

**SEMI-ANNUAL  
QUALITY ASSURANCE REPORT  
GROUND WATER MONITORING**

**SECOND HALF OF 1999  
(JULY - OCTOBER)**

# UNITED NUCLEAR CORPORATION



P.O. Box 3077  
Gallup, New Mexico 87305-3077

Telephone: (505) 722-6651  
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## CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 25, 2000

Mr. Greg Lyssy  
U.S. Environmental Protection Agency  
OK/NM Superfund Enforcement Section (6H-E0)  
Region VI  
1445 Ross Avenue  
Dallas, TX 75202-2733

40-8907

Re: Semi-Annual Quality Assurance Report  
Ground Water Monitoring - Second Half of 1999

Dear Mr. Lyssy,

In accordance with Section V.A. 15 of the Administrative Order for the Church Rock Site, I have enclosed a report regarding performance of ground water monitoring quality assurance procedures during the second half of 1999.

Two sampling episodes occurred in the second half of 1999 -- in July and in October.

Sincerely,

A handwritten signature in black ink, appearing to read "Larry Bush", written over a horizontal line.

Larry Bush  
Manager

LB:r

Enclosure

cc: NRC, Rockville, MD  
NRC, Arlington, TX  
Steve Cline, GE  
Roy Blickwedel, GE

NMSSOI Public

**SEMI-ANNUAL QUALITY ASSURANCE  
CHURCH ROCK SITE  
JULY AND OCTOBER SAMPLING EVENTS  
JANUARY 2000**

# **TABLE OF CONTENTS**

**1.0 Requirements**

**2.0 Field Sampling Procedures**

**3.0 Chain of Custody**

**4.0 Laboratory Quality Control**

**5.0 Data Validation**

**Appendix A: Field Data Sheets**

**Appendix B: Chain of Custody**

**Appendix C: Laboratory Quality Control and Performance Reports**

## **1.0 REQUIREMENTS**

The quality assurance and control procedures are contained in Section 3.0 of the Remedial Action Plan of the Church Rock Site Dated April, 1989. The procedures address sampling, chain of custody, laboratory quality control, and data validation. These requirements became effective July 3, 1989, when United Nuclear received the Administrative Order on the Church Rock Site from the Environmental Protection Agency (EPA).

## **2.0 FIELD SAMPLING PROCEDURE**

Copies of the field sampling report sheets for the third and fourth quarters of 1999, are included as Appendix A. The sheets indicate the estimated volume of water purged from the well prior to sampling and the field parameters of pH, temperature, and conductivity. The Field Blank and Rinsate analysis reports are also included in Appendix A.

## **3.0 CHAIN OF CUSTODY**

Copies of the Chain of Custody forms are included as Appendix B. Energy Laboratories, Inc., our contact laboratory is located in Casper, Wyoming. Energy Labs inspect the sample shipments upon arrival to verify the information on the Chain of Custody form and to determine if samples arrive at the appropriate temperature.

## **4.0 LABORATORY CONTROL**

Copies of the internal Quality Control report prepared by Energy Laboratories and the associated EPA performance evaluations are included in Appendix C.

## **5.0 DATA EVALUATION**

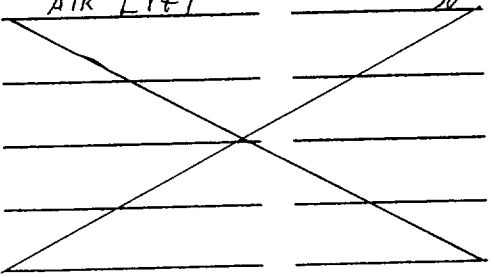
Analytical reports are reviewed by the Church Rock Manager and the Radiation Safety Officer after receipt from Energy Labs. Significant increases or decreases and out of range values are identified and the laboratory is requested to recheck the suspect values, the laboratory responds by checking transcription for these items, and where necessary, repeats the analysis. A revised report is then issued for that sample if an error is discovered.

**APPENDIX A**  
**FIELD DATA SHEETS**

## GROUND WATER MONITORING FIELD DATA SHEET

\*WATER DEPTH AND PURGING\*

3rd QUARTER 1999

WELL NO.	MONTH/ DAY	TIME	WATER DEPTH	PURGING METHOD	EST. VOL. PURGED
502-B	7-12	1506	162.4	BAILED	3 gal.
504-B	7-12	1442	160.9	BAILED	3 "
509-D	7-12	1140	64.6	AIR LIFT	20 "
515-A	7-12	1025	98.8	AIR LIFT	5 "
516-A	7-12	1101	101.4	AIR LIFT	2 "
517	7-12	0959	100.3	AIR LIFT	2 "
518	7-12	1518	132.4	BAILED	3 "
604	7-12	1036	98.6	AIR LIFT	10 "
614	7-12	1007	96.4	AIR LIFT	2 "
619	7-12	1048	127.3	AIR LIFT	25 "
624	7-12	1325	47.8	AIR LIFT	15 "
627	7-12	1414	53.0	AIR LIFT	5 "
632	7-12	1345	46.4	AIR LIFT	1 "
TWQ-141	7-12	0850	194.9	AIR LIFT	30 "
TWQ-142	7-12	0925	204.1	AIR LIFT	30 "
TWQ-143	7-12	0937	210.8	AIR LIFT	30 "
804	7-21	1410	49.46		
805	7-21	1359	51.00		
806	7-21	1353	50.8		
807	7-21	1345	53.6		

## GROUND WATER MONITORING FIELD DATA SHEET

3<sup>rd</sup> QUARTER 19 99  
 \*\*WATER DEPTH AND PURGING\*\*

Well No.	Month/Day	Time	Water Depth	Purging Method	Est. Vol. Purged
GW-1	7-12	1300	59.4	AIR LIFT	15 gal
GW-2	7-12	1336	54.9	AIR LIFT	15 "
GW-3	7-12	1400	51.7	AIR LIFT	5 "
GW-4	7-12	1130	48.9	AIR LIFT	5 "
EPA-1		NO	WATER	NO WATER	
EPA-2	7-19	1254	170.3	Pump	40 "
EPA-4	7-19	1031	200.3	pump	70 "
EPA-5	7-19	1146	119.5	pump	42 "
EPA-6		DELETED		DELETED	
EPA-7	7-19	1132	108.6	pump	48 "
EPA-8	7-19	0924	213.4	pump	83 "
EPA-9	7-19	1025	169.1	pump	8 "
EPA-13	7-19	1115	164.9	pump	17 "
EPA-14	7-19	1427	108.2	pump	182 "
EPA-15		DELETED		DELETED	
EPA-22A		NO WATER		NO WATER	
EPA-23	7-19	1350	46.4	pump	280 "
EPA-25	7-19	1500	50.7	pump	30 "
EPA-27		NO WATER		NO WATER	
EPA-28	7-19	1330	61.5	pump	15 "
*411					
420	7-12	0948	134.8	AIR LIFT	1 "

\* LARGE AMOUNT OF OIL IN WELL. BAILED WILL NOT GO THROUGH OIL TO GET ANY WATER  
 SAMPLE



## GROUND WATER MONITORING FIELD DATA SHEET

\*\*SAMPLING\*\*

3<sup>rd</sup> QUARTER 19 99

WELL NO.	MONTH/ DAY	TIME	SAMPLING METHOD	pH	COND.	C° TEMP.	COMMENTS
502-B	7-13	1506	BAILED	4.7	4860	16.5	
504-B	7-13	1450	BAILED	6.5	4640	16.9	
509-D	7-13	1144	BAILED	6.5	6880	15.4	
515-A	7-13	1015	BAILED	5.7	7130	15.9	
516-A	7-13	1103	BAILED	6.5	1058	16.2	
517	7-13	0955	BAILED	4.6	4580	14.9	
518	7-13	1520	BAILED	3.5	5960	15.4	
604	7-13	1037	BAILED	4.6	6540	17.2	
614	7-13	1014	BAILED	7.0	7700	15.8	
619	7-13	1049	BAILED	6.6	4820	15.3	
624	7-13	1325	BAILED	6.7	5240	15.9	
627	7-13	1431	BAILED	7.0	5390	16.6	
632	7-13	1345	BAILED	6.3	6120	16.4	
TWQ-141	7-13	0854	BAILED	6.8	1352	14.8	
TWQ-142	7-13	0925	BAILED	6.8	1620	15.8	
TWQ-143	7-13	0937	BAILED	6.8	1520	15.3	
801	7-20	0900	Pump	6.5	7570	14.4	
802	7-20	0850	Pump	6.5	7270	14.5	
803	Pump FROZE-UP IN WELL CASTING						
FIELD BLANK	7-13	1400		7.7	2840	24.8	
RINSATE	7-13	1355		7.4	8570	24.3	

## GROUND WATER MONITORING FIELD DATA SHEET

3<sup>rd</sup> QUARTER 1999  
\*\*SAMPLING\*\*

Well No.	Month/Day	Time	Sampling Method	pH	Cond.	C° Temp.	Comments
GW-1	7-13	1300	BAILED	6.7	4240	16.0	
GW-2	7-13	1336	BAILED	6.6	5320	15.2	
GW-3	7-13	1413	BAILED	6.7	4770	16.2	
GW-4	7-13	1130	BAILED	7.2	3920	16.8	
EPA-1	7-20	1100	Pump	NO	WATER		
EPA-2	7-20	1300	Pump	6.7	3220	15.5	
EPA-4	7-20	1040	Pump	6.5	4460	14.6	
EPA-5	7-20	1147	Pump	6.5	7350	15.8	
EPA-6		DELETED		DELETED			
EPA-7	7-20	1133	Pump	6.06	7350	14.8	
EPA-8	7-20	0925	Pump	6.36	4250	15.2	
EPA-9	7-20	1030	Pump	3.8	5210	16.9	
EPA-13	7-20	1115	Pump	6.2	5760	14.8	
EPA-14	7-20	1430	Pump	6.2	3800	14.9	
EPA-15		DELETED		DELETED			
EPA-22A		NO	WATER	NO	WATER		
EPA-23	7-20	1352	Pump	6.7	4960	14.8	
EPA-25	7-20	1500	Pump	6.8	4230	15.7	
EPA-27		NO	WATER	NO	WATER		
EPA-28	7-20	1332	Pump	6.9	5080	16.0	
411		DELETED		DELETED			
420	7-13	1000	BAILED	6.4	3610	16.7	

## EPA WELLS

3<sup>rd</sup> Quarter 19 99

Date	Well No.	HP	Elevation T.O.P.	Meter Reading Start	(-)	Meter Reading End	=	Gals. Purged	Time for Well To Go Dry Minutes/Seconds
<u>7-19</u>	EPA-1	1/2	7035.544	<u>NO</u>		<u>WATER</u>			
<u>** 7-19</u>	EPA-2	1/3	7019.485	<u>1,349,840</u>		<u>METER SANDER-up</u>	<u>EST 40</u>		<u>17.14</u>
<u>7-19</u>	EPA-4	1/2	7069.798	<u>1,349,663</u>		<u>1,349,733</u>	<u>70</u>		<u>15:57</u>
<u>7-19</u>	EPA-5	1/3	7011.444	<u>1,349,798</u>		<u>1,349,840</u>	<u>42</u>		<u>6.58</u>
<u>7-19</u>	EPA-7	1/3	7011.662	<u>1,349,750</u>		<u>1,349,798</u>	<u>48</u>		<u>4:32</u>
<u>7-19</u>	EPA-8	1/2	7076.402	<u>1,349,592</u>		<u>1,349,655</u>	<u>83</u>		<u>24:50</u>
<u>7-19</u>	EPA-9	1/3	7076.612	<u>1,349,655</u>		<u>1,349,663</u>	<u>8</u>		<u>1:25</u>
<u>7-19</u>	EPA-13	1/2	7030.467	<u>1,349,733</u>		<u>1,349,750</u>	<u>17</u>		<u>1:19</u>
<u>7-19</u>	EPA-14	1/2	6965.611	<u>1,350,144</u>		<u>1,350,326</u>	<u>182</u>		<u>16:30</u>
<u>7-19</u>	EPA-22A	1/2	6954.512	<u>NO</u>		<u>WATER</u>			
<u>7-19</u>	EPA-23	2	6926.312	<u>1,349,864</u>		<u>1,350,144</u>	<u>280</u>		<u>22:30</u>
<u>** 7-19</u>	EPA-25	1/2	6903.383	<u>1,350,826</u>		<u>METER SANDER-up</u>	<u>EST 30</u>		<u>21:40</u>
<u>7-19</u>	EPA-27	1/3	6910.946	<u>NO</u>		<u>WATER</u>			
<u>7-19</u>	EPA-28	1	6917.861	<u>1,349,848</u>		<u>1,349,864</u>	<u>15</u>		<u>1:06</u>
	NR-1	1/3		<u>1,350,330</u>		<u>1,350,437</u>	<u>107</u>		<u>15:30</u>

\*Deleted EPA-3, EPA-12, EPA-17, EPA-18 due to lack of water.  
Also EPA-15

\*\* EXCESSIVE AMOUNT OF SAND IN WATER.

## GROUND WATER MONITORING FIELD DATA SHEET

\*WATER DEPTH AND PURGING\*

4<sup>th</sup> QUARTER 19 99

WELL NO.	MONTH/ DAY	TIME	WATER DEPTH	PURGING METHOD	EST. VOL. PURGED
502-B	10-4	1325	162.0'	BAILED	3 gal.
504-B	10-4	1300	160.3'	BAILED	3 gal.
509-D	10-4	1025	64.8'	AIRLIFT	20 gal.
515-A	10-4	0925-	98.7'	AIRLIFT	4 gal.
516-A	10-4	0955	102.4'	AIRLIFT	2 gal.
517	10-4	0857	102.5'	AIRLIFT	2 gal.
518	10-4	1340	132.4'	BAILED	3 gal.
604	10-4	0935	97.8'	AIRLIFT	10 gal.
614	10-4	0910	96.6'	AIRLIFT	1 gal.
619	10-4	0945	127.4'	AIRLIFT	25 gal.
624	10-4	1050	46.8'	AIRLIFT	15 gal.
* 627	10-4	1140	53.0'	AIRLIFT	0
632	10-4	1110	45.4'	AIRLIFT	1 gal.
** TWQ-141	10-4	0800	45.2'	AIRLIFT	45 gal.
TWQ-142	10-4	0820	203.5'	AIRLIFT	30 gal.
TWQ-143	10-4	0830	210.6'	AIRLIFT	30 gal.
804	10-13	1035	49.43		
805	10-13	1040	51.1		
806	10-13	1043	50.8		
807	10-13	1050	53.5		

\*\* WELL STAN PIPE BROKEN BY CATTLE. FLOOD WATER FILL WELL WITH SAND & WATER  
 \* SOMETHING IN CASTING, COULDN'T GET 6" DEBUZER DOWN PIPE TO WATER

## GROUND WATER MONITORING FIELD DATA SHEET

\*WATER DEPTH AND PURGING\*

4<sup>th</sup> QUARTER 19 99

WELL NO.	MONTH/ DAY	TIME	WATER DEPTH	PURGING METHOD	EST. VOL. PURGED
GW-1	10-4	1037	58.9'	AIRLIFT	15 gal.
GW-2	10-4	1100	53.6'	AIRLIFT	15 gal.
GW-3	10-4	1125	50.7'	AIRLIFT	5 gal.
GW-4	10-4	1015	49.3'	AIRLIFT	4 gal.
* EPA-1		NO	WATER		
EPA-2	10-11	1115	170.2'	Pump	40 gal.
EPA-4	10-11	0932	200.6'	pump	92 gal.
EPA-5	10-11	1030	119.6'	Pump	40 gal.
EPA-7	10-11	1012	108.5'	Pump	46 gal.
EPA-8	10-11	0815	213.5'	Pump	66 gal.
EPA-9	10-11	0915	169.2'	Pump	7 gal.
EPA-13	10-11	0750	165.0'	Pump	15 gal.
EPA-14	10-11	1422	108.2'	Pump	177 gal.
* EPA-22A					
EPA-23	10-11	1342	46.2'	Pump	245 gal.
EPA-25	10-11	1500	51.0'	pump	30 gal.
* EPA-27					
EPA-28	10-11	1330	60.6'	Pump	15 gal.
**411					
420	10-4	0845	135.3	AIRLIFT	2 gal.

\* DELETED EPA-1, ~~EPA-13~~, EPA-22-A, EPA-27 DUE TO LACK OF WATER  
 \*\* LARGE AMOUNT OF OIL IN WELL. BAILER WILL NOT GO THROUGH OIL TO GET A WATER SAMPLE

## GROUND WATER MONITORING FIELD DATA SHEET

4<sup>th</sup> QUARTER 19 99

\*\*SAMPLING\*\*

Well No.	Month/Day	Time	Sampling Method	pH	Cond.	C° Temp.	Comments
502-B	10-5	1350	BAILED	4.25	4,980	14.7	
504-B	10-5	1335	BAILED	5.73	4,770	15.7	
509-D	10-5	1057	BAILED	6.56	6,670	14.0	
515-A	10-5	0949	BAILED	5.36	7,320	14.5	
516-A	10-5	1030	BAILED	6.40	1,082	14.4	
517	10-5	0916	BAILED	4.50	4,600	14.2	
518	10-5	1400	BAILED	3.48	6,020	16.6	
604	10-5	1,001	BAILED	4.42	6,970	14.7	
614	10-5	0944	BAILED	6.80	7,770	14.9	
619	10-5	1013	BAILED	6.86	4,560	14.3	
624	10-5	1127	BAILED	6.78	5,300	14.2	
627	10-5	1236	BAILED	7.09	5,500	15.3	
632	10-5	1147	BAILED	6.60	6,270	14.4	
★TWQ-141	10-5	0825	BAILED	—	—	—	
TWQ-142	10-5	0833	BAILED	7.60	1,660	14.7	
TWQ-143	10-5	0845	BAILED	7.52	1,466	14.8	
801	10-5	1415	BAILED	6.37	7,070	15.1	
802	10-11	0730	Pump	6.62	6,880	13.9	
803	10-11	0740	Pump	6.58	6,770	14.4	
Field Blank	10-5	1230		7.69	3,540	21.5	
Rinsate	10-5	1227		7.44	3,780	21.5	

★WELL FILLED WITH SAND, NO WATER FOR SAMPLE

## GROUND WATER MONITORING FIELD DATA SHEET

4<sup>th</sup> QUARTER 19 99

\*\*SAMPLING\*\*

Well No.	Month/Day	Time	Sampling Method	pH	Cond.	C° Temp.	Comments
GW-1	10-5	1117	Bailed	6.75	4,380	14.6	
GW-2	10-5	1138	Bailed	6.52	5,270	13.5	
GW-3	10-5	1205	Bailed	6.68	4,840	15.1	
*GW-4	10-5	1047	Bailed				
**EPA-1							
EPA-2	10-12	1316	pump	6.64	3,600	15.8	
EPA-4	10-12	1005	pump	6.60	4,360	14.6	
EPA-5	10-12	1036	Pump	6.45	7,290	15.4	
**EPA-6							
EPA-7	10-12	1025	Pump	6.01	7,010	14.7	
EPA-8	10-12	0938	Pump	6.45	4,380	13.5	
EPA-9	10-12	0950	Pump	4.9	5,070	13.1	
EPA-13	10-12	0920	Pump	6.1	5,650	13.6	
EPA-14	10-12	1455	Pump	6.54	3,710	16.4	
*EPA-15							
**EPA-22A	10-1						
EPA-23	10-12	1353	Pump	6.62	4,700	16.2	
EPA-25	10-12	1516	Pump	6.83	4,210	16.1	
**EPA-27							
EPA-28	10-12	1338	Pump	6.90	5,060	14.5	
**411							
420	10-5	0900	Bailed	6.72	3,850	14.2	

\* WELL GW4 DIDNT RECOVER, NOT ENOUGH WATER FOR A SAMPLE.  
 \*\* DELETED WELLS EPA-1, EPA-6, EPA-15, EPA-27 DUE TO LACK OF WATER, ALSO #1

# EPA WELLS

4<sup>th</sup> Quarter 19 99

<u>Date</u>	<u>Well No.</u>	<u>HP</u>	<u>Elevation T.O.P.</u>	<u>Meter Reading Start</u>	<u>(-)</u>	<u>Meter Reading End</u>	<u>=</u>	<u>Gals. Purged</u>	<u>Time for Well To Go Dry Minutes/Seconds</u>
	EPA-1	1/2	7035.544	<u>DELETED</u>		<u>due TO LACK OF WATER</u>			
<u>★ 10-11</u>	EPA-2	1/3	7019.485	<u>804,440</u>		<u>—</u>		<u>EST. 40</u>	<u>18:23</u>
<u>10-11</u>	EPA-4	1/2	7069.798	<u>804,262</u>		<u>804,354</u>		<u>92</u>	<u>22:30</u>
<u>10-11</u>	EPA-5	1/3	7011.444	<u>804,400</u>		<u>804,440</u>		<u>40</u>	<u>6:50</u>
<u>10-11</u>	EPA-7	1/3	7011.662	<u>804,354</u>		<u>804,400</u>		<u>46</u>	<u>4:25</u>
<u>10-11</u>	EPA-8	1/2	7076.402	<u>804,189</u>		<u>804,255</u>		<u>66</u>	<u>25:21</u>
<u>10-11</u>	EPA-9	1/3	7076.612	<u>804,255</u>		<u>804,262</u>		<u>7</u>	<u>1:29</u>
<u>10-11</u>	EPA-13	1/2	7030.467	<u>804,174</u>		<u>804,189</u>		<u>15</u>	<u>1:14</u>
<u>10-11</u>	EPA-14	1/2	6965.611	<u>804,710</u>		<u>804,887</u>		<u>177</u>	<u>18:27</u>
<u>★</u>	EPA-15	5-30	7002.932						
<u>★ 10-11</u>	EPA-22A	1/2	6954.512						
<u>10-11</u>	EPA-23	2	6926.312	<u>804,465</u>		<u>804,710</u>		<u>245</u>	<u>21:27</u>
<u>★★ 10-11</u>	EPA-25	1/2	6903.383	<u>804,887</u>		<u>—</u>		<u>EST. 30</u>	<u>21:10</u>
<u>★ 10-11</u>	EPA-27	1/3	6910.946						
	EPA-28	1	6917.861	<u>804,450</u>		<u>804,465</u>		<u>15</u>	<u>1:10</u>
<u>★★★</u>	NR-1	1/3							

\*Deleted EPA-3, EPA-12, EPA-17, EPA-18 due to lack of water.

★★ METER WOULDN'T RECORD, due TO LARGE AMOUNT OF SAND IN WATER.

★★★ NR-1 IS ONLY SAMPLE ON FRIST +<sup>th</sup> THIRD QUANTERS



**APPENDIX B**

**CHAIN OF CUSTODY FORMS**

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 3077  
Gallup, NM 87305-3077  
505-722-6651

Alluvium

CHAIN OF CUSTODY

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

All analysis will be performed in accordance with EPA approved  
procedures and/or 15th Edition of Standard Methods

UNC Submittal No. TE-5-7-99 (Pg. 1 of 2)

Sample Description	Date	Time	Filter 0.45u	PRESERVATION plain	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	NaOH	Preserved By	Analysis Required (For all samples listed)
TWQ-141	7-13-99	0854	mc ✓	XLB	mc ✓	mc ✓	XLB			As, Be, Ca, Cd, Cl, HCO <sub>3</sub> ,
TWQ-142		0925								K, Mg, Mn, Na, NH <sub>3</sub> , Ni,
TWQ-143		0937								NO <sub>3</sub> , Pb, Pb-210, pH, Se,
517		0960								SO <sub>4</sub> , TDS, Th-230, U, V,
<del>801</del>		<del>1000</del>	<del>NOT</del>	<del>Here</del>	<del>Production well</del>	<del>not</del>	<del>sampled</del>			Chloroform, Gross
420		1000								Alpha (-) U & Rn,
614		1014								Combined Ra-226 & Ra-228, Al,
515-A		1015						NA		Co, Mo
604		1037								
619		1049	1 Broken VOA							Wells GW-3 and GW-4 require Po-210
516-A		1103	1 Broken VOA							analysis in addition to above
509-D		1144								
GW-1		1300								
624		1325								
GW-2		1336								

Sampled by: Scott A. Bogard Received by: M. Chas. Oly  
Dispatched by: JBucante Date: 7/14/99 Time: 2:00pm  
Carrier: UPS  
Method of Shipment: 4 ICED COOLER

7-13-99 1000  
Date Time  
Signature: [Signature]  
Lab Receipt Signature  
07/16/99 1000  
Date Time

The above analysis to be performed is  
authorized by:  
Signature: [Signature]  
Date: 7-14-99

## CHAIN OF CUSTODY

Do not log for Chloroform

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 3077  
Gallup, NM 87305-3077  
505-722-6651

CHAIN OF CUSTODY

*Albuviuim*

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

All analysis will be performed in accordance with EPA approved  
procedures and/or 15th Edition of Standard Methods

UNC Submittal No. TE-6-7-99

Sample Description	Date	Time	PRESERVATION					Preserved By	Analysis Required (For all samples listed)
			Filter 0.45u	plain	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		
801	7-20-99	0830	MC ✓	✓	MC ✓	✓	✓	FA	As, Be, Ca, Cd, Cl, HCO <sub>3</sub> ,
802		0820							K, Mg, Mn, Na, NH <sub>3</sub> , Ni,
EPA-8		0924							NO <sub>3</sub> , Pb, Pb-210, pH, Se,
EPA-9		1025							SO <sub>4</sub> , TDS, Th-230, U, V,
EPA-4		1031							Chloroform, Gross
EPA-13		1115							Alpha (-) U & Rn,
EPA-7		1132						NA	Combined Ra-226 & Ra-228, Al,
EPA-5		1146							Co, Mo
EPA-2		1254							
EPA-28		1330							Wells CW-3 and CW-4 require Po-210
EPA-23		1350							analysis in addition to above.
EPA-14		1427							
EPA-25		1500							
NR-1		1535	✓	✓	✓	✓	✓		
627 (RESAMPLE)	✓	1245							

Sampled by: Lisa A. Boyett Received by: Max Chischilly Jr.

Dispatched by: R. B. Bunker Date: 7-21-99 Time: 2:00

Carrier: UPS

3 ICED COOLER  
Method of Shipment

7-20-99 1000 1500  
Date Time

Lisa Boyett  
Lab Receipt Signature

7/23/99 1000  
Date Time

The above analysis to be performed is  
authorized by

[Signature]  
Signature

7-21-99  
Date

Zone 1

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 3077  
Gallup, NM 87305-3077  
505-722-6651

CHAIN OF CUSTODY

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

All analysis will be performed in accordance with EPA approved procedures and/or 15th Edition of Standard Methods

UNC Submittal No. TE- 8-10-99

Sample Description	Date	Time	PRESERVATION					Preserved By	Analysis Required (For all samples listed)
			Filter 0.45u	plain	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		
A 803	10-12-99	0850	✓	mc	✓	mc	✓	mc	As, Be, Ca, Cd, Cl, HCO <sub>3</sub> ,
A 803	1	0900	✓	mc	✓	mc	✓	mc	K, Mg, Mn, Na, NH <sub>3</sub> , Ni,
3 EPA-13		0920	✓	mc	✓	mc	✓	mc	NO <sub>3</sub> , Pb, Pb-210, pH, Se,
EPA-8		0938	✓	mc	✓	mc	✓	mc	SO <sub>4</sub> , TDS, Th-230, U, V,
3 EPA-9		0950	✓	mc	✓	mc	✓	mc	Chloroform, Gross
EPA-4		1005	✓	mc	✓	mc	✓	mc	Alpha (-) U & Rn;
EPA-7		1025	✓	mc	✓	mc	✓	mc	Combined Ra-226 & Ra-228, Al,
EPA-5		1036	✓	mc	✓	mc	✓	mc	Co, Mo
EPA-2		1316	✓	mc	✓	mc	✓	mc	
A EPA-28		1338	✓	mc	✓	mc	✓	mc	
A EPA-23		1353	✓	mc	✓	mc	✓	mc	
3 EPA-14		1455	✓	mc	✓	mc	✓	mc	
A EPA-25	✓	1516	✓	mc	✓	mc	✓	mc	
3 RS-A1			✓	mc	✓	mc	✓	mc	

33759R000007

Sampled by: John H. Rogers

Dispatched by: R. Beanti

Carrier: UPS

Method of Shipment: ICED COOLER

Received by: Max Chiscolly Jr.

Date: 10/13/99 Time: 2:00pm

10/12/99 @1000-1530  
Date Time

June Ben  
Lab Receipt Signature

10/15/99 1000  
Date Time

The above analysis to be performed is authorized by:

John Ben  
Signature

10-13-99  
Date

Aluminum

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 3077  
Gallup, NM 87305-3077  
505-722-6651

CHAIN OF CUSTODY

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

All analysis will be performed in accordance with EPA approved  
procedures and/or 15th Edition of Standard Methods

UNC Submittal No. TE- 7-10-99

(PG 1 OF 2)

Sample Description	Date	Time	PRESERVATION					Preserved By	Analysis Required (For all samples listed)
			Filter 0.45u	plain	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		
TWQ-142	10-5-99	0833	✓	me	LAB	✓	me	LAB	As, Be, Ca, Cd, Cl, HCO <sub>3</sub> ,
TWQ-143		0845							K, Mg, Mn, Na, NH <sub>3</sub> , Ni,
517		0916							NO <sub>3</sub> , Pb, Pb-210, pH, Se,
614		0944							SO <sub>4</sub> , TDS, Th-230, U, V,
515-A		0949							Chloroform, Gross
604		1001							Alpha (-) U & Rn,
619		1013							Combined Ra-226 & Ra-228, Al,
516-A		1030							Co, Mo
509-D		1057							
624		1127							*Wells GW-3 and GW-4 require Po-210
RINSATE		1227							analysis in addition to above.
F. BLANK		1230							* NOT REQUIRED
632		1149							
504-B		1335							
502-B	10-5-99	1350	✓	me	LAB	✓	me	LAB	

Sampled by: James J. Koppert

Dispatched by: R. B. Benti

Carrier: UPS

Method of Shipment: ICED COOLER

Method of Shipment

Received by: M. Chachalla  
Date: 10/16/99 Time: 2:00pm

10-5-99 1030-1400  
Date Time  
[Signature]  
Lab Receipt Signature  
10/11/99 1030  
Date Time

The above analysis to be performed is  
authorized by:  
[Signature]  
Signature  
10-6-99  
Date

3375 R00010  
PAGE NO.

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 3077  
Gallup, NM 87305-3077  
505-722-6651

### CHAIN OF CUSTODY

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper	WY	82601
City	State	Zip

307-235-0515  
Phone No.

All analysis will be performed in accordance with EPA approved procedures and/or 15th Edition of Standard Methods

UNC Submittal No. TE- 7-10-99

(PG. 2 OF 2)

[illegible]

\* Wells GW-3 and GW-4 require Po-210 analysis in addition to above.

\* NOT REQUIRED

Sampled by: Robert Bogar

Received by M. Chaschly

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Date 10/16/99 Time 2:00 pm

Carrier: VPS

Date	Time

5 ICE ICED COOLER

Method of Shipment

Downloaded from <http://ajphaphysocpubs.phapublications.org/> by guest on June 11, 2015

10-5-99	1030-
Date	Time

Lab Receipt Signature

Date 10/11/99 Time 1000

The above analysis to be performed is authorized by:

Signature \_\_\_\_\_

Date 10-6-99

33595R00011

PAGE 40

1-99

## **APPENDIX C**

### **LABORATORY QUALITY CONTROL AND PERFORMANCE REPORTS**





### QUALITY ASSURANCE REPORT - UNC MINING & MILLING

Project: S.W. Alluvium 3rd Quarter  
Laboratory ID Range: 35510-35516  
Report Date: August 17, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	-	5.0	100	-	CP	08-05-99
Magnesium	EPA 200.7	-	5.9	89	-	CP	08-05-99
Sodium	EPA 200.7	-	3.1	97	-	CP	08-05-99
Potassium	EPA 200.7	-	6.3	95	-	CP	08-05-99
Bicarbonate	SM 2320 B.	-	0.3	103	-	LM	07-26-99
Sulfate	EPA 200.7	-	4.1	82	-	CP	08-05-99
Chloride	EPA 200.7	-	1.6	87	-	CP	08-05-99
Ammonium	EPA 350.1	-	0.0	103	-	RK	07-19-99
Nitrite + Nitrate	EPA 353.2	-	0.0	104	-	RK	07-22-99

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	0.4	98	-	KP	07-20-99
pH	SM 4500-H B.	-	0.3	-	-	LM	07-26-99

Trace Metals							
Aluminum	EPA 200.7	-	0.0	93	-	CP	08-05-99
Arsenic	EPA 206.3	-	0.0	90	-	MM	07-26-99
Beryllium	EPA 200.7	-	0.0	82	-	CP	08-05-99
Cadmium	EPA 200.8	100	-	100	-	SD	07-26-99
Cobalt	EPA 200.7	-	0.0	84	-	CP	08-05-99
Lead	EPA 200.7	-	0.0	82	-	CP	08-05-99
Manganese	EPA 200.7	-	0.0	89	-	CP	08-05-99
Molybdenum	EPA 200.7	-	0.0	87	-	CP	08-05-99
Nickel	EPA 200.7	-	0.0	87	-	CP	08-05-99
Selenium	EPA 270.3	-	0.0	96	-	MM	07-26-99
Vanadium	EPA 200.7	-	0.0	93	-	CP	08-05-99

Radiometrics							
Uranium	EPA 200.8	98	-	108	-	SD	07-26-99
Radium 226	EPA 903.0	-	14.0	89	-	LH	08-03-99
Radium 228	EPA 904.0	-	0.0	88	-	LH	08-06-99
Thorium 230	EPA 907.0	-	7.3	88	-	PH	07-22-99
Lead 210	NERHL-65-4	-	0.0	101	-	LH	08-02-99
Polonium 210	RMO-3008, USAEC	79	-	102	-	RS	07-22-99
Gross Alpha	EPA 900.1	100	-	96	-	RS	07-21-99


Trace Organics							
Chloroform	EPA 601	-	2.3	109	-	RO	07-20-99

#### NOTES:

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By: 

pim r:\reports\clients99\unc\_mining\_&\_milling\water\qa\35510-16.xls

Reviewed by: 



### QUALITY ASSURANCE REPORT - UNC MINING & MILLING

Project: 3rd Quarter Zone 1 (35518-27), Zone 3 (35528)  
Laboratory ID Range: 35518-35528  
Report Date: August 23, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	-	5.0	95	-	CP	08-05-99
Magnesium	EPA 200.7	-	5.9	88	-	CP	08-05-99
Sodium	EPA 200.7	-	3.1	97	-	CP	08-05-99
Potassium	EPA 200.7	-	6.3	95	-	CP	08-05-99
Bicarbonate	SM 2320 B.	-	0.3	103	-	LM	07-26-99
Sulfate	EPA 200.7	-	4.1	96	-	CP	08-05-99
Chloride	EPA 200.7	-	1.6	92	-	CP	08-05-99
Ammonia	SM 4500-NH <sub>3</sub> G.	-	0.0	100	-	RK	07-19-99
Nitrite + Nitrate	EPA 353.2	-	0.0	104	-	RK	07-22-99

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	0.5	101	-	KP	08-30-99
pH	SM 4500-H B.	-	0.3	-	-	LM	07-26-99


Trace Metals							
Aluminum	EPA 200.7	-	0.0	80	-	CP	08-05-99
Arsenic	EPA 206.3	-	0.0	90	-	MM	07-26-99
Beryllium	EPA 200.7	-	0.0	91	-	CP	08-05-99
Cadmium	EPA 200.8	100	-	100	-	SD	07-26-99
Cobalt	EPA 200.7	-	0.0	90	-	CP	08-05-99
Lead	EPA 200.7	-	0.0	84	-	CP	08-05-99
Manganese	EPA 200.7	-	0.0	84	-	CP	08-05-99
Molybdenum	EPA 200.7	-	0.0	92	-	CP	08-05-99
Nickel	EPA 200.7	-	0.0	95	-	CP	08-05-99
Selenium	EPA 270.3	-	0.0	96	-	MM	07-26-99
Vanadium	EPA 200.7	-	0.0	96	-	CP	08-05-99

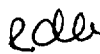
Radiometrics							
Uranium	EPA 200.8	98	-	108	-	SD	07-26-99
Radium 226	EPA 903.0	-	14.0	89	-	LH	08-03-99
Radium 228	EPA 904.0	-	0.0	88	-	LH	08-06-99
Thorium 230	EPA 907.0	-	12.5	89	-	PH	08-10-99
Lead 210	NERHL-65-4	-	0.0	91	-	RS	08-06-99
Gross Alpha	EPA 900.1	-	0.0	102	-	RS	08-12-99

Trace Organics							
Chloroform	EPA 601	-	2.3	109	-	RO	07-21-99

#### NOTES:

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:   
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Reviewed by: 



### QUALITY ASSURANCE REPORT - UNC MINING & MILLING

Project: 3rd Quarter S.W. Alluvium  
Laboratory ID Range: 35979-35983  
Report Date: August 26, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	100	-	96	-	TS	08-09-99
Magnesium	EPA 200.7	100	-	89	-	TS	08-09-99
Sodium	EPA 200.7	100	-	98	-	TS	08-09-99
Potassium	EPA 200.7	100	-	96	-	TS	08-09-99
Bicarbonate	SM 2320 B.	-	0.2	96	-	LM	07-27-99
Sulfate	EPA 200.7	99	-	91	-	TS	08-09-99
Chloride	EPA 200.7	109	-	95	-	TS	08-09-99
Ammonium	EPA 350.1	-	0.3	108	-	RK	07-26-99
Nitrite + Nitrate	EPA 353.2	-	0.0	94	-	RK	07-28-99

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	0.0	101	-	JR	07-27-99
pH	SM 4500-H B.	-	0.2	-	-	LM	07-27-99

Trace Metals							
Aluminum	EPA 200.7	100	-	87	-	TS	08-09-99
Arsenic	EPA 206.3	-	0.0	96	-	MM	07-28-99
Beryllium	EPA 200.7	100	-	88	-	TS	08-09-99
Cadmium	EPA 200.8	100	-	102	-	SD	07-26-99
Cobalt	EPA 200.7	100	-	87	-	TS	08-09-99
Lead	EPA 200.7	100	-	84	-	TS	08-09-99
Manganese	EPA 200.7	100	-	85	-	TS	08-09-99
Molybdenum	EPA 200.7	100	-	95	-	TS	08-09-99
Nickel	EPA 200.7	100	-	86	-	TS	08-09-99
Selenium	EPA 270.3	-	0.0	98	-	MM	07-27-99
Vanadium	EPA 200.7	100	-	94	-	TS	08-09-99


Radiometrics							
Uranium	EPA 200.8	102	-	116	-	SD	07-26-99
Radium 226	EPA 903.0	-	0.0	89	-	RS	08-03-99
Radium 228	EPA 904.0	-	0.0	78	-	LH	08-18-99
Thorium 230	EPA 907.0	-	12.5	89	-	PH	08-10-99
Lead 210	NERHL-65-4	-	0.0	95	-	RS	08-04-99
Gross Alpha	EPA 900.1	-	5.0	93	-	RS	08-03-99

Trace Organics							
Chloroform	EPA 601	-	0.6	103	-	RO	07-26-99

#### NOTES:

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:   
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Reviewed by:   
Login No. 54576



# QUALITY ASSURANCE REPORT - UNC MINING & MILLING

Project: 3rd Quarter Zone 3

Laboratory ID Range: 35991-35993

Report Date: August 26, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	100	-	96	-	TS	08-09-99
Magnesium	EPA 200.7	100	-	89	-	TS	08-09-99
Sodium	EPA 200.7	100	-	98	-	TS	08-09-99
Potassium	EPA 200.7	100	-	96	-	TS	08-09-99
Bicarbonate	SM 2320 B.	-	0.2	96	-	LM	07-27-99
Sulfate	EPA 200.7	99	-	91	-	TS	08-09-99
Chloride	EPA 200.7	109	-	95	-	TS	08-09-99
Ammonium	EPA 350.1	-	0.3	108	-	RK	07-26-99
Nitrite + Nitrate	EPA 353.2	-	0.0	94	-	RK	07-28-99

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	0.0	101	-	JR	07-27-99
pH	SM 4500-H B.	-	0.2	-	-	LM	07-27-99

Trace Metals							
Aluminum	EPA 200.7	100	-	87	-	TS	08-09-99
Arsenic	EPA 206.3	-	0.0	96	-	MM	07-28-99
Beryllium	EPA 200.7	100	-	88	-	TS	08-09-99
Cadmium	EPA 200.8	100	-	102	-	SD	07-26-99
Cobalt	EPA 200.7	100	-	87	-	TS	08-09-99
Lead	EPA 200.7	100	-	84	-	TS	08-09-99
Manganese	EPA 200.7	100	-	85	-	TS	08-09-99
Molybdenum	EPA 200.7	100	-	95	-	TS	08-09-99
Nickel	EPA 200.7	100	-	86	-	TS	08-09-99
Selenium	EPA 270.3	-	0.0	98	-	MM	07-27-99
Vanadium	EPA 200.7	100	-	94	-	TS	08-09-99

Radiometrics							
Uranium	EPA 200.8	102	-	116	-	SD	07-26-99
Radium 226	EPA 903.0	-	0.0	89	-	RS	08-03-99
Radium 228	EPA 904.0	-	0.0	78	-	LH	08-18-99
Thorium 230	EPA 907.0	-	12.0	89	-	PH	08-10-99
Lead 210	NERHL-65-4	-	0.0	95	-	RS	08-04-99
Gross Alpha	EPA 900.1	-	5.0	93	-	RS	08-03-99

Trace Organics							
Chloroform	EPA 601	-	8.0	100	-	RO	07-26-99

## NOTES:

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:

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Reviewed by:

Login No. 54581



# QUALITY ASSURANCE REPORT - UNC MINING & MILLING

Project: 3rd Quarter Zone 3  
Laboratory ID Range: 35529-35532  
Report Date: August 27, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	-	5.0	95	-	CP	08-05-99
Magnesium	EPA 200.7	-	5.9	88	-	CP	08-05-99
Sodium	EPA 200.7	-	3.1	97	-	CP	08-05-99
Potassium	EPA 200.7	-	6.3	95	-	CP	08-05-99
Bicarbonate	SM 2320 B.	-	0.3	103	-	LM	07-26-99
Sulfate, 35529, 31-32	EPA 200.7	-	4.1	96	-	CP	08-05-99
Sulfate, 35530	SM 4500-SO4 E. Mod.	-	6.0	98	-	JL	08-27-99
Chloride	EPA 200.7	-	1.6	92	-	CP	08-05-99
Ammonia	SM 4500-NH <sub>3</sub> G.	-	0.0	100	-	RK	07-19-99
Nitrite + Nitrate	EPA 353.2	-	0.0	104	-	RK	07-22-99

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	0.3	102	-	KP	07-20-99
pH	SM 4500-H B.	-	0.3	-	-	LM	07-26-99

Trace Metals							
Aluminum	EPA 200.7	-	0.0	80	-	CP	08-05-99
Arsenic	EPA 206.3	-	0.0	90	-	MM	07-26-99
Beryllium	EPA 200.7	-	0.0	91	-	CP	08-05-99
Cadmium	EPA 200.8	100	-	104	-	SD	07-26-99
Cobalt	EPA 200.7	-	0.0	90	-	CP	08-05-99
Lead	EPA 200.7	-	0.0	84	-	CP	08-05-99
Manganese	EPA 200.7	-	0.0	84	-	CP	08-05-99
Molybdenum	EPA 200.7	-	0.0	92	-	CP	08-05-99
Nickel	EPA 200.7	-	0.0	95	-	CP	08-05-99
Selenium	EPA 270.3	-	0.0	96	-	MM	07-26-99
Vanadium	EPA 200.7	-	0.0	96	-	CP	08-05-99


Radiometrics							
Uranium	EPA 200.8	101	-	111	-	SD	07-26-99
Radium 226	EPA 903.0	100	-	89	-	LH	08-03-99
Radium 228	EPA 904.0	-	0.0	78	-	LH	08-18-99
Thorium 230	EPA 907.0	103	-	90	-	PH	08-03-99
Lead 210	NERHL-65-4	-	0.0	91	-	LH	07-28-99
Gross Alpha	EPA 900.1	-	5.0	93	-	RS	08-03-99

Trace Organics							
Chloroform	EPA 601	-	6.7	102	-	RO	07-21-99

## NOTES:

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:   
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Reviewed by:   
Login No. 54401

**QUALITY ASSURANCE REPORT - UNC MINING & MILLING**

Project: 3rd Quarter Zone 1  
Laboratory ID Range: 35996-36001  
Report Date: August 31, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	100	-	96	-	TS	08-09-99
Magnesium	EPA 200.7	100	-	89	-	TS	08-09-99
Sodium	EPA 200.7	100	-	98	-	TS	08-09-99
Potassium	EPA 200.7	100	-	96	-	TS	08-09-99
Bicarbonate	SM 2320 B.	-	0.5	100	-	LM	07-28-99
Sulfate	EPA 200.7	99	-	91	-	TS	08-09-99
Chloride	EPA 200.7	109	-	95	-	TS	08-09-99
Ammonium	SM 4500-NH <sub>3</sub> G.	-	0.3	108	-	RK	07-26-99
Nitrite + Nitrate	EPA 353.2	-	0.0	95	-	RK	07-28-99

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	0.0	101	-	JL	07-27-99
pH	SM 4500-H B.	-	0.0	-	-	LM	07-28-99


Trace Metals							
Aluminum	EPA 200.7	100	-	87	-	TS	08-09-99
Arsenic	EPA 206.3	-	0.0	96	-	MM	07-28-99
Beryllium	EPA 200.7	100	-	88	-	TS	08-09-99
Cadmium	EPA 200.8	100	-	104	-	SD	07-26-99
Cobalt	EPA 200.7	100	-	87	-	TS	08-09-99
Lead	EPA 200.7	100	-	84	-	TS	08-09-99
Manganese	EPA 200.7	100	-	85	-	TS	08-09-99
Molybdenum	EPA 200.7	100	-	95	-	TS	08-09-99
Nickel	EPA 200.7	100	-	86	-	TS	08-09-99
Selenium	EPA 270.3	-	0.0	98	-	MM	07-27-99
Vanadium	EPA 200.7	100	-	94	-	TS	08-09-99

Radiometrics							
Uranium	EPA 200.8	99	-	110	-	SD	07-26-99
Radium 226	EPA 903.0	-	15.0	85	-	RS	08-10-99
Radium 228	EPA 904.0	-	13.5	104	-	LH	08-12-99
Thorium 230	EPA 907.0	-	8.0	96	-	PH	08-13-99
Lead 210	NERHL-65-4	-	0.0	95	-	RS	08-04-99
Gross Alpha	EPA 900.1	-	5.0	93	-	RS	08-03-99

Trace Organics							
Chloroform	EPA 601	-	8.0	100	-	RO	07-26-99

**NOTES:**

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:   
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Reviewed by:   
Login No. 54582

**QUALITY ASSURANCE REPORT - UNC MINING & MILLING**

Project: Zone 3 4th Quarter  
Laboratory ID Range: 33594-001-005  
Report Date: November 12, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	-	0.0	97	-	CP	11-03-99
Magnesium	EPA 200.7	-	0.0	95	-	CP	11-03-99
Sodium	EPA 200.7	-	0.2	92	-	CP	11-03-99
Potassium	EPA 200.7	-	2.0	93	-	CP	11-03-99
Bicarbonate	SM 2320 B.	-	0.2	100	-	LM	10-15-99
Sulfate	EPA 200.7	-	0.0	93	-	CP	11-03-99
Chloride	EPA 200.7	-	3.2	90	-	CP	11-03-99
Ammonium	SM 4500-NH <sub>3</sub> G.	-	0.0	101	-	RK	10-11-99
Nitrite + Nitrate	EPA 353.2	-	7.4	105	-	JR	10-15-99

PARAMETERS with 48 hour holding time						Date/Time Analyzed
pH	SM 4500-H B.	-	0.0	-	-	LM 10-15-99 @ 09:46

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	0.0	102	-	JR	10-13-99

Trace Metals							
Aluminum	EPA 200.7	-	0.0	93	-	CP	11-03-99
Arsenic	EPA 206.3	-	0.0	86	-	MM	10-14-99
Beryllium	EPA 200.7	-	0.0	93	-	CP	11-03-99
Cadmium	EPA 200.8	-	7.7	102	-	SD	10-22-99
Cobalt	EPA 200.7	-	0.0	91	-	CP	11-03-99
Lead	EPA 200.7	-	1.0	92	-	CP	11-03-99
Manganese	EPA 200.7	-	0.0	91	-	CP	11-03-99
Molybdenum	EPA 200.7	-	0.0	92	-	CP	11-03-99
Nickel	EPA 200.7	-	1.0	91	-	CP	11-03-99
Selenium	EPA 270.3	-	0.0	86	-	MM	10-13-99
Vanadium	EPA 200.7	-	0.0	93	-	CP	11-03-99

Radiometrics							
Uranium	EPA 200.8	-	2.2	110	-	SD	10-22-99
Radium 226	EPA 903.0	-	0.0	101	-	RS	10-27-99
Radium 228	EPA 904.0	-	0.0	119	-	LH	11-03-99
Thorium 230	EPA 907.0	-	6.2	114	-	PH	11-02-99
Lead 210	NERHL-65-4	-	0.0	113	-	LH	11-10-99
Gross Alpha	EPA 900.1	-	0.0	103	-	RS	11-02-99

Trace Organics							
Chloroform	EPA 601	-	0.2	106	-	RO	10-13-99

**NOTES:**

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:

  
STEVEN W. COWLING  
DATA VALIDATOR

Reviewed by:

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# QUALITY ASSURANCE REPORT - UNC MINING & MILLING

Project: S.W. Alluvium 4th Quarter  
 Laboratory ID Range: 33595-001-008  
 Report Date: November 16, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	-	0.0	97	-	CP	11-03-99
Magnesium	EPA 200.7	-	0.0	95	-	CP	11-03-99
Sodium	EPA 200.7	-	0.2	92	-	CP	11-03-99
Potassium	EPA 200.7	-	2.0	93	-	CP	11-03-99
Bicarbonate	SM 2320 B.	-	0.2	100	-	LM	10-15-99
Sulfate	EPA 200.7	-	0.0	93	-	CP	11-03-99
Chloride	EPA 200.7	-	3.2	90	-	CP	11-03-99
Ammonium	SM 4500-NH <sub>3</sub> G.	-	0.0	103	-	RK	10-11-99
Nitrite + Nitrate	EPA 353.2	-	0.0	98	-	JL	10-15-99

PARAMETERS with 48 hour holding time						Date/Time Analyzed
pH	SM 4500-H B.	-	0.0	-	-	LM 10-15-99 @ 12:20

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	5.8	102	-	JR	10-13-99

Trace Metals							
Aluminum	EPA 200.7	-	0.0	93	-	CP	11-03-99
Arsenic	EPA 206.3	-	0.0	94	-	MM	10-14-99
Beryllium	EPA 200.7	-	0.0	93	-	CP	11-03-99
Cadmium	EPA 200.8	-	7.7	102	-	SD	10-22-99
Cobalt	EPA 200.7	-	0.0	91	-	CP	11-03-99
Lead	EPA 200.7	-	1.0	92	-	CP	11-03-99
Manganese	EPA 200.7	-	0.0	91	-	CP	11-03-99
Molybdenum	EPA 200.7	-	0.0	92	-	CP	11-03-99
Nickel	EPA 200.7	-	1.0	91	-	CP	11-03-99
Selenium	EPA 270.3	-	0.0	86	-	MM	10-13-99
Vanadium	EPA 200.7	-	0.0	93	-	CP	11-03-99

Radiometrics							
Uranium	EPA 200.8	-	3.8	110	-	SD	10-22-99
Radium 226	EPA 903.0	-	0.0	98	-	RS	10-29-99
Radium 228	EPA 904.0	-	0.0	112	-	LH	11-03-99
Thorium 230	EPA 907.0	-	0.0	103	-	PH	11-12-99
Lead 210	NERHL-65-4	-	0.0	73	-	RS	11-10-99
Gross Alpha	EPA 900.1	-	0.0	103	-	RS	11-02-99

Trace Organics							
Chloroform	EPA 601	-	0.2	106	-	RO	10-14-99

## NOTES:

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:

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*Steven W. Cowling*  
 STEVEN W. COWLING  
 DATA VALIDATOR

Reviewed by:

*Roger G. Gilling*  
 ROGER GILLING  
 LABORATORY SUPERVISOR

TRACKING NO. PAGE NO.

33595R00009



**QUALITY ASSURANCE REPORT - UNC MINING & MILLING**

Project: Zone 1 4th Quarter  
Laboratory ID Range: 33759-001-005  
Report Date: November 19, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	-	0.7	95	-	CP	11-05-99
Magnesium	EPA 200.7	-	2.5	93	-	CP	11-05-99
Sodium	EPA 200.7	-	1.2	93	-	CP	11-05-99
Potassium	EPA 200.7	-	0.0	90	-	CP	11-05-99
Bicarbonate	SM 2320 B.	-	0.0	-	-	LM	10-19-99
Sulfate	EPA 200.7	-	2.3	91	-	CP	11-05-99
Chloride	EPA 200.7	-	0.0	94	-	CP	11-05-99
Ammonium	SM 4500-NH <sub>3</sub> G.	-	0.0	100	-	JL	10-18-99
Nitrite + Nitrate	EPA 353.2	-	0.0	100	-	JL	10-20-99

PARAMETERS with 48 hour holding time						Date/Time Analyzed
pH	SM 4500-H B.	-	0.0	-	-	LM 10-19-99 @ 10:34

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	0.0	101	-	JR	10-19-99

Trace Metals							
Aluminum	EPA 200.7	-	3.0	96	-	CP	11-05-99
Arsenic	EPA 206.3	-	0.0	94	-	MM	10-19-99
Beryllium	EPA 200.7	-	1.2	91	-	CP	11-05-99
Cadmium	EPA 200.8	-	0.0	109	-	SD	10-22-99
Cobalt	EPA 200.7	-	0.0	92	-	CP	11-05-99
Lead	EPA 200.7	-	3.0	94	-	CP	11-05-99
Manganese	EPA 200.7	-	2.0	93	-	CP	11-05-99
Molybdenum	EPA 200.7	-	0.0	91	-	CP	11-05-99
Nickel	EPA 200.7	-	0.0	87	-	CP	11-05-99
Selenium	EPA 270.3	-	0.3	102	-	MM	10-18-99
Vanadium	EPA 200.7	-	1.0	93	-	CP	11-05-99

Radiometrics							
Uranium	EPA 200.8	-	1.2	117	-	SD	10-22-99
Radium 226	EPA 903.0	-	0.0	102	-	RS	11-10-99
Radium 228	EPA 904.0	-	0.0	113	-	LH	11-17-99
Thorium 230	EPA 907.0	-	13.5	97	-	PH	11-16-99
Lead 210	NERHL-65-4	-	0.0	93	-	RS	11-17-99
Gross Alpha	EPA 900.1	-	5.8	101	-	RS	11-08-99

Trace Organics							
Chloroform	EPA 601	-	0.5	107	-	RO	10-19-99

**NOTES:**

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:

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STEVEN W. COWLING  
DATA VALIDATOR

Reviewed by:

TRACKING NO. PAGE NO.

33759R00006



# QUALITY ASSURANCE REPORT - UNC MINING & MILLING

Project: Zone 3 4th Quarter  
Laboratory ID Range: 33758-001-003  
Report Date: November 24, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	-	0.7	95	-	CP	11-05-99
Magnesium	EPA 200.7	-	2.5	93	-	CP	11-05-99
Sodium	EPA 200.7	-	1.2	93	-	CP	11-05-99
Potassium	EPA 200.7	-	0.0	90	-	CP	11-05-99
Bicarbonate	SM 2320 B.	-	0.8	-	-	LM	10-19-99
Sulfate	EPA 200.7	-	2.3	91	-	CP	11-05-99
Chloride	EPA 200.7	-	0.0	94	-	CP	11-05-99
Ammonium	SM 4500-NH <sub>3</sub> G.	-	0.0	100	-	JL	10-18-99
Nitrite + Nitrate	EPA 353.2	-	0.0	100	-	JL	10-20-99

PARAMETERS with 48 hour holding time						Date/Time Analyzed
pH	SM 4500-H B.	-	0.8	-	-	LM 10-19-99 @ 09:30

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	0.0	107	-	JR	10-19-99

Trace Metals							
Aluminum	EPA 200.7	-	3.0	96	-	CP	11-05-99
Arsenic	EPA 206.3	-	0.0	94	-	MM	10-19-99
Beryllium	EPA 200.7	-	1.2	91	-	CP	11-05-99
Cadmium	EPA 200.8	-	0.0	109	-	SD	10-22-99
Cobalt	EPA 200.7	-	0.0	92	-	CP	11-05-99
Lead	EPA 200.7	-	3.0	94	-	CP	11-05-99
Manganese	EPA 200.7	-	2.0	93	-	CP	11-05-99
Molybdenum	EPA 200.7	-	0.0	91	-	CP	11-05-99
Nickel	EPA 200.7	-	0.0	87	-	CP	11-05-99
Selenium	EPA 270.3	-	0.3	102	-	MM	10-18-99
Vanadium	EPA 200.7	-	1.0	93	-	CP	11-05-99

Radiometrics							
Uranium	EPA 200.8	-	1.2	117	-	SD	10-22-99
Radium 226	EPA 903.0	-	0.0	102	-	RS	11-10-99
Radium 228	EPA 904.0	-	0.0	113	-	LH	11-17-99
Thorium 230	EPA 907.0	-	13.5	97	-	PH	11-16-99
Lead 210	NERHL-65-4	-	0.0	97	-	LH	11-19-99
Gross Alpha	EPA 900.1	-	5.8	101	-	RS	11-08-99

Trace Organics							
Chloroform	EPA 601	-	0.5	107	-	RO	10-19-99

## NOTES:

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:

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STEVEN W. COWLING  
DATA VALIDATOR

Reviewed by:

ROGER GARCIA  
LABORATORY SUPERVISOR

TRACKING NO. PAGE NO.

33758R000004



# QUALITY ASSURANCE REPORT - UNC MINING & MILLING

Project: S.W. Alluvium 4th Quarter  
 Laboratory ID Range: 33757-001-005  
 Report Date: November 29, 1999

Major Ions	Method	Duplicate #1 %	RPD <sup>1</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	-	0.7	95	-	CP	11-05-99
Magnesium	EPA 200.7	-	2.5	93	-	CP	11-05-99
Sodium	EPA 200.7	-	1.2	93	-	CP	11-05-99
Potassium	EPA 200.7	-	0.0	90	-	CP	11-05-99
Bicarbonate	SM 2320 B.	-	0.8	-	-	LM	10-19-99
Sulfate	EPA 200.7	-	2.3	91	-	CP	11-05-99
Chloride	EPA 200.7	-	0.0	94	-	CP	11-05-99
Ammonium	SM 4500-NH <sub>3</sub> G.	-	0.0	100	-	JL	10-18-99
Nitrite + Nitrate	EPA 353.2	-	0.0	100	-	JL	10-20-99

PARAMETERS with 48 hour holding time						Date/Time Analyzed
pH	SM 4500-H B.	-	0.8	-	-	LM 10-19-99 @ 09:07

Non-Metals							
TDS @ 180 °C	SM 2540 C. Mod.	-	0.3	107	-	JL	10-19-99

Trace Metals							
Aluminum	EPA 200.7	-	3.0	96	-	CP	11-05-99
Arsenic	EPA 206.3	-	0.0	94	-	MM	10-19-99
Beryllium	EPA 200.7	-	1.2	91	-	CP	11-05-99
Cadmium	EPA 200.8	-	0.0	109	-	SD	10-22-99
Cobalt	EPA 200.7	-	0.0	92	-	CP	11-05-99
Lead	EPA 200.7	-	3.0	94	-	CP	11-05-99
Manganese	EPA 200.7	-	2.0	93	-	CP	11-05-99
Molybdenum	EPA 200.7	-	0.0	91	-	CP	11-05-99
Nickel	EPA 200.7	-	0.0	87	-	CP	11-05-99
Selenium	EPA 270.3	-	0.3	102	-	MM	10-18-99
Vanadium	EPA 200.7	-	1.0	93	-	CP	11-05-99

Radiometrics							
Uranium	EPA 200.8	-	1.2	117	-	SD	10-22-99
Radium 226	EPA 903.0	-	0.0	102	-	RS	11-10-99
Radium 228	EPA 904.0	-	0.0	113	-	LH	11-17-99
Thorium 230	EPA 907.0	-	13.5	97	-	PH	11-16-99
Lead 210	NERHL-65-4	-	0.0	97	-	RS	11-19-99
Gross Alpha	EPA 900.1	-	5.8	101	-	RS	11-08-99

Trace Organics							
Chloroform	EPA 601	-	0.5	107	-	RO	10-19-99

## NOTES:

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:

STEVEN W. COWLING  
 DATA VALIDATOR

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Reviewed by:

ROGER CAPLAN  
 QUALITY ASSURANCE SUPERVISOR  
 TRACKING NO. PAGE NO.

33757R00006



# QUALITY ASSURANCE REPORT - UNC MINING & MILLING

Project: Zone 1 4th Quarter  
 Laboratory ID Range: 33596-001-009  
 Report Date: December 1, 1999

Major Ions	Method	Duplicate <sup>1</sup> #1 %	RPD <sup>2</sup> %	Spike <sup>3</sup> #1 %	Spk #2 %	Analyst	Date Analyzed
Calcium	EPA 200.7	-	0.0	97	-	CP	11-03-99
Magnesium	EPA 200.7	-	0.0	95	-	CP	11-03-99
Sodium	EPA 200.7	-	0.2	92	-	CP	11-03-99
Potassium	EPA 200.7	-	2.0	93	-	CP	11-03-99
Bicarbonate	SM 2320 B.	-	0.7	-	-	LM	10-18-99
Sulfate	EPA 200.7	-	0.0	93	-	CP	11-03-99
Chloride	EPA 200.7	-	3.2	90	-	CP	11-03-99
Ammonium	SM 4500-NH <sub>3</sub> G.	-	0.0	103	-	RK	10-11-99
Nitrite + Nitrate	EPA 353.2	-	7.4	105	-	JR	10-15-99

PARAMETERS with 48 hour holding time						Date/Time Analyzed
pH	SM 4500-H B.	-	0.7	-	-	LM 10-18-99 @ 10:58

Non-Metals						
TDS @ 180 °C	SM 2540 C. Mod.	-	5.8	100	-	JR 10-13-99

Trace Metals						
Aluminum	EPA 200.7	-	0.0	93	-	CP 11-03-99
Arsenic	EPA 206.3	-	0.0	97	-	MM 10-14-99
Beryllium	EPA 200.7	-	0.0	93	-	CP 11-03-99
Cadmium	EPA 200.8	-	0.0	108	-	SD 10-22-99
Cobalt	EPA 200.7	-	0.0	91	-	CP 11-03-99
Lead	EPA 200.7	-	1.0	92	-	CP 11-03-99
Manganese	EPA 200.7	-	0.0	91	-	CP 11-03-99
Molybdenum	EPA 200.7	-	0.0	92	-	CP 11-03-99
Nickel	EPA 200.7	-	1.0	91	-	CP 11-03-99
Selenium	EPA 270.3	-	0.0	98	-	MM 10-13-99
Vanadium	EPA 200.7	-	0.0	93	-	CP 11-03-99

Radiometrics						
Uranium	EPA 200.8	-	2.3	112	-	SD 10-22-99
Radium 226	EPA 903.0	-	0.0	98	-	RS 10-29-99
Radium 228	EPA 904.0	-	0.0	112	-	LH 11-03-99
Thorium 230	EPA 907.0	-	0.0	90	-	PH 11-24-99
Lead 210	NERHL-65-4	-	0.0	103	-	LH 11-12-99
Gross Alpha	EPA 900.1	-	0.0	107	-	RS 10-29-99

Trace Organics						
Chloroform	EPA 601	-	0.2	106	-	RO 10-14-99

## NOTES:

- (1) These values are an assessment of analytical precision. They are a percent recovery of the original result. ELI duplicates 10 percent of all samples for each analytical method.
- (2) These values are an assessment of analytical precision. The acceptance range is 0-20% for sample results above 10 times the reporting limit. This range is not applicable to samples with results below 10 times the reporting limit.
- (3) These values are an assessment of analytical accuracy. They are a percent recovery of the spike addition. ELI performs a matrix spike on 10 percent of all samples for each analytical method.

Report Approved By:

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*Steven W. Cowling*  
 STEVEN W. COWLING  
 DATA VALIDATOR

Reviewed by:

*R.A. Gaurino*  
 ROGER GAURINO  
 TRACKING NO. PAGE NO.

33596R00010