0.073
Selenium	17	0.01	0.005	0.001	0.007
Silver	17	0.05	0.008	0.009	0.026
Zinc	17	5	0.004	0.005	0.014
<b>ANIONS</b>					
Bicarbonate	17		328.824	53.234	435
Carbonate	17		10.000	0.000	10
Chloride	17		23294.118	1524.880	26344
Sulfate	17		2135.294	149.277	2434
<b>CATIONS</b>					
Calcium	17		442.353	48.333	539
Magnesium	17		646.471	75.221	797
Potassium	17		474.118	80.517	635
Sodium	17		15000.000	1414.214	17828
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	2.712	0.369	3.45
Fluorine	7		2.029	2.848	7.72
Nitrate	17		0.080	0.186	0.452
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	17	10	0.092	0.184	0.459
Total Dissolved Solids	17		43411.765	1286.071	45984
Conductivity (umhos/cm)	16		60312.500	6419.879	73152
pH (units)	17	6.5-8.5	7.512	0.203	7.92
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		0.700	0.566	1.83
Total Organic Halogens (TOX)	17		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.211	0.074	7.36
Conductivity (umhos/cm)	17		64952.824	4649.797	74252
Temperature (Deg. C)	17		12.118	1.816	15.75

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-22

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	108.824	132.127	373.08
Gross Beta	17		520.000	157.667	835.33
Total Uranium (mg/l)	17	0.02	0.017	0.002	0.02
Beryllium-7	17		130.176	203.167	536.51
Cadmium-109	17		73.647	25.144	123.94
Carbon-14	12	2133	7.250	9.5	24.86
Cobalt-60	17		7.729		19.40
Iodine-129	6	1.07	1.033		4.89
Manganese-54	17		6.494	3.351	13.54
Neptunium-237	6		0.267	0.512	1.29
Potassium-40	17	48	403.765	88.931	581.63
Radium-226	17		0.700	0.331	1.36
Radium-228	17		1.941	0.540	3.02
Ra-226 + Ra-228	17	5	2.641	0.871	4.383
Strontium-90	17	8	0.388	0.670	1.73
Technetium-99	6	800	2.233	1.362	4.96
Thorium-230	17	5.33	0.459	1.012	2.48
Thorium-232	17	5.33	0.000	0.000	0.00
Tritium	12		46.667	66.249	179.16

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-23

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.015	0.007	0.029
Barium	17	1	0.017	0.019	0.056
Beryllium	13		0.0050	0.0000	0.005
Cadmium	17	0.01	0.006	0.007	0.019
Chromium	17	0.05	0.019	0.022	0.063
Copper	17	1	0.009	0.009	0.0268
Lead	17	0.05	0.005	0.000	0.005
Mercury	17	0.002	0.0003	0.0002	0.0006
Molybdenum	13		0.138	0.049	0.236
Nickel	17	0.15	0.018	0.028	0.073
Selenium	17	0.01	0.005	0.001	0.007
Silver	17	0.05	0.009	0.013	0.035
Zinc	17	5	0.004	0.005	0.014
<b>ANIONS</b>					
Bicarbonate	17		307.647	35.235	378
Carbonate	17		10.000	0.000	10
Chloride	17		22176.471	1247.835	24672
Sulfate	17		2905.882	255.459	3417
<b>CATIONS</b>					
Calcium	17		460.588	45.822	552
Magnesium	17		654.706	65.270	785
Potassium	17		472.941	81.078	635
Sodium	17		14764.706	1591.500	17948
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	3.006	0.401	3.81
Fluorine	7		2.014	2.854	7.72
Nitrate	17		0.055	0.029	0.112
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	17	10	0.058	0.032	0.122
Total Dissolved Solids	17		42647.059	1185.261	45018
Conductivity (umhos/cm)	16		58562.500	6072.157	70707
pH (units)	17	6.5-8.5	7.529	0.214	7.96
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		2.816	6.309	15.43
Total Organic Halogens (TOX)	17		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.226	0.092	7.41
Conductivity (umhos/cm)	17		63875.353	5580.427	75036
Temperature (Deg. C)	17		12.994	0.896	14.79

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-23

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	57.059	90.928	238.91
Gross Beta	17		560.588	169.306	899.20
Total Uranium (mg/l)	17	0.02	0.015	0.004	0.02
Beryllium-7	17		133.529	187.274	508.08
Cadmium-109	17		78.941	28.014	134.97
Carbon-14	12	2133	5.000	6.083	17.17
Cobalt-60	17		8.088	5.219	18.53
Iodine-129	6	1.07	0.850	1.402	3.65
Manganese-54	17		7.812	4.624	17.20
Neptunium-237	6		0.117	1.261	0.64
Potassium-40	17	48	397.941	44.013	585.97
Radium-226	17		0.812	0.293	1.40
Radium-228	17		2.141	0.671	3.48
Ra-226 + Ra-228	17	5	2.953	0.964	4.881
Strontium-90	17	8	0.229	0.358	0.94
Technetium-99	6	800	4.117	4.751	13.62
Thorium-230	17	5.33	1.647	4.227	10.10
Thorium-232	17	5.33	0.053	0.188	0.43
Tritium	12		35.833	48.384	132.60

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-24

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.017	0.007	0.032
Barium	17	1	0.012	0.012	0.037
Beryllium	13		0.005	0.000	0.005
Cadmium	17	0.01	0.006	0.007	0.021
Chromium	17	0.05	0.021	0.027	0.074
Copper	17	1	0.007	0.007	0.022
Lead	17	0.05	0.005	0.000	0.005
Mercury	17	0.002	0.000	0.000	0.0006
Molybdenum	13		0.185	0.066	0.317
Nickel	17	0.15	0.023	0.037	0.096
Selenium	17	0.01	0.006	0.002	0.010
Silver	17	0.05	0.008	0.012	0.032
Zinc	17	5	0.005	0.007	0.019
<b>ANIONS</b>					
Bicarbonate	17		228.235	15.043	258
Carbonate	17		10.000	0.000	10
Chloride	17		24176.471	1822.580	27822
Sulfate	17		4141.176	1213.192	6568
<b>CATIONS</b>					
Calcium	17		477.647	39.337	556
Magnesium	17		734.118	59.117	852
Potassium	17		522.353	50.588	624
Sodium	17		16352.941	1780.323	19914
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	3.035	0.403	3.84
Fluorine	6		0.633	0.094	0.82
Nitrate	17		0.063	0.030	0.124
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	17	10	0.069	0.033	0.135
Total Dissolved Solids	17		47235.294	1799.654	50835
Conductivity (umhos/cm)	16		64250.000	7570.502	79391
pH (units)	17	6.5-8.5	7.500	0.185	7.87
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		1.509	2.758	7.03
Total Organic Halogens (TOX)	17		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.381	0.081	7.54
Conductivity (umhos/cm)	17		69047.000	5525.055	80097
Temperature (Deg. C)	17		12.988	1.323	15.63

\* Based on samples collected between April 1991 and November 1993



**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-24

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PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	102.353	217.919	538.19
Gross Beta	17		581.765	193.763	969.29
Total Uranium (mg/l)	17	0.02	0.015	0.004	0.02
Beryllium-7	17		111.294	150.935	413.16
Cadmium-109	17		72.353	24.044	120.44
Carbon-14	12	2133	4.083	5.024	14.13
Cobalt-60	17		7.429	4.713	16.85
Iodine-129	6	1.07	0.167	0.373	0.91
Manganese-54	17		6.765	3.727	14.22
Neptunium-237	6		0.083	0.121	0.33
Potassium-40	17	48	447.824	81.569	610.96
Radium-226	17		1.312	0.580	2.47
Radium-228	17		2.547	0.477	3.50
Ra-226 + Ra-228	17	5	3.859	1.057	5.972
Strontium-90	17	8	0.235	0.322	0.88
Technetium-99	6	800	1.733	2.934	7.60
Thorium-230	16	5.33	0.231	0.682	1.59
Thorium-232	17	5.33	0.071	0.282	0.64
Tritium	12		21.667	50.139	121.94

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-25

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.058	0.023	0.105
Barium	17	1	0.014	0.016	0.046
Beryllium	13		0.005	0.000	0.005
Cadmium	17	0.01	0.008	0.009	0.025
Chromium	17	0.05	0.032	0.037	0.106
Copper	17	1	0.016	0.030	0.075
Lead	17	0.05	0.005	0.001	0.007
Mercury	17	0.002	0.000	0.000	0.0007
Molybdenum	14		0.171	0.059	0.289
Nickel	17	0.15	0.022	0.033	0.089
Selenium	17	0.01	0.005	0.000	0.005
Silver	17	0.05	0.016	0.043	0.103
Zinc	17	5	0.005	0.007	0.018
<b>ANIONS</b>					
Bicarbonate	17		215.294	35.829	287
Carbonate	17		10.000	0.000	10
Chloride	17		24470.588	1538.435	27547
Sulfate	17		4311.765	373.981	5060
<b>CATIONS</b>					
Calcium	17		527.059	60.173	647
Magnesium	17		864.118	47.534	959
Potassium	17		512.941	88.035	689
Sodium	17		16588.235	1497.403	19583
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	3.394	0.453	4.30
Fluorine	7		1.671	2.176	6.02
Nitrate	17		0.034	0.024	0.081
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	17	10	0.038	0.021	0.080
Total Dissolved Solids	17		44452.941	10232.596	64918
Conductivity (umhos/cm)	16		64062.500	9902.454	83867
pH (units)	17	6.5-8.5	7.471	0.127	7.73
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		4.944	10.363	25.67
Total Organic Halogens (TOX)	17		0.034	0.116	0.267
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.329	0.079	7.49
Conductivity (umhos/cm)	17		66890.824	9930.568	86752
Temperature (Deg. C)	17		12.612	0.750	14.11

\* Based on samples collected between April 1991 and November 1993

TABLE 1  
SUMMARY OF WATER QUALITY STATISTICS  
Compliance Monitor Wells  
(in pCi/l unless noted otherwise)

Well Identification: GW-25

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	108.294	122.890	354.07
Gross Beta	17		612.471	171.351	955.17
Total Uranium (mg/l)	17	0.02	0.103	0.029	0.16
Beryllium-7	17		93.000	101.979	296.96
Cadmium-109	17		68.118	17.112	102.34
Carbon-14	12	2133	10.000	15.050	40.10
Cobalt-60	17		6.976	3.856	14.69
Iodine-129	6	1.07	0.450	0.739	1.93
Manganese-54	17		6.553	3.105	12.76
Neptunium-237	6		0.517	0.851	2.22
Potassium-40	17	48	450.235	166.701	783.64
Radium-226	17		1.647	0.638	2.92
Radium-228	17		2.494	0.581	3.66
Ra-226 + Ra-228	17	5	4.141	1.219	6.578
Strontium-90	17	8	0.324	0.310	0.94
Technetium-99	6	800	2.550	2.274	7.10
Thorium-230	17	5.33	0.665	1.031	2.73
Thorium-232	17	5.33	0.000	0.000	0.00
Tritium	12		33.333	61.146	155.63

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-26

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	15	0.05	0.094	0.050	0.195
Barium	15	1	0.017	0.014	0.046
Beryllium	13		0.005	0.000	0.005
Cadmium	15	0.01	0.007	0.009	0.025
Chromium	15	0.05	0.030	0.031	0.093
Copper	15	1	0.008	0.009	0.026
Lead	15	0.05	0.005	0.000	0.006
Mercury	15	0.002	0.000	0.000	0.0004
Molybdenum	13		0.477	0.119	0.714
Nickel	15	0.15	0.023	0.034	0.092
Selenium	15	0.01	0.007	0.003	0.014
Silver	15	0.05	0.005	0.001	0.008
Zinc	15	5	0.008	0.014	0.037
<b>ANIONS</b>					
Bicarbonate	15		115.200	21.100	157
Carbonate	15		10.000	0.000	10
Chloride	15		23533.333	1543.445	26620
Sulfate	15		4640.000	540.123	5720
<b>CATIONS</b>					
Calcium	15		638.667	48.972	737
Magnesium	15		936.667	39.441	1016
Potassium	15		475.333	78.982	633
Sodium	15		15400.000	1200.000	17800
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	15	2.40	3.573	0.497	4.57
Fluorine	7		1.486	1.845	5.18
Nitrate	15		1.016	0.087	1.19
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	1.020	0.082	1.18
Total Dissolved Solids	15		45400.000	5017.303	55435
Conductivity (umhos/cm)	14		62929	8697	80323
pH (units)	15	6.5-8.5	7.527	0.134	7.79
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		2.593	4.425	11.44
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	15		7.509	0.143	7.79
Conductivity (umhos/cm)	15		66151.667	10644.709	87441
Temperature (Deg. C)	15		12.973	0.839	14.65

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-26

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	15	15	32.000	65.136	162.27
Gross Beta	15		570.000	192.111	954.22
Total Uranium	15	0.02	0.024	0.008	0.04
Beryllium-7	15		54.333	32.130	118.59
Cadmium-109	15		61.667	20.082	101.83
Carbon-14	12	2133	6.742	15.718	38.18
Cobalt-60	15		5.973	3.192	12.36
Iodine-129	6	1.07	0.567	1.098	2.76
Manganese-54	15		5.220	2.989	11.20
Neptunium-237	6		0.467	0.576	1.62
Potassium-40	15	48	366.467	107.568	581.60
Radium-226	15		0.947	0.446	1.84
Radium-228	15		2.307	0.687	3.68
Ra-226 + Ra-228	15	5	3.23	1.133	5.519
Strontium-90	15	8	0.247	0.376	1.00
Technetium-99	6	800	0.550	0.465	1.48
Thorium-230	15	5.33	1.253	2.893	7.04
Thorium-232	15	5.33	0.000	0.000	0.00
Tritium	12		28.167	45.647	119.46

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-27

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	15	0.05	0.027	0.014	0.054
Barium	15	1	0.022	0.017	0.055
Beryllium	13		0.005	0.000	0.005
Cadmium	15	0.01	0.007	0.008	0.024
Chromium	15	0.05	0.025	0.027	0.079
Copper	15	1	0.008	0.008	0.023
Lead	15	0.05	0.005	0.000	0.005
Mercury	15	0.002	0.000	0.001	0.0020
Molybdenum	13		0.454	0.454	1.362
Nickel	15	0.15	0.019	0.030	0.079
Selenium	15	0.01	0.005	0.000	0.005
Silver	15	0.05	0.005	0.001	0.008
Zinc	15	5	0.005	0.007	0.020
<b>ANIONS</b>					
Bicarbonate	15		161.333	12.037	185
Carbonate	15		10.000	0.000	10
Chloride	15		21133.333	1359.739	23853
Sulfate	15		3946.667	527.720	5002
<b>CATIONS</b>					
Calcium	15		525.333	47.591	621
Magnesium	15		820.667	68.650	958
Potassium	15		502.667	39.067	581
Sodium	15		13800.000	1326.650	16453
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	15	2.40	3.453	0.459	4.37
Fluorine	7		1.886	2.498	6.88
Nitrate	15		0.055	0.081	0.217
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	0.057	0.082	0.220
Total Dissolved Solids	15		41933.333	5272.149	52478
Conductivity (umhos/cm)	14		57214	7552	72317
pH (units)	15	6.5-8.5	7.560	0.102	7.76
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		1.360	0.679	2.72
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	15		7.433	0.127	7.69
Conductivity (umhos/cm)	15		61142.400	8540.768	78224
Temperature (Deg. C)	15		13.160	1.601	16.36

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-27

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	15	15	73.333	138.066	349.47
Gross Beta	15		555.333	137.786	830.90
Total Uranium	15	0.02	0.011	0.009	0.03
Beryllium-7	15		47.733	26.714	101.16
Cadmium-109	15		64.800	19.360	103.52
Carbon-14	12	2133	4.500	4.213	12.93
Cobalt-60	15		6.040	3.323	12.69
Iodine-129	6	1.07	0.667	1.026	2.72
Manganese-54	15		5.033	3.069	11.17
Neptunium-237	6		0.317	0.664	1.65
Potassium-40	15	48	392.400	145.256	682.91
Radium-226	15		0.560	0.270	1.10
Radium-228	15		1.513	0.674	2.86
Ra-226 + Ra-228	15	5	2.073	0.944	3.962
Strontium-90	15	8	0.520	0.598	1.72
Technetium-99	6	800	1.150	1.502	4.15
Thorium-230	15	5.33	1.647	2.520	6.69
Thorium-232	15	5.33	0.007	0.025	0.06
Tritium	12		16.667	43.843	104.35

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-28

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	15	0.05	0.041	0.016	0.073
Barium	15	1	0.012	0.011	0.034
Beryllium	13		0.005	0.000	0.005
Cadmium	15	0.01	0.006	0.007	0.021
Chromium	15	0.05	0.022	0.025	0.073
Copper	15	1	0.009	0.009	0.027
Lead	15	0.05	0.005	0.001	0.008
Mercury	15	0.002	0.000	0.000	0.0008
Molybdenum	13		0.262	0.262	0.785
Nickel	15	0.15	0.020	0.033	0.085
Selenium	15	0.01	0.005	0.000	0.005
Silver	15	0.05	0.006	0.002	0.009
Zinc	15	5	0.009	0.015	0.039
<b>ANIONS</b>					
Bicarbonate	15		150.667	11.235	173
Carbonate	15		10.000	0.000	10
Chloride	15		22600.000	1306.395	25213
Sulfate	15		3740.000	340.196	4420
<b>CATIONS</b>					
Calcium	15		444.000	25.508	495
Magnesium	15		715.333	35.377	786
Potassium	15		510.667	61.043	633
Sodium	15		14533.333	1257.864	17049
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	15	2.40	3.140	0.379	3.90
Fluorine	7		1.814	2.526	6.87
Nitrate	15		0.319	0.134	0.588
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	0.323	0.138	0.598
Total Dissolved Solids	15		43733.333	2293.953	48321
Conductivity (umhos/cm)	14		60357	8406	77169
pH (units)	15	6.5-8.5	7.613	0.150	7.91
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		1.373	0.658	2.69
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	15		7.521	0.096	7.71
Conductivity (umhos/cm)	15		63915.600	10377.063	84670
Temperature (Deg. C)	15		12.827	0.765	14.36

\* Based on samples collected between April 1991 and November 1993



**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-28

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	15	15	112.667	157.669	428.00
Gross Beta	15		481.333	131.751	744.83
Total Uranium	15	0.02	0.008	0.002	0.01
Beryllium-7	15		50.200	29.492	109.18
Cadmium-109	15		61.800	16.638	95.08
Carbon-14	12	2133	4.333	5.467	15.27
Cobalt-60	15		6.093	3.103	12.30
Iodine-129	6	1.07	0.767	1.714	4.20
Manganese-54	15		5.287	3.204	11.69
Neptunium-237	6		0.050	0.076	0.20
Potassium-40	15	48	385.867	69.927	525.72
Radium-226	15		0.893	1.389	3.67
Radium-228	15		1.527	0.554	2.64
Ra-226 + Ra-228	15	5	2.420	1.943	6.306
Strontium-90	15	8	0.267	0.252	0.77
Technetium-99	6	800	1.433	2.142	5.72
Thorium-230	15	5.33	0.240	0.498	1.24
Thorium-232	15	5.33	0.000	0.000	0.00
Tritium	12		54.167	72.854	199.87

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
(in mg/l unless noted otherwise)

Well Identification: GW-29

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.013	0.005	0.022
Barium	17	1	0.012	0.014	0.039
Beryllium	13		0.005	0.000	0.005
Cadmium	17	0.01	0.006	0.008	0.022
Chromium	17	0.05	0.020	0.026	0.073
Copper	17	1	0.008	0.008	0.024
Lead	17	0.05	0.005	0.000	0.005
Mercury	17	0.002	0.0043	0.0150	0.034
Molybdenum	13		0.193	0.090	0.373
Nickel	17	0.15	0.016	0.027	0.071
Selenium	17	0.01	0.005	0.000	0.005
Silver	17	0.05	0.007	0.006	0.019
Zinc	17	5	0.004	0.006	0.017
<b>ANIONS</b>					
Bicarbonate	17		324.706	27.033	379
Carbonate	17		10.000	0.000	10
Chloride	17		24764.706	1436.065	27637
Sulfate	17		4094.118	616.890	5328
<b>CATIONS</b>					
Calcium	17		529.412	47.213	624
Magnesium	17		810.588	65.122	941
Potassium	17		543.529	77.075	698
Sodium	17		16294.118	1636.521	19567
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	3.324	0.566	4.46
Fluorine	7		1.743	2.556	6.85
Nitrate	17		0.019	0.016	0.051
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	17	10	0.021	0.020	0.061
Total Dissolved Solids	17		46058.824	3637.559	53334
Conductivity (umhos/cm)	16		62750.000	8265.138	79280
pH (units)	17	6.5-8.5	7.412	0.160	7.73
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		1.886	4.106	10.10
Total Organic Halogens (TOX)	17		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.205	0.061	7.33
Conductivity (umhos/cm)	17		70047.529	5280.983	80609
Temperature (Deg. C)	17		13.006	0.844	14.69

\* Based on samples collected between April 1991 and November 1993

TABLE 1  
SUMMARY OF WATER QUALITY STATISTICS  
Compliance Monitor Wells  
(in pCi/l unless noted otherwise)

Well identification: GW-29

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PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	65.647	94.494	254.63
Gross Beta	17		590.588	146.467	883.52
Total Uranium (mg/l)	17	0.02	0.024	0.010	0.04
Beryllium-7	17		140.647	244.750	630.15
Cadmium-109	17		88.471	85.507	259.48
Carbon-14	12	2133	8.433	9.187	26.81
Cobalt-60	17		9.553	11.382	32.32
Iodine-129	6	1.07	0.917	1.795	4.51
Manganese-54	17		9.053	15.132	39.32
Neptunium-237	6		1.033	1.763	4.56
Potassium-40	17	48	452.941	98.738	650.42
Radium-226	17		1.135	0.551	2.24
Radium-228	17		2.506	0.758	4.02
Ra-226 + Ra-228	17	5	3.641	1.309	6.259
Strontium-90	17	8	0.324	0.461	1.25
Technetium-99	6	800	1.400	1.297	3.99
Thorium-230	17	5.33	0.518	0.943	2.40
Thorium-232	17	5.33	0.076	0.306	0.69
Tritium	12		16.667	32.745	82.16

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-36

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	15	0.05	0.032	0.014	0.060
Barium	15	1	0.015	0.014	0.043
Beryllium	13		0.005	0.000	0.005
Cadmium	15	0.01	0.006	0.007	0.020
Chromium	15	0.05	0.027	0.025	0.077
Copper	15	1	0.008	0.008	0.024
Lead	15	0.05	0.005	0.000	0.005
Mercury	15	0.002	0.0005	0.0008	0.002
Molybdenum	13		0.238	0.100	0.439
Nickel	15	0.15	0.034	0.058	0.150
Selenium	15	0.01	0.006	0.001	0.008
Silver	15	0.05	0.005	0.001	0.008
Zinc	15	5	0.006	0.008	0.022
<b>ANIONS</b>					
Bicarbonate	15		154.667	23.627	202
Carbonate	15		10.000	0.000	10
Chloride	15		22066.667	1339.983	24747
Sulfate	15		3626.667	349.221	4325
<b>CATIONS</b>					
Calcium	15		478.000	45.782	570
Magnesium	15		651.333	58.976	769
Potassium	15		480.000	40.000	560
Sodium	15		14400.000	1254.326	16909
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	15	2.40	2.840	0.535	3.91
Fluorine	7		1.586	2.211	6.01
Nitrate	15		0.570	0.054	0.678
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	0.587	0.063	0.713
Total Dissolved Solids	15		41066.667	1913.693	44894
Conductivity (umhos/cm)	14		58857	7347	73551
pH (units)	15	6.5-8.5	7.513	0.159	7.83
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		3.707	9.439	22.58
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	15		7.526	0.132	7.79
Conductivity (umhos/cm)	15		63713.267	5265.624	74245
Temperature (Deg. C)	15		12.713	0.964	14.64

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-36

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	15	15	83.333	125.468	334.27
Gross Beta	15		496.667	138.788	774.24
Total Uranium	15	0.02	0.043	0.013	0.07
Beryllium-7	15		60.267	51.613	163.49
Cadmium-109	15		62.267	22.143	106.55
Carbon-14	12	2133	6.000	6.745	19.49
Cobalt-60	15		6.027	3.590	13.21
Iodine-129	6	1.07	1.467	1.981	5.43
Manganese-54	15		5.340	3.246	11.83
Neptunium-237	6		0.133	0.180	0.49
Potassium-40	15	48	381.667	136.744	655.15
Radium-226	15		0.853	0.361	1.58
Radium-228	15		2.067	0.439	2.95
Ra-226 + Ra-228	15	5	2.920	0.800	4.521
Strontium-90	15	8	0.273	0.341	0.96
Technetium-99	6	800	1.067	1.832	4.73
Thorium-230	15	5.33	0.647	1.318	3.28
Thorium-232	15	5.33	0.000	0.000	0.00
Tritium	12		16.667	35.434	87.53

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-37

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	15	0.05	0.021	0.011	0.043
Barium	15	1	0.017	0.015	0.048
Beryllium	13		0.005	0.000	0.005
Cadmium	15	0.01	0.007	0.008	0.023
Chromium	15	0.05	0.023	0.031	0.086
Copper	15	1	0.008	0.008	0.023
Lead	15	0.05	0.005	0.000	0.005
Mercury	15	0.002	0.0004	0.0005	0.001
Molybdenum	13		0.246	0.108	0.463
Nickel	15	0.15	0.027	0.059	0.145
Selenium	15	0.01	0.005	0.001	0.007
Silver	15	0.05	0.005	0.001	0.008
Zinc	15	5	0.006	0.008	0.021
<b>ANIONS</b>					
Bicarbonate	15		135.067	17.264	170
Carbonate	15		10.000	0.000	10
Chloride	15		23800.000	1641.138	27082
Sulfate	15		3793.333	358.639	4511
<b>CATIONS</b>					
Calcium	15		480.000	53.666	587
Magnesium	15		736.000	79.816	896
Potassium	15		526.000	51.225	628
Sodium	15		15800.000	1720.465	19241
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	15	2.40	2.953	0.398	3.75
Fluorine	7		0.986	1.231	3.45
Nitrate	15		0.323	0.294	0.910
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	15	10	0.328	0.291	0.909
Total Dissolved Solids	15		46266.667	2015.496	50298
Conductivity (umhos/cm)	14		64286	9168	82623
pH (units)	15	6.5-8.5	7.513	0.109	7.73
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	15		2.660	5.450	13.56
Total Organic Halogens (TOX)	15		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	15		7.467	3.117	7.70
Conductivity (umhos/cm)	15		67198.400	10317.387	87833
Temperature (Deg. C)	15		12.100	0.821	13.74

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-37

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	15	15	134.667	125.850	386.37
Gross Beta	15		543.333	153.522	850.38
Total Uranium	15	0.02	0.011	0.004	0.02
Beryllium-7	15		47.933	27.194	102.32
Cadmium-109	15		59.933	19.529	98.99
Carbon-14	12	2133	4.000	5.332	14.66
Cobalt-60	15		6.180	3.754	13.69
Iodine-129	6	1.07	0.833	1.367	3.57
Manganese-54	15		5.213	3.280	11.77
Neptunium-237	6		0.763	0.121	1.01
Potassium-40	15	48	412.200	119.960	652.12
Radium-226	15		1.313	0.970	3.25
Radium-228	15		2.747	0.665	4.08
Ra-226 + Ra-228	15	5	4.060	1.635	7.331
Strontium-90	15	8	0.500	0.784	2.07
Technetium-99	6	800	1.733	2.242	6.22
Thorium-230	15	5.33	0.480	0.946	2.37
Thorium-232	15	5.33	0.053	0.200	0.45
Tritium	12		12.500	41.458	95.42

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-38

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.022	0.011	0.043
Barium	17	1	0.024	0.031	0.087
Beryllium	13		0.005	0.000	0.005
Cadmium	17	0.01	0.007	0.008	0.022
Chromium	17	0.05	0.025	0.033	0.091
Copper	17	1	0.017	0.035	0.086
Lead	17	0.05	0.005	0.000	0.005
Mercury	17	0.002	0.0004	0.0004	0.001
Molybdenum	13		0.200	0.078	0.357
Nickel	17	0.15	0.019	0.027	0.073
Selenium	17	0.01	0.006	0.002	0.009
Silver	17	0.05	0.016	0.043	0.103
Zinc	17	5	0.010	0.018	0.047
<b>ANIONS</b>					
Bicarbonate	17		188.824	34.451	258
Carbonate	17		10.000	0.000	10
Chloride	17		20176.471	1423.967	23024
Sulfate	17		2988.235	205.462	3399
<b>CATIONS</b>					
Calcium	17		398.235	38.841	476
Magnesium	17		580.000	52.131	684
Potassium	17		457.059	56.544	570
Sodium	17		13058.824	1161.672	15382
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	2.482	0.340	3.16
Fluorine	7		1.357	1.896	5.15
Nitrate	17		0.285	0.158	0.602
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	17	10	0.296	0.151	0.599
Total Dissolved Solids	17		37000.000	1571.810	40144
Conductivity (umhos/cm)	16		54375.000	6122.448	66620
pH (units)	17	6.5-8.5	7.541	0.142	7.82
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		1.191	0.503	2.20
Total Organic Halogens (TOX)	17		0.034	0.116	0.267
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.434	0.121	7.68
Conductivity (umhos/cm)	17		57553.706	7398.918	72352
Temperature (Deg. C)	17		12.047	0.638	13.32

\* Based on samples collected between April 1991 and November 1993



**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-38

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	78.824	103.576	285.98
Gross Beta	17		452.353	89.280	630.91
Total Uranium (mg/l)	17	0.02	0.025	0.008	0.04
Beryllium-7	17		85.000	105.672	296.34
Cadmium-109	17		55.824	24.551	104.92
Carbon-14	12	2133	8.167	11.603	31.37
Cobalt-60	17		5.259	3.241	11.74
Iodine-129	6	1.07	0.850	1.608	4.07
Manganese-54	17		5.447	3.726	12.90
Neptunium-237	6		0.033	0.075	0.18
Potassium-40	17	48	363.647	180.241	724.13
Radium-226	17		1.341	0.320	1.98
Radium-228	17		2.847	0.982	4.81
Ra-226 + Ra-228	17	5	4.188	1.302	6.792
Strontium-90	17	8	0.471	0.556	1.58
Technetium-99	6	800	3.250	6.183	15.62
Thorium-230	17	5.33	0.076	0.180	0.44
Thorium-232	17	5.33	0.000	0.000	0.00
Tritium	12		14.167	31.743	77.65

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-56R

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	6	0.05	0.008	0.002	0.012
Barium	6	1	0.065	0.018	0.100
Beryllium	6		0.005	0.000	0.005
Cadmium	6	0.01	0.010	0.011	0.031
Chromium	6	0.05	0.031	0.030	0.090
Copper	6	1	0.010	0.009	0.029
Lead	6	0.05	0.005	0.000	0.005
Mercury	6	0.002	0.0003	0.0002	0.001
Molybdenum	6		0.040	0.042	0.125
Nickel	6	0.15	0.029	0.039	0.106
Selenium	6	0.01	0.005	0.000	0.005
Silver	6	0.05	0.005	0.000	0.005
Zinc	6	5	0.009	0.009	0.027
<b>ANIONS</b>					
Bicarbonate	6		355.000	15.000	385
Carbonate	6		10.000	0.000	10
Chloride	6		21666.667	745.356	23157
Sulfate	6		1683.333	233.928	2151
<b>CATIONS</b>					
Calcium	6		368.333	15.723	400
Magnesium	6		500.000	25.820	552
Potassium	6		506.667	32.998	573
Sodium	6		14500.000	500.000	15500
<b>OTHER CHEMISTRIES</b>					
Cyanide	6		0.005	0.000	0.005
Fluoride	6	2.40	2.683	0.234	3.15
Fluorine	6		2.217	3.036	8.29
Nitrate	6		0.027	0.012	0.052
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	6	10	0.030	0.015	0.061
Total Dissolved Solids	6		41166.667	4179.979	49527
Conductivity (umhos/cm)	5		63400	10268	83937
pH (units)	6	6.5-8.5	7.533	0.236	8.00
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	6		1.000	0.000	1.00
Total Organic Halogens (TOX)	6		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	6		7.175	0.098	7.37
Conductivity (umhos/cm)	6		64716.667	3459.969	71637
Temperature (Deg. C)	6		12.508	0.372	13.25

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-56R

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	6	15	6.667	14.907	36.48
Gross Beta	6		366.667	99.107	564.88
Total Uranium (mg/l)	6	0.02	0.012	0.005	0.02
Beryllium-7	6		23.333	7.203	37.74
Cadmium-109	6		53.833	16.687	87.21
Carbon-14	6	2133	3.333	5.528	14.39
Cobalt-60	6		2.617	0.508	3.63
Iodine-129	5	1.07	0.000	0.000	0.00
Manganese-54	6		2.217	0.437	3.09
Neptunium-237	5		0.200	0.261	0.72
Potassium-40	6	48	340.000	176.163	692.33
Radium-226	6		1.300	0.462	2.22
Radium-228	6		2.517	0.882	4.28
Ra-226 + Ra-228	6	5	3.817	1.344	6.505
Strontium-90	6	8	0.133	0.197	0.53
Technetium-99	5	800	1.720	2.296	6.31
Thorium-230	6	5.33	1.367	2.327	6.02
Thorium-232	6	5.33	0.000	0.000	0.00
Tritium	6		49.167	70.735	190.64

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-57

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	14	0.05	0.012	0.006	0.024
Barium	14	1	0.020	0.015	0.049
Beryllium	13		0.005	0.000	0.005
Cadmium	14	0.01	0.007	0.008	0.023
Chromium	14	0.05	0.029	0.028	0.084
Copper	14	1	0.010	0.011	0.032
Lead	14	0.05	0.005	0.000	0.005
Mercury	14	0.002	0.0004	0.0005	0.001
Molybdenum	13		0.323	0.105	0.533
Nickel	14	0.15	0.024	0.044	0.111
Selenium	14	0.01	0.005	0.000	0.005
Silver	14	0.05	0.005	0.000	0.005
Zinc	14	5	0.009	0.012	0.033
<b>ANIONS</b>					
Bicarbonate	14		126.429	8.113	143
Carbonate	14		10.000	0.000	10
Chloride	14		20642.857	1493.182	23629
Sulfate	14		4192.857	647.483	5488
<b>CATIONS</b>					
Calcium	14		648.571	70.392	789
Magnesium	14		797.143	68.079	933
Potassium	14		490.000	74.929	640
Sodium	14		13500.000	1052.209	15604
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	14	2.40	3.314	0.352	4.02
Fluorine	7		1.629	2.195	6.02
Nitrate	14		0.322	0.060	0.443
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	14	10	0.324	0.062	0.448
Total Dissolved Solids	14		41214.286	2335.398	45885
Conductivity (umhos/cm)	13		55384.615	8490.161	72365
pH (units)	14	6.5-8.5	7.464	0.212	7.89
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	14		1.336	0.669	2.67
Total Organic Halogens (TOX)	14		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	14		7.441	0.074	7.59
Conductivity (umhos/cm)	14		61109.429	4730.496	70570
Temperature (Deg. C)	14		13.364	0.859	15.08

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-57

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	14	15	70.714	74.110	218.94
Gross Beta	14		516.429	155.178	826.78
Total Uranium	14	0.02	0.004	0.002	0.01
Beryllium-7	14		58.857	40.165	139.19
Cadmium-109	14		68.071	28.011	124.09
Carbon-14	12	2133	3.475	4.302	12.28
Cobalt-60	14		7.179	4.435	16.05
Iodine-129	6	0.000	0.000	0.000	0.00
Manganese-54	14		6.229	4.820	15.87
Neptunium-237	6		0.100	0.200	0.50
Potassium-40	14	48	415.286	77.628	570.54
Radium-226	14		0.579	0.314	1.21
Radium-228	14		1.293	0.524	2.34
Ra-226 + Ra-228	14	5	1.871	0.839	3.549
Strontium-90	14	8	0.336	0.447	1.23
Technetium-99	6	800	1.920	1.977	5.87
Thorium-230	14	5.33	1.614	2.306	6.23
Thorium-232	14	5.33	0.043	0.155	0.35
Tritium	12		50.000	47.610	145.22

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-58

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	14	0.05	0.064	0.026	0.116
Barium	14	1	0.020	0.014	0.049
Beryllium	13		0.005	0.000	0.005
Cadmium	14	0.01	0.006	0.007	0.020
Chromium	14	0.05	0.022	0.023	0.068
Copper	14	1	0.069	0.070	0.209
Lead	14	0.05	0.005	0.000	0.005
Mercury	14	0.002	0.0005	0.0005	0.001
Molybdenum	13		0.200	0.078	0.357
Nickel	14	0.15	0.022	0.035	0.093
Selenium	14	0.01	0.005	0.000	0.006
Silver	14	0.05	0.005	0.000	0.005
Zinc	14	5	0.114	0.134	0.383
<b>ANIONS</b>					
Bicarbonate	14		144.286	11.157	167
Carbonate	14		10.000	0.000	10
Chloride	14		20500.000	1052.209	22604
Sulfate	14		2914.286	279.942	3474
<b>CATIONS</b>					
Calcium	14		415.000	36.985	489
Magnesium	14		637.857	48.282	734
Potassium	14		472.857	49.631	572
Sodium	14		13214.286	860.114	14935
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	14	2.40	2.821	0.330	3.48
Fluorine	7		1.843	2.517	6.88
Nitrate	14		0.686	0.163	1.012
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	14	10	0.689	0.166	1.020
Total Dissolved Solids	14		39642.857	2580.342	44804
Conductivity (umhos/cm)	13		56076.923	7927.183	71931
pH (units)	14	6.5-8.5	7.564	0.149	7.86
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	14		1.150	0.331	1.81
Total Organic Halogens (TOX)	14		0.005	0.000	0.005
<b>FIELD MEASUREMENTS</b>					
pH (units)	14		7.524	0.123	7.77
Conductivity (umhos/cm)	14		61685.714	4791.638	71269
Temperature (Deg. C)	14		12.914	0.612	14.14

\* Based on samples collected between April 1991 and November 1993

**TABLE I**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in pCi/l unless noted otherwise)**

Well Identification: GW-58

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	14	15	97.143	86.967	271.08
Gross Beta	14		511.429	176.468	864.36
Total Uranium	14	0.02	0.029	0.009	0.05
Beryllium-7	14		56.143	42.890	141.92
Cadmium-109	14		61.857	24.026	109.91
Carbon-14	12	2133	3.667	3.659	10.98
Cobalt-60	14		5.664	3.618	12.90
Iodine-129	6	1.07	0.220	0.440	1.10
Manganese-54	14		5.721	3.704	13.13
Neptunium-237	6		0.260	0.388	1.04
Potassium-40	14	48	382.214	99.035	580.29
Radium-226	14		1.407	0.390	2.19
Radium-228	14		2.529	0.795	4.12
Ra-226 + Ra-228	14	5	3.936	1.185	6.306
Strontium-90	14	8	0.321	0.347	1.01
Technetium-99	6	800	0.280	0.366	1.01
Thorium-230	14	5.33	0.457	1.089	2.64
Thorium-232	14	5.33	0.136	0.489	1.11
Tritium	12		39.583	67.899	175.38

\* Based on samples collected between April 1991 and November 1993

**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
**Compliance Monitor Wells**  
**(in mg/l unless noted otherwise)**

Well Identification: GW-I-2-30

Page 1 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED METALS</b>					
Arsenic	17	0.05	0.013	0.005	0.023
Barium	17	1	0.040	0.101	0.242
Beryllium	13		0.005	0.000	0.005
Cadmium	17	0.01	0.006	0.006	0.018
Chromium	17	0.05	0.017	0.018	0.053
Copper	17	1	0.009	0.011	0.031
Lead	17	0.05	0.005	0.000	0.005
Mercury	17	0.002	0.0002	0.0001	0.0005
Molybdenum	13		0.058	0.045	0.149
Nickel	17	0.15	0.013	0.019	0.050
Selenium	17	0.01	0.005	0.000	0.005
Silver	17	0.05	0.009	0.016	0.040
Zinc	17	5	0.007	0.009	0.024
<b>ANIONS</b>					
Bicarbonate	17		252.353	29.611	312
Carbonate	17		10.000	0.000	10
Chloride	17		18941.176	1161.672	21265
Sulfate	17		1588.235	613.459	2815
<b>CATIONS</b>					
Calcium	17		325.882	31.071	388
Magnesium	17		438.235	47.432	533
Potassium	17		419.412	102.583	625
Sodium	17		11470.588	2810.017	17091
<b>OTHER CHEMISTRIES</b>					
Cyanide	11		0.005	0.000	0.005
Fluoride	17	2.40	2.318	0.340	3.00
Fluorine	7		2.086	2.824	7.73
Nitrate	17		0.076	0.256	0.588
Nitrates (NO3-N + NO2-N)	17	10	0.015	0.007	0.029
Total Dissolved Solids	17		33117.647	1450.450	36019
Conductivity (umhos/cm)	16		49125.000	5278.198	59681
pH (units)	17	6.5-8.5	7.571	0.177	7.93
<b>ORGANICS</b>					
Total Organic Carbon (TOC)	17		1.734	3.318	8.37
Total Organic Halogens (TOX)	17		0.034	0.116	0.267
<b>FIELD MEASUREMENTS</b>					
pH (units)	17		7.415	0.128	7.67
Conductivity (umhos/cm)	17		52889.118	8694.979	70279
Temperature (Deg. C)	17		12.953	1.038	15.03

\* Based on samples collected between April 1991 and November 1993



**TABLE 1**  
**SUMMARY OF WATER QUALITY STATISTICS**  
 Compliance Monitor Wells  
 (in pCi/l unless noted otherwise)

Well Identification: GW-I-2-30

Page 2 of 2

PARAMETERS	Number of Samples	GWQS	Mean Concentration *	Standard Deviation (s) *	Mean Concentration + 2(s)
<b>DISSOLVED RADIOLOGICS</b>					
Gross Alpha	17	15	22.941	41.975	106.89
Gross Beta	17		395.882	225.494	846.87
Total Uranium (mg/l)	17	0.02	0.009	0.003	0.01
Beryllium-7	17		81.000	109.380	299.76
Cadmium-109	17		69.882	23.738	117.36
Carbon-14	12	2133	3.667	4.570	12.81
Cobalt-60	17		7.306	3.953	15.21
Iodine-129	6	1.07	0.267	0.596	1.46
Manganese-54	17		7.406	4.449	16.30
Protactinium-237	6		0.083	0.121	0.33
Potassium-40	17	48	336.941	104.675	546.29
Radium-226	17		0.641	0.283	1.21
Radium-228	17		1.624	0.543	2.71
Ra-226 + Ra-228	17	5	2.265	0.826	3.916
Strontium-90	17	8	0.494	0.810	2.11
Technetium-99	6	800	2.800	5.056	12.91
Thorium-230	17	5.33	1.335	2.313	5.96
Thorium-232	17	5.33	0.118	0.471	1.06
Tritium	12		6.667	14.907	36.48

\* Based on samples collected between April 1991 and November 1993

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TABLES 2 AND 3

PROPOSED GROUNDWATER PROTECTION LEVELS

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**TABLE 2**  
**PROPOSED GROUNDWATER PROTECTION LEVELS**  
**Compliance Monitor Wells**  
**( in mg/l unless noted otherwise )**

PARAMETERS	UDWQ GWQS	Proposed GWPL (1)
<b>DISSOLVED METALS</b>		
Arsenic	0.05	0.05 (2)
Barium	1.0	1.0
Beryllium (11)	NA	0.01 (3)
Cadmium	0.01	0.01 (5) *
Chromium	0.05	0.05 (6) *
Copper	1.0	1
Lead	0.05	0.05
Mercury	0.002	0.002 (7)
Molybdenum (11)	NA	(4) *
Nickel	0.15	0.15 *
Selenium	0.01	0.01 (8)
Silver	0.05	0.05 (9)
Zinc	5.0	5.0 (10)
<b>OTHER CHEMISTRIES</b>		
Cyanide (11)	NA	0.01 (3)
Fluoride	2.4	(4)
Fluorine (11)	NA	(4)
Nitrates (NO <sub>3</sub> -N + NO <sub>2</sub> -N)	10.0	10.0
Total Dissolved Solids (TDS)	NA	(4)
pH (units)	6.5-8.5	6.5-8.5
<b>ORGANICS</b>		
Total Organic Carbon (TOC)	NA	(4)
Total Organic Halogens (TOX)	NA	(4)

- (1) GWPL established as GWQS or Mean + 2(s), based on samples collected between April 1991 and November 1993, whichever is greater. Out-of-compliance status defined as two consecutive samples in excess of the GWPL for any compliance monitor well.
  - (2) GWPL established at 0.05 mg/l for all the compliance monitor wells except as follows:
 

GW-25 - 0.105 mg/l	GW-28 - 0.073 mg/l
GW-26 - 0.195 mg/l	GW-36 - 0.060 mg/l
GW-27 - 0.054 mg/l	GW-58 - 0.116 mg/l
  - (3) GWPL established at 10 percent of detection limit.
  - (4) GWPL established at Mean + 2(s) for all the monitor wells, see Table 3, Page 1 of 2.
  - (5) GWPL established at 0.01 mg/l for all the compliance monitor wells except as follows:
 

GW-25 - 0.017 mg/l	GW-38 - 0.016 mg/l
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  - (6) GWPL established at 0.05 mg/l for all the compliance monitor wells except as follows:
 

GW-19A - 0.062 mg/l	GW-26 - 0.052 mg/l
GW-25 - 0.089 mg/l	GW-38 - 0.081 mg/l
  - (7) GWPL established at 0.002 mg/l for all the compliance monitor wells except as follows:
 

GW-20 - 0.0054 mg/l	GW-29 - 0.034 mg/l
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  - (8) GWPL established at 0.01 mg/l for all the compliance monitor wells except as follows:
 

GW-26 - 0.014 mg/l
--------------------
  - (9) GWPL established at 0.05 mg/l for all the compliance monitor wells except as follows:
 

GW-25 - 0.103 mg/l	GW-38 - 0.103 mg/l
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  - (10) GWPL established at 5 mg/l for all the compliance monitor wells except as follows:
 

GW-19A - 8.20 mg/l
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  - (11) 11e.(2) permit parameters; all other parameters except copper, zinc, fluoride, nitrates, TDS, pH, TOC, and TOX are required by both the LARW and 11e.(2) Permits.
- \* Based on samples collected between April 1991 and May 1993 because elevated concentrations for these constituents in August and November 1993 are apparently due to corrosion of the stainless steel sampling pumps.

**TABLE 2**  
**PROPOSED GROUNDWATER PROTECTIONS LEVELS**  
**Compliance Monitor Wells**  
**( in pCi/l unless noted otherwise )**

PARAMETERS	UDWQ GWQS	Proposed GWPL (1)
<b>DISSOLVED RADIOLOGICS</b>		
Gross Alpha	15	(2)
Gross Beta	NA	(2)
Total Uranium (mg/l) (7)	0.02	0.02 (3)
Carbon-14	2133	2133
Iodine-129	1.07	1.07 (4)
Neptunium-237	8.0	8.0
Potassium-40	48	(2)
Radium-226 (7)	NA	NA
Radium-228 (7)	NA	NA
Ra-226 + Ra-228	5.0	5.0 (5)
Strontium-90	8.0	8.0
Technetium-99	800	800
Thorium-230 (7)	5.33	5.33 (6)
Thorium-232 (7)	5.33	5.33

- (1) GWPL established as GWQS or Mean + 2(s), based on samples collected between April 1991 and November 1993, whichever is greater. Out-of-compliance status defined as two consecutive samples in excess of the GWPL for any compliance monitor well.
- (2) GWPL established at Mean + 2(s) for all the monitor wells, see Table 3, Page 2 of 2.
- (3) GWPL established at 0.02 mg/l for all the compliance monitor wells except as follows:
 

GW-25 - 0.16 mg/l	GW-36 - 0.07 mg/l
GW-26 - 0.04 mg/l	GW-38 - 0.04 mg/l
GW-27 - 0.03 mg/l	GW-58 - 0.05 mg/l
GW-29 - 0.04 mg/l	
- (4) GWPL established at 1.07 pCi/l for all the compliance monitor wells except as follows:
 

GW-19A - 6.60 pCi/l	GW-26 - 2.76 pCi/l	GW-37 - 3.57 pCi/l
GW-20 - 8.45 pCi/l	GW-27 - 2.72 pCi/l	GW-38 - 4.07 pCi/l
GW-22 - 4.89 pCi/l	GW-28 - 4.20 pCi/l	GW-58 - 1.10 pCi/l
GW-23 - 3.65 pCi/l	GW-29 - 4.51 pCi/l	I-2-30 - 1.46 pCi/l
GW-25 - 1.93 pCi/l	GW-36 - 5.43 pCi/l	
- (5) GWPL established at 5 pCi/l for all the compliance monitor wells except as follows:
 

GW-20 - 10.78 pCi/l	GW-28 - 6.31 pCi/l	GW-38 - 6.79 pCi/l
GW-24 - 5.97 pCi/l	GW-29 - 6.26 pCi/l	GW-56R - 6.50 pCi/l
GW-25 - 6.58 pCi/l	GW-37 - 7.33 pCi/l	GW-58 - 6.31 pCi/l
GW-26 - 5.52 pCi/l		
- (6) GWPL established at 5.33 pCi/l for all the compliance monitor wells except as follows:
 

GW-16R - 6.66 pCi/l	GW-27 - 6.69 pCi/l	I-2-30 - 5.96 pCi/l
GW-23 - 10.10 pCi/l	GW-56R - 6.02 pCi/l	
GW-26 - 7.04 pCi/l	GW-57 - 6.23 pCi/l	
- (7) These radiological parameters are required by LARW and 11e.(2) Permits; all others radiological parameters are LARW only.

TABLE 2  
 PROPOSED GROUNDWATER PROTECTIONS LEVELS  
 11e.(2) Compliance Monitor Wells  
 ( in ug/l unless noted otherwise )

PARAMETERS (7)	Proposed GWPL
<b>VOLATILE ORGANICS</b>	
Acetone	3700 (1)
2-Butanone	22 (4)
Chloroform	100 (2)
Carbon disulfide	21 (1)
1,2-Dichloroethane	5 (2)
Methylene Chloride	5 (5)
Naphthalene	14000 (3)
<b>SEMI-VOLATILE ORGANICS</b>	
Diethylphthalate	5000 (6)
2-Methylnaphthalene	5.0 (4)

- (1) U.S. EPA, Region III, guidelines only; not regulatory standards, October 1993.
- (2) Federal maximum contaminant level (MCL), promulgated under the Safe Drinking Water Act.
- (3) Utah Division of Environmental Response and Remediation (DERR) groundwater protection standards for underground storage tank (UST) sites.
- (4) GWPL established at 10 percent of the detection limit.
- (5) Federal MCL (Proposed).
- (6) Federal MCL (Goal).
- (7) 11e.(2) compliance monitoring wells only.

**TABLE 3**  
**PROPOSED GROUNDWATER PROTECTION LEVELS**  
**Compliance Monitor Wells**  
**( in mg/l unless noted otherwise )**

WELL IDENTIFICATION (2)	PROPOSED GWPL (1)					
	Molybdenum *	Fluoride	Fluorine	TDS	TOC	TOX
GW-16R	0.10	3.27	8.29	43017	0.27	0.01
GW-19A	0.90	5.58	7.72	55051	14.94	0.01
GW-20	0.31	4.0	0.76	55552	15.83	0.01
GW-22	0.10	3.45	7.72	45984	1.83	0.01
GW-23	0.24	3.81	7.72	45018	15.43	0.01
GW-24	0.32	3.84	0.82	50835	7.03	0.01
GW-25	0.29	4.3	6.02	64918	25.67	0.267
GW-26	0.71	4.57	5.18	55435	11.44	0.01
GW-27	1.36	4.37	6.88	52478	2.72	0.01
GW-28	0.79	3.9	6.87	48321	2.69	0.01
GW-29	0.37	4.46	6.85	53334	10.1	0.01
GW-36	0.44	3.91	6.01	44894	22.58	0.01
GW-37	0.46	3.75	3.45	50298	13.56	0.01
GW-38	0.36	3.16	5.15	40144	2.2	0.267
GW-56R	0.13	3.15	8.29	49527	1	0.01
GW-57	0.53	4.02	6.02	45885	2.67	0.01
GW-58	0.36	3.48	6.88	44804	1.81	0.01
I-2-30	0.15	3.0	7.73	36019	8.37	0.267

(1) GWPL based on Mean + 2(s) for samples collected between April 1991 and November 1993, for each compliance monitor well.

(2) The compliance monitor wells are defined as follows:

LARW Cell: I-2-30, GW-16R, GW-20, GW-22, GW-23, GW-24, GW-25, GW-29, GW-56R, GW-63 and GW-64.

11e.(2) Cells 1 and 2: GW-19A, GW-20, GW-24, GW-25, GW-26, GW-27, GW-28, GW-29, GW-36, GW-37, GW-38, GW-57, GW-58, GW-60, and GW-63.

\* Based on samples collected between April 1991 and May 1993 because elevated concentrations for these constituents in August and November 1993 are apparently due to corrosion of the stainless steel sampling pumps.

**TABLE 3**  
**PROPOSED GROUNDWATER PROTECTIONS LEVELS**  
**Compliance Monitor Wells**  
**( in pCi/l unless noted otherwise )**

WELL IDENTIFICATION (2)	PROPOSED GWPL (1)		
	Gross Alpha	Gross Beta	Potassium-40
GW-16R	91	723	658
GW-19A	223	761	678
GW-20	246	798	653
GW-22	373	835	582
GW-23	239	899	586
GW-24	538	969	611
GW-25	354	955	784
GW-26	162	954	582
GW-27	349	831	683
GW-28	428	745	526
GW-29	255	884	650
GW-36	334	774	655
GW-37	386	850	652
GW-38	286	631	724
GW-56R	36	565	692
GW-57	219	827	571
GW-58	271	864	580
I-2-30	107	847	546

(1) GWPL based on Mean + 2(s) for samples collected between April 1991 and November 1993 for each compliance monitor well.

(2) The compliance monitor wells are defined as follows:

LARW Cell: I-2-30, GW-16R, GW-20, GW-22, GW-23, GW-24, GW-25, GW-29, GW-56R,  
 GW-63 and GW-64

11E.(2) Cells 1 & 2: GW-19A, GW-20, GW-24, GW-25, GW-26, GW-27, GW-28, GW-29, GW-36,  
 GW-37, GW-38, GW-57, GW-58, GW-60 and GW-63



**PROJECT MEMORANDUM**

**TO:** Loren Morton - Utah Division of Water Quality  
 Scott Hacking - Utah Division of Radiation Control  
 Otis Willoughby - Utah Division of Solid and Hazardous Waste  
 George Hellstrom - Envirocare of Utah, Inc.  
 Dennis Romanowski - Envirocare of Utah, Inc.

**FROM:** Stan Plaisier - Bingham Environmental, Inc.  
 Mark Taggart - Bingham Environmental, Inc. *STP*

**DATE:** March 29, 1994

**SUBJECT:** Corrosion of Stainless Steel Dedicated Sampling Pumps  
 Compliance Monitor Wells  
 Groundwater Quality Discharge Permit No. UGW450005  
 Envirocare LARW and 11e.(2) Disposal Cells  
 South Clive, Utah

Laboratory analytical results for groundwater samples collected in August, November and December 1993 indicated significant increases in cadmium, chromium, molybdenum, nickel and iron concentrations when compared to previous baseline data. Figures 1 and 2 provide graphs of cadmium, chromium and nickel concentrations in groundwater samples collected from GW-20 and GW-29 between January 1992 and February 1994. Significant increases in metal concentrations were detected in samples collected in August 1993 and the concentrations increased again in November 1993. The metal concentrations began to decrease in December 1993 or January 1994 with the concentrations being much lower in samples collected in February 1994. Probable out-of-compliance and out-of-compliance status was triggered in several of the compliance monitor wells due to these increases in regulated metals.

Based on disposal operations and estimated travel times for contaminate transport it is very unlikely that the increased metal concentrations are due to Envirocare's disposal operation. Review of the groundwater monitoring system indicated that the only potential source of metals was the stainless steel dedicated sampling pumps which had been in the majority of the monitor wells since December 1991. Envirocare personnel had previously observed evidence of corrosion occurring on some of the stainless steel pumps when they were removed for service or inspection. Discussions with QED Environmental Systems, Inc. (QED), supplier of the stainless steel pumps, indicated that the pump housing is made of 316L (low carbon) stainless steel. According to QED the stainless steel primarily consists



of 69% iron, 18% chromium and 14% nickel with minor amounts of molybdenum, carbon, manganese, silicone, phosphorus and sulphur. Based on discussions with QED cadmium is not a constituent of 316L stainless steel. Table 1 summarizes the percentage of metals and non-metal constituents reported by QED to be in their 316L stainless steel bladder sampling pumps.

Bingham Environmental has reviewed available information and checked with the analytical laboratory to verify that the metal concentrations were correctly analyzed and reported. Based on this review, it is our conclusion that the increased cadmium, chromium, molybdenum, nickel and iron concentrations are due to corrosion of the dedicated stainless steel sampling pumps installed in each of the compliance monitor wells. The fluctuations in metal concentrations appears to be a function of how much water is purged prior to sampling and how frequent the well is sampled. The significant increases in metal concentrations was observed in August 1993 which is when the sampling frequency was reduced from monthly to quarterly.

To evaluate the purging effect on the metal concentrations, times series sampling and analysis were performed by Envirocare personnel in January 1994 on GV-20 and GW-29. Results, which have been graphed on Figures 3 and 4, indicate that chromium, iron and nickel stabilize only after several well volumes have been removed and cadmium, manganese and molybdenum appear to stabilize rather quickly. Based on this data it is apparent that elevated concentrations of metals still exist when the compliance monitor wells are routinely purged and sampled.

The elevated cadmium concentrations have been somewhat perplexing. QED has reported that their stainless steel pumps do not contain cadmium, however, the cadmium concentrations have been elevated whenever other corrosion metals such as iron and chromium were elevated. Bingham Environmental contacted the analytical laboratory to determine if there was instrument interference occurring. The laboratory performed a relatively thorough review of their procedures and results and concluded that the cadmium concentrations they reported were correct.

Based on review of the data, cadmium concentrations were elevated whenever chromium concentrations were relatively high. Cadmium was plotted versus chromium for data collected in August and November 1993, presented on Figure 5, and the data indicates that elevated chromium has a direct correlation to elevated cadmium levels. Although cadmium has been reported to not be a constituent of stainless steel there may be other parts of the pump assembly which contains cadmium. Another possible explanation for the presence of cadmium may be due to some kind of interference that elevated chromium has on the cadmium analysis, however, American West Analytical Laboratory has already stated that they believe instrument interference has not caused false positive values for cadmium.

Although Envirocare is in the process of removing the stainless steel sampling pumps from the compliance monitor wells, there is evidence that it will probably take some period of time for the metal concentrations to decrease down to baseline levels. Therefore it may be necessary to waive groundwater protection levels for these parameters until the concentrations have stabilized at baseline values.

**TABLE 1**  
**COMPOSITION OF 316-L STAINLESS STEEL SAMPLING PUMP**

PARAMETER	PERCENT
Carbon	0.03
Manganese	2
Silicone	1
Phosphorus	0.045
Sulphur	0.03
Chromium	16 to 18
Nickel	10 to 14
Molybdenum	2 to 3
Iron	62 to 6 <sup>9</sup>

Reference: QED Ground Water Specialists, Correspondence,  
October 15, 1993, From: Bruce Hellner, To: Mark Taggart.

# GW-20

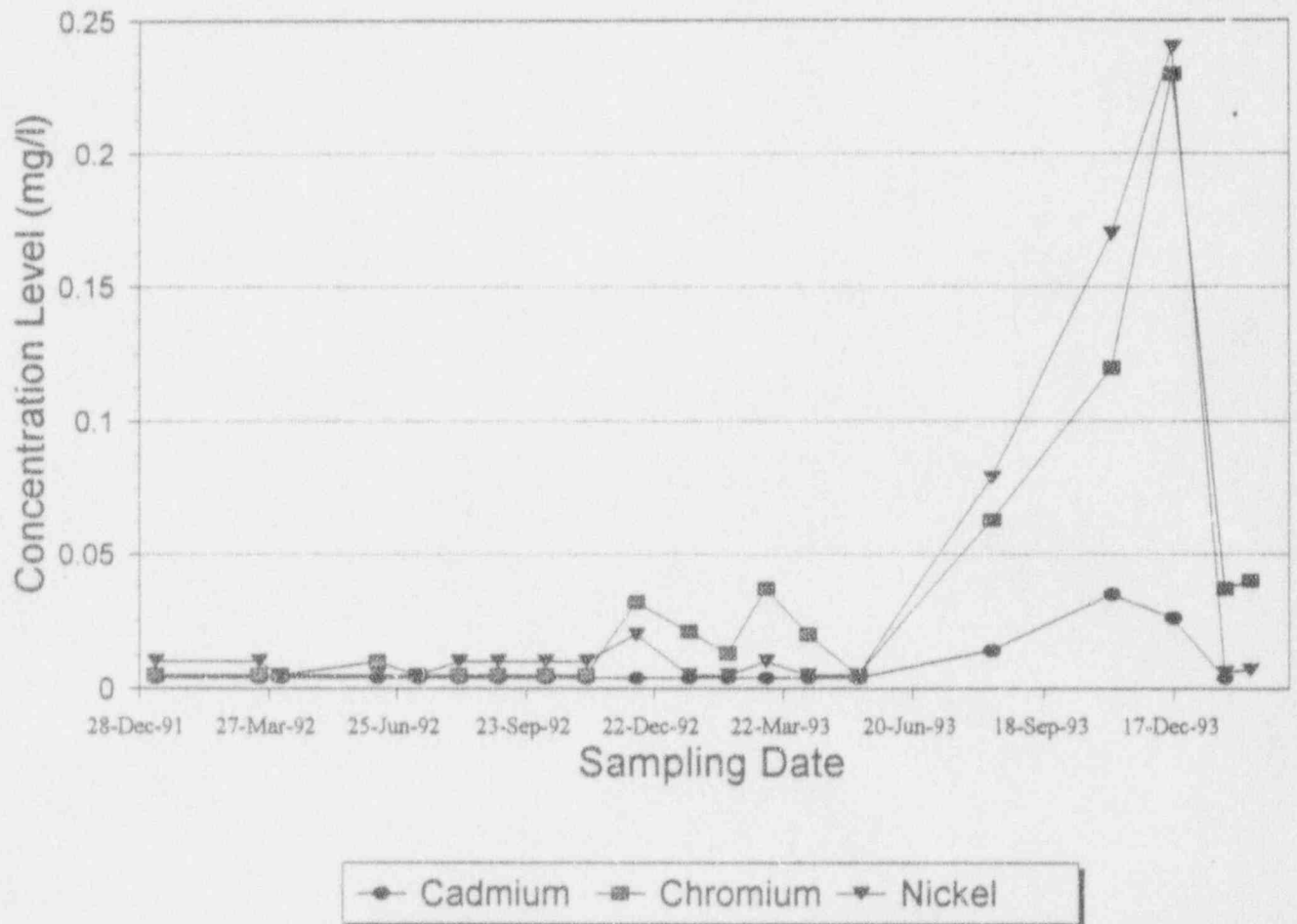


Figure 1

# GW-29

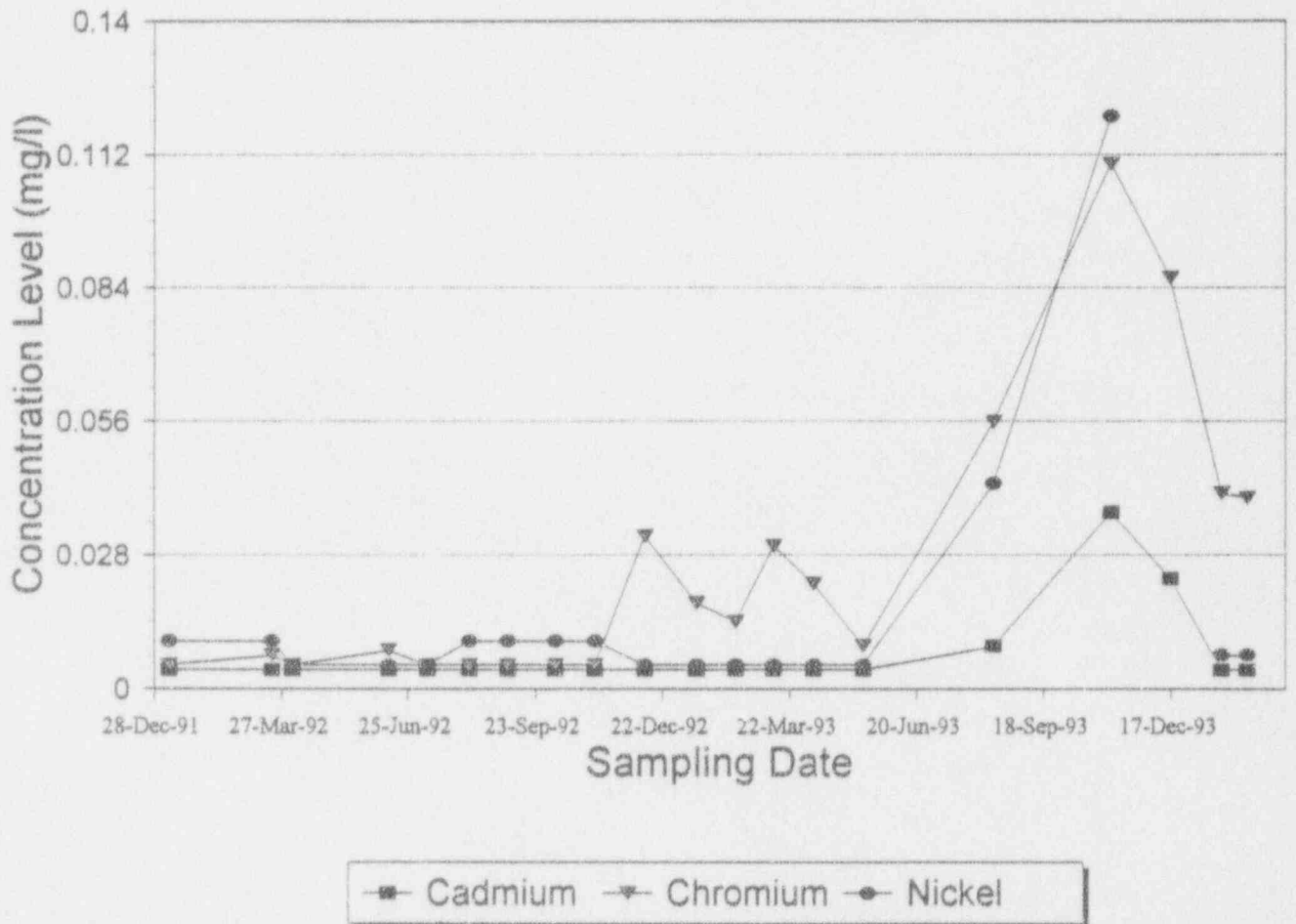


Figure 2

# TIME SERIES SAMPLE ANALYSIS

January 20, 1994

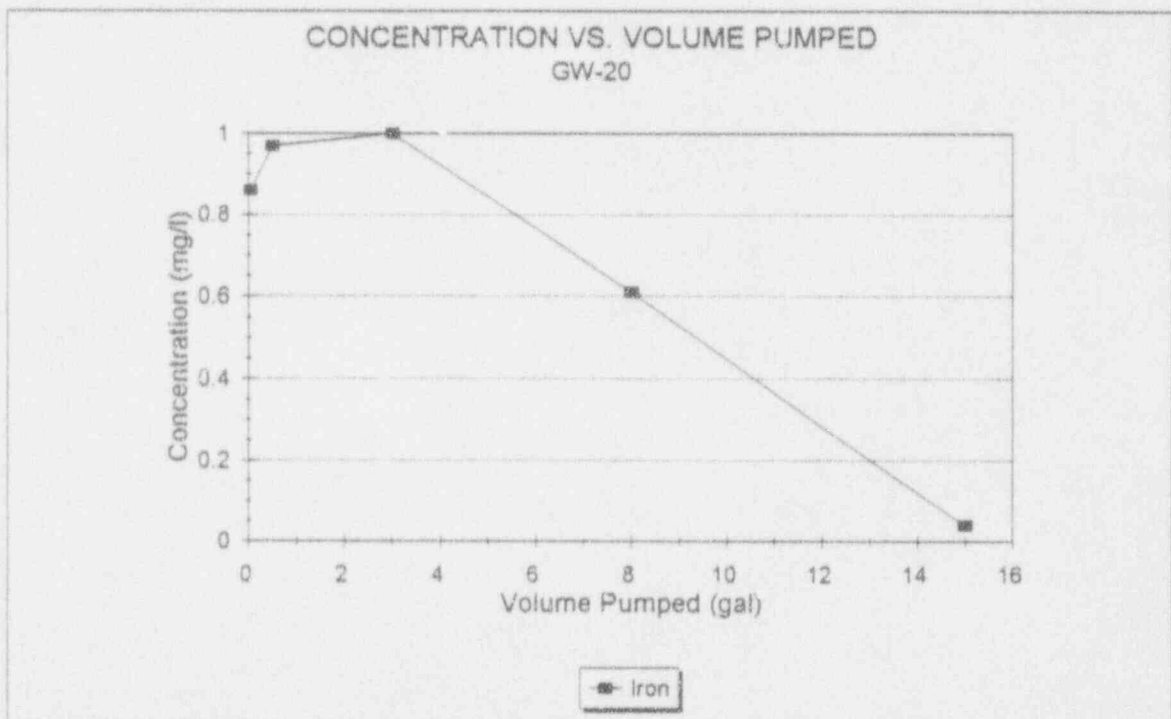
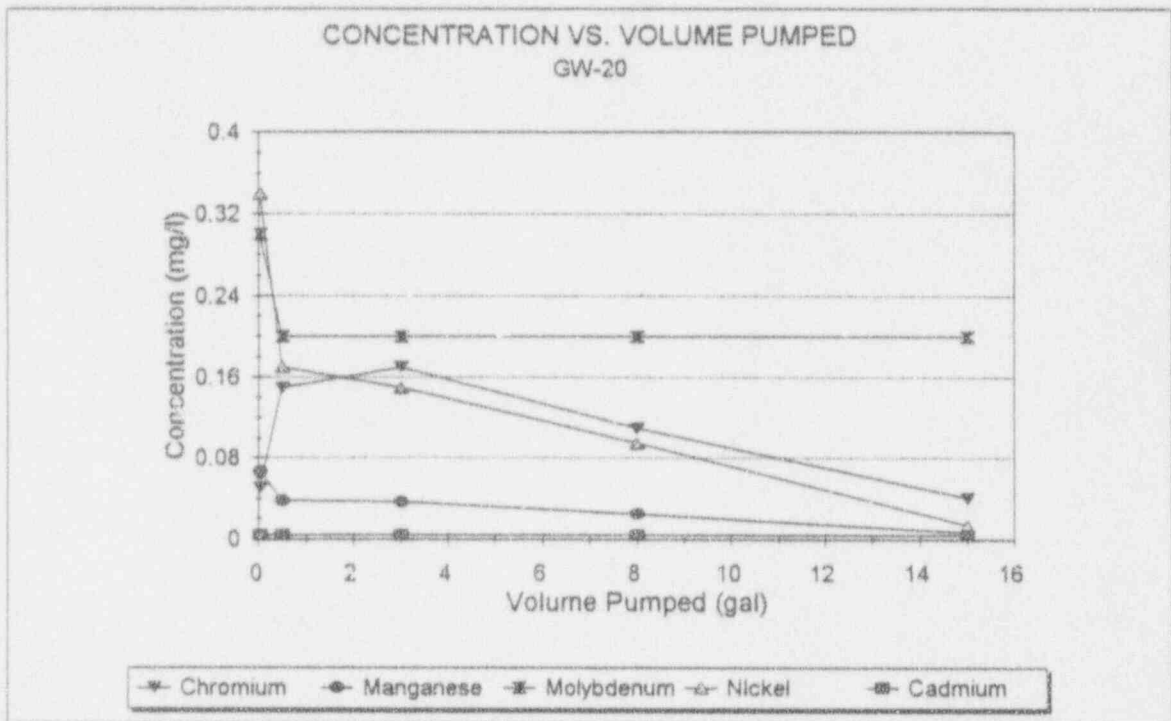


Figure 3

# TIME SERIES SAMPLE ANALYSIS

January 20, 1994

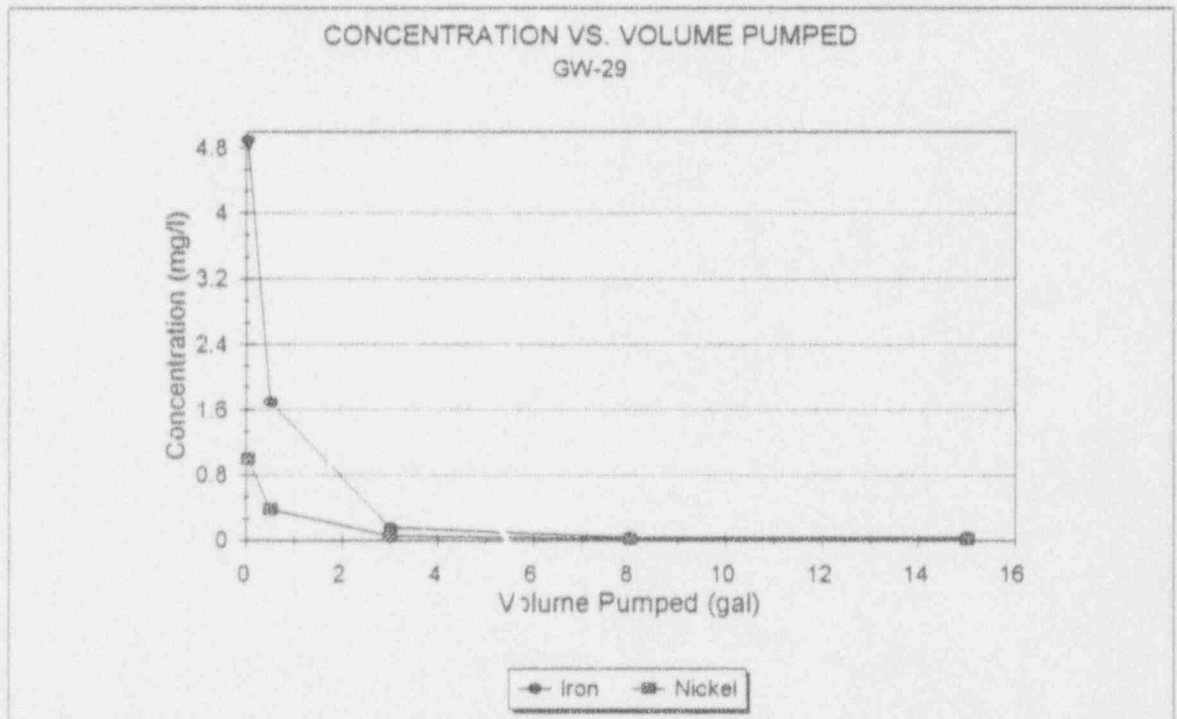
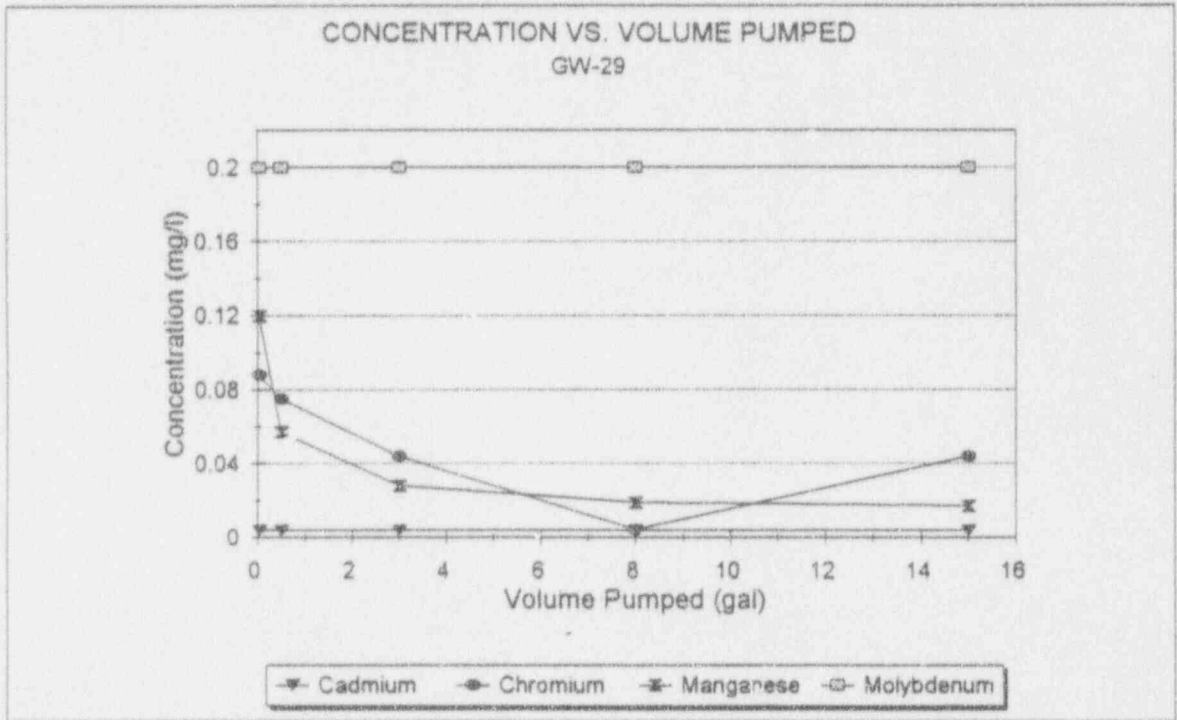


Figure 4

# Cadmium vs. Chromium

August/November 1993

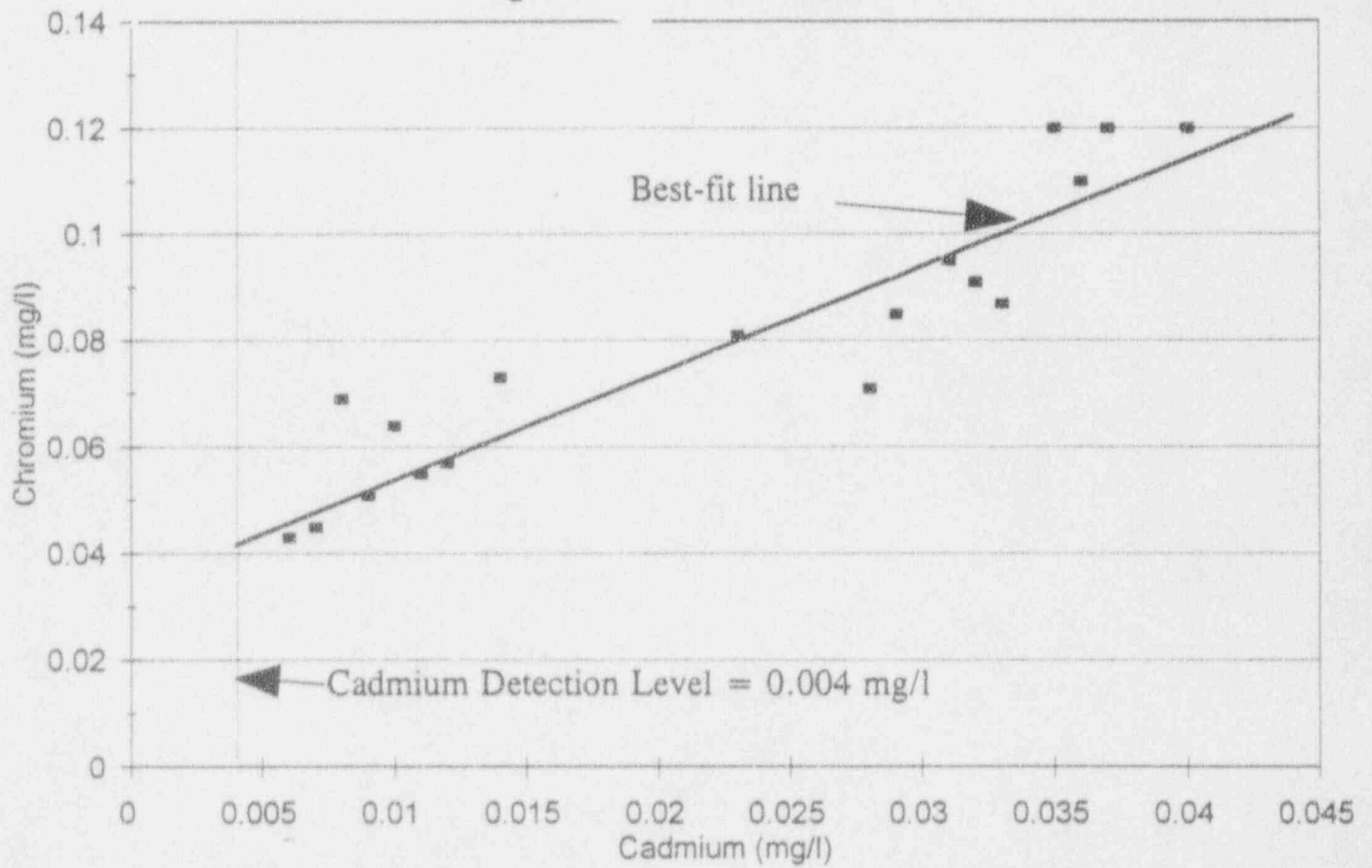


Figure 5

**Organic Analysis For 11e.(2) Compliance Monitor Wells  
November 1993 and February 1994**





AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-01

Field Sample ID. Number:  
November LARW Sampling/GW-37

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	<10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *David L. [Signature]*  
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-02

Field Sample ID. Number:  
November LARW Sampling/GW-24

Analytical Results

VOLATILE ORGANIC COMPOUNDS

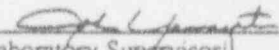
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-03

Field Sample ID. Number:  
November LARW Sampling/GW-63

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

< Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *David L. [Signature]*  
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-04

Field Sample ID. Number:  
November LARW Sampling/GW-20

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

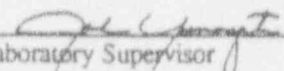
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	<10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-05

Field Sample ID. Number:  
November LARW Sampling/GW-71

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

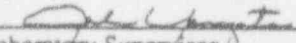
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	<10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-06

Field Sample ID. Number:  
November LARW Sampling/GW-58

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

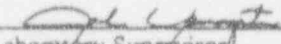
(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:

  
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-07

Field Sample ID. Number:  
November LARW Sampling/GW-28

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

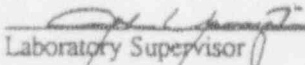
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	<10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-08

Field Sample ID. Number:  
November LARW Sampling/GW-57

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *John L. Armstrong*  
Laboratory Supervisor

Report Date 12/10/93

1 of 1





AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-09

Field Sample ID. Number:  
November LARW Sampling/GW-60

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

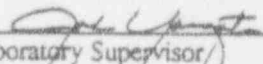
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-14

Field Sample ID. Number:  
November LARW Sampling/GW-36

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Jeff Lowe*  
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-15

Field Sample ID. Number:  
November LARW Sampling/GW-19A

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

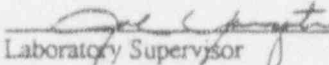
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-Method Blank

Field Sample ID. Number:  
Method Blank #1

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

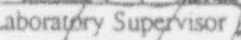
(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:

  
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-Method Blank

Field Sample ID. Number:  
Method Blank #2

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *John L. [Signature]*  
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-16

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #1

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *John L. [Signature]*  
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-17

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #2

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

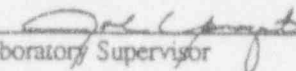
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 9, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16511-18

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #3

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	<10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Paul C. [Signature]*  
Laboratory Supervisor

Report Date 12/10/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-Method Blank

Field Sample ID. Number:  
Method Blank

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

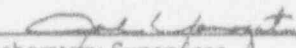
Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-01

Field Sample ID. Number:  
November LARW Sampling/GW-37

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS


Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semi-volatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-02

Field Sample ID. Number:  
November LARW Sampling/GW-24

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

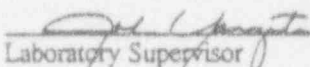
Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semi-volatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-03

Field Sample ID. Number:  
November LARW Sampling/GW-63

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

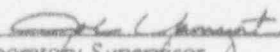
Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

< Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-04

Field Sample ID. Number:  
November LARW Sampling/GW-20

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

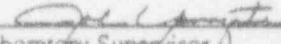
Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-05

Field Sample ID. Number:  
November LARW Sampling/GW-71

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

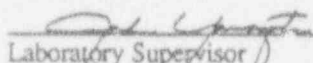
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-06

Field Sample ID. Number:  
November LARW Sampling/GW-58

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

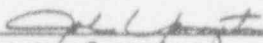
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-07

Field Sample ID. Number:  
November LARW Sampling/GW-28

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

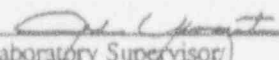
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-08

Field Sample ID. Number:  
November LARW Sampling/GW-57

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

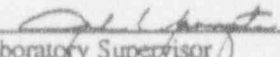
Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-09

Field Sample ID. Number:  
November LARW Sampling/GW-60

463 West 3600 South  
Salt Lake City, Utah  
84115

Analytical Results

ACID COMPOUNDS

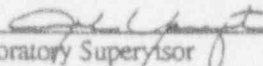
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 9, 1993

Lab Sample ID. Number:  
16511-14

Field Sample ID. Number:  
November LARW Sampling/GW-36

463 West 3600 South  
Salt Lake City, Utah  
84115

Analytical Results

ACID COMPOUNDS

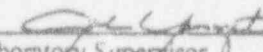
Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 10, 1993

Lab Sample ID. Number:  
16511-15

Field Sample ID. Number:  
November LARW Sampling/GW-19A

463 West 3600 South  
Salt Lake City, Utah  
84115

Analytical Results

ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Jennifer Habel*  
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 10, 1993

Lab Sample ID. Number:  
16511-Method Blank

Field Sample ID. Number:  
Method Blank

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

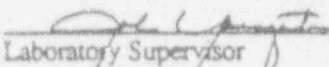
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 10, 1993

Lab Sample ID. Number:  
16511-16

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #1

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

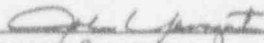
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semi-volatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 10, 1993

Lab Sample ID. Number:  
16511-17

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #2

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

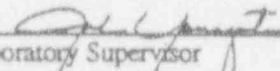
Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 4, 1993  
Set Identification Number: 16511  
Set Description: Fifteen Water Samples

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 10, 1993

Lab Sample ID. Number:  
16511-18

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #3

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Jennifer Habel*  
Laboratory Supervisor

Report Date 12/9/93

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Client: Envirocare  
 Date Received: November 4, 1993  
 Sample Number: 16511

### QUALITY CONTROL REPORT

Contact: Jeff Lowe  
 Received By: Jennifer Habel  
 Set Description: Fifteen Water Samples

#### Quality Control Results

Units = (ppb)

Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
16511-15	t-1,2-Dichloroethene	0.0	20.0	20.9	20.6	105.	103.	1.45
16511-15	Benzene	0.0	20.0	18.8	18.6	94.0	93.0	1.07
16511-15	Trichloroethene	0.0	20.0	17.7	18.8	88.5	94.0	-6.03
16511-15	Toluene	0.0	20.0	18.0	20.8	90.0	104.	-14.4
16511-15	Chlorobenzene	0.0	20.0	18.8	18.8	94.0	94.0	0.0

$$RPD = \frac{(SSR - SDR)}{\left(\frac{SSR + SDR}{2}\right)} * 100$$

$$\%SR = \frac{(SSR - SR)}{SA} * 100$$

$$\%SDR = \frac{(SDR - SR)}{SA} * 100$$

Released by: *J. Habel*  
 Laboratory Supervisor

Report Date 12/9/93

1 of 1



Client: Envirocare  
 Date Received: November 4, 1993  
 Sample Number: 16511

### QUALITY CONTROL REPORT

Contact: Jeff Lowe  
 Received By: Jennifer Habel  
 Set Description: Fifteen Water Samples

#### Quality Control Results

Units = (ppm)

Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
16511-01	Phenol	0.0	200.	48.7	52.1	24.4	26.1	-6.7
16511-01	1,4-Dichlorobenzene	0.0	200.	73.1	76.0	36.6	38.0	-3.9
16511-01	2,4-Dinitrotoluene	0.0	200.	171.6	190.0	85.8	95.0	-10.2
16511-01	Pentachlorophenol	0.0	200.	200.3	225.6	100.2	112.8	-11.9
16511-01	Pyrene	0.0	200.	165.6	175.9	82.8	88.0	-6.0
16511-15	Phenol	0.0	200.	65.1	66.8	32.6	33.4	-2.6
16511-15	1,4-Dichlorobenzene	0.0	200.	73.0	68.6	36.5	34.3	6.2
16511-15	2,4-Dinitrotoluene	0.0	200.	174.0	169.2	87.0	84.6	2.8
16511-15	Pentachlorophenol	0.0	200.	186.9	183.0	93.5	91.5	2.1
16511-15	Pyrene	0.0	200.	163.8	168.0	81.9	84.0	-2.5

$$RPD = \frac{(SSR - SDR)}{\left(\frac{SSR + SDR}{2}\right)} * 100$$

$$\%SR = \frac{(SSR - SR)}{SA} * 100$$

$$\%SDR = \frac{(SDR - SR)}{SA} * 100$$

Released by: John Sprague  
 Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Set Identification Number: 16470  
Set Description: One Water Sample

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 6, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16470-01

Field Sample ID. Number:  
November LARW Sampling/GW-38

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	<10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Jeff Lowe*  
Laboratory Supervisor

Report Date 12/10/93 1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Set Identification Number: 16470  
Set Description: One Water Sample

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 4, 1993

Lab Sample ID. Number:  
16470-01

Field Sample ID. Number:  
November LARW Sampling/GW-38

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Jennifer Habel*  
Laboratory Supervisor

Report Date 12/9/93      1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Set Identification Number: 16470  
Set Description: One Water Sample

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 6, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16470-Method Blank

Field Sample ID. Number:  
Method Blank

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

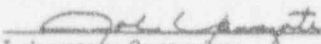
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	<10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93 1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Set Identification Number: 16470  
Set Description: One Water Sample

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8247  
Purge & Trap GC/MS

Date Analyzed:  
November 6, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16470-02

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #1

Analytical Results

VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *John C. [Signature]*  
Laboratory Supervisor

Report Date 12/10/93 1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Set Identification Number: 16470  
Set Description: One Water Sample

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 6, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16470-03

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #2

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

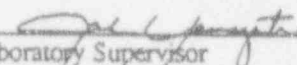
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	<10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93 1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Set Identification Number: 16470  
Set Description: One Water Sample

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 6, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16470-04

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #3

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Jennifer Habel*  
Laboratory Supervisor

Report Date 12/10/93 1 of 1





AMERICAN  
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ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Set Identification Number: 16470  
Set Description: One Water Sample

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 4, 1993

Lab Sample ID. Number:  
16470-Method Blank

Field Sample ID. Number:  
Method Blank

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

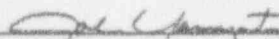
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93      1 of 1



AMERICAN  
WEST  
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LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Set Identification Number: 16470  
Set Description: One Water Sample

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 4, 1993

Lab Sample ID. Number:  
16470-02

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #1

463 West 3600 South  
Salt Lake City, Utah  
84115

Analytical Results

ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *John L. Houghton*  
Laboratory Supervisor

Report Date 12/9/93 1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Set Identification Number: 16470  
Set Description: One Water Sample

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 4, 1993

Lab Sample ID. Number:  
16470-03

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #2

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

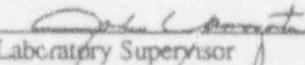
Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax: (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93      1 of 1

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 2, 1993  
Set Identification Number: 16470  
Set Description: One Water Sample

Contact: Jeff Lowe  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 4, 1993

Lab Sample ID. Number:  
16470-04

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #3

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Jeff Lowe*  
Laboratory Supervisor

Report Date 12/9/93 1 of 1

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Client: Envirocare  
Date Received: November 2, 1993  
Sample Number: 16470

## QUALITY CONTROL REPORT

Contact: Jeff Lowe  
Received By: Jennifer Habel  
Set Description: One Water Sample

### Quality Control Results

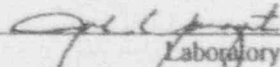
Units = (ppb)

Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
16470-01	Phenol	0.0	200.	78.6	81.7	39.3	40.9	-3.9
16470-01	1,4-Dichlorobenzene	0.0	200.	97.1	97.4	48.6	48.7	-0.3
16470-01	2,4-Dinitrotoluene	0.0	200.	213.5	225.0	106.8	112.5	-5.2
16470-01	Pentachlorophenol	0.0	200.	226.6	252.9	113.3	126.5	-11.0
16470-01	Pyrene	0.0	200.	214.2	230.5	107.1	115.3	-7.3
16470-01	1,1,2-Dichloroethene	0.0	20.0	22.1	20.4	110.5	102.0	8.00
16470-01	Benzene	0.0	20.0	21.5	21.1	107.5	105.5	1.88
16470-01	Trichloroethene	0.0	20.0	20.5	19.0	102.5	95.0	7.59
16470-01	Toluene	0.0	20.0	19.8	18.5	99.0	92.5	6.79
16470-01	Chlorobenzene	0.0	20.0	20.8	18.2	104.0	91.0	13.3

$$RPD = \frac{(SSR - SDR)}{\left(\frac{SSR + SDR}{2}\right)} \cdot 100$$

$$\%SR = \frac{(SSR - SR)}{SA} \cdot 100$$

$$\%SDR = \frac{(SDR - SR)}{SA} \cdot 100$$

Released by:   
Laboratory Supervisor

Report Date 12/10/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 10, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16534-01

Field Sample ID. Number:  
November LARW Sampling/GW-72

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

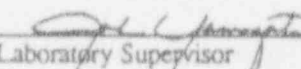
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 10, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16534-03

Field Sample ID. Number:  
November LARW Sampling/GW-27

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

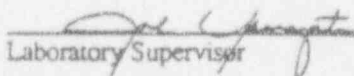
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 3-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	<10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 10, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16534-04

Field Sample ID. Number:  
November LARW Sampling/GW-29

Analytical Results

VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

1 of 1





AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 10, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16534-08

Field Sample ID. Number:  
November LARW Sampling/GW-26

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

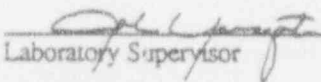
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 10, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16534-09

Field Sample ID. Number:  
November LARW Sampling/GW-25

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

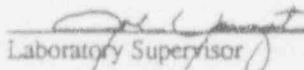
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 10, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16534-10

Field Sample ID. Number:  
November LARW Sampling/Trip Blank

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

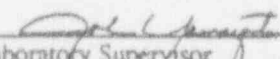
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 10, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16534-Method Blank

Field Sample ID. Number:  
Method Blank

Analytical Results

VOLATILE ORGANIC COMPOUNDS

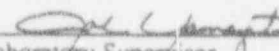
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	<10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/10/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 10, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16534-19

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #1

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Elona Hayward*  
Laboratory Supervisor

Report Date 12/10/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 10, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16534-20

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #2

Analytical Results

VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Paul L. [Signature]*  
Laboratory Supervisor

Report Date 12/10/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
November 10, 1993

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
16534-21

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #3

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	10.	< 10.
2-Butanone	10.	< 10.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	2.0	< 2.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Debra L. [Signature]*  
Laboratory Supervisor

Report Date 12/10/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 11, 1993

Lab Sample ID. Number:  
16534-Method Blank

Field Sample ID. Number:  
Method Blank

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

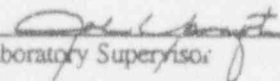
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 11, 1993

Lab Sample ID. Number:  
16534-01

Field Sample ID. Number:  
November LARW Sampling/GW-72

463 West 3600 South  
Salt Lake City, Utah  
84115

Analytical Results

ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *[Signature]*  
Laboratory Supervisor

Report Date 12/9/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 11, 1993

Lab Sample ID. Number:  
16534-03

Field Sample ID. Number:  
November LARW Sampling/GW-27

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

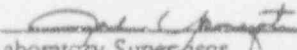
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 11, 1993

Lab Sample ID. Number:  
16534-04

Field Sample ID. Number:  
November LARW Sampling/GW-29

463 West 3600 South  
Salt Lake City, Utah  
84115

Analytical Results

ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specific method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Paul [Signature]*  
Laboratory Supervisor

Report Date 12/9/93

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Rowe  
Received By: Elona Hayward

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 11, 1993

Lab Sample ID. Number:  
16534-08

Field Sample ID. Number:  
November LARW Sampling/GW-26

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

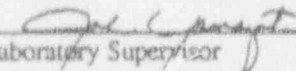
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/2/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 11, 1993

Lab Sample ID. Number:  
16534-09

Field Sample ID. Number:  
November LARW Sampling/GW-25

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

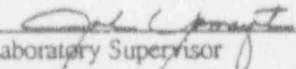
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 11, 1993

Lab Sample ID. Number:  
16534-10

Field Sample ID. Number:  
November LARW Sampling/Trip Blank

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

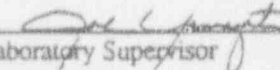
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 11, 1993

Lab Sample ID. Number:  
16534-19

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #1

463 West 3600 South  
Salt Lake City, Utah  
84115

Analytical Results

ACID COMPOUNDS

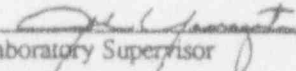
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 11, 1993

Lab Sample ID. Number:  
16534-20

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #2

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-3686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by: *Deborah L. [Signature]*  
Laboratory Supervisor

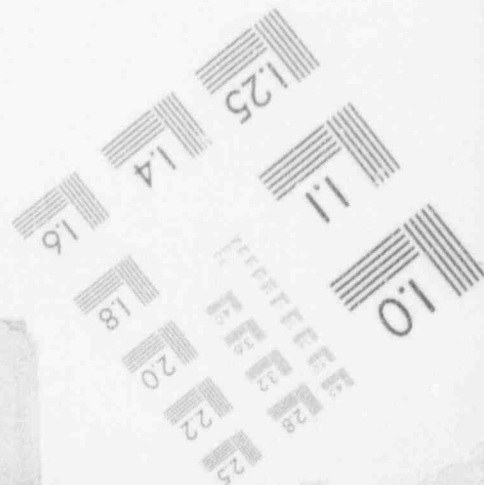
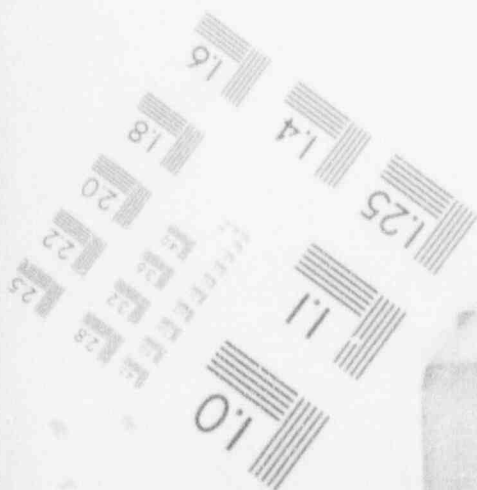
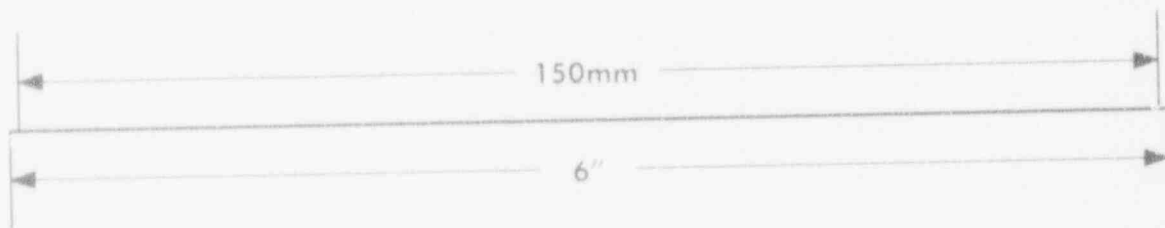
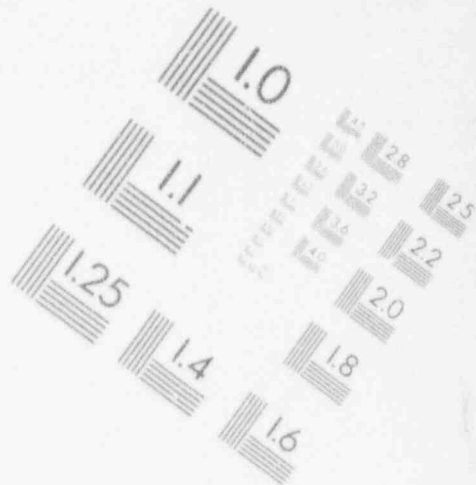
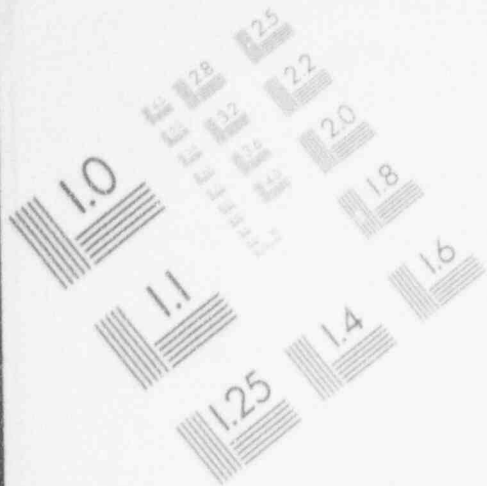
Report Date 12/9/93

1 of 1



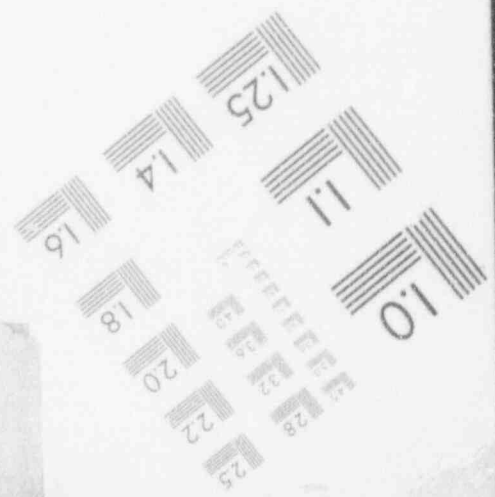
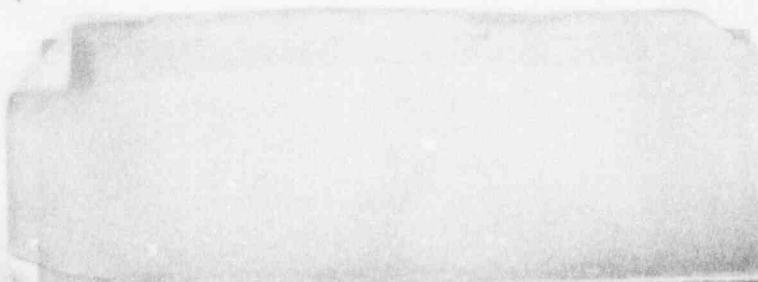
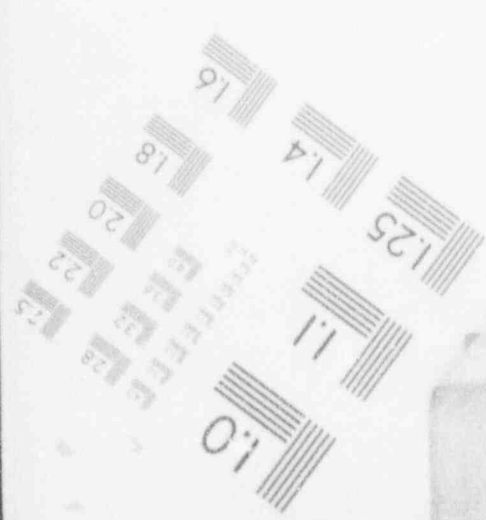
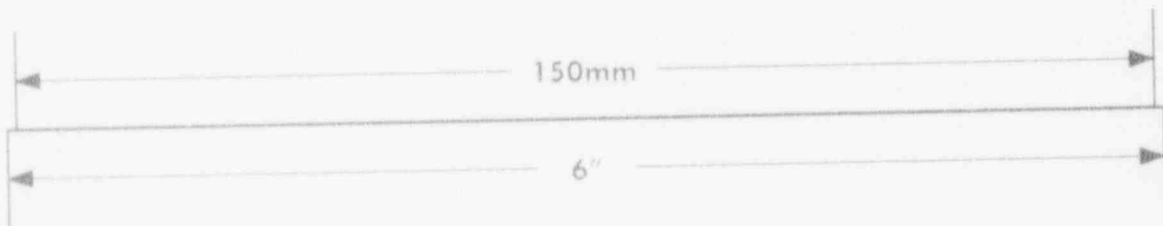
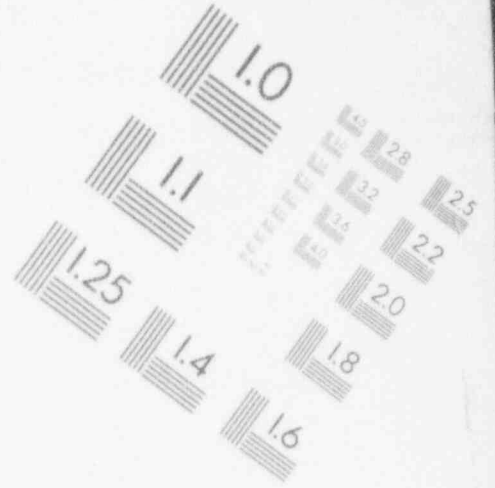
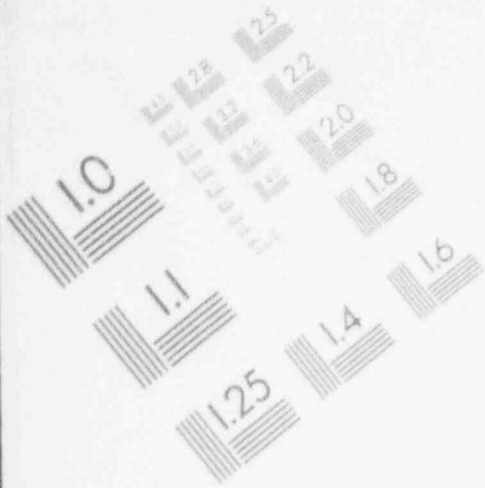
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## IMAGE EVALUATION TEST TARGET (MT-3)



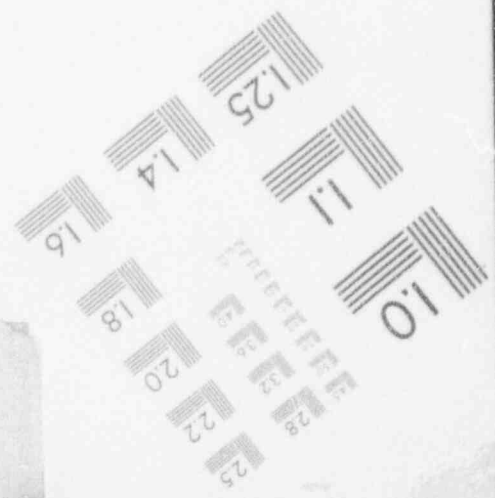
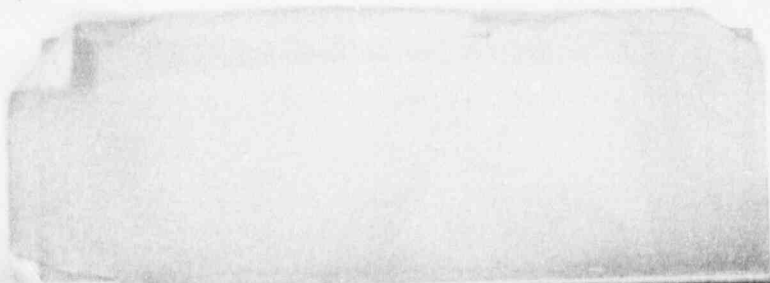
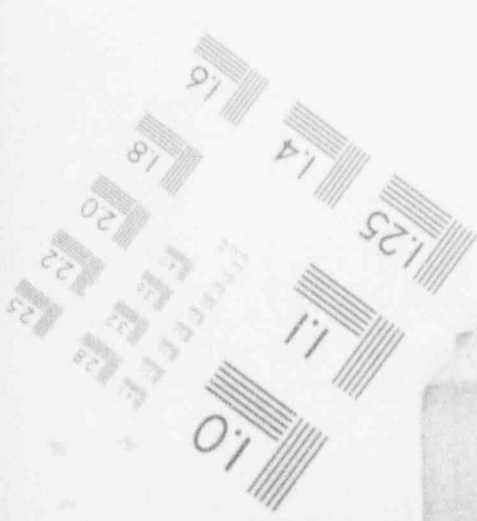
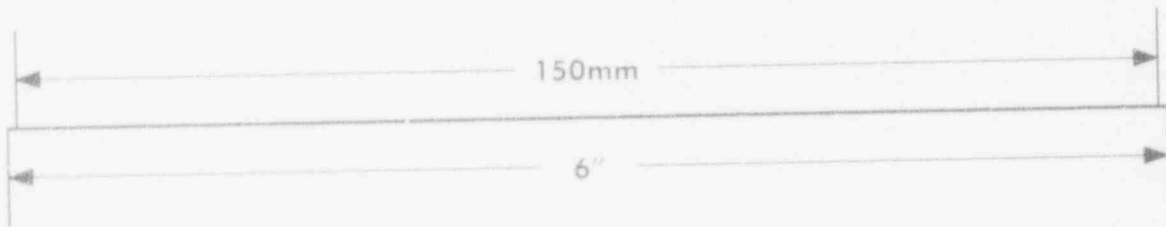
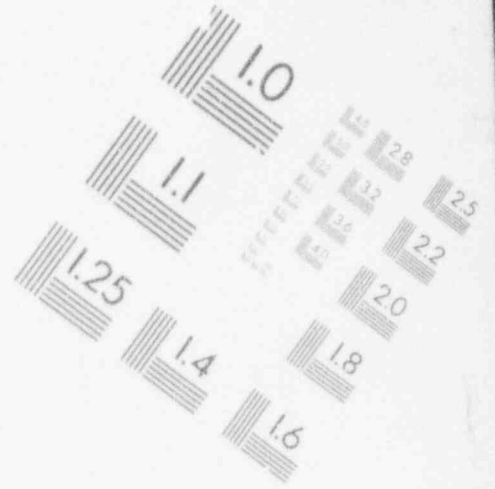
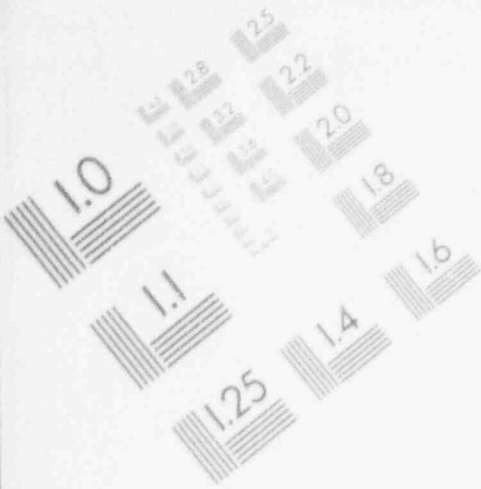
# 1

## IMAGE EVALUATION TEST TARGET (MT-3)



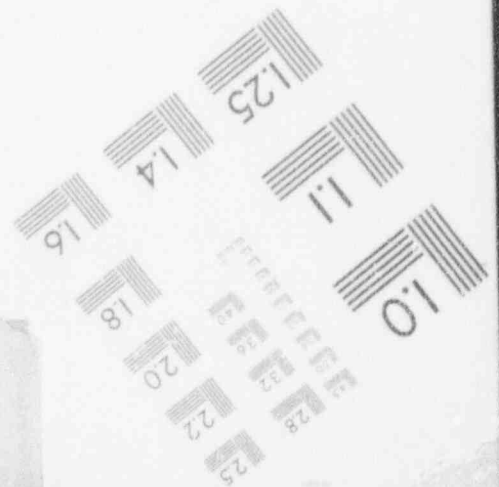
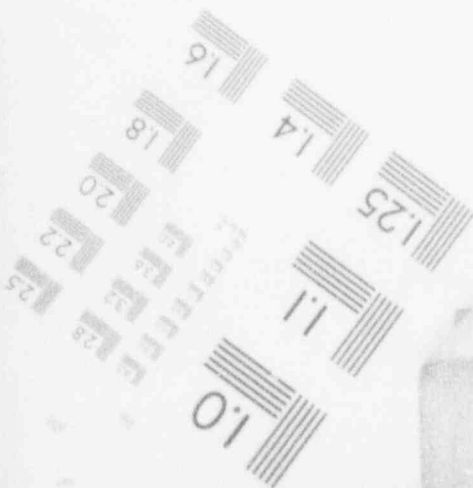
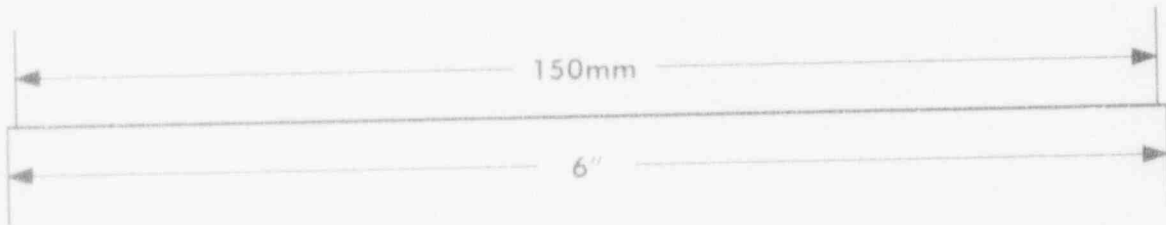
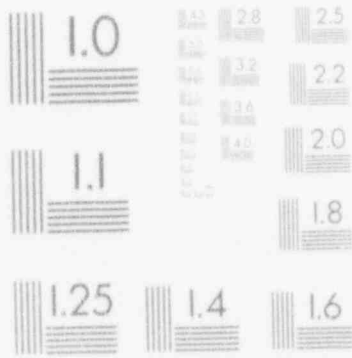
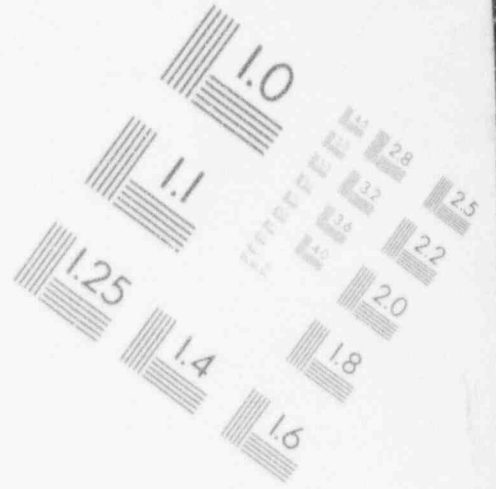
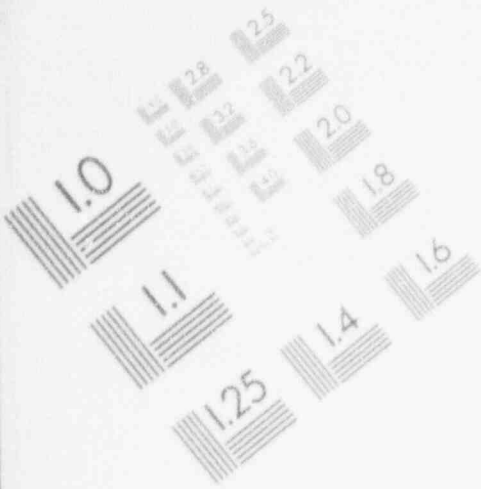
# 1

## IMAGE EVALUATION TEST TARGET (MT-3)



# 1

## IMAGE EVALUATION TEST TARGET (MT-3)





AMERICAN  
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## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: November 8, 1993  
Set Identification Number: 16534  
Set Description: Eighteen Water Samples

Contact: Jeff Lowe  
Received By: Elona Hayward

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
November 11, 1993

Lab Sample ID. Number:  
16534-21

Field Sample ID. Number:  
November LARW Sampling/Lab Blank #3

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

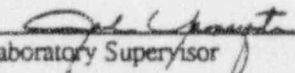
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:   
Laboratory Supervisor

Report Date 12/9/93

1 of 1



Client: Envirocare  
 Date Received: November 8, 1993  
 Sample Number: 16534

### QUALITY CONTROL REPORT

Contact: Jeff Lowe  
 Received By: Elona Hayward  
 Set Description: Eighteen Water Samples

#### Quality Control Results

Units :: (ppb)

Sample #	Compound	Original Concentration (SR)	Spike Added (SA)	Spike Result (SSR)	Spike Dup Result (SDR)	% Spike Recovery (%SR)	% Spike Dup Recovery (%SDR)	% Duplicate Difference (RPD)
16534-09	t-1,2-Dichloroethene	0.0	20.0	22.5	22.3	113.	112.	0.893
16534-09	Benzene	0.0	20.0	20.1	20.9	101.	105.	-3.90
16534-09	Trichloroethene	0.0	20.0	19.9	20.9	99.5	105.	-4.90
16534-09	Toluene	0.0	20.0	17.9	17.9	89.5	89.5	0.00
16534-09	Chlorobenzene	0.0	20.0	18.7	19.3	93.5	96.5	-3.16
16534-10	Phenol	0.0	400.	0.0	0.0	0.0	0.0	-
16534-10	1,4-Dichlorobenzene	0.0	400.	184.2	184.4	46.1	46.1	-0.1
16534-10	2,4-Dinitrotoluene	0.0	400.	309.2	327.2	77.3	81.8	-5.7
16534-10	Pentachlorophenol	0.0	400.	0.0	0.0	0.0	0.0	-
16534-10	Pyrene	0.0	400.	276.5	306.8	69.1	76.7	-10.4

$$RPD = \frac{(SSR - SDR)}{\left(\frac{SSR + SDR}{2}\right)} * 100$$

$$\%SR = \frac{(SSR - SR)}{SA} * 100$$

$$\%SDR = \frac{(SDR - SR)}{SA} * 100$$

Released by:

*John G. ...*  
 Laboratory Supervisor

Report Date 12/9/93

# PRELIMINARY



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## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17536-03

Field Sample ID. Number:  
Quarterly LARW GW Monitoring ~~January 1994~~  
GW-19A

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	< 20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:

  
Laboratory Supervisor

Report Date 3/1/94 1 of 1

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463 West 3600 South  
Salt Lake City, Utah  
84115

(801) 263-8686  
Fax (801) 263-8687

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 15, 1994

Lab Sample ID. Number:  
17536-03

Field Sample ID. Number:  
Quarterly LARW GW Monitoring ~~January 1994~~  
GW-19A

**Analytical Results**

**ACID COMPOUNDS**

Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by: *John L. Spangston*  
Laboratory Supervisor

Report Date 3/2/94 1 of 1

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# PRELIMINARY

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17550  
Set Description: Eleven Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 11, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17550-05

Field Sample ID. Number:  
Quarterly LARW GW Monitoring ~~January~~ 1994/GW-20

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	< 20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by: Jay Vance  
Laboratory Supervisor

Report Date 3/2/94 1 of 1

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# PRELIMINARY



## ORGANIC ANALYSIS REPORT

AMERICAN  
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Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17550  
Set Description: Eleven Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 16, 1994

Lab Sample ID. Number:  
17550-05

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-20

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

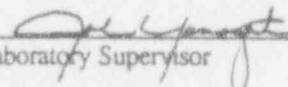
(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

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Laboratory Supervisor

Report Date 3/2/94

1 of 1



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463 West 3600 South  
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84115

(801) 263-8686  
Fax (801) 263-8687

# PRELIMINARY

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17550  
Set Description: Eleven Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 11, 1994

Lab Sample ID. Number:  
17550-04

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-24

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

< Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by: Jay Vance  
Laboratory Supervisor

Report Date 3/2/94 1 of 1

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## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17550  
Set Description: Eleven Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 16, 1994

Lab Sample ID. Number:  
17550-04

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-24

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)


(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Released by:

  
Laboratory Supervisor

Report Date 3/2/94

1 of 1

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# PRELIMINARY



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## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 9, 1994  
Set Identification Number: 17522  
Set Description: Six Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17522-02

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-25

### Analytical Results

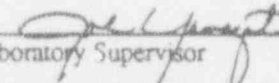
### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:   
Laboratory Supervisor

Report Date 3/2/94

1 of 1

# PRELIMINARY



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## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 9, 1994  
Set Identification Number: 17522  
Set Description: Six Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 14, 1994

Lab Sample ID. Number:  
17522-02

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-25

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by: Jay Vance  
Laboratory Supervisor

Report Date 3/2/94

1 of 1

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463 West 3600 South  
Salt Lake City, Utah  
84115

(801) 263-8686  
Fax (801) 263-8687

# PRELIMINARY

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 9, 1994  
Set Identification Number: 17522  
Set Description: Six Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

Lab Sample ID. Number:  
17522-03

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-26

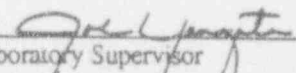
### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	< 20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:   
Laboratory Supervisor

Report Date 3/2/94

1 of 1



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Fax (801) 263-8687

Client: Envirocare  
Date Received: February 9, 1994  
Set Identification Number: 17522  
Set Description: Six Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 15, 1994

Lab Sample ID. Number:  
17522-03

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-26

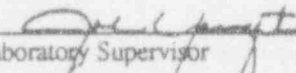
**Analytical Results**

**ACID COMPOUNDS**

Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:   
Laboratory Supervisor

Report Date 3/2/94 1 of 1



# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 9, 1994  
Set Identification Number: 17522  
Set Description: Six Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17522-04

Field Sample ID. Number:  
Quarterly LARW GW Monitoring ~~January 1994~~/GW-27

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

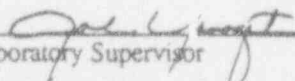
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:

  
Laboratory Supervisor

Report Date 3/2/94

1 of 1

# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

Client: Envirocare  
Date Received: February 9, 1994  
Set Identification Number: 17522  
Set Description: Six Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

## ORGANIC ANALYSIS REPORT

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 15, 1994

Lab Sample ID. Number:  
17522-04

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-27

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by: Jay Vance  
Laboratory Supervisor

Report Date 3/2/94

1 of 1

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# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17536-01

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-28

### Analytical Results

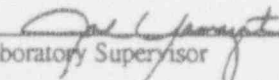
### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

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Laboratory Supervisor

Report Date 3/2/94 1 of 1

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# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 15, 1994

Lab Sample ID. Number:  
17536-01

Field Sample ID. Number:  
Quarterly LARW GW Monitoring - January 1994/GW-28

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by: *Jay Vance*  
Laboratory Supervisor

Report Date 3/2/94

1 of 1

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

# PRELIMINARY

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17550  
Set Description: Eleven Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 11, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17550-06

Field Sample ID. Number:  
Quarterly LARW GW Monitoring ~~January~~ 1994/GW-29

### Analytical Results

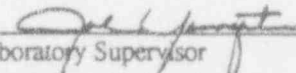
### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

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Report Date 3/2/94 1 of 1

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# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17550  
Set Description: Eleven Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 16, 1994

Lab Sample ID. Number:  
17550-06

Field Sample ID. Number:  
Quarterly LARW GW Monitoring ~~January 1994~~ GW-29

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS

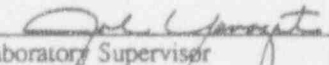
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

T Trace. Detectable amount is lower than the practical quantitation limit for this compound.

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Report Date 3/2/94

1 of 1



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

463 West 3600 South  
Salt Lake City, Utah  
84115

(801) 263-8686  
Fax (801) 263-8687

PRELIMINARY

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

Lab Sample ID. Number:  
17536-08

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-36

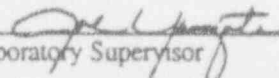
Analytical Results

VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:   
Laboratory Supervisor

Report Date 3/2/94 1 of 1

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# PRELIMINARY



## ORGANIC ANALYSIS REPORT

AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-845 #8270

Date Analyzed:  
February 16, 1994

Lab Sample ID. Number:  
17536-08

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-36

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

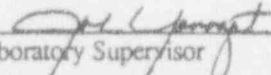
### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:   
Laboratory Supervisor

Report Date 3/2/94

1 of 1

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AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

PRELIMINARY

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17536-07

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-37

Analytical Results

VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by: *Jay Vance*  
Laboratory Supervisor

Report Date 3/2/94 1 of 1

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# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 16, 1994

Lab Sample ID. Number:  
17536-07

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-37

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

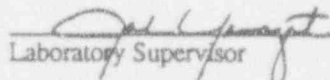
### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:   
Laboratory Supervisor

Report Date 3/2/94

1 of 1

# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17536-06

Field Sample ID. Number:  
Quarterly LARW GW Monitoring ~~January 1994~~/GW-38

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

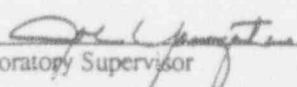
Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:

  
Laboratory Supervisor

Report Date 3/2/94

1 of 1

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# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 15, 1994

Lab Sample ID. Number:  
17536-06

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-38

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

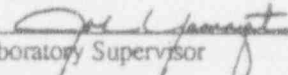
### ACID COMPOUNDS

Units = ug/L (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

(801) 263-8686  
Fax (801) 263-8687

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:   
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Report Date 3/2/94 1 of 1

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# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 9, 1994  
Set Identification Number: 17522  
Set Description: Six Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17522-06

Field Sample ID. Number:  
Quarterly LARW GW Monitoring ~~January 1994~~/GW-57

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by: Jay Vance  
Laboratory Supervisor

Report Date 3/2/94

1 of 1

# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 9, 1994  
Set Identification Number: 17522  
Set Description: Six Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 14, 1994

Lab Sample ID. Number:  
17522-06

Field Sample ID. Number:  
Quarterly LARW GW Monitoring ~~January 1994~~/GW-57

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

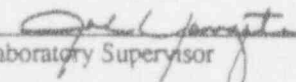
### ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by:   
Laboratory Supervisor

Report Date 3/2/94 1 of 1

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# PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17536-02

Field Sample ID. Number:  
Quarterly LARW GW Monitoring - January 1994/GW-58

### Analytical Results

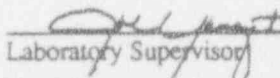
### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

< Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

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Laboratory Supervisor

Report Date 3/2/94 1 of 1

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PRELIMINARY



AMERICAN  
WEST  
ANALYTICAL  
LABORATORIES

ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 15, 1994

Lab Sample ID. Number:  
17536-02

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-58

463 West 3600 South  
Salt Lake City, Utah  
84115

Analytical Results

ACID COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Diethyl phthalate	4.0	<4.0
2-Methylnaphthalene	4.0	<4.0

<Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

Released by: *[Signature]*  
Laboratory Supervisor

Report Date 3/2/94 1 of 1

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LABORATORIES

463 West 3600 South  
Salt Lake City, Utah  
84115

(801) 263-8686  
Fax (801) 263-8687

# PRELIMINARY

## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

Lab Sample ID. Number:  
17536-05

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-60

### Analytical Results

### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

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Released by: *Jay Vance*  
Laboratory Supervisor

Report Date 3/2/94 1 of 1

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## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 15, 1994

Lab Sample ID. Number:  
17536-05

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-60

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

### ACID COMPOUNDS


Units =  $\mu\text{g/L}$  (ppb)

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<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
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Laboratory Supervisor

Report Date 3/2/94

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## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Volatile Organics

Method Ref. Number:  
EPA SW-846 #8240  
Purge & Trap GC/MS

Date Analyzed:  
February 10, 1994

463 West 3600 South  
Salt Lake City, Utah  
84115

Lab Sample ID. Number:  
17536-04

Field Sample ID. Number:  
Quarterly LARW GW Monitoring ~~January 1994~~/GW-63

### Analytical Results

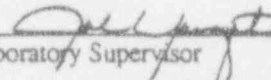
### VOLATILE ORGANIC COMPOUNDS

Units =  $\mu\text{g/L}$  (ppb)

(801) 263-8686  
Fax (801) 263-8687

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
Acetone	20.	< 20.
2-Butanone	20.	<20.
Carbon disulfide	2.0	< 2.0
Chloroform	2.0	< 2.0
1,2-Dichloroethane	2.0	< 2.0
Methylene chloride	2.0	< 2.0
Naphthalene	4.0	< 4.0

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Laboratory Supervisor

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## ORGANIC ANALYSIS REPORT

Client: Envirocare  
Date Received: February 10, 1994  
Set Identification Number: 17536  
Set Description: Eight Water Samples

Contact: Jay Vance  
Received By: Jennifer Habel

Analysis Requested:  
Semivolatile Organics

Method Ref. Number:  
EPA SW-846 #8270

Date Analyzed:  
February 15, 1994

Lab Sample ID. Number:  
17536-04

Field Sample ID. Number:  
Quarterly LARW GW Monitoring January 1994/GW-63

463 West 3600 South  
Salt Lake City, Utah  
84115

### Analytical Results

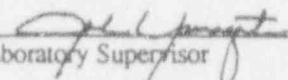
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Units =  $\mu\text{g/L}$  (ppb)

<u>Compound:</u>	<u>Detection Limit:</u>	<u>Amount Detected:</u>
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