

# UNITED NUCLEAR CORPORATION



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August 28, 2018

ATTN: Document Control Desk

40-8907

Ms. Andrea Kock, Deputy Director  
Division of Decommissioning, Uranium Recovery and Waste Programs  
Office of Nuclear Materials Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
11545 Rockville Pike, #2 White Flint  
Mail Stop T-8F5  
Rockville, MD 20852-2738

RE: First Half –January thru June 2018  
Semi – Annual Ground Water Monitoring Report,  
QA/QC Report and Environmental Monitoring Report.

Dear Ms. Kock:

The above reports are submitted pursuant to our NRC Source Materials License NO. SUA-1475. Condition 30C and 12; Section V.A. 15 of the EPA Administrative Order for the Church Rock Site.

South West Alluvium point of compliance wells GW-2 and GW-3 were not sampled due to the location hazardous condition (i.e. currently both wells are too close to unstable edge of pipeline arroyo) and GW-3 is not meeting low-flow sampling method criteria due to very low water volume in well.

Although not part of the performance monitoring program requirement Zone 3 supplemental wells PB-3, PB-4, PB-2, NBL-2, RW-A, NW wells 1 thru 5, MW-6, MW-7 and IW-A are also included in this report (PB-2, PB-3, PB-4, MW-6 and IW-A are monitored for water level only). There is no effluent monitoring data to report.

Sincerely,

Max Chischilly Jr.  
Radiation Safety Officer

dy  
Enclosures

Cc. Robert Warren, Chester Engineers (1CD)  
Steve Jetter, NMED (1CD)  
Glenna Lee, NNEPA (1CD)  
Jim Smith, NRC 1 printed copy (1CD)  
Janet Brooks, USEPA Region 6 (1 flash drive)  
Ray L. Kellar, NRC Region IV (1CD)  
Document Control Desk, NRC (1 printed copy)

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SEMI-ANNUAL GROUND WATER  
AND ENVIRONMENTAL  
MONITORING REPORT

FIRST HALF OF 2018  
(JANUARY THRU JUNE)

**QUARTERLY SAMPLING**  
**SEMI-ANNUAL GROUND WATER MONITORING REPORT**  
**JANUARY TO JUNE OF 2018**  
**FIELD DATA SHEET OF**  
**FIRST AND SECOND QUARTER**

**CONTROLS**

SW ALLUVIUM

ZONE – 1

ZONE – 3

# GROUND WATER FIELD MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: January QUARTER: First YEAR: 2018

## SOUTHWEST ALLUVIUM

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP. (°C)
509-D	1-8 0821	84.47	6949.50	6865.03	6,720	6.59	11.5
624	1-8 1645	55.35	6898.70	6843.35	5,700	6.74	10.7
627	1-9 1100	62.01	6892.40	6830.39	4,280	6.93	15.1
632	1-8 1223	49.62	6903.60	6853.98	6,670	6.68	12.1
801	1-8 1311	56.95	6904.30	6847.35	6,600	6.75	12.3
802	1-8 1138	53.06	6907.10	6854.04	6,640	6.64	13.3
803	1-8 0956	67.64	6922.60	6854.96	6,080	6.64	12.6
808	1-8 1050	54.87	6910.70	6855.83	6,170	6.63	12.6
GW-1	1-8 1401	66.61	6916.50	6849.89	6,340	6.82	12.1
GW-2			6912.90				
GW-3			6910.00				
EPA-23	1-8 0912	61.04	6926.50	6865.46	4,660	6.86	10.8
EPA-25	1-9 0956	58.14	6903.40	6845.26	4,680	6.84	12.7
EPA-28	1-8 1456	67.46	6917.90	6850.44	4,830	7.00	11.7
EPA-28 DUP (QA/QC)	1-8 1540	67.96	6917.90	6849.94	4,850	7.01	11.5
SBL-1	1-9 0851	51.33	6896.30	6844.97	7,580	6.62	11.5
805	1-18 1021	59.47	6915.60	6856.13			
807	1-18 1005	63.94	6923.40	6859.46			

COMMENTS: Well GW-2 and GW-3 are not sampled due to hazardous conditions  
(close to unstable edge of pipeline arroya) and GW-3 has very low water volume. Well 632 water  
level dropped 4.52' during sample.



# GROUND WATER FIELD MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: January

QUARTER: First

YEAR: 2018

## ZONE - 1

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP. (°C)
515-A	1-9 1353	107.55	7008.80	6901.25	9,340	6.17	13.0
604	1-9 1454	106.63	7006.00	6899.37	6,360	5.55	12.9
614	1-9 1234	106.3	7012.00	6905.70	7,430	6.45	14.7
TWQ-142	1-10 1040	202.71	6983.40	6780.69	1,931	8.05	10.2
EPA-2	1-10 0928	175.32	7019.50	6844.18	3,450	7.03	10.8
EPA-2 DUP (QA/QC)	1-10 1005	176.32	7019.50	6843.18	3,500	7.03	10.8
EPA-4	1-10 0821	209.16	7069.80	6860.64	4,450	6.90	10.0
EPA-5	1-9 1635	128.23	7011.50	6883.27	4,460	6.45	12.3
EPA-7	1-9 1553	117.93	7011.70	6893.77	7,130	6.22	13.4
Rinsate (QA/QC)	1-10 1130				2	8.05	7.8
Field Blank (QA/QC)	1-10 1140				5	6.90	8.0
TWQ-143	1-18 1430	209.38	6989.60	6780.22			
EPA-8	1-10 0910	217.13	7076.40	6859.27			
505-A	1-18 1104	122.96	6963.10	6840.14			
502-A	1-18 1144	196.92	7025.30	6828.38			
501-A	1-18 1154	213.35	7048.00	6834.65			
504-A	1-18 1319	201.46	7001.40	6799.94			
412	1-18 1356	186.62	6979.40	6792.78			

COMMENTS: Well 515-A water level dropped 6.20' during sample.

# GROUND WATER FIELD MONITORING

## WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: January

QUARTER: First

YEAR: 2018

### ZONE - 3

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)
504-B	1-18 1315	Dry @ 171.0	7001.80				
517	1-15 0920	107.10	6971.29	6864.19	5,620	3.17	9.7
EPA-14	1-15 1647	125.97	6963.88	6837.91	3,870	5.65	11.4
420	1-15 1508	157.24	6982.60	6825.36	3,570	6.59	11.7
711	1-15 1245	184.79	7042.75	6857.96	4,600	3.84	13.1
613	1-15 0830	80.00	6961.30	6881.30	8,670	3.10	10.6
708	1-15 1042	159.13	7011.73	6852.60	5,320	3.67	15.1
Rinsate (QA/QC)	1-16 1707				10	8.03	10.6
Field Blank (QA/QC)	1-16 1717				7	7.50	13.1
NBL-1	1-18 1412	Mud @ 197.58	6991.96				
EPA-9	1-10 0908	170.50	7076.60	6906.10			
EPA-13	1-15 1356	169.57	7031.66	6862.09	6,120	6.03	13.7
702	1-18 1042	83.92	6974.20	6890.28			
710	1-18 1231	166.78	7016.36	6849.58			
712	1-18 1242	177.63	7022.16	6844.53			
713	1-18 1251	168.81	7024.19	6855.38			
714	1-18 1111	106.60	6962.54	6855.94			
701	1-18 1056	85.04	6961.30	6876.26			
706	1-18 1122	117.00	6972.12	6855.12			
707	1-18 1223	163.26	7005.20	6841.94			
717	1-16 0906	136.59	6972.07	6835.48	6,000	3.15	11.1
717 DUPL (QA/QC)	1-16 0951	137.78	7042.75	6904.97	6,040	3.13	12.0
719	1-17 1000	170.90	7001.48	6830.58	5,420	6.02	10.0
402	1-18 1330	136.69	6968.20	6831.51			
446	1-18 1500	159.31	6998.30	6838.99			
424**	1-18 1339	143.53	6972.62	6829.09			

COMMENTS: Sample collected for well 517 after pump and line repair. Well 719 pump failed and was replaced with new 18" pump. Well 517 water level dropped 3.52' during sample.

# GROUND WATER FIELD MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: January

QUARTER: First

YEAR: 2018

**\*SUPPLEMENTAL\***

**ZONE -3**

[illegible]

**COMMENTS:** In order to collect sample and water level on 1-17, extraction wells

RW-A was shut off @ 0906/restarted @ 1145, NW-2 was shut off @ 0853/restarted @ 1158

and NW-5 was shut off @ 0857/restarted @ 1205.

# GROUND WATER FIELD MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: April QUARTER: Second YEAR: 2018

## SOUTHWEST ALLUVIUM

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP. (°C)
509-D	4-2 0832	84.52	6949.50	6864.98	6,420	6.53	12.8
624	4-2 1642	55.40	6898.70	6843.30	5,330	6.56	14.7
627	4-3 1047	62.20	6892.40	6830.20	4,230	6.93	16.7
632	4-2 1240	49.62	6903.60	6853.98	6,600	6.47	14.0
801	4-2 1326	56.99	6904.30	6847.31	6,340	6.64	14.4
802	4-2 1158	53.07	6907.10	6854.03	6,420	6.55	15.7
803	4-2 1022	67.56	6922.60	6855.04	5,820	6.54	14.7
808	4-2 1112	54.78	6910.70	6855.92	6,100	6.55	14.6
GW-1	4-2 1417	66.66	6916.50	6849.84	6,200	6.70	14.9
GW-2			6912.90				
GW-3			6910.00				
EPA-23	4-2 0933	61.00	6926.50	6865.50	4,300	6.72	14.9
EPA-25	4-3 0945	58.32	6903.40	6845.08	4,600	6.78	13.4
EPA-28	4-22 1512	67.47	6917.90	6850.43	4,610	6.82	15.5
EPA-28 DUP (QA/QC)	4-2 1555	67.91	6917.90	6849.99	4,600	6.85	15.9
SBL-1	4-3 0838	51.28	6896.30	6845.02	7,450	6.63	12.9
805	4-13 1029	59.40	6915.60	6856.20			
807	4-13 1025	63.88	6923.40	6859.52			

COMMENTS: Well GW-2 and GW-3 are not sampled due to hazardous conditions (close to unstable edge of pipeline arroya) and GW-3 has very low water volume.

Well 632 Water level dropped 4.99' during sample.

# GROUND WATER FIELD MONITORING

## WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: April QUARTER: Second YEAR: 2018

### ZONE - 1

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP. (°C)
515-A	4-3 1403	107.42	7008.80	6901.38	9,260	6.00	17.2
604	4-3 1507	106.54	7006.00	6899.46	6,200	5.37	15.5
614	4-3 1250	106.09	7012.00	6905.91	7,330	6.36	16.2
TWQ-142	4-4 1046	202.93	6983.40	6780.47	1,892	7.84	15.3
EPA-2	4-4 0934	175.56	7019.50	6843.94	3,380	6.94	12.4
EPA-2 DUP (QA/QC)	4-4 1005	176.39	7019.50	6843.11	3,330	6.91	13.4
EPA-4	4-4 0826	209.43	7069.80	6860.37	4,330	6.73	13.3
EPA-5	4-3 1647	128.15	7011.50	6883.35	4,260	6.23	14.9
EPA-7	4-3 1604	117.82	7011.70	6893.88	6,920	6.08	14.8
Rinsate (QA/QC)	4-4 1130				2	7.47	17.0
Field Blank (QA/QC)	4-4 1140				3	6.59	14.6
TWQ-143	4-12 1243	crude oil @ 209.27	6989.60	6780.33			
EPA-8	4-4 0915	217.34	7076.40	6859.06			
505-A	4-13 1148	122.75	6963.10	6840.35			
502-A	4-13 1105	196.65	7025.30	6828.65			
501-A	4-13 1116	213.11	7048.00	6834.89			
504-A	4-13 1142	201.22	7001.40	6800.18			
412	4-13 1052	186.50	6979.40	6792.90			

COMMENTS: Well 515-A water level dropped 6.33' during sample.

# GROUND WATER FIELD MONITORING

## WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: April QUARTER: Second YEAR: 2018  
**ZONE - 3**

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP. (°C)
504-B	4-12 1153	Dry @ 170	7001.80				
517	4-9 0908	107.20	6971.29	6864.09	5,290	3.33	12.6
EPA-14	4-9 1550	126.21	6963.88	6837.67	3,600	5.57	14.2
420	4-9 1415	157.60	6982.60	6825.00	3,360	6.44	16.6
711	4-9 1143	184.90	7042.75	6857.85	4,500	4.04	14.6
613	4-9 0821	80.19	6961.30	6881.11	8,280	3.13	12.7
708	4-9 1014	159.30	7011.73	6852.43	5,140	3.85	14.1
Rinsate (QA/QC)	4-10 1730				3	6.70	28.2
Field Blank (QA/QC)	4-10 1740				3	6.14	23.0
NBL-1	4-12 1226	Mud @ 197.50	6991.96				
EPA-9	4-4 0912	170.80	7076.60	6905.80			
EPA-13	4-9 1257	169.85	7031.66	6861.81	6,010	5.98	16.0
702	4-12 0957	83.92	6974.20	6890.28			
710	4-12 1041	166.85	7016.36	6849.51			
712	4-13 1137	177.51	7022.16	6844.65			
713	4-12 1051	168.71	7024.19	6855.48			
714	4-12 1015	106.60	6962.54	6855.94			
701	4-12 1007	85.06	6961.30	6876.24			
706	4-13 1058	117.05	6972.12	6855.07			
707	4-13 1124	163.16	7005.20	6842.04			
717	4-10 0950	136.77	6972.07	6835.30	5,600	3.33	15.9
717 DUPL (QA/QC)	4-10 1040	137.99	7042.75	6904.76	5,660	3.44	16.6
719	4-10 1610	170.99	7001.48	6830.49	5,000	5.64	22.3
402	4-12 1203	136.73	6968.20	6831.47			
446	4-12 1253	crude oil @ 159.53	6998.30	6838.77			
424**	4-12 1209	143.53	6972.62	6829.09			

COMMENTS: Well 517 water level dropped 3.68' during sample and required a 24 hr. recharge to resume/collect full sample. Sample collected for well 719 after pump repair and required an 18 hr. recharge to resume/collect full sample volume.

# GROUND WATER FIELD MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: April

QUARTER: Second

YEAR: 2018

**\*SUPPLEMENTAL\***

**ZONE -3**

[illegible]

COMMENTS: In order to collect sample and water level on 4-11, extraction wells RW-A was shut off @ 1815 on 4-10/restarted @ 1528 on 4-11, NW-2 was shut off @ 1819 on 4-10/restarted at 1510 on 4-11 and NW-5 was shut off @ 1821 on 4-10/restarted @ 1520 on 4-11.



# NBL-1, NBL-2, RW-A & PB WELL GROUND WATER MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY, TITRATION AND TEMPERATURE

MONTH: January, February & March

QUARTER: First

YEAR: 2018

## ZONE - 3

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP. (°C)	HCO3 mg/l	Chl mg/l
NBL-1			6991.96						
NBL-2	1-16 1320	173.23	6975.61	6802.38	3,420	6.68	12.1	282	40
PB-2	1-17 1441	Mud @ 189.85	6989.70						
PB-3	1-17 1432	Mud @ 193.73	6990.23						
PB-4	1-17 1438	193.29	6990.18	6796.89					
RW-A	1-17 1100	177.54	6983.23	6805.69	5,100	5.58	16.3	56	30
NBL-1			6991.96						
NBL-2	2-27 1123	173.23	6975.61	6802.38	3,420	6.76	11.9	336	40
PB-2	2-27 1211	Mud @ 189.85	6989.70						
PB-3	2-27 1150	Mud @ 193.73	6990.23						
PB-4	2-27 1152	193.28	6990.18	6796.90					
RW-A	2-27 1210	175.89	6983.23	6807.34					
NBL-1			6991.96						
NBL-2	3-21 1026	173.48	6975.61	6802.13	3,300	6.86	13.3	295	40
PB-2	3-21 1244	Mud @ 189.85	6989.70						
PB-3	3-21 1236	Mud @ 193.73	6990.23						
PB-4	3-21 1240	193.31	6990.18	6796.87					
RW-A	3-21 1200	177.63	6983.23	6805.60	5,050	5.85	16.6	54	30
NBL-1			6991.96						
NBL-2			6975.61						
PB-2			6989.70						
PB-3			6990.23						
PB-4			6990.18						
RW-A			6983.23						

COMMENTS: No Sample for RW-A on 2-27-18 due to pump failure.



# MW & NW WELL GROUND WATER MONITORING

## WATER ELEVATIONS, pH, CONDUCTIVITY, TITRATION AND TEMPERATURE

MONTH: January, February & March

QUARTER: First

YEAR: 2018

### ZONE - 3

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP. (°C)	HCO <sub>3</sub> mg/l	Chl mg/l
NW-1	1-17 1130	200.06	6997.15	6797.09	3,580	6.79	7.1	378	16
NW-2	1-17 1025	199.61	6989.76	6790.15	4,440	5.89	11.5	141	31
NW-3	1-16 1615	193.22	6985.57	6792.35	4,040	7.47	11.5	429	34
NW-4	1-17 1009	196.53	6990.13	6793.60	3,980	6.03	11.8	37	23
NW-5	1-17 1040	193.25	6985.85	6792.60	4,840	5.14	10.9	17	32
MW-6	1-17 1414	199.96	6990.94	6790.98					
MW-7	1-16 1341	198.78	6988.82	6790.04	3,840	7.66	11.4	259	37
NW-1	2-27 1200	199.99	6997.15	6797.16	3,690	7.50	23.2	359	16
NW-2	2-27 1112	199.45	6989.76	6790.31	4,380	6.14	13.7	140	30
NW-3	2-27 1145	193.23	6985.57	6792.34	3,910	7.30	9.8	484	33
NW-4	2-27 1100	196.29	6990.13	6793.84	3,910	5.91	12.3	30	22
NW-5	2-27 1127	193.37	6985.85	6792.48	4,650	5.55	13.0	24	33
MW-6	2-27 1142	199.98	6990.94	6790.96					
MW-7	2-27 1023	198.78	6988.82	6790.04	3,930	7.51	11.3	222	36
NW-1	3-21 1020	200.23	6997.15	6796.92	3,550	6.99	10.7	364	14
NW-2	3-21 1110	199.81	6989.76	6789.95	4,360	6.11	15.5	132	30
NW-3	3-21 1125	193.40	6985.57	6792.17	3,930	7.43	9.6	475	33
NW-4	3-21 1040	196.49	6990.13	6793.64	3,840	6.40	12.5	32	21
NW-5	3-21 1145	193.52	6985.85	6792.33	4,660	5.57	12.6	24	31
MW-6	3-21 1232	200.00	6990.94	6790.94					
MW-7	3-21 1112	199.04	6988.82	6789.78	3,920	7.21	15.9	213	35
NW-1			6997.15						
NW-2			6989.76						
NW-3			6985.57						
NW-4			6990.13						
NW-5			6985.85						
MW-6			6990.94						
MW-7			6988.82						

COMMENTS: \_\_\_\_\_

# NBL-1, NBL-2, RW-A & PB WELL GROUND WATER MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY, TITRATION AND TEMPERATURE

MONTH: April, May & June

QUARTER: Second

YEAR: 2018

## ZONE - 3

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP. (°C)	HCO3 mg/l	Chl mg/l
NBL-1			6991.96						
NBL-2	4-10 1142	173.73	6975.61	6801.88	3,230	6.60	16.3	307	41
PB-2	4-11 1523	mud @ 189.85	6989.70						
PB-3	4-11 1515	Mud @ 193.73	6990.23						
PB-4	4-11 1520	193.30	6990.18	6796.88					
RW-A	4-11 1035	176.28	6983.23	6806.95	4,910	5.69	15.6	46	30
NBL-1			6991.96						
NBL-2	5-17 0945	173.62	6975.61	6801.99	3,430	6.57	19.1	311	41
PB-2	5-17 1224	Mud @ 189.85	6989.70						
PB-3	5-17 1214	Mud @ 193.73	6990.23						
PB-4	5-17 1215	193.18	6990.18	6797.00					
RW-A	5-17 1320	177.33	6983.23	6805.90	5,060	5.77	22.6	57	30
NBL-1			6991.96						
NBL-2	6-20 1007	173.82	6975.61	6801.79	3,160	7.09	16.7	307	41
PB-2	6-20 1200	dry @ 189.95	6989.70						
PB-3	6-20 1148	dry @ 194	6990.23						
PB-4	6-20 1150	dry @ 194	6990.18						
RW-A	6-20 1140	175.91	6983.23	6807.32	4,980	5.80	15.6	43	29
NBL-1			6991.96						
NBL-2			6975.61						
PB-2			6989.70						
PB-3			6990.23						
PB-4			6990.18						
RW-A			6983.23						

COMMENTS: \_\_\_\_\_

# MW & NW WELL GROUND WATER MONITORING

## WATER ELEVATIONS, pH, CONDUCTIVITY, TITRATION AND TEMPERATURE

MONTH: April, May & June

QUARTER: Second

YEAR: 2018

### ZONE - 3

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP. (°C)	HCO3 mg/l	Chl mg/l
NW-1	4-11 0850	200.26	6997.15	6796.89	3,570	6.99	12.2	356	15
NW-2	4-11 0950	199.50	6989.76	6790.26	4,300	6.02	12.6	116	29
NW-3	4-10 1540	193.52	6985.57	6792.05	3,920	7.21	14.7	432	31
NW-4	4-11 0920	196.44	6990.13	6793.69	3,800	6.42	12.7	26	21
NW-5	4-11 1010	193.37	6985.85	6792.48	5,390	4.52	12.8	13	30
MW-6	4-11 1607	200.00	6990.94	6790.94					
MW-7	4-10 1217	199.18	6988.82	6789.64	3,720	7.53	18.7	210	33
NW-1	5-17 1015	200.04	6997.15	6797.11	3,620	7.28	17.0	354	14
NW-2	5-17 1100	199.84	6989.76	6789.92	4,400	5.97	20.7	116	29
NW-3	5-17 1140	193.46	6985.57	6792.11	3,990	7.17	12.7	493	30
NW-4	5-17 1030	195.97	6990.13	6794.16	3,850	6.22	14.2	24	21
NW-5	5-17 1125	193.64	6985.85	6792.21	4,750	5.27	16.3	14	30
MW-6	5-17 1210	200.02	6990.94	6790.92					
MW-7	5-17 1102	199.05	6988.82	6789.77	3,850	7.64	22.4	206	33
NW-1	6-20 1004	200.07	6997.15	6797.08	3,600	7.13	16.4	349	15
NW-2	6-20 1045	199.97	6989.76	6789.79	4,450	5.99	23.8	110	29
NW-3	6-20 1100	193.68	6985.57	6791.89	3,970	7.24	16.2	445	33
NW-4	6-20 1020	195.91	6990.13	6794.22	3,830	6.24	15.2	21	21
NW-5	6-20 1120	193.75	6985.85	6792.10	4,740	5.22	21.4	18	30
MW-6	6-20 1138	200.03	6990.94	6790.91					
MW-7	6-20 1043	199.25	6988.82	6789.57	3,450	7.81	25.7	190	33
NW-1			6997.15						
NW-2			6989.76						
NW-3			6985.57						
NW-4			6990.13						
NW-5			6985.85						
MW-6			6990.94						
MW-7			6988.82						

COMMENTS: \_\_\_\_\_

**QUARTERLY SAMPLING**  
**SEMI-ANNUAL GROUND WATER MONITORING REPORT**

**JANUARY TO JUNE OF 2018**

**SOUTH WEST ALLUVIUM**

\*509-D

624

627

\*632

801

802

803

808

\*GW-1

\*EPA-23

EPA-25

\*EPA-28

SBL-1

**LEVELS ONLY**

805

807

**NOTE: \*POINT OF COMPLIANCE WELLS  
WATER LEVEL ONLY IS IN FIELD DATA SHEET**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-001  
**Client Sample ID:** 509-D

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 08:21  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	2330	mg/L		5		A2320 B	01/12/18 17:13 / mvr
Chloride	351	mg/L	D	2		E300.0	01/13/18 10:13 / ljl
Sulfate	2160	mg/L	D	8		E300.0	01/13/18 10:13 / ljl
Calcium	857	mg/L		1		E200.7	01/17/18 22:31 / eli-b
Magnesium	363	mg/L		1		E200.7	01/17/18 22:31 / eli-b
Potassium	12	mg/L		1		E200.7	01/17/18 22:31 / eli-b
Sodium	397	mg/L	D	3		E200.7	01/17/18 22:31 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.56	s.u.	H	0.01		A4500-H B	01/12/18 13:53 / jeu
Solids, Total Dissolved TDS @ 180 C	5420	mg/L	D	100		A2540 C	01/12/18 13:38 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	9.05	mg/L	D	0.05		E353.2	01/15/18 13:52 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/22/18 10:03 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/29/18 13:55 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 18:16 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 18:16 / eli-b
Cobalt	0.012	mg/L		0.005		E200.8	01/18/18 18:16 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 18:16 / eli-b
Manganese	4.39	mg/L	D	0.002		E200.8	01/18/18 18:16 / eli-b
Molybdenum	0.001	mg/L		0.001		E200.8	01/18/18 18:16 / eli-b
Nickel	0.008	mg/L		0.005		E200.8	01/18/18 18:16 / eli-b
Uranium	0.272	mg/L		0.0003		E200.8	01/18/18 18:16 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 18:16 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 17:48 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/18/18 16:31 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5300	mg/L				A1030 E	01/31/18 10:25 / tjp
A/C Balance	-1.85	%				A1030 E	01/31/18 10:25 / tjp
Anions	93.6	meq/L				A1030 E	01/31/18 10:25 / tjp
Cations	90.2	meq/L				A1030 E	01/31/18 10:25 / tjp
TDS Ratio	1.01	unitless				A1030 E	01/31/18 10:25 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.5	pCi/L	U			E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 06:24 / dmf
Lead 210	-0.09	pCi/L	U			E909.0	01/21/18 03:45 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/21/18 03:45 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-001  
**Client Sample ID:** 509-D

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 08:21  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/21/18 03:45 / meh
Radium 226	0.4	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 MDC	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 228	0.9	pCi/L	U			RA-05	01/30/18 15:34 / trs
Radium 228 precision (±)	1.0	pCi/L				RA-05	01/30/18 15:34 / trs
Radium 228 MDC	1.7	pCi/L				RA-05	01/30/18 15:34 / trs
Thorium 230	0.0007	pCi/L	U			E908.0	01/30/18 08:19 / meh
Thorium 230 precision (±)	0.06	pCi/L				E908.0	01/30/18 08:19 / meh
Thorium 230 MDC	0.2	pCi/L				E908.0	01/30/18 08:19 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 13:36 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 13:36 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 13:36 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/17/18 13:36 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	107	%REC		71-139		E624	01/17/18 13:36 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	01/17/18 13:36 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	01/17/18 13:36 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
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MDC - Minimum detectable concentration

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ND - Not detected at the reporting limit.  
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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-001  
**Client Sample ID:** 509-D

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 08:32  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	2240	mg/L		5		A2320 B	04/08/18 18:20 / mvr
Chloride	362	mg/L	D	2		E300.0	04/07/18 00:18 / ljl
Sulfate	2440	mg/L	D	8		E300.0	04/07/18 00:18 / ljl
Calcium	932	mg/L	D	7		E200.7	04/09/18 17:57 / eli-b
Magnesium	365	mg/L		1		E200.7	04/09/18 17:57 / eli-b
Potassium	12	mg/L		1		E200.7	04/09/18 17:57 / eli-b
Sodium	382	mg/L	D	2		E200.7	04/09/18 17:57 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.65	s.u.	H	0.01		A4500-H B	04/06/18 10:57 / jeu
Solids, Total Dissolved TDS @ 180 C	5880	mg/L	D	100		A2540 C	04/06/18 14:11 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	9.20	mg/L	D	0.05		E353.2	04/06/18 11:22 / dmb
Nitrogen, Ammonia as N	0.10	mg/L		0.05		A4500-NH <sub>3</sub> G	04/11/18 13:41 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.05	mg/L		0.03		E200.8	04/10/18 01:14 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/11/18 17:51 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 01:14 / eli-b
Cobalt	0.014	mg/L		0.005		E200.8	04/10/18 01:14 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/10/18 01:14 / eli-b
Manganese	3.38	mg/L		0.001		E200.8	04/10/18 01:14 / eli-b
Molybdenum	0.003	mg/L		0.001		E200.8	04/10/18 01:14 / eli-b
Nickel	0.008	mg/L		0.005		E200.8	04/10/18 01:14 / eli-b
Uranium	0.248	mg/L		0.0003		E200.8	04/10/18 01:14 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 01:14 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 18:36 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:20 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5700	mg/L				A1030 E	04/17/18 11:21 / tla
A/C Balance	-2.58	%				A1030 E	04/17/18 11:21 / tla
Anions	98.4	meq/L				A1030 E	04/17/18 11:21 / tla
Cations	93.5	meq/L				A1030 E	04/17/18 11:21 / tla
TDS Ratio	1.04	unitless				A1030 E	04/17/18 11:21 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.9	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U MDC	0.8	pCi/L				E900.1	04/16/18 11:00 / cnh
Lead 210	0.9	pCi/L	U			E909.0	04/12/18 13:19 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/12/18 13:19 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-001  
**Client Sample ID:** 509-D

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 08:32  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/12/18 13:19 / meh
Radium 226	0.5	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	1.6	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 precision (±)	0.7	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	04/17/18 14:10 / plj
Thorium 230	-0.02	pCi/L	U			E908.0	04/18/18 08:58 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/18/18 08:58 / cnh
Thorium 230 MDC	0.3	pCi/L				E908.0	04/18/18 08:58 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/09/18 16:51 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/09/18 16:51 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/09/18 16:51 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/09/18 16:51 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	04/09/18 16:51 / eli-b
Surr: p-Bromofluorobenzene	97.0	%REC		80-127		E624	04/09/18 16:51 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123		E624	04/09/18 16:51 / eli-b

**Report Definitions:**  
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QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

SW Alluvium

Well ID:		509-D	509-D	509-D	509-D
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-001	C18010327-001	C17100193-001	C17070424-001
Bicarbonate as HCO <sub>3</sub>	mg/L	2240	2330	2500	2490
Chloride	mg/L	362	351	339	344
Sulfate	mg/L	2440	2160	2100	2340
Calcium	mg/L	932	857	877	866
Magnesium	mg/L	365	363	417	408
Potassium	mg/L	12	12	13	13
Sodium	mg/L	382	397	413	402
pH	s.u.	6.65	6.56	6.60	6.57
Solids, Total Dissolved TDS @ 180 C	mg/L	5880	5420	5690	5820
Nitrogen, Ammonia as N	mg/L	0.10	ND(0.05)	0.20	1.04
Nitrogen, Nitrate+Nitrite as N	mg/L	9.20	9.05	8.70	8.25
Aluminum	mg/L	0.05	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.014	0.012	0.01	0.01
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.38	4.39	4.36	3.93
Molybdenum	mg/L	0.003	0.001	ND(0.1)	ND(0.1)
Nickel	mg/L	0.008	0.008	ND(0.05)	ND(0.05)
Uranium	mg/L	0.248	0.272	0.264	0.240
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.58	-1.85	0.86	-2.82
Anions	meq/L	98.4	93.6	94.7	100
Cations	meq/L	93.5	90.2	96.4	94.6
Solids, Total Dissolved - Calculated	mg/L	5700	5300	5400	5700
TDS Ratio	unitless	1.04	1.01	1.05	1.03
Gross Alpha minus Rn & U	pCi/L	0.9	0.5	0.3	0.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.6	0.4	0.5	0.7
Gross Alpha minus Rn & U MDC	pCi/L	0.8	0.6	0.7	1.0
Lead 210	pCi/L	0.9	-0.09	-0.5	0.6
Lead 210 precision (±)	pCi/L	0.8	0.7	0.8	0.8
Lead 210 MDC	pCi/L	1.3	1.2	1.4	1.4
Radium 226	pCi/L	0.5	0.4	0.3	0.3
Radium 226 precision (±)	pCi/L	0.2	0.1	0.1	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	1.6	0.9	1.5	1.2
Radium 228 precision (±)	pCi/L	0.7	1.0	0.8	1.0
Radium 228 MDC	pCi/L	1.3	1.7	1.3	1.7
Thorium 230	pCi/L	-0.02	0.0007	0.05	-0.006
Thorium 230 precision (±)	pCi/L	0.1	0.06	0.1	0.05
Thorium 230 MDC	pCi/L	0.3	0.2	0.2	0.1
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-011  
**Client Sample ID:** 624

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 16:45  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1540	mg/L		5		A2320 B	01/12/18 19:29 / mvr
Chloride	221	mg/L	D	2		E300.0	01/13/18 14:27 / lji
Sulfate	2360	mg/L	D	8		E300.0	01/13/18 14:27 / lji
Calcium	706	mg/L		1		E200.7	01/17/18 23:22 / eli-b
Magnesium	426	mg/L		1		E200.7	01/17/18 23:22 / eli-b
Potassium	6	mg/L		1		E200.7	01/22/18 13:14 / eli-b
Sodium	340	mg/L	D	3		E200.7	01/17/18 23:22 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.60	s.u.	H	0.01		A4500-H B	01/12/18 14:35 / jeu
Solids, Total Dissolved TDS @ 180 C	5210	mg/L	D	40		A2540 C	01/12/18 13:41 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	71.5	mg/L	D	0.2		E353.2	01/15/18 14:09 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/22/18 10:08 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/29/18 14:36 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 18:48 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 18:48 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 18:48 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 18:48 / eli-b
Manganese	0.124	mg/L	D	0.002		E200.8	01/18/18 18:48 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 18:48 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/18/18 18:48 / eli-b
Uranium	0.0422	mg/L		0.0003		E200.8	01/18/18 18:48 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 18:48 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 20:36 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:48 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5200	mg/L				A1030 E	01/31/18 10:29 / tjp
A/C Balance	-0.25	%				A1030 E	01/31/18 10:29 / tjp
Anions	85.6	meq/L				A1030 E	01/31/18 10:29 / tjp
Cations	85.2	meq/L				A1030 E	01/31/18 10:29 / tjp
TDS Ratio	1.01	unitless				A1030 E	01/31/18 10:29 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.6	pCi/L				E900.1	01/30/18 07:56 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	01/30/18 07:56 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 07:56 / dmf
Lead 210	-0.4	pCi/L	U			E909.0	01/22/18 16:11 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/22/18 16:11 / meh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-011  
**Client Sample ID:** 624

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 16:45  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/22/18 16:11 / meh
Radium 226	0.3	pCi/L				E903.0	02/09/18 13:27 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/09/18 13:27 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	02/09/18 13:27 / trs
Radium 228	-0.5	pCi/L	U			RA-05	01/30/18 17:07 / trs
Radium 228 precision (±)	1.2	pCi/L				RA-05	01/30/18 17:07 / trs
Radium 228 MDC	2.1	pCi/L				RA-05	01/30/18 17:07 / trs
Thorium 230	0.01	pCi/L	U			E908.0	01/30/18 08:18 / meh
Thorium 230 precision (±)	0.07	pCi/L				E908.0	01/30/18 08:18 / meh
Thorium 230 MDC	0.2	pCi/L				E908.0	01/30/18 08:18 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 18:19 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 18:19 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 18:19 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/17/18 18:19 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	01/17/18 18:19 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	01/17/18 18:19 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	01/17/18 18:19 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-011  
**Client Sample ID:** 624

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 16:42  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1570	mg/L		5		A2320 B	04/08/18 20:13 / mvr
Chloride	228	mg/L	D	2		E300.0	04/07/18 04:36 / ljl
Sulfate	2370	mg/L	D	8		E300.0	04/07/18 04:36 / ljl
Calcium	765	mg/L	D	7		E200.7	04/09/18 18:49 / eli-b
Magnesium	387	mg/L		1		E200.7	04/09/18 18:49 / eli-b
Potassium	6	mg/L		1		E200.7	04/09/18 18:49 / eli-b
Sodium	301	mg/L	D	2		E200.7	04/09/18 18:49 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.59	s.u.	H	0.01		A4500-H B	04/06/18 11:30 / jeu
Solids, Total Dissolved TDS @ 180 C	5350	mg/L	D	40		A2540 C	04/06/18 14:13 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	77	mg/L	D	1		E353.2	04/06/18 11:41 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	04/06/18 15:25 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/10/18 01:46 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 15:29 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 01:46 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/10/18 01:46 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/10/18 01:46 / eli-b
Manganese	0.116	mg/L		0.001		E200.8	04/10/18 01:46 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/10/18 01:46 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/10/18 01:46 / eli-b
Uranium	0.0410	mg/L		0.0003		E200.8	04/10/18 01:46 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 01:46 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 21:25 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:42 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5200	mg/L				A1030 E	04/17/18 11:25 / tla
A/C Balance	-2.10	%				A1030 E	04/17/18 11:25 / tla
Anions	86.9	meq/L				A1030 E	04/17/18 11:25 / tla
Cations	83.3	meq/L				A1030 E	04/17/18 11:25 / tla
TDS Ratio	1.03	unitless				A1030 E	04/17/18 11:25 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.7	pCi/L				E900.1	04/16/18 12:35 / cnh
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	04/16/18 12:35 / cnh
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/16/18 12:35 / cnh
Lead 210	-0.8	pCi/L	U			E909.0	04/13/18 18:48 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	04/13/18 18:48 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-011  
**Client Sample ID:** 624

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 16:42  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	04/13/18 18:48 / meh
Radium 226	0.3	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	0.6	pCi/L	U			RA-05	04/17/18 16:11 / plj
Radium 228 precision (±)	0.8	pCi/L				RA-05	04/17/18 16:11 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	04/17/18 16:11 / plj
Thorium 230	0.1	pCi/L	U			E908.0	04/18/18 17:03 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/18/18 17:03 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	04/18/18 17:03 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/10/18 19:59 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/10/18 19:59 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/10/18 19:59 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/10/18 19:59 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	04/10/18 19:59 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	04/10/18 19:59 / eli-b
Surr: Toluene-d8	94.0	%REC		80-123		E624	04/10/18 19:59 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

SW Alluvium

Well ID:		624	624	624	624
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-011	C18010327-011	C17100193-011	C17070424-011
Bicarbonate as HCO <sub>3</sub>	mg/L	1570	1540	1670	1630
Chloride	mg/L	228	221	212	210
Sulfate	mg/L	2370	2360	2100	2130
Calcium	mg/L	765	706	689	728
Magnesium	mg/L	387	426	434	443
Potassium	mg/L	6	6	6	6
Sodium	mg/L	301	340	306	326
pH	s.u.	6.59	6.60	6.63	6.60
Solids, Total Dissolved TDS @ 180 C	mg/L	5350	5210	5170	5210
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	77	71.5	71.5	71.0
Aluminum	mg/L	ND(0.03)	ND(0.03)	0.2	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.116	0.124	0.14	0.13
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0410	0.0422	0.0420	0.0397
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.10	-0.25	0.78	2.89
Anions	meq/L	86.9	85.6	82.3	82.2
Cations	meq/L	83.3	85.2	83.6	87.1
Solids, Total Dissolved - Calculated	mg/L	5200	5200	4900	5000
TDS Ratio	unitless	1.03	1.01	1.06	1.04
Gross Alpha minus Rn & U	pCi/L	0.7	0.6	0.2	0.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.4	0.4	0.3
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.6	0.7	0.5
Lead 210	pCi/L	-0.8	-0.4	0.05	0.8
Lead 210 precision (±)	pCi/L	0.7	0.7	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.2	1.4	1.4
Radium 226	pCi/L	0.3	0.3	0.2	0.4
Radium 226 precision (±)	pCi/L	0.2	0.1	0.1	0.2
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	0.6	-0.5	1.1	-0.3
Radium 228 precision (±)	pCi/L	0.8	1.2	0.8	1.1
Radium 228 MDC	pCi/L	1.3	2.1	1.7	1.8
Thorium 230	pCi/L	0.1	0.01	0.05	0.03
Thorium 230 precision (±)	pCi/L	0.1	0.07	0.08	0.06
Thorium 230 MDC	pCi/L	0.2	0.2	0.1	0.1
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010384-003  
**Client Sample ID:** 627

**Report Date:** 02/13/18  
**Collection Date:** 01/09/18 11:00  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	554	mg/L		5		A2320 B	01/15/18 19:06 / mvr
Chloride	32	mg/L	D	2		E300.0	01/16/18 04:21 / ljl
Sulfate	2320	mg/L	D	8		E300.0	01/16/18 04:21 / ljl
Calcium	521	mg/L		1		E200.7	01/17/18 22:27 / eli-b
Magnesium	226	mg/L		1		E200.7	01/17/18 22:27 / eli-b
Potassium	5	mg/L		1		E200.7	01/17/18 22:27 / eli-b
Sodium	351	mg/L	D	2		E200.7	01/17/18 22:27 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.95	s.u.	H	0.01		A4500-H B	01/15/18 12:35 / jeu
Solids, Total Dissolved TDS @ 180 C	4140	mg/L	D	40		A2540 C	01/15/18 16:23 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	78.2	mg/L	D	0.2		E353.2	01/17/18 14:06 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/16/18 16:56 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/19/18 04:31 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 17:44 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 17:44 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 17:44 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 17:44 / eli-b
Manganese	0.040	mg/L	D	0.002		E200.8	01/18/18 17:44 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 17:44 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/18/18 17:44 / eli-b
Uranium	0.0212	mg/L		0.0003		E200.8	01/18/18 17:44 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 17:44 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 04:27 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:56 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4100	mg/L				A1030 E	01/31/18 10:30 / tjp
A/C Balance	-3.09	%				A1030 E	01/31/18 10:30 / tjp
Anions	63.8	meq/L				A1030 E	01/31/18 10:30 / tjp
Cations	60.0	meq/L				A1030 E	01/31/18 10:30 / tjp
TDS Ratio	1.01	unitless				A1030 E	01/31/18 10:30 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.4	pCi/L	U			E900.1	02/05/18 18:30 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	02/05/18 18:30 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	02/05/18 18:30 / dmf
Lead 210	0.2	pCi/L	U			E909.0	01/23/18 03:07 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/23/18 03:07 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010384-003  
**Client Sample ID:** 627

**Report Date:** 02/13/18  
**Collection Date:** 01/09/18 11:00  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/23/18 03:07 / meh
Radium 226	0.3	pCi/L				E903.0	02/06/18 13:32 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/06/18 13:32 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/06/18 13:32 / arh
Radium 228	1.1	pCi/L	U			RA-05	01/31/18 12:11 / trs
Radium 228 precision (±)	1.1	pCi/L				RA-05	01/31/18 12:11 / trs
Radium 228 MDC	1.6	pCi/L				RA-05	01/31/18 12:11 / trs
Thorium 230	0.1	pCi/L				E908.0	02/06/18 09:51 / cnh
Thorium 230 precision (±)	0.08	pCi/L				E908.0	02/06/18 09:51 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	02/06/18 09:51 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 13:07 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 13:07 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 13:07 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/17/18 13:07 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	106	%REC		71-139		E624	01/17/18 13:07 / eli-b
Surr: p-Bromofluorobenzene	102	%REC		80-127		E624	01/17/18 13:07 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	01/17/18 13:07 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040251-003  
**Client Sample ID:** 627

**Report Date:** 05/04/18  
**Collection Date:** 04/03/18 10:47  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	560	mg/L		5		A2320 B	04/09/18 02:50 / mvr
Chloride	33	mg/L	D	2		E300.0	04/11/18 20:00 / ljl
Sulfate	2340	mg/L	D	8		E300.0	04/11/18 20:00 / ljl
Calcium	522	mg/L		1		E200.7	04/11/18 16:48 / eli-b
Magnesium	215	mg/L		1		E200.7	04/11/18 16:48 / eli-b
Potassium	5	mg/L		1		E200.7	04/12/18 15:10 / eli-b
Sodium	348	mg/L		1		E200.7	04/11/18 16:48 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	7.04	s.u.	H	0.01		A4500-H B	04/09/18 12:46 / jeu
Solids, Total Dissolved TDS @ 180 C	4240	mg/L	D	40		A2540 C	04/09/18 14:27 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	83	mg/L	D	1		E353.2	04/09/18 11:38 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	04/11/18 14:11 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/12/18 01:20 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 01:20 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 01:20 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/12/18 01:20 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 01:20 / eli-b
Manganese	0.098	mg/L		0.001		E200.8	04/12/18 01:20 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 01:20 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/12/18 01:20 / eli-b
Uranium	0.0179	mg/L		0.0003		E200.8	04/12/18 01:20 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 01:20 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 18:00 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:42 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4100	mg/L				A1030 E	04/16/18 17:03 / tla
A/C Balance	-4.59	%				A1030 E	04/16/18 17:03 / tla
Anions	64.7	meq/L				A1030 E	04/16/18 17:03 / tla
Cations	59.0	meq/L				A1030 E	04/16/18 17:03 / tla
TDS Ratio	1.03	unitless				A1030 E	04/16/18 17:03 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.6	pCi/L				E900.1	04/16/18 13:02 / cnh
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	04/16/18 13:02 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 13:02 / cnh
Lead 210	0.4	pCi/L	U			E909.0	04/13/18 20:58 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	04/13/18 20:58 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C18040251-003  
Client Sample ID: 627

Report Date: 05/04/18  
Collection Date: 04/03/18 10:47  
Date Received: 04/06/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.1	pCi/L				E909.0	04/13/18 20:58 / meh
Radium 226	0.3	pCi/L				E903.0	04/23/18 12:58 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	04/23/18 12:58 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 12:58 / arh
Radium 228	1.0	pCi/L	U			RA-05	04/18/18 13:08 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	04/18/18 13:08 / plj
Radium 228 MDC	1.6	pCi/L				RA-05	04/18/18 13:08 / plj
Thorium 230	0.02	pCi/L	U			E908.0	04/26/18 12:39 / cnh
Thorium 230 precision (±)	0.06	pCi/L				E908.0	04/26/18 12:39 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	04/26/18 12:39 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/16/18 18:00 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/16/18 18:00 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/16/18 18:00 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/16/18 18:00 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	04/16/18 18:00 / eli-b
Surr: p-Bromofluorobenzene	97.0	%REC		80-127		E624	04/16/18 18:00 / eli-b
Surr: Toluene-d8	93.0	%REC		80-123		E624	04/16/18 18:00 / eli-b

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

SW Alluvium

Well ID:		627	627	627	627
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/4/2018	2/13/2018	11/10/2017	8/24/2017
Analyte	Units	C18040251-003	C18010384-003	C17100294-003	C17070469-003
Bicarbonate as HCO <sub>3</sub>	mg/L	560	554	600	588
Chloride	mg/L	33	32	31	33
Sulfate	mg/L	2340	2320	2170	2170
Calcium	mg/L	522	521	523	488
Magnesium	mg/L	215	226	226	211
Potassium	mg/L	5	5	5	6
Sodium	mg/L	348	351	364	346
pH	s.u.	7.04	6.95	7.02	6.96
Solids, Total Dissolved TDS @ 180 C	mg/L	4240	4140	4080	4180
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	83	78.2	79.0	81.0
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.098	0.040	0.15	0.05
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0179	0.0212	0.0210	0.0196
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-4.59	-3.09	-0.90	-3.95
Anions	meq/L	64.7	63.8	61.8	61.6
Cations	meq/L	59.0	60.0	60.7	56.9
Solids, Total Dissolved - Calculated	mg/L	4100	4100	4000	3900
TDS Ratio	unitless	1.03	1.01	1.02	1.07
Gross Alpha minus Rn & U	pCi/L	0.6	0.4	0.7	0.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.4	0.4	0.3
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.6	0.6	0.4
Lead 210	pCi/L	0.4	0.2	1.0	0.8
Lead 210 precision (±)	pCi/L	0.7	0.7	0.9	0.8
Lead 210 MDC	pCi/L	1.1	1.2	1.3	1.4
Radium 226	pCi/L	0.3	0.3	0.2	0.2
Radium 226 precision (±)	pCi/L	0.1	0.1	0.1	0.1
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	1.0	1.1	1	-0.6
Radium 228 precision (±)	pCi/L	1.1	1.1	0.9	1.0
Radium 228 MDC	pCi/L	1.6	1.6	1.4	1.8
Thorium 230	pCi/L	0.02	0.1	0.05	0.07
Thorium 230 precision (±)	pCi/L	0.06	0.08	0.07	0.1
Thorium 230 MDC	pCi/L	0.1	0.1	0.1	0.3
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-006  
**Client Sample ID:** 632

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 12:23  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1660	mg/L		5		A2320 B	01/12/18 18:30 / mvr
Chloride	237	mg/L	D	5		E300.0	01/13/18 12:20 / ljl
Sulfate	3520	mg/L	D	20		E300.0	01/13/18 12:20 / ljl
Calcium	566	mg/L		1		E200.7	01/17/18 23:03 / eli-b
Magnesium	752	mg/L		1		E200.7	01/17/18 23:03 / eli-b
Potassium	9	mg/L		1		E200.7	01/22/18 12:57 / eli-b
Sodium	377	mg/L	D	3		E200.7	01/17/18 23:03 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.57	s.u.	H	0.01		A4500-H B	01/12/18 14:08 / jeu
Solids, Total Dissolved TDS @ 180 C	6930	mg/L	D	100		A2540 C	01/12/18 13:39 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	43.0	mg/L	D	0.2		E353.2	01/15/18 14:03 / dmb
Nitrogen, Ammonia as N	0.3	mg/L	D	0.2		A4500-NH3 G	01/16/18 16:39 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/29/18 14:19 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 18:27 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 18:27 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 18:27 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 18:27 / eli-b
Manganese	3.47	mg/L	D	0.002		E200.8	01/18/18 18:27 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 18:27 / eli-b
Nickel	0.015	mg/L		0.005		E200.8	01/18/18 18:27 / eli-b
Uranium	0.0780	mg/L		0.0003		E200.8	01/18/18 18:27 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 18:27 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 19:12 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/18/18 16:43 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6500	mg/L				A1030 E	01/31/18 10:27 / tjp
A/C Balance	-1.65	%				A1030 E	01/31/18 10:27 / tjp
Anions	110	meq/L				A1030 E	01/31/18 10:27 / tjp
Cations	107	meq/L				A1030 E	01/31/18 10:27 / tjp
TDS Ratio	1.07	unitless				A1030 E	01/31/18 10:27 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.1	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 06:24 / dmf
Lead 210	0.3	pCi/L	U			E909.0	01/21/18 21:58 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/21/18 21:58 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-006  
**Client Sample ID:** 632

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 12:23  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L			E909.0		01/21/18 21:58 / meh
Radium 226	0.7	pCi/L			E903.0		02/09/18 11:50 / trs
Radium 226 precision (±)	0.2	pCi/L			E903.0		02/09/18 11:50 / trs
Radium 226 MDC	0.1	pCi/L			E903.0		02/09/18 11:50 / trs
Radium 228	1.9	pCi/L			RA-05		01/30/18 15:34 / trs
Radium 228 precision (±)	1.6	pCi/L			RA-05		01/30/18 15:34 / trs
Radium 228 MDC	1.6	pCi/L			RA-05		01/30/18 15:34 / trs
Thorium 230	0.04	pCi/L	U		E908.0		01/30/18 08:18 / meh
Thorium 230 precision (±)	0.08	pCi/L			E908.0		01/30/18 08:18 / meh
Thorium 230 MDC	0.1	pCi/L			E908.0		01/30/18 08:18 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		01/17/18 15:57 / eli-b
Bromoform	ND	ug/L		0.50	E624		01/17/18 15:57 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		01/17/18 15:57 / eli-b
Chloroform	0.77	ug/L		0.50	E624		01/17/18 15:57 / eli-b
Trihalomethanes, Total	0.77	ug/L		0.50	E624		02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	112	%REC		71-139	E624		01/17/18 15:57 / eli-b
Surr: p-Bromofluorobenzene	102	%REC		80-127	E624		01/17/18 15:57 / eli-b
Surr: Toluene-d8	100	%REC		80-123	E624		01/17/18 15:57 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-006  
**Client Sample ID:** 632

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 12:40  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1710	mg/L		5		A2320 B	04/08/18 19:24 / mvr
Chloride	257	mg/L	D	2		E300.0	04/07/18 01:50 / lj
Sulfate	3560	mg/L	D	8		E300.0	04/07/18 01:50 / lj
Calcium	645	mg/L	D	7		E200.7	04/09/18 18:28 / eli-b
Magnesium	702	mg/L		1		E200.7	04/09/18 18:28 / eli-b
Potassium	9	mg/L		1		E200.7	04/09/18 18:28 / eli-b
Sodium	371	mg/L	D	2		E200.7	04/09/18 18:28 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.51	s.u.	H	0.01		A4500-H B	04/06/18 11:15 / jeu
Solids, Total Dissolved TDS @ 180 C	6930	mg/L	D	100		A2540 C	04/06/18 14:12 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	44	mg/L	D	1		E353.2	04/06/18 11:35 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	04/11/18 13:50 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/10/18 01:26 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 15:14 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 01:26 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/10/18 01:26 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/10/18 01:26 / eli-b
Manganese	3.31	mg/L		0.001		E200.8	04/10/18 01:26 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/10/18 01:26 / eli-b
Nickel	0.014	mg/L		0.005		E200.8	04/10/18 01:26 / eli-b
Uranium	0.0765	mg/L		0.0003		E200.8	04/10/18 01:26 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 01:26 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 20:00 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:31 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6600	mg/L				A1030 E	04/17/18 11:23 / tla
A/C Balance	-2.78	%				A1030 E	04/17/18 11:23 / tla
Anions	112	meq/L				A1030 E	04/17/18 11:23 / tla
Cations	106	meq/L				A1030 E	04/17/18 11:23 / tla
TDS Ratio	1.05	unitless				A1030 E	04/17/18 11:23 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	2.2	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/16/18 11:00 / cnh
Lead 210	0.9	pCi/L	U			E909.0	04/13/18 04:35 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/13/18 04:35 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-006  
**Client Sample ID:** 632

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 12:40  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/13/18 04:35 / meh
Radium 226	1	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	2.4	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 precision (±)	0.9	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 MDC	1.1	pCi/L				RA-05	04/17/18 14:10 / plj
Thorium 230	0.06	pCi/L		U		E908.0	04/18/18 17:03 / cnh
Thorium 230 precision (±)	0.08	pCi/L				E908.0	04/18/18 17:03 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	04/18/18 17:03 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/09/18 19:18 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/09/18 19:18 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/09/18 19:18 / eli-b
Chloroform	0.65	ug/L		0.50		E624	04/09/18 19:18 / eli-b
Trihalomethanes, Total	0.65	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	104	%REC		71-139		E624	04/09/18 19:18 / eli-b
Surr: p-Bromofluorobenzene	97.0	%REC		80-127		E624	04/09/18 19:18 / eli-b
Surr: Toluene-d8	90.0	%REC		80-123		E624	04/09/18 19:18 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

SW Alluvium

Well ID:		632	632	632	632
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-006	C18010327-006	C17100193-006	C17070424-006
Bicarbonate as HCO <sub>3</sub>	mg/L	1710	1660	1820	1740
Chloride	mg/L	257	237	243	222
Sulfate	mg/L	3560	3520	3220	3150
Calcium	mg/L	645	566	547	556
Magnesium	mg/L	702	752	789	808
Potassium	mg/L	9	9	10	9
Sodium	mg/L	371	377	378	402
pH	s.u.	6.51	6.57	6.60	6.57
Solids, Total Dissolved TDS @ 180 C	mg/L	6930	6930	6510	6710
Nitrogen, Ammonia as N	mg/L	ND(0.05)	0.3	0.10	0.09
Nitrogen, Nitrate+Nitrite as N	mg/L	44	43.0	43.0	46.0
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.31	3.47	2.40	1.56
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.014	0.015	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0765	0.0780	0.0759	0.0652
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.78	-1.65	1.02	3.95
Anions	meq/L	112	110	107	103
Cations	meq/L	106	107	109	112
Solids, Total Dissolved - Calculated	mg/L	6600	6500	6300	6200
TDS Ratio	unitless	1.05	1.07	1.04	1.08
Gross Alpha minus Rn & U	pCi/L	2.2	1.1	1.3	1.1
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.7	0.5	0.6	1.4
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.6	0.7	1.0
Lead 210	pCi/L	0.9	0.3	1.6	1.3
Lead 210 precision (±)	pCi/L	0.8	0.7	1.0	0.9
Lead 210 MDC	pCi/L	1.3	1.2	1.5	1.4
Radium 226	pCi/L	1	0.7	0.5	0.9
Radium 226 precision (±)	pCi/L	0.2	0.2	0.2	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	2.4	1.9	1.6	2.5
Radium 228 precision (±)	pCi/L	0.9	1.6	1	1.2
Radium 228 MDC	pCi/L	1.1	1.6	1.4	1.5
Thorium 230	pCi/L	0.06	0.04	0.09	0.04
Thorium 230 precision (±)	pCi/L	0.08	0.08	0.1	0.08
Thorium 230 MDC	pCi/L	0.1	0.1	0.2	0.2
Trihalomethanes, Total	ug/L	0.65	0.77	0.66	0.64

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-007  
**Client Sample ID:** 801

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 13:11  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1460	mg/L		5		A2320 B	01/12/18 18:51 / mvr
Chloride	212	mg/L	D	5		E300.0	01/13/18 13:15 / ljl
Sulfate	3550	mg/L	D	20		E300.0	01/13/18 13:15 / ljl
Calcium	541	mg/L		1		E200.7	01/17/18 23:06 / eli-b
Magnesium	722	mg/L		1		E200.7	01/17/18 23:06 / eli-b
Potassium	12	mg/L		1		E200.7	01/22/18 13:00 / eli-b
Sodium	346	mg/L	D	3		E200.7	01/17/18 23:06 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.69	s.u.	H	0.01		A4500-H B	01/12/18 14:19 / jeu
Solids, Total Dissolved TDS @ 180 C	6840	mg/L	D	100		A2540 C	01/12/18 13:40 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	58.5	mg/L	D	0.2		E353.2	01/15/18 14:04 / dmb
Nitrogen, Ammonia as N	4.3	mg/L	D	0.2		A4500-NH3 G	01/16/18 16:40 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/29/18 14:22 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 18:30 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 18:30 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 18:30 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 18:30 / eli-b
Manganese	6.58	mg/L	D	0.002		E200.8	01/18/18 18:30 / eli-b
Molybdenum	0.001	mg/L		0.001		E200.8	01/18/18 18:30 / eli-b
Nickel	0.015	mg/L		0.005		E200.8	01/18/18 18:30 / eli-b
Uranium	0.0400	mg/L		0.0003		E200.8	01/18/18 18:30 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 18:30 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 19:24 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/18/18 16:44 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6400	mg/L				A1030 E	01/31/18 10:28 / tjp
A/C Balance	-2.87	%				A1030 E	01/31/18 10:28 / tjp
Anions	108	meq/L				A1030 E	01/31/18 10:28 / tjp
Cations	102	meq/L				A1030 E	01/31/18 10:28 / tjp
TDS Ratio	1.07	unitless				A1030 E	01/31/18 10:28 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.4	pCi/L	U			E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 06:24 / dmf
Lead 210	-0.2	pCi/L	U			E909.0	01/22/18 01:37 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/22/18 01:37 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-007  
**Client Sample ID:** 801

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 13:11  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/22/18 01:37 / meh
Radium 226	0.3	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 MDC	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 228	-0.3	pCi/L	U			RA-05	01/30/18 17:07 / trs
Radium 228 precision (±)	1.2	pCi/L				RA-05	01/30/18 17:07 / trs
Radium 228 MDC	2.0	pCi/L				RA-05	01/30/18 17:07 / trs
Thorium 230	0.07	pCi/L	U			E908.0	01/30/18 08:18 / meh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	01/30/18 08:18 / meh
Thorium 230 MDC	0.2	pCi/L				E908.0	01/30/18 08:18 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 16:26 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 16:26 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 16:26 / eli-b
Chloroform	0.46	ug/L	J	0.50		E624	01/17/18 16:26 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	110	%REC		71-139		E624	01/17/18 16:26 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	01/17/18 16:26 / eli-b
Surr: Toluene-d8	108	%REC		80-123		E624	01/17/18 16:26 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
J - Estimated value. The analyte was present but less than the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-007  
**Client Sample ID:** 801

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 13:26  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1490	mg/L		5		A2320 B	04/08/18 19:35 / mvr
Chloride	226	mg/L	D	2		E300.0	04/07/18 02:08 / ljl
Sulfate	3550	mg/L	D	8		E300.0	04/07/18 02:08 / ljl
Calcium	625	mg/L	D	7		E200.7	04/09/18 18:32 / eli-b
Magnesium	672	mg/L		1		E200.7	04/09/18 18:32 / eli-b
Potassium	12	mg/L		1		E200.7	04/09/18 18:32 / eli-b
Sodium	347	mg/L	D	2		E200.7	04/09/18 18:32 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.65	s.u.	H	0.01		A4500-H B	04/06/18 11:17 / jeu
Solids, Total Dissolved TDS @ 180 C	6820	mg/L	D	100		A2540 C	04/06/18 14:12 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	59	mg/L	D	1		E353.2	04/06/18 11:36 / dmb
Nitrogen, Ammonia as N	3.2	mg/L	D	0.2		A4500-NH3 G	04/06/18 15:18 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/10/18 01:28 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 15:17 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 01:28 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/10/18 01:28 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/10/18 01:28 / eli-b
Manganese	6.31	mg/L		0.001		E200.8	04/10/18 01:28 / eli-b
Molybdenum	0.001	mg/L		0.001		E200.8	04/10/18 01:28 / eli-b
Nickel	0.014	mg/L		0.005		E200.8	04/10/18 01:28 / eli-b
Uranium	0.0398	mg/L		0.0003		E200.8	04/10/18 01:28 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 01:28 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 20:12 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:32 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6500	mg/L				A1030 E	04/17/18 11:23 / tla
A/C Balance	-3.27	%				A1030 E	04/17/18 11:23 / tla
Anions	109	meq/L				A1030 E	04/17/18 11:23 / tla
Cations	102	meq/L				A1030 E	04/17/18 11:23 / tla
TDS Ratio	1.06	unitless				A1030 E	04/17/18 11:23 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.2	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/16/18 11:00 / cnh
Lead 210	6.8	pCi/L				E909.0	04/13/18 07:34 / meh
Lead 210 precision (±)	2.3	pCi/L				E909.0	04/13/18 07:34 / meh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C18040172-007  
Client Sample ID: 801

Report Date: 05/10/18  
Collection Date: 04/02/18 13:26  
Date Received: 04/05/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.6	pCi/L				E909.0	04/13/18 07:34 / meh
Radium 226	0.6	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	1.4	pCi/L				RA-05	05/08/18 10:52 / plj
Radium 228 precision (±)	0.7	pCi/L				RA-05	05/08/18 10:52 / plj
Radium 228 MDC	1.2	pCi/L				RA-05	05/08/18 10:52 / plj
Thorium 230	0.1	pCi/L	U			E908.0	04/18/18 17:03 / cnh
Thorium 230 precision (±)	0.2	pCi/L				E908.0	04/18/18 17:03 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	04/18/18 17:03 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/09/18 19:47 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/09/18 19:47 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/09/18 19:47 / eli-b
Chloroform	0.39	ug/L	J	0.50		E624	04/09/18 19:47 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	103	%REC		71-139		E624	04/09/18 19:47 / eli-b
Surr: p-Bromofluorobenzene	97.0	%REC		80-127		E624	04/09/18 19:47 / eli-b
Surr: Toluene-d8	92.0	%REC		80-123		E624	04/09/18 19:47 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
J - Estimated value. The analyte was present but less than the reporting limit.

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United Nuclear Corporation

SW Alluvium

Well ID:		801	801	801	801
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-007	C18010327-007	C17100193-007	C17070424-007
Bicarbonate as HCO <sub>3</sub>	mg/L	1490	1460	1600	1560
Chloride	mg/L	226	212	200	204
Sulfate	mg/L	3550	3550	3250	3210
Calcium	mg/L	625	541	570	583
Magnesium	mg/L	672	722	782	769
Potassium	mg/L	12	12	12	12
Sodium	mg/L	347	346	368	372
pH	s.u.	6.65	6.69	6.72	6.67
Solids, Total Dissolved TDS @ 180 C	mg/L	6820	6840	6520	6520
Nitrogen, Ammonia as N	mg/L	3.2	4.3	4.4	3.9
Nitrogen, Nitrate+Nitrite as N	mg/L	59	58.5	58.5	50.5
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	6.31	6.58	6.27	6.73
Molybdenum	mg/L	0.001	0.001	ND(0.1)	ND(0.1)
Nickel	mg/L	0.014	0.015	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0398	0.0400	0.0407	0.0371
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-3.27	-2.87	2.84	3.30
Anions	meq/L	109	108	103	102
Cations	meq/L	102	102	109	109
Solids, Total Dissolved - Calculated	mg/L	6500	6400	6200	6200
TDS Ratio	unitless	1.06	1.07	1.05	1.05
Gross Alpha minus Rn & U	pCi/L	1.2	0.4	0.2	-0.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.4	0.4	0.3
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.6	0.7	0.5
Lead 210	pCi/L	6.8	-0.2	1.1	0.8
Lead 210 precision (±)	pCi/L	2.3	0.7	0.9	0.8
Lead 210 MDC	pCi/L	1.6	1.2	1.4	1.4
Radium 226	pCi/L	0.6	0.3	0.2	0.6
Radium 226 precision (±)	pCi/L	0.2	0.1	0.1	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	1.4	-0.3	0.8	1.1
Radium 228 precision (±)	pCi/L	0.7	1.2	0.9	1
Radium 228 MDC	pCi/L	1.2	2.0	1.4	1.5
Thorium 230	pCi/L	0.1	0.07	-0.008	-0.02
Thorium 230 precision (±)	pCi/L	0.2	0.1	0.04	0.06
Thorium 230 MDC	pCi/L	0.2	0.2	0.1	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	0.53



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-005  
**Client Sample ID:** 802

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 11:38  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1950	mg/L		5		A2320 B	01/12/18 17:57 / mvr
Chloride	184	mg/L	D	5		E300.0	01/13/18 11:26 / ljl
Sulfate	3190	mg/L	D	20		E300.0	01/13/18 11:26 / ljl
Calcium	639	mg/L		1		E200.7	01/18/18 23:06 / eli-b
Magnesium	714	mg/L		1		E200.7	01/18/18 23:06 / eli-b
Potassium	5	mg/L		1		E200.7	01/22/18 12:53 / eli-b
Sodium	330	mg/L	D	2		E200.7	01/22/18 12:53 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.57	s.u.	H	0.01		A4500-H B	01/12/18 14:05 / jeu
Solids, Total Dissolved TDS @ 180 C	6780	mg/L	D	100		A2540 C	01/12/18 13:39 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	73.8	mg/L	D	0.2		E353.2	01/15/18 14:02 / dmb
Nitrogen, Ammonia as N	0.6	mg/L	D	0.2		A4500-NH3 G	01/16/18 16:38 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/19/18 02:20 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/19/18 02:20 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/19/18 02:20 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/19/18 02:20 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/19/18 02:20 / eli-b
Manganese	1.26	mg/L		0.001		E200.8	01/19/18 02:20 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/19/18 02:20 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/19/18 02:20 / eli-b
Uranium	0.126	mg/L		0.0003		E200.8	01/19/18 02:20 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/19/18 02:20 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 19:00 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/18/18 16:41 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6400	mg/L				A1030 E	01/31/18 10:27 / tjp
A/C Balance	-1.64	%				A1030 E	01/31/18 10:27 / tjp
Anions	109	meq/L				A1030 E	01/31/18 10:27 / tjp
Cations	105	meq/L				A1030 E	01/31/18 10:27 / tjp
TDS Ratio	1.06	unitless				A1030 E	01/31/18 10:27 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.2	pCi/L	U			E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 06:24 / dmf
Lead 210	-0.2	pCi/L	U			E909.0	01/21/18 18:19 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/21/18 18:19 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-005  
**Client Sample ID:** 802

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 11:38  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/21/18 18:19 / meh
Radium 226	0.2	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 MDC	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 228	0.3	pCi/L	U			RA-05	01/30/18 15:34 / trs
Radium 228 precision (±)	1.0	pCi/L				RA-05	01/30/18 15:34 / trs
Radium 228 MDC	1.7	pCi/L				RA-05	01/30/18 15:34 / trs
Thorium 230	0.02	pCi/L	U			E908.0	01/30/18 08:18 / meh
Thorium 230 precision (±)	0.08	pCi/L				E908.0	01/30/18 08:18 / meh
Thorium 230 MDC	0.2	pCi/L				E908.0	01/30/18 08:18 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 15:29 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 15:29 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 15:29 / eli-b
Chloroform	2.2	ug/L		0.50		E624	01/17/18 15:29 / eli-b
Trihalomethanes, Total	2.2	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	109	%REC		71-139		E624	01/17/18 15:29 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	01/17/18 15:29 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	01/17/18 15:29 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
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MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-005  
**Client Sample ID:** 802

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 11:58  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1990	mg/L		5		A2320 B	04/08/18 19:13 / mvr
Chloride	201	mg/L	D	2		E300.0	04/07/18 01:31 / ljl
Sulfate	3240	mg/L	D	8		E300.0	04/07/18 01:31 / ljl
Calcium	686	mg/L		1		E200.7	04/10/18 13:51 / eli-b
Magnesium	770	mg/L		1		E200.7	04/10/18 13:51 / eli-b
Potassium	6	mg/L		1		E200.7	04/10/18 13:51 / eli-b
Sodium	331	mg/L	D	2		E200.7	04/10/18 13:51 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.57	s.u.	H	0.01		A4500-H B	04/06/18 11:12 / jeu
Solids, Total Dissolved TDS @ 180 C	6880	mg/L	D	100		A2540 C	04/06/18 14:12 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	74	mg/L	D	1		E353.2	04/06/18 11:34 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	04/11/18 13:48 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/10/18 22:52 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/10/18 22:52 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 22:52 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/10/18 22:52 / eli-b
Lead	0.004	mg/L		0.001		E200.8	04/10/18 22:52 / eli-b
Manganese	1.27	mg/L		0.001		E200.8	04/10/18 22:52 / eli-b
Molybdenum	0.002	mg/L		0.001		E200.8	04/10/18 22:52 / eli-b
Nickel	0.012	mg/L		0.005		E200.8	04/10/18 22:52 / eli-b
Uranium	0.141	mg/L		0.0003		E200.8	04/10/18 22:52 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 22:52 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 19:48 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:29 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6600	mg/L				A1030 E	04/17/18 11:22 / tla
A/C Balance	0.51	%				A1030 E	04/17/18 11:22 / tla
Anions	111	meq/L				A1030 E	04/17/18 11:22 / tla
Cations	112	meq/L				A1030 E	04/17/18 11:22 / tla
TDS Ratio	1.05	unitless				A1030 E	04/17/18 11:22 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.1	pCi/L	U			E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U Precision (±)	0.3	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/16/18 11:00 / cnh
Lead 210	0	pCi/L	U			E909.0	04/13/18 01:24 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/13/18 01:24 / meh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
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**Project:** SW Alluvium  
**Lab ID:** C18040172-005  
**Client Sample ID:** 802

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 11:58  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/13/18 01:24 / meh
Radium 226	0.4	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	1.4	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 precision (±)	0.8	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 MDC	1.2	pCi/L				RA-05	04/17/18 14:10 / plj
Thorium 230	-0.03	pCi/L	U			E908.0	04/18/18 17:03 / cnh
Thorium 230 precision (±)	0.07	pCi/L				E908.0	04/18/18 17:03 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	04/18/18 17:03 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/09/18 18:48 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/09/18 18:48 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/09/18 18:48 / eli-b
Chloroform	1.8	ug/L		0.50		E624	04/09/18 18:48 / eli-b
Trihalomethanes, Total	1.8	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139		E624	04/09/18 18:48 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	04/09/18 18:48 / eli-b
Surr: Toluene-d8	94.0	%REC		80-123		E624	04/09/18 18:48 / eli-b

**Report Definitions:**  
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United Nuclear Corporation

SW Alluvium

Well ID:		802	802	802	802
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-005	C18010327-005	C17100193-005	C17070424-005
Bicarbonate as HCO <sub>3</sub>	mg/L	1990	1950	2140	2080
Chloride	mg/L	201	184	173	188
Sulfate	mg/L	3240	3190	2880	2900
Calcium	mg/L	686	639	638	664
Magnesium	mg/L	770	714	740	754
Potassium	mg/L	6	5	6	5
Sodium	mg/L	331	330	332	330
pH	s.u.	6.57	6.57	6.62	6.60
Solids, Total Dissolved TDS @ 180 C	mg/L	6880	6780	6450	6500
Nitrogen, Ammonia as N	mg/L	ND(0.05)	0.6	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	74	73.8	73.5	75.5
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	0.004	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	1.27	1.26	1.31	1.18
Molybdenum	mg/L	0.002	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.012	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.141	0.126	0.149	0.122
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.001
A/C Balance	%	0.51	-1.64	1.22	1.94
Anions	meq/L	111	109	105	105
Cations	meq/L	112	105	107	110
Solids, Total Dissolved - Calculated	mg/L	6600	6400	6100	6200
TDS Ratio	unitless	1.05	1.06	1.05	1.04
Gross Alpha minus Rn & U	pCi/L	0.1	0.2	0.4	0.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.3	0.4	0.4	0.6
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.6	0.7	1.0
Lead 210	pCi/L	0	-0.2	0.6	0.3
Lead 210 precision (±)	pCi/L	0.8	0.7	0.9	0.8
Lead 210 MDC	pCi/L	1.3	1.2	1.4	1.4
Radium 226	pCi/L	0.4	0.2	0.2	0.3
Radium 226 precision (±)	pCi/L	0.2	0.1	0.1	0.1
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	1.4	0.3	2.8	1.1
Radium 228 precision (±)	pCi/L	0.8	1.0	1.1	1.1
Radium 228 MDC	pCi/L	1.2	1.7	1.1	1.5
Thorium 230	pCi/L	-0.03	0.02	0.07	0.0007
Thorium 230 precision (±)	pCi/L	0.07	0.08	0.09	0.07
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	1.8	2.2	2.1	2.4



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-003  
**Client Sample ID:** 803

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 09:56  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1590	mg/L		5		A2320 B	01/12/18 17:34 / mvr
Chloride	164	mg/L	D	2		E300.0	01/13/18 10:49 / ljl
Sulfate	3350	mg/L	D	8		E300.0	01/13/18 10:49 / ljl
Calcium	631	mg/L		1		E200.7	01/17/18 22:47 / eli-b
Magnesium	694	mg/L		1		E200.7	01/17/18 22:47 / eli-b
Potassium	11	mg/L		1		E200.7	01/22/18 12:46 / eli-b
Sodium	277	mg/L	D	3		E200.7	01/17/18 22:47 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.60	s.u.	H	0.01		A4500-H B	01/12/18 13:59 / jeu
Solids, Total Dissolved TDS @ 180 C	6290	mg/L	D	100		A2540 C	01/12/18 13:39 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	31.7	mg/L	D	0.1		E353.2	01/15/18 13:57 / dmb
Nitrogen, Ammonia as N	2.3	mg/L	D	0.2		A4500-NH3 G	01/16/18 16:36 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.04	mg/L		0.03		E200.8	01/29/18 14:12 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 18:22 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 18:22 / eli-b
Cobalt	0.005	mg/L		0.005		E200.8	01/18/18 18:22 / eli-b
Lead	0.001	mg/L		0.001		E200.8	01/18/18 18:22 / eli-b
Manganese	3.51	mg/L	D	0.002		E200.8	01/18/18 18:22 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 18:22 / eli-b
Nickel	0.006	mg/L		0.005		E200.8	01/18/18 18:22 / eli-b
Uranium	0.0838	mg/L		0.0003		E200.8	01/18/18 18:22 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 18:22 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 18:36 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/18/18 16:38 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6100	mg/L				A1030 E	01/31/18 10:26 / tjp
A/C Balance	-0.83	%				A1030 E	01/31/18 10:26 / tjp
Anions	103	meq/L				A1030 E	01/31/18 10:26 / tjp
Cations	101	meq/L				A1030 E	01/31/18 10:26 / tjp
TDS Ratio	1.04	unitless				A1030 E	01/31/18 10:26 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.1	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 06:24 / dmf
Lead 210	-0.2	pCi/L	U			E909.0	01/21/18 11:02 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/21/18 11:02 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-003  
**Client Sample ID:** 803

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 09:56  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/21/18 11:02 / meh
Radium 226	0.2	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 MDC	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 228	0.5	pCi/L		U		RA-05	01/30/18 15:34 / trs
Radium 228 precision (±)	1	pCi/L				RA-05	01/30/18 15:34 / trs
Radium 228 MDC	1.6	pCi/L				RA-05	01/30/18 15:34 / trs
Thorium 230	0.02	pCi/L		U		E908.0	01/30/18 08:18 / meh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	01/30/18 08:18 / meh
Thorium 230 MDC	0.2	pCi/L				E908.0	01/30/18 08:18 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 14:32 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 14:32 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 14:32 / eli-b
Chloroform	0.21	ug/L		J 0.50		E624	01/17/18 14:32 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	104	%REC		71-139		E624	01/17/18 14:32 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	01/17/18 14:32 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	01/17/18 14:32 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
J - Estimated value. The analyte was present but less than the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-003  
**Client Sample ID:** 803

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 10:22  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1650	mg/L		5		A2320 B	04/08/18 18:50 / mvr
Chloride	172	mg/L	D	2		E300.0	04/07/18 00:55 / ljl
Sulfate	3390	mg/L	D	8		E300.0	04/07/18 00:55 / ljl
Calcium	693	mg/L	D	7		E200.7	04/09/18 18:05 / eli-b
Magnesium	648	mg/L		1		E200.7	04/09/18 18:05 / eli-b
Potassium	12	mg/L		1		E200.7	04/09/18 18:05 / eli-b
Sodium	265	mg/L	D	2		E200.7	04/09/18 18:05 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.60	s.u.	H	0.01		A4500-H B	04/06/18 11:03 / jeu
Solids, Total Dissolved TDS @ 180 C	6530	mg/L	D	100		A2540 C	04/06/18 14:12 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	34.1	mg/L	D	0.1		E353.2	04/06/18 11:24 / dmb
Nitrogen, Ammonia as N	1.07	mg/L		0.05		A4500-NH <sub>3</sub> G	04/11/18 13:44 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/10/18 01:20 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/11/18 18:04 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 01:20 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/10/18 01:20 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/10/18 01:20 / eli-b
Manganese	3.11	mg/L		0.001		E200.8	04/10/18 01:20 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/10/18 01:20 / eli-b
Nickel	0.006	mg/L		0.005		E200.8	04/10/18 01:20 / eli-b
Uranium	0.0840	mg/L		0.0003		E200.8	04/10/18 01:20 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 01:20 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 19:24 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:23 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6200	mg/L				A1030 E	04/17/18 11:22 / tla
A/C Balance	-2.44	%				A1030 E	04/17/18 11:22 / tla
Anions	105	meq/L				A1030 E	04/17/18 11:22 / tla
Cations	99.8	meq/L				A1030 E	04/17/18 11:22 / tla
TDS Ratio	1.06	unitless				A1030 E	04/17/18 11:22 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.8	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/16/18 11:00 / cnh
Lead 210	0.4	pCi/L	U			E909.0	04/12/18 19:15 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/12/18 19:15 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C18040172-003  
Client Sample ID: 803

Report Date: 05/10/18  
Collection Date: 04/02/18 10:22  
Date Received: 04/05/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/12/18 19:15 / meh
Radium 226	0.3	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	1.5	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 precision (±)	0.8	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 MDC	1.1	pCi/L				RA-05	04/17/18 14:10 / plj
Thorium 230	0.05	pCi/L	U			E908.0	04/18/18 08:58 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/18/18 08:58 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	04/18/18 08:58 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/09/18 17:49 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/09/18 17:49 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/09/18 17:49 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/09/18 17:49 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	04/09/18 17:49 / eli-b
Surr: p-Bromofluorobenzene	101	%REC		80-127		E624	04/09/18 17:49 / eli-b
Surr: Toluene-d8	97.0	%REC		80-123		E624	04/09/18 17:49 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

SW Alluvium

Well ID:		803	803	803	803
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-003	C18010327-003	C17100193-003	C17070424-003
Bicarbonate as HCO <sub>3</sub>	mg/L	1650	1590	1590	1770
Chloride	mg/L	172	164	142	162
Sulfate	mg/L	3390	3350	2840	3100
Calcium	mg/L	693	631	614	597
Magnesium	mg/L	648	694	661	680
Potassium	mg/L	12	11	11	13
Sodium	mg/L	265	277	249	273
pH	s.u.	6.60	6.60	6.65	6.60
Solids, Total Dissolved TDS @ 180 C	mg/L	6530	6290	5870	6510
Nitrogen, Ammonia as N	mg/L	1.07	2.3	0.13	1.72
Nitrogen, Nitrate+Nitrite as N	mg/L	34.1	31.7	29.5	32.8
Aluminum	mg/L	ND(0.03)	0.04	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	0.005	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	0.001	0.002	0.003
Manganese	mg/L	3.11	3.51	3.23	2.69
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.006	0.006	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0840	0.0838	0.0696	0.0778
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.44	-0.83	2.74	-1.16
Anions	meq/L	105	103	91.0	100
Cations	meq/L	99.8	101	96.1	98.1
Solids, Total Dissolved - Calculated	mg/L	6200	6100	5400	5900
TDS Ratio	unitless	1.06	1.04	1.09	1.11
Gross Alpha minus Rn & U	pCi/L	0.8	1.1	0.8	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.6	0.5	0.6
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.6	0.7	1
Lead 210	pCi/L	0.4	-0.2	1.5	0.08
Lead 210 precision (±)	pCi/L	0.8	0.7	1.0	0.8
Lead 210 MDC	pCi/L	1.3	1.2	1.5	1.3
Radium 226	pCi/L	0.3	0.2	0.03	0.4
Radium 226 precision (±)	pCi/L	0.1	0.1	0.1	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	1.5	0.5	0.8	1.6
Radium 228 precision (±)	pCi/L	0.8	1	0.7	1
Radium 228 MDC	pCi/L	1.1	1.6	1.2	1.6
Thorium 230	pCi/L	0.05	0.02	0.002	0.07
Thorium 230 precision (±)	pCi/L	0.1	0.1	0.09	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-004  
**Client Sample ID:** 808

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 10:50  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1780	mg/L		5		A2320 B	01/12/18 17:46 / mvr
Chloride	179	mg/L	D	2		E300.0	01/13/18 11:07 / tjl
Sulfate	3190	mg/L	D	8		E300.0	01/13/18 11:07 / tjl
Calcium	633	mg/L		1		E200.7	01/17/18 22:59 / eli-b
Magnesium	636	mg/L		1		E200.7	01/17/18 22:59 / eli-b
Potassium	9	mg/L		1		E200.7	01/22/18 12:50 / eli-b
Sodium	341	mg/L	D	3		E200.7	01/17/18 22:59 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.56	s.u.	H	0.01		A4500-H B	01/12/18 14:02 / jeu
Solids, Total Dissolved TDS @ 180 C	6420	mg/L	D	100		A2540 C	01/12/18 13:39 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	22.3	mg/L	D	0.1		E353.2	01/15/18 14:01 / dmb
Nitrogen, Ammonia as N	2.5	mg/L	D	0.2		A4500-NH3 G	01/16/18 16:37 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/29/18 14:15 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 18:25 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 18:25 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 18:25 / eli-b
Lead	0.001	mg/L		0.001		E200.8	01/18/18 18:25 / eli-b
Manganese	2.24	mg/L	D	0.002		E200.8	01/18/18 18:25 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 18:25 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/18/18 18:25 / eli-b
Uranium	0.0922	mg/L		0.0003		E200.8	01/18/18 18:25 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 18:25 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 18:48 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/18/18 16:39 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6000	mg/L				A1030 E	01/31/18 10:26 / tjp
A/C Balance	-1.52	%				A1030 E	01/31/18 10:26 / tjp
Anions	102	meq/L				A1030 E	01/31/18 10:26 / tjp
Cations	99.2	meq/L				A1030 E	01/31/18 10:26 / tjp
TDS Ratio	1.07	unitless				A1030 E	01/31/18 10:26 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.3	pCi/L	U			E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 06:24 / dmf
Lead 210	-0.5	pCi/L	U			E909.0	01/21/18 14:41 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/21/18 14:41 / meh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-004  
**Client Sample ID:** 808

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 10:50  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/21/18 14:41 / meh
Radium 226	0.3	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 MDC	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 228	0.6	pCi/L		U		RA-05	01/30/18 15:34 / trs
Radium 228 precision (±)	1	pCi/L				RA-05	01/30/18 15:34 / trs
Radium 228 MDC	1.6	pCi/L				RA-05	01/30/18 15:34 / trs
Thorium 230	-0.02	pCi/L		U		E908.0	01/30/18 08:18 / meh
Thorium 230 precision (±)	0.06	pCi/L				E908.0	01/30/18 08:18 / meh
Thorium 230 MDC	0.2	pCi/L				E908.0	01/30/18 08:18 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 15:00 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 15:00 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 15:00 / eli-b
Chloroform	0.74	ug/L		0.50		E624	01/17/18 15:00 / eli-b
Trihalomethanes, Total	0.74	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139		E624	01/17/18 15:00 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127		E624	01/17/18 15:00 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	01/17/18 15:00 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-004  
**Client Sample ID:** 808

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 11:12  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1870	mg/L		5		A2320 B	04/08/18 19:02 / mvr
Chloride	189	mg/L	D	2		E300.0	04/07/18 01:13 / ljl
Sulfate	3340	mg/L	D	8		E300.0	04/07/18 01:13 / ljl
Calcium	714	mg/L	D	7		E200.7	04/09/18 18:09 / eli-b
Magnesium	621	mg/L		1		E200.7	04/09/18 18:09 / eli-b
Potassium	9	mg/L		1		E200.7	04/09/18 18:09 / eli-b
Sodium	333	mg/L	D	2		E200.7	04/09/18 18:09 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.57	s.u.	H	0.01		A4500-H B	04/06/18 11:06 / jeu
Solids, Total Dissolved TDS @ 180 C	6630	mg/L	D	100		A2540 C	04/06/18 14:12 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	19.3	mg/L	D	0.1		E353.2	04/06/18 11:30 / dmb
Nitrogen, Ammonia as N	2.2	mg/L	D	0.2		A4500-NH3 G	04/11/18 13:45 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/10/18 01:23 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 15:11 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 01:23 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/10/18 01:23 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/10/18 01:23 / eli-b
Manganese	2.28	mg/L		0.001		E200.8	04/10/18 01:23 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/10/18 01:23 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/10/18 01:23 / eli-b
Uranium	0.0812	mg/L		0.0003		E200.8	04/10/18 01:23 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 01:23 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 19:36 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:25 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6200	mg/L				A1030 E	04/17/18 11:22 / tla
A/C Balance	-2.54	%				A1030 E	04/17/18 11:22 / tla
Anions	107	meq/L				A1030 E	04/17/18 11:22 / tla
Cations	102	meq/L				A1030 E	04/17/18 11:22 / tla
TDS Ratio	1.06	unitless				A1030 E	04/17/18 11:22 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.6	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/16/18 11:00 / cnh
Lead 210	0.5	pCi/L	U			E909.0	04/12/18 22:20 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/12/18 22:20 / meh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-004  
**Client Sample ID:** 808

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 11:12  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/12/18 22:20 / meh
Radium 226	0.5	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	1.1	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 precision (±)	0.7	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 MDC	1.0	pCi/L				RA-05	04/17/18 14:10 / plj
Thorium 230	0.04	pCi/L		U		E908.0	04/18/18 08:58 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/18/18 08:58 / cnh
Thorium 230 MDC	0.3	pCi/L				E908.0	04/18/18 08:58 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/09/18 18:19 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/09/18 18:19 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/09/18 18:19 / eli-b
Chloroform	0.50	ug/L		0.50		E624	04/09/18 18:19 / eli-b
Trihalomethanes, Total	0.50	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	103	%REC		71-139		E624	04/09/18 18:19 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127		E624	04/09/18 18:19 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123		E624	04/09/18 18:19 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

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ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

SW Alluvium

Well ID:		808	808	808	808
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-004	C18010327-004	C17100193-004	C17070424-004
Bicarbonate as HCO <sub>3</sub>	mg/L	1870	1780	1930	2020
Chloride	mg/L	189	179	172	192
Sulfate	mg/L	3340	3190	2820	3210
Calcium	mg/L	714	633	645	597
Magnesium	mg/L	621	636	641	754
Potassium	mg/L	9	9	9	7
Sodium	mg/L	333	341	337	311
pH	s.u.	6.57	6.56	6.62	6.53
pH Measurement Temp		0	0	0	0
Solids, Total Dissolved TDS @ 180 C	mg/L	6630	6420	6020	6850
Nitrogen, Ammonia as N	mg/L	2.2	2.5	1.21	0.10
Nitrogen, Nitrate+Nitrite as N	mg/L	19.3	22.3	18.7	47.8
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	0.001	0.001	0.002
Manganese	mg/L	2.28	2.24	2.10	1.66
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0812	0.0922	0.0841	0.107
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.54	-1.52	1.80	-1.52
Anions	meq/L	107	102	96.4	109
Cations	meq/L	102	99.2	99.9	106
Solids, Total Dissolved - Calculated	mg/L	6200	6000	5600	6300
TDS Ratio	unitless	1.06	1.07	1.07	1.09
Gross Alpha minus Rn & U	pCi/L	0.6	0.3	0.6	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.4	0.5	0.6
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.6	0.7	1
Lead 210	pCi/L	0.5	-0.5	0.3	0.1
Lead 210 precision (±)	pCi/L	0.8	0.7	0.8	0.8
Lead 210 MDC	pCi/L	1.3	1.2	1.4	1.3
Radium 226	pCi/L	0.5	0.3	0.3	0.2
Radium 226 precision (±)	pCi/L	0.2	0.1	0.1	0.1
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	1.1	0.6	0.8	-0.6
Radium 228 precision (±)	pCi/L	0.7	1	0.7	0.7
Radium 228 MDC	pCi/L	1.0	1.6	1.1	1.3
Thorium 230	pCi/L	0.04	-0.02	0.07	0.09
Thorium 230 precision (±)	pCi/L	0.1	0.06	0.09	0.1
Thorium 230 MDC	pCi/L	0.3	0.2	0.1	0.2
Trihalomethanes, Total	ug/L	0.50	0.74	0.58	1.5

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-008  
**Client Sample ID:** GW-1

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 14:01  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1680	mg/L		5		A2320 B	01/12/18 19:03 / mvr
Chloride	244	mg/L	D	2		E300.0	01/13/18 13:33 / ljl
Sulfate	2770	mg/L	D	8		E300.0	01/13/18 13:33 / ljl
Calcium	682	mg/L		1		E200.7	01/17/18 23:10 / eli-b
Magnesium	561	mg/L		1		E200.7	01/17/18 23:10 / eli-b
Potassium	8	mg/L		1		E200.7	01/22/18 13:04 / eli-b
Sodium	411	mg/L	D	3		E200.7	01/17/18 23:10 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.75	s.u.	H	0.01		A4500-H B	01/12/18 14:26 / jeu
Solids, Total Dissolved TDS @ 180 C	6290	mg/L	D	100		A2540 C	01/12/18 13:40 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	79.2	mg/L	D	0.2		E353.2	01/15/18 14:05 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/22/18 10:05 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.03	mg/L		0.03		E200.8	01/29/18 14:26 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 18:33 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 18:33 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 18:33 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 18:33 / eli-b
Manganese	0.077	mg/L	D	0.002		E200.8	01/18/18 18:33 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 18:33 / eli-b
Nickel	0.012	mg/L		0.005		E200.8	01/18/18 18:33 / eli-b
Uranium	0.101	mg/L		0.0003		E200.8	01/18/18 18:33 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 18:33 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 19:36 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/18/18 16:46 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5900	mg/L				A1030 E	01/31/18 10:28 / tjp
A/C Balance	0.27	%				A1030 E	01/31/18 10:28 / tjp
Anions	97.7	meq/L				A1030 E	01/31/18 10:28 / tjp
Cations	98.3	meq/L				A1030 E	01/31/18 10:28 / tjp
TDS Ratio	1.07	unitless				A1030 E	01/31/18 10:28 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.4	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 06:24 / dmf
Lead 210	0.5	pCi/L	U			E909.0	01/22/18 05:15 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/22/18 05:15 / meh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C18010327-008  
Client Sample ID: GW-1

Report Date: 02/13/18  
Collection Date: 01/08/18 14:01  
Date Received: 01/11/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/22/18 05:15 / meh
Radium 226	0.3	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 MDC	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 228	-0.2	pCi/L	U			RA-05	01/30/18 17:07 / trs
Radium 228 precision (±)	1.0	pCi/L				RA-05	01/30/18 17:07 / trs
Radium 228 MDC	1.7	pCi/L				RA-05	01/30/18 17:07 / trs
Thorium 230	0.02	pCi/L	U			E908.0	01/30/18 08:18 / meh
Thorium 230 precision (±)	0.06	pCi/L				E908.0	01/30/18 08:18 / meh
Thorium 230 MDC	0.1	pCi/L				E908.0	01/30/18 08:18 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 16:54 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 16:54 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 16:54 / eli-b
Chloroform	0.84	ug/L		0.50		E624	01/17/18 16:54 / eli-b
Trihalomethanes, Total	0.84	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	105	%REC		71-139		E624	01/17/18 16:54 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	01/17/18 16:54 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123		E624	01/17/18 16:54 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-008  
**Client Sample ID:** GW-1

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 14:17  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1730	mg/L		5		A2320 B	04/08/18 19:46 / mvr
Chloride	255	mg/L	D	2		E300.0	04/07/18 02:27 / ljl
Sulfate	2850	mg/L	D	8		E300.0	04/07/18 02:27 / ljl
Calcium	741	mg/L	D	7		E200.7	04/09/18 18:36 / eli-b
Magnesium	508	mg/L		1		E200.7	04/09/18 18:36 / eli-b
Potassium	8	mg/L		1		E200.7	04/09/18 18:36 / eli-b
Sodium	384	mg/L	D	2		E200.7	04/09/18 18:36 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.77	s.u.	H	0.01		A4500-H B	04/06/18 11:20 / jeu
Solids, Total Dissolved TDS @ 180 C	6200	mg/L	D	100		A2540 C	04/06/18 14:12 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	82	mg/L	D	1		E353.2	04/06/18 11:37 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	04/06/18 15:21 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/10/18 01:37 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 15:20 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 01:37 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/10/18 01:37 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/10/18 01:37 / eli-b
Manganese	0.038	mg/L		0.001		E200.8	04/10/18 01:37 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/10/18 01:37 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/10/18 01:37 / eli-b
Uranium	0.102	mg/L		0.0003		E200.8	04/10/18 01:37 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 01:37 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 20:24 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:34 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6000	mg/L				A1030 E	04/17/18 11:23 / tla
A/C Balance	-2.56	%				A1030 E	04/17/18 11:23 / tla
Anions	101	meq/L				A1030 E	04/17/18 11:23 / tla
Cations	95.7	meq/L				A1030 E	04/17/18 11:23 / tla
TDS Ratio	1.04	unitless				A1030 E	04/17/18 11:23 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.7	pCi/L				E900.1	04/16/18 12:35 / cnh
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	04/16/18 12:35 / cnh
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/16/18 12:35 / cnh
Lead 210	0.2	pCi/L	U			E909.0	04/13/18 09:38 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/13/18 09:38 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-008  
**Client Sample ID:** GW-1

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 14:17  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/13/18 09:38 / meh
Radium 226	0.1	pCi/L	U			E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	1.4	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 precision (±)	0.8	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 MDC	1.2	pCi/L				RA-05	04/17/18 14:10 / plj
Thorium 230	0.07	pCi/L	U			E908.0	04/18/18 17:03 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/18/18 17:03 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	04/18/18 17:03 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/10/18 17:03 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/10/18 17:03 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/10/18 17:03 / eli-b
Chloroform	0.56	ug/L		0.50		E624	04/10/18 17:03 / eli-b
Trihalomethanes, Total	0.56	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139		E624	04/10/18 17:03 / eli-b
Surr: p-Bromofluorobenzene	101	%REC		80-127		E624	04/10/18 17:03 / eli-b
Surr: Toluene-d8	92.0	%REC		80-123		E624	04/10/18 17:03 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

SW Alluvium

Well ID:		GW-1	GW-1	GW-1	GW-1
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-008	C18010327-008	C17100193-008	C17070424-008
Bicarbonate as HCO <sub>3</sub>	mg/L	1730	1680	1800	1770
Chloride	mg/L	255	244	240	237
Sulfate	mg/L	2850	2770	2550	2580
Calcium	mg/L	741	682	676	692
Magnesium	mg/L	508	561	577	586
Potassium	mg/L	8	8	9	7
Sodium	mg/L	384	411	416	420
pH	s.u.	6.77	6.75	6.73	6.74
Solids, Total Dissolved TDS @ 180 C	mg/L	6200	6290	5840	6120
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	82	79.2	77.5	80.5
Aluminum	mg/L	ND(0.03)	0.03	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.038	0.077	0.10	0.11
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	0.012	ND(0.05)	ND(0.05)
Uranium	mg/L	0.102	0.101	0.0995	0.0926
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.56	0.27	2.28	3.01
Anions	meq/L	101	97.7	95.1	95.3
Cations	meq/L	95.7	98.3	99.5	101
Solids, Total Dissolved - Calculated	mg/L	6000	5900	5700	5800
TDS Ratio	unitless	1.04	1.07	1.02	1.06
Gross Alpha minus Rn & U	pCi/L	0.7	1.4	0.8	0.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.6	0.5	0.6
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.6	0.7	1.0
Lead 210	pCi/L	0.2	0.5	0.4	0.6
Lead 210 precision (±)	pCi/L	0.8	0.7	0.8	0.8
Lead 210 MDC	pCi/L	1.3	1.2	1.4	1.4
Radium 226	pCi/L	0.1	0.3	0.1	0.6
Radium 226 precision (±)	pCi/L	0.2	0.1	0.1	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	1.4	-0.2	0.2	1.2
Radium 228 precision (±)	pCi/L	0.8	1.0	0.9	1.2
Radium 228 MDC	pCi/L	1.2	1.7	1.5	1.6
Thorium 230	pCi/L	0.07	0.02	-0.02	-0.01
Thorium 230 precision (±)	pCi/L	0.1	0.06	0.05	0.07
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
Trihalomethanes, Total	ug/L	0.56	0.84	0.91	0.70

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-002  
**Client Sample ID:** EPA-23

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 09:12  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1250	mg/L		5		A2320 B	01/12/18 17:22 / mvr
Chloride	120	mg/L	D	2		E300.0	01/13/18 10:31 / ljl
Sulfate	2440	mg/L	D	8		E300.0	01/13/18 10:31 / ljl
Calcium	649	mg/L		1		E200.7	01/17/18 22:35 / eli-b
Magnesium	387	mg/L		1		E200.7	01/17/18 22:35 / eli-b
Potassium	10	mg/L		1		E200.7	01/17/18 22:35 / eli-b
Sodium	148	mg/L	D	2		E200.7	01/17/18 22:35 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.71	s.u.	H	0.01		A4500-H B	01/12/18 13:56 / jeu
Solids, Total Dissolved TDS @ 180 C	4650	mg/L	D	40		A2540 C	01/12/18 13:39 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	01/15/18 13:53 / dmb
Nitrogen, Ammonia as N	0.8	mg/L	D	0.2		A4500-NH <sub>3</sub> G	01/16/18 16:32 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/29/18 14:08 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 18:19 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 18:19 / eli-b
Cobalt	0.010	mg/L		0.005		E200.8	01/18/18 18:19 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 18:19 / eli-b
Manganese	6.92	mg/L	D	0.002		E200.8	01/18/18 18:19 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 18:19 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/18/18 18:19 / eli-b
Uranium	0.0348	mg/L		0.0003		E200.8	01/18/18 18:19 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 18:19 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 18:24 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/18/18 16:36 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4400	mg/L				A1030 E	01/31/18 10:25 / tjp
A/C Balance	-2.50	%				A1030 E	01/31/18 10:25 / tjp
Anions	74.6	meq/L				A1030 E	01/31/18 10:25 / tjp
Cations	71.0	meq/L				A1030 E	01/31/18 10:25 / tjp
TDS Ratio	1.06	unitless				A1030 E	01/31/18 10:25 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.7	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	01/30/18 06:24 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 06:24 / dmf
Lead 210	-0.09	pCi/L	U			E909.0	01/21/18 07:23 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/21/18 07:23 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-002  
**Client Sample ID:** EPA-23

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 09:12  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/21/18 07:23 / meh
Radium 226	0.3	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 MDC	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 228	-0.03	pCi/L	U			RA-05	01/30/18 15:34 / trs
Radium 228 precision (±)	0.9	pCi/L				RA-05	01/30/18 15:34 / trs
Radium 228 MDC	1.4	pCi/L				RA-05	01/30/18 15:34 / trs
Thorium 230	0.002	pCi/L	U			E908.0	01/30/18 08:18 / meh
Thorium 230 precision (±)	0.07	pCi/L				E908.0	01/30/18 08:18 / meh
Thorium 230 MDC	0.2	pCi/L				E908.0	01/30/18 08:18 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 14:04 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 14:04 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 14:04 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/17/18 14:04 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	106	%REC		71-139		E624	01/17/18 14:04 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	01/17/18 14:04 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	01/17/18 14:04 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-002  
**Client Sample ID:** EPA-23

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 09:33  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1280	mg/L		5		A2320 B	04/08/18 18:29 / mvr
Chloride	124	mg/L	D	2		E300.0	04/07/18 00:36 / ljl
Sulfate	2450	mg/L	D	8		E300.0	04/07/18 00:36 / ljl
Calcium	730	mg/L	D	4		E200.7	04/09/18 18:01 / eli-b
Magnesium	356	mg/L		1		E200.7	04/09/18 18:01 / eli-b
Potassium	10	mg/L		1		E200.7	04/09/18 18:01 / eli-b
Sodium	146	mg/L		1		E200.7	04/09/18 18:01 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.66	s.u.	H	0.01		A4500-H B	04/06/18 11:00 / jeu
Solids, Total Dissolved TDS @ 180 C	4710	mg/L	D	40		A2540 C	04/06/18 14:11 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.01	mg/L		0.01		E353.2	04/06/18 11:23 / dmb
Nitrogen, Ammonia as N	0.52	mg/L		0.05		A4500-NH3 G	04/11/18 13:42 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/10/18 01:17 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/11/18 18:01 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 01:17 / eli-b
Cobalt	0.010	mg/L		0.005		E200.8	04/10/18 01:17 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/10/18 01:17 / eli-b
Manganese	6.46	mg/L		0.001		E200.8	04/10/18 01:17 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/10/18 01:17 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/10/18 01:17 / eli-b
Uranium	0.0337	mg/L		0.0003		E200.8	04/10/18 01:17 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 01:17 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 19:12 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:21 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4500	mg/L				A1030 E	04/17/18 11:21 / tla
A/C Balance	-2.15	%				A1030 E	04/17/18 11:21 / tla
Anions	75.5	meq/L				A1030 E	04/17/18 11:21 / tla
Cations	72.3	meq/L				A1030 E	04/17/18 11:21 / tla
TDS Ratio	1.06	unitless				A1030 E	04/17/18 11:21 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	2.2	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	04/16/18 11:00 / cnh
Gross Alpha minus Rn & U MDC	1.6	pCi/L				E900.1	04/16/18 11:00 / cnh
Lead 210	1	pCi/L	U			E909.0	04/12/18 16:18 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/12/18 16:18 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-002  
**Client Sample ID:** EPA-23

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 09:33  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/12/18 16:18 / meh
Radium 226	0.6	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	0.1	pCi/L	U			RA-05	04/17/18 14:10 / plj
Radium 228 precision (±)	0.7	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 MDC	1.2	pCi/L				RA-05	04/17/18 14:10 / plj
Thorium 230	0.01	pCi/L	U			E908.0	04/18/18 08:58 / cnh
Thorium 230 precision (±)	0.08	pCi/L				E908.0	04/18/18 08:58 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	04/18/18 08:58 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/09/18 17:20 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/09/18 17:20 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/09/18 17:20 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/09/18 17:20 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	04/09/18 17:20 / eli-b
Surr: p-Bromofluorobenzene	96.0	%REC		80-127		E624	04/09/18 17:20 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123		E624	04/09/18 17:20 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

SW Alluvium

Well ID:		EPA-23	EPA-23	EPA-23	EPA-23
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-002	C18010327-002	C17100193-002	C17070424-002
Bicarbonate as HCO <sub>3</sub>	mg/L	1280	1250	1360	1320
Chloride	mg/L	124	120	117	115
Sulfate	mg/L	2450	2440	2210	2240
Calcium	mg/L	730	649	649	650
Magnesium	mg/L	356	387	391	379
Potassium	mg/L	10	10	10	10
Sodium	mg/L	146	148	151	143
pH	s.u.	6.66	6.71	6.70	6.69
Solids, Total Dissolved TDS @ 180 C	mg/L	4710	4650	4490	4590
Nitrogen, Ammonia as N	mg/L	0.52	0.8	0.46	0.51
Nitrogen, Nitrate+Nitrite as N	mg/L	0.01	ND(0.01)	ND(0.01)	ND(0.01)
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.010	0.010	0.01	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	6.46	6.92	6.81	6.85
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0337	0.0348	0.0351	0.0321
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.15	-2.50	-0.18	-1.01
Anions	meq/L	75.5	74.6	71.7	71.6
Cations	meq/L	72.3	71.0	71.4	70.1
Solids, Total Dissolved - Calculated	mg/L	4500	4400	4200	4200
TDS Ratio	unitless	1.06	1.06	1.07	1.09
Gross Alpha minus Rn & U	pCi/L	2.2	0.7	1	0.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.1	0.4	0.5	0.6
Gross Alpha minus Rn & U MDC	pCi/L	1.6	0.6	0.7	1.0
Lead 210	pCi/L	1	-0.09	0.8	1.4
Lead 210 precision (±)	pCi/L	0.8	0.7	0.9	1
Lead 210 MDC	pCi/L	1.3	1.2	1.4	1.4
Radium 226	pCi/L	0.6	0.3	0.3	0.5
Radium 226 precision (±)	pCi/L	0.2	0.1	0.1	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	0.1	-0.03	1.2	0.9
Radium 228 precision (±)	pCi/L	0.7	0.9	0.8	1.0
Radium 228 MDC	pCi/L	1.2	1.4	1.3	1.6
Thorium 230	pCi/L	0.01	0.002	0.1	-0.01
Thorium 230 precision (±)	pCi/L	0.08	0.07	0.2	0.06
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010384-002  
**Client Sample ID:** EPA-25

**Report Date:** 02/13/18  
**Collection Date:** 01/09/18 09:56  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1320	mg/L		5		A2320 B	01/15/18 18:58 / mvr
Chloride	146	mg/L	D	2		E300.0	01/16/18 04:03 / ljl
Sulfate	1940	mg/L	D	8		E300.0	01/16/18 04:03 / ljl
Calcium	775	mg/L		1		E200.7	01/17/18 22:23 / eli-b
Magnesium	238	mg/L		1		E200.7	01/17/18 22:23 / eli-b
Potassium	7	mg/L		1		E200.7	01/17/18 22:23 / eli-b
Sodium	204	mg/L	D	3		E200.7	01/17/18 22:23 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.85	s.u.	H	0.01		A4500-H B	01/15/18 12:32 / jeu
Solids, Total Dissolved TDS @ 180 C	4410	mg/L	D	40		A2540 C	01/15/18 16:23 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	63.5	mg/L	D	0.2		E353.2	01/17/18 14:03 / dmb
Nitrogen, Ammonia as N	0.05	mg/L		0.05		A4500-NH <sub>3</sub> G	01/16/18 16:55 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/22/18 19:27 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 17:41 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 17:41 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 17:41 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 17:41 / eli-b
Manganese	0.485	mg/L		0.001		E200.8	01/22/18 19:27 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 17:41 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/22/18 19:27 / eli-b
Uranium	0.137	mg/L		0.0003		E200.8	01/18/18 17:41 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 17:41 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 04:15 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:54 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4300	mg/L				A1030 E	01/31/18 10:30 / tjp
A/C Balance	-2.45	%				A1030 E	01/31/18 10:30 / tjp
Anions	70.6	meq/L				A1030 E	01/31/18 10:30 / tjp
Cations	67.3	meq/L				A1030 E	01/31/18 10:30 / tjp
TDS Ratio	1.04	unitless				A1030 E	01/31/18 10:30 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.3	pCi/L	U			E900.1	02/05/18 18:30 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	02/05/18 18:30 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	02/05/18 18:30 / dmf
Lead 210	-0.2	pCi/L	U			E909.0	01/22/18 23:29 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/22/18 23:29 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C18010384-002  
Client Sample ID: EPA-25

Report Date: 02/13/18  
Collection Date: 01/09/18 09:56  
Date Received: 01/12/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/22/18 23:29 / meh
Radium 226	0.2	pCi/L				E903.0	02/06/18 13:32 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/06/18 13:32 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/06/18 13:32 / arh
Radium 228	1.1	pCi/L	U			RA-05	01/31/18 12:11 / trs
Radium 228 precision (±)	1.1	pCi/L				RA-05	01/31/18 12:11 / trs
Radium 228 MDC	1.7	pCi/L				RA-05	01/31/18 12:11 / trs
Thorium 230	0.1	pCi/L	U			E908.0	02/02/18 10:24 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/02/18 10:24 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 12:39 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 12:39 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 12:39 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/17/18 12:39 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	105	%REC		71-139		E624	01/17/18 12:39 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	01/17/18 12:39 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	01/17/18 12:39 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040251-002  
**Client Sample ID:** EPA-25

**Report Date:** 05/04/18  
**Collection Date:** 04/03/18 09:45  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1350	mg/L		5		A2320 B	04/09/18 02:41 / mvr
Chloride	152	mg/L	D	2		E300.0	04/11/18 19:42 / ljl
Sulfate	1960	mg/L	D	8		E300.0	04/11/18 19:42 / ljl
Calcium	782	mg/L		1		E200.7	04/11/18 16:28 / eli-b
Magnesium	238	mg/L		1		E200.7	04/11/18 16:28 / eli-b
Potassium	8	mg/L		1		E200.7	04/11/18 16:28 / eli-b
Sodium	214	mg/L		1		E200.7	04/11/18 16:28 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.99	s.u.	H	0.01		A4500-H B	04/09/18 12:43 / jeu
Solids, Total Dissolved TDS @ 180 C	4550	mg/L	D	40		A2540 C	04/09/18 14:27 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	67	mg/L	D	1		E353.2	04/09/18 11:37 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	04/11/18 14:10 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/12/18 01:17 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 01:17 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 01:17 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/12/18 01:17 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 01:17 / eli-b
Manganese	0.316	mg/L		0.001		E200.8	04/12/18 01:17 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 01:17 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/12/18 01:17 / eli-b
Uranium	0.120	mg/L		0.0003		E200.8	04/12/18 01:17 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 01:17 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 17:48 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:37 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4300	mg/L				A1030 E	04/16/18 17:03 / tla
A/C Balance	-2.76	%				A1030 E	04/16/18 17:03 / tla
Anions	72.0	meq/L				A1030 E	04/16/18 17:03 / tla
Cations	68.1	meq/L				A1030 E	04/16/18 17:03 / tla
TDS Ratio	1.05	unitless				A1030 E	04/16/18 17:03 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.3	pCi/L	U			E900.1	04/16/18 13:02 / cnh
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	04/16/18 13:02 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 13:02 / cnh
Lead 210	0.2	pCi/L	U			E909.0	04/13/18 17:25 / meh
Lead 210 precision (±)	0.6	pCi/L				E909.0	04/13/18 17:25 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040251-002  
**Client Sample ID:** EPA-25

**Report Date:** 05/04/18  
**Collection Date:** 04/03/18 09:45  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.1	pCi/L				E909.0	04/13/18 17:25 / meh
Radium 226	0.2	pCi/L				E903.0	04/23/18 12:58 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	04/23/18 12:58 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 12:58 / arh
Radium 228	0.1	pCi/L	U			RA-05	04/18/18 13:08 / plj
Radium 228 precision (±)	1	pCi/L				RA-05	04/18/18 13:08 / plj
Radium 228 MDC	1.6	pCi/L				RA-05	04/18/18 13:08 / plj
Thorium 230	0.1	pCi/L	U			E908.0	04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	04/19/18 11:42 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/16/18 17:31 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/16/18 17:31 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/16/18 17:31 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/16/18 17:31 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	95.0	%REC		71-139		E624	04/16/18 17:31 / eli-b
Surr: p-Bromofluorobenzene	96.0	%REC		80-127		E624	04/16/18 17:31 / eli-b
Surr: Toluene-d8	94.0	%REC		80-123		E624	04/16/18 17:31 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

SW Alluvium

Well ID:		EPA-25	EPA-25	EPA-25	EPA-25
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/4/2018	2/13/2018	11/10/2017	8/24/2017
Analyte	Units	C18040251-002	C18010384-002	C17100294-002	C17070469-002
Bicarbonate as HCO <sub>3</sub>	mg/L	1350	1320	1440	1370
Chloride	mg/L	152	146	145	138
Sulfate	mg/L	1960	1940	1790	1800
Calcium	mg/L	782	775	795	777
Magnesium	mg/L	238	238	242	247
Potassium	mg/L	8	7	7	9
Sodium	mg/L	214	204	219	213
pH	s.u.	6.99	6.85	6.85	6.85
Solids, Total Dissolved TDS @ 180 C	mg/L	4550	4410	4440	4270
Nitrogen, Ammonia as N	mg/L	ND(0.05)	0.05	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	67	63.5	61.0	65.5
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.316	0.485	0.44	0.45
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.120	0.137	0.130	0.116
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.76	-2.45	-0.26	-0.08
Anions	meq/L	72.0	70.6	69.6	68.7
Cations	meq/L	68.1	67.3	69.3	68.6
Solids, Total Dissolved - Calculated	mg/L	4300	4300	4200	4200
TDS Ratio	unitless	1.05	1.04	1.05	1.03
Gross Alpha minus Rn & U	pCi/L	0.3	0.3	0.6	0.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.4	0.4	0.3
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.6	0.6	0.4
Lead 210	pCi/L	0.2	-0.2	-0.1	0.2
Lead 210 precision (±)	pCi/L	0.6	0.7	0.7	0.8
Lead 210 MDC	pCi/L	1.1	1.2	1.2	1.4
Radium 226	pCi/L	0.2	0.2	0.06	0.1
Radium 226 precision (±)	pCi/L	0.1	0.1	0.1	0.1
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	0.1	1.1	0.5	0.8
Radium 228 precision (±)	pCi/L	1	1.1	0.9	1.0
Radium 228 MDC	pCi/L	1.6	1.7	1.4	1.6
Thorium 230	pCi/L	0.1	0.1	0.005	0.08
Thorium 230 precision (±)	pCi/L	0.2	0.1	0.06	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.1	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-009  
**Client Sample ID:** EPA-28

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 14:56  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	394	mg/L		5		A2320 B	01/12/18 19:11 / mvr
Chloride	100	mg/L	D	2		E300.0	01/13/18 13:51 / ljl
Sulfate	3210	mg/L	D	8		E300.0	01/13/18 13:51 / ljl
Calcium	512	mg/L		1		E200.7	01/19/18 18:55 / eli-b
Magnesium	462	mg/L		1		E200.7	01/19/18 18:55 / eli-b
Potassium	10	mg/L		1		E200.7	01/22/18 13:07 / eli-b
Sodium	236	mg/L	D	3		E200.7	01/17/18 23:14 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.89	s.u.	H	0.01		A4500-H B	01/12/18 14:29 / jeu
Solids, Total Dissolved TDS @ 180 C	4960	mg/L	D	40		A2540 C	01/12/18 13:40 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	6.85	mg/L	D	0.05		E353.2	01/15/18 14:07 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	01/22/18 10:06 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.03	mg/L		0.03		E200.8	01/29/18 14:29 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 18:42 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 18:42 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 18:42 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 18:42 / eli-b
Manganese	0.628	mg/L	D	0.002		E200.8	01/18/18 18:42 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 18:42 / eli-b
Nickel	0.009	mg/L		0.005		E200.8	01/18/18 18:42 / eli-b
Uranium	0.0211	mg/L		0.0003		E200.8	01/18/18 18:42 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 18:42 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 19:48 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/18/18 16:47 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4800	mg/L				A1030 E	02/01/18 13:18 / tjp
A/C Balance	-1.59	%				A1030 E	02/01/18 13:18 / tjp
Anions	76.5	meq/L				A1030 E	02/01/18 13:18 / tjp
Cations	74.1	meq/L				A1030 E	02/01/18 13:18 / tjp
TDS Ratio	1.04	unitless				A1030 E	02/01/18 13:18 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.8	pCi/L				E900.1	01/30/18 07:56 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	01/30/18 07:56 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 07:56 / dmf
Lead 210	0.03	pCi/L	U			E909.0	01/22/18 08:54 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/22/18 08:54 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-009  
**Client Sample ID:** EPA-28

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 14:56  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/22/18 08:54 / meh
Radium 226	0.3	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 MDC	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 228	-0.3	pCi/L	U			RA-05	01/30/18 17:07 / trs
Radium 228 precision (±)	1.2	pCi/L				RA-05	01/30/18 17:07 / trs
Radium 228 MDC	2.0	pCi/L				RA-05	01/30/18 17:07 / trs
Thorium 230	0.2	pCi/L	U			E908.0	01/30/18 08:18 / meh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	01/30/18 08:18 / meh
Thorium 230 MDC	0.2	pCi/L				E908.0	01/30/18 08:18 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 17:22 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 17:22 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 17:22 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/17/18 17:22 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	107	%REC		71-139		E624	01/17/18 17:22 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	01/17/18 17:22 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	01/17/18 17:22 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-009  
**Client Sample ID:** EPA-28

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 15:12  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	406	mg/L		5		A2320 B	04/08/18 19:54 / mvr
Chloride	103	mg/L	D	2		E300.0	04/07/18 02:45 / ljl
Sulfate	3230	mg/L	D	8		E300.0	04/07/18 02:45 / ljl
Calcium	541	mg/L	D	4		E200.7	04/09/18 18:40 / eli-b
Magnesium	409	mg/L		1		E200.7	04/09/18 18:40 / eli-b
Potassium	10	mg/L		1		E200.7	04/09/18 18:40 / eli-b
Sodium	236	mg/L		1		E200.7	04/09/18 18:40 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.87	s.u.	H	0.01		A4500-H B	04/06/18 11:23 / jeu
Solids, Total Dissolved TDS @ 180 C	4970	mg/L	D	40		A2540 C	04/06/18 14:13 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	6.90	mg/L	D	0.05		E353.2	04/06/18 11:39 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	04/06/18 15:23 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.03	mg/L		0.03		E200.8	04/10/18 01:40 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 15:23 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 01:40 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/10/18 01:40 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/10/18 01:40 / eli-b
Manganese	0.590	mg/L		0.001		E200.8	04/10/18 01:40 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/10/18 01:40 / eli-b
Nickel	0.008	mg/L		0.005		E200.8	04/10/18 01:40 / eli-b
Uranium	0.0213	mg/L		0.0003		E200.8	04/10/18 01:40 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 01:40 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 20:36 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:36 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4800	mg/L				A1030 E	04/17/18 11:24 / tla
A/C Balance	-4.14	%				A1030 E	04/17/18 11:24 / tla
Anions	77.3	meq/L				A1030 E	04/17/18 11:24 / tla
Cations	71.2	meq/L				A1030 E	04/17/18 11:24 / tla
TDS Ratio	1.04	unitless				A1030 E	04/17/18 11:24 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.2	pCi/L				E900.1	04/16/18 12:35 / cnh
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	04/16/18 12:35 / cnh
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/16/18 12:35 / cnh
Lead 210	1.1	pCi/L	U			E909.0	04/13/18 12:46 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	04/13/18 12:46 / meh

**Report Definitions:**  
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QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C18040172-009  
Client Sample ID: EPA-28

Report Date: 05/10/18  
Collection Date: 04/02/18 15:12  
Date Received: 04/05/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/13/18 12:46 / meh
Radium 226	0.7	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	1.5	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 precision (±)	0.8	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 MDC	1.1	pCi/L				RA-05	04/17/18 14:10 / plj
Thorium 230	0.1	pCi/L		U		E908.0	04/18/18 17:03 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/18/18 17:03 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	04/18/18 17:03 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/10/18 19:01 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/10/18 19:01 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/10/18 19:01 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/10/18 19:01 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	04/10/18 19:01 / eli-b
Surr: p-Bromofluorobenzene	96.0	%REC		80-127		E624	04/10/18 19:01 / eli-b
Surr: Toluene-d8	94.0	%REC		80-123		E624	04/10/18 19:01 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

SW Alluvium

Well ID:		EPA-28	EPA-28	EPA-28	EPA-28
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-009	C18010327-009	C17100193-009	C17070424-009
Bicarbonate as HCO <sub>3</sub>	mg/L	406	394	432	412
Chloride	mg/L	103	100	98	98
Sulfate	mg/L	3230	3210	2900	2930
Calcium	mg/L	541	512	491	491
Magnesium	mg/L	409	462	469	463
Potassium	mg/L	10	10	10	10
Sodium	mg/L	236	236	252	252
pH	s.u.	6.87	6.89	6.93	6.89
Solids, Total Dissolved TDS @ 180 C	mg/L	4970	4960	4830	4920
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	6.90	6.85	7.05	7.10
Aluminum	mg/L	0.03	0.03	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.590	0.628	0.46	0.51
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.008	0.009	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0213	0.0211	0.0211	0.0183
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-4.14	-1.59	2.51	1.95
Anions	meq/L	77.3	76.5	70.7	71.0
Cations	meq/L	71.2	74.1	74.4	73.9
Solids, Total Dissolved - Calculated	mg/L	4800	4800	4500	4500
TDS Ratio	unitless	1.04	1.04	1.08	1.10
Gross Alpha minus Rn & U	pCi/L	1.2	0.8	1	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.5	0.5	0.4
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.6	0.7	0.5
Lead 210	pCi/L	1.1	0.03	0.4	-0.02
Lead 210 precision (±)	pCi/L	0.9	0.7	0.8	0.8
Lead 210 MDC	pCi/L	1.3	1.2	1.4	1.3
Radium 226	pCi/L	0.7	0.3	0.3	0.2
Radium 226 precision (±)	pCi/L	0.2	0.1	0.1	0.1
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	1.5	-0.3	0.3	1.4
Radium 228 precision (±)	pCi/L	0.8	1.2	0.9	1.2
Radium 228 MDC	pCi/L	1.1	2.0	1.5	1.8
Thorium 230	pCi/L	0.1	0.2	0.02	0.1
Thorium 230 precision (±)	pCi/L	0.1	0.1	0.06	0.1
Thorium 230 MDC	pCi/L	0.1	0.2	0.1	0.1
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010384-001  
**Client Sample ID:** SBL-1

**Report Date:** 02/13/18  
**Collection Date:** 01/09/18 08:51  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	425	mg/L		5		A2320 B	01/15/18 18:40 / mvr
Chloride	75	mg/L	D	5		E300.0	01/16/18 03:45 / ljl
Sulfate	6190	mg/L	D	20		E300.0	01/16/18 03:45 / ljl
Calcium	473	mg/L		1		E200.7	01/17/18 22:19 / eli-b
Magnesium	1210	mg/L		1		E200.7	01/17/18 22:19 / eli-b
Potassium	13	mg/L		1		E200.7	01/17/18 22:19 / eli-b
Sodium	272	mg/L	D	3		E200.7	01/17/18 22:19 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.80	s.u.	H	0.01		A4500-H B	01/15/18 12:29 / jeu
Solids, Total Dissolved TDS @ 180 C	9430	mg/L	D	100		A2540 C	01/15/18 16:23 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	35.0	mg/L	D	0.2		E353.2	01/17/18 13:59 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	01/16/18 16:53 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.55	mg/L	D	0.04		E200.8	01/18/18 17:38 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 17:38 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 17:38 / eli-b
Cobalt	0.032	mg/L		0.005		E200.8	01/18/18 17:38 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 17:38 / eli-b
Manganese	4.40	mg/L	D	0.002		E200.8	01/18/18 17:38 / eli-b
Molybdenum	0.001	mg/L		0.001		E200.8	01/18/18 17:38 / eli-b
Nickel	0.092	mg/L		0.005		E200.8	01/18/18 17:38 / eli-b
Uranium	0.0099	mg/L		0.0003		E200.8	01/18/18 17:38 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 17:38 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 03:39 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:49 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	8600	mg/L				A1030 E	01/31/18 10:30 / tjp
A/C Balance	-1.80	%				A1030 E	01/31/18 10:30 / tjp
Anions	140	meq/L				A1030 E	01/31/18 10:30 / tjp
Cations	135	meq/L				A1030 E	01/31/18 10:30 / tjp
TDS Ratio	1.10	unitless				A1030 E	01/31/18 10:30 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.8	pCi/L				E900.1	02/05/18 18:30 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	02/05/18 18:30 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	02/05/18 18:30 / dmf
Lead 210	0.8	pCi/L	U			E909.0	01/22/18 19:50 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/22/18 19:50 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010384-001  
**Client Sample ID:** SBL-1

**Report Date:** 02/13/18  
**Collection Date:** 01/09/18 08:51  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/22/18 19:50 / meh
Radium 226	0.6	pCi/L				E903.0	02/06/18 13:32 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	02/06/18 13:32 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/06/18 13:32 / arh
Radium 228	3.4	pCi/L				RA-05	01/31/18 12:11 / trs
Radium 228 precision (±)	1.2	pCi/L				RA-05	01/31/18 12:11 / trs
Radium 228 MDC	1.6	pCi/L				RA-05	01/31/18 12:11 / trs
Thorium 230	0.04	pCi/L	U			E908.0	02/02/18 10:24 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/02/18 10:24 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 12:11 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 12:11 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 12:11 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/17/18 12:11 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	109	%REC		71-139		E624	01/17/18 12:11 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127		E624	01/17/18 12:11 / eli-b
Surr: Toluene-d8	105	%REC		80-123		E624	01/17/18 12:11 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040251-001  
**Client Sample ID:** SBL-1

**Report Date:** 05/04/18  
**Collection Date:** 04/03/18 08:38  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	438	mg/L		5		A2320 B	04/09/18 02:31 / mvr
Chloride	79	mg/L	D	5		E300.0	04/11/18 19:24 / ljl
Sulfate	6280	mg/L	D	20		E300.0	04/11/18 19:24 / ljl
Calcium	466	mg/L		1		E200.7	04/11/18 16:24 / eli-b
Magnesium	1170	mg/L		1		E200.7	04/11/18 16:24 / eli-b
Potassium	13	mg/L		1		E200.7	04/11/18 16:24 / eli-b
Sodium	280	mg/L	D	2		E200.7	04/11/18 16:24 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.93	s.u.	H	0.01		A4500-H B	04/09/18 12:40 / jeu
Solids, Total Dissolved TDS @ 180 C	9310	mg/L	D	100		A2540 C	04/09/18 14:27 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	38	mg/L	D	1		E353.2	04/09/18 11:34 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	04/11/18 14:09 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.19	mg/L		0.03		E200.8	04/12/18 01:14 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 01:14 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 01:14 / eli-b
Cobalt	0.027	mg/L		0.005		E200.8	04/12/18 01:14 / eli-b
Lead	0.002	mg/L		0.001		E200.8	04/12/18 01:14 / eli-b
Manganese	4.08	mg/L		0.001		E200.8	04/12/18 01:14 / eli-b
Molybdenum	0.009	mg/L		0.001		E200.8	04/12/18 01:14 / eli-b
Nickel	0.086	mg/L		0.005		E200.8	04/12/18 01:14 / eli-b
Uranium	0.0102	mg/L		0.0003		E200.8	04/12/18 01:14 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 01:14 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 17:36 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:36 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	8700	mg/L				A1030 E	04/16/18 17:03 / tla
A/C Balance	-3.85	%				A1030 E	04/16/18 17:03 / tla
Anions	143	meq/L				A1030 E	04/16/18 17:03 / tla
Cations	132	meq/L				A1030 E	04/16/18 17:03 / tla
TDS Ratio	1.07	unitless				A1030 E	04/16/18 17:03 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.4	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:30 / cnh
Lead 210	0.1	pCi/L	U			E909.0	04/13/18 13:52 / meh
Lead 210 precision (±)	0.6	pCi/L				E909.0	04/13/18 13:52 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C18040251-001  
Client Sample ID: SBL-1

Report Date: 05/04/18  
Collection Date: 04/03/18 08:38  
Date Received: 04/06/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.1	pCi/L			E909.0		04/13/18 13:52 / meh
Radium 226	0.5	pCi/L			E903.0		04/23/18 12:58 / arh
Radium 226 precision (±)	0.2	pCi/L			E903.0		04/23/18 12:58 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		04/23/18 12:58 / arh
Radium 228	2.1	pCi/L			RA-05		04/18/18 13:08 / plj
Radium 228 precision (±)	1.1	pCi/L			RA-05		04/18/18 13:08 / plj
Radium 228 MDC	1.6	pCi/L			RA-05		04/18/18 13:08 / plj
Thorium 230	0.3	pCi/L			E908.0		04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.2	pCi/L			E908.0		04/19/18 11:42 / dmf
Thorium 230 MDC	0.2	pCi/L			E908.0		04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		04/16/18 17:01 / eli-b
Bromoform	ND	ug/L		0.50	E624		04/16/18 17:01 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		04/16/18 17:01 / eli-b
Chloroform	ND	ug/L		0.50	E624		04/16/18 17:01 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139	E624		04/16/18 17:01 / eli-b
Surr: p-Bromofluorobenzene	97.0	%REC		80-127	E624		04/16/18 17:01 / eli-b
Surr: Toluene-d8	98.0	%REC		80-123	E624		04/16/18 17:01 / eli-b

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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United Nuclear Corporation

SW Alluvium

Well ID:		SBL-1	SBL-1	SBL-1	SBL-1
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/4/2018	2/13/2018	11/10/2017	8/24/2017
Analyte	Units	C18040251-001	C18010384-001	C17100294-001	C17070469-001
Bicarbonate as HCO <sub>3</sub>	mg/L	438	425	452	461
Chloride	mg/L	79	75	73	76
Sulfate	mg/L	6280	6190	5520	5690
Calcium	mg/L	466	473	477	483
Magnesium	mg/L	1170	1210	1220	1190
Potassium	mg/L	13	13	13	14
Sodium	mg/L	280	272	280	284
pH	s.u.	6.93	6.80	6.80	6.81
Solids, Total Dissolved TDS @ 180 C	mg/L	9310	9430	8870	8860
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	38	35.0	35.3	36.8
Aluminum	mg/L	0.19	0.55	0.4	0.5
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.027	0.032	0.03	0.03
Lead	mg/L	0.002	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	4.08	4.40	4.02	4.13
Molybdenum	mg/L	0.009	0.001	ND(0.1)	ND(0.1)
Nickel	mg/L	0.086	0.092	0.12	0.10
Uranium	mg/L	0.0102	0.0099	0.0102	0.0101
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.001
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-3.85	-1.80	3.71	1.49
Anions	meq/L	143	140	127	131
Cations	meq/L	132	135	136	135
Solids, Total Dissolved - Calculated	mg/L	8700	8600	8000	8100
TDS Ratio	unitless	1.07	1.10	1.12	1.09
Gross Alpha minus Rn & U	pCi/L	1.4	0.8	1.1	0.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.5	0.5	0.4
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.6	0.6	0.4
Lead 210	pCi/L	0.1	0.8	-0.2	0.3
Lead 210 precision (±)	pCi/L	0.6	0.7	0.7	0.8
Lead 210 MDC	pCi/L	1.1	1.2	1.3	1.4
Radium 226	pCi/L	0.5	0.6	0.4	0.5
Radium 226 precision (±)	pCi/L	0.2	0.2	0.2	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	2.1	3.4	2.6	2.3
Radium 228 precision (±)	pCi/L	1.1	1.2	0.9	1.1
Radium 228 MDC	pCi/L	1.6	1.6	1.4	1.6
Thorium 230	pCi/L	0.3	0.04	0.04	0.001
Thorium 230 precision (±)	pCi/L	0.2	0.1	0.08	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.3
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**QUARTERLY SAMPLING**  
**SEMI-ANNUAL GROUND WATER MONITORING REPORT**

**JANUARY TO JUNE OF 2018**

**ZONE - 1**

515-A

\*604

\*614

TWQ-142

EPA-2

\*EPA-4

\*EPA-5

\*EPA-7

**LEVELS ONLY**

TWQ-143

EPA-8

505-A

502-A

501-A

504-A

412

**NOTE: \*POINT OF COMPLIANCE WELLS  
WATER LEVEL ONLY IS IN FIELD DATA SHEET**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-002  
**Client Sample ID:** 515-A

**Report Date:** 02/23/18  
**Collection Date:** 01/09/18 13:53  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	787	mg/L		5		A2320 B	01/15/18 19:23 / mvr
Chloride	386	mg/L	D	5		E300.0	01/16/18 04:58 / ljl
Sulfate	6550	mg/L	D	20		E300.0	01/16/18 04:58 / ljl
Calcium	453	mg/L	D	2		E200.7	01/18/18 00:40 / eli-b
Magnesium	1340	mg/L		1		E200.7	01/18/18 00:40 / eli-b
Potassium	18	mg/L	D	2		E200.7	01/19/18 19:52 / eli-b
Sodium	592	mg/L	D	7		E200.7	01/19/18 00:35 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.29	s.u.	H	0.01		A4500-H B	01/15/18 12:41 / jeu
Solids, Total Dissolved TDS @ 180 C	10500	mg/L	D	100		A2540 C	01/15/18 16:23 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	39.5	mg/L	D	0.2		E353.2	01/17/18 14:09 / dmb
Nitrogen, Ammonia as N	23	mg/L	D	2		A4500-NH <sub>3</sub> G	01/16/18 16:58 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.18	mg/L	D	0.08		E200.8	01/18/18 19:32 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 19:32 / eli-b
Cadmium	0.001	mg/L		0.001		E200.8	01/18/18 19:32 / eli-b
Cobalt	0.026	mg/L		0.005		E200.8	01/18/18 19:32 / eli-b
Lead	0.001	mg/L		0.001		E200.8	01/18/18 19:32 / eli-b
Manganese	8.00	mg/L	D	0.004		E200.8	01/18/18 19:32 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 19:32 / eli-b
Nickel	0.105	mg/L		0.005		E200.8	01/18/18 19:32 / eli-b
Uranium	0.0089	mg/L		0.0003		E200.8	01/18/18 19:32 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 19:32 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	0.001	mg/L		0.001		E1632AM	01/23/18 01:15 / eli-h
Selenium-IV	0.003	mg/L		0.001		A3114 B	01/19/18 16:29 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	2.7	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U Precision (±)	0.8	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Lead 210	0.7	pCi/L	U			E909.0	01/26/18 01:35 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	01/26/18 01:35 / meh
Lead 210 MDC	1.5	pCi/L				E909.0	01/26/18 01:35 / meh
Radium 226	1.7	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 precision (±)	0.4	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 228	4.9	pCi/L				RA-05	02/05/18 14:05 / trs
Radium 228 precision (±)	1.5	pCi/L				RA-05	02/05/18 14:05 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-002  
**Client Sample ID:** 515-A

**Report Date:** 02/23/18  
**Collection Date:** 01/09/18 13:53  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.8	pCi/L				RA-05	02/05/18 14:05 / trs
Thorium 230	0.7	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 precision (±)	0.4	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 MDC	0.4	pCi/L				E908.0	02/02/18 10:24 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	9900	mg/L				A1030 E	01/31/18 10:31 / tjp
A/C Balance	-0.67	%				A1030 E	01/31/18 10:31 / tjp
Anions	163	meq/L				A1030 E	01/31/18 10:31 / tjp
Cations	161	meq/L				A1030 E	01/31/18 10:31 / tjp
TDS Ratio	1.06	unitless				A1030 E	01/31/18 10:31 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/22/18 15:50 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/22/18 15:50 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/22/18 15:50 / eli-b
Chloroform	151	ug/L		10		E624	01/23/18 08:41 / eli-b
Trihalomethanes, Total	151	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	110	%REC		71-139		E624	01/22/18 15:50 / eli-b
Surr: p-Bromofluorobenzene	109	%REC		80-127		E624	01/22/18 15:50 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	01/22/18 15:50 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-002  
**Client Sample ID:** 515-A

**Report Date:** 05/02/18  
**Collection Date:** 04/03/18 14:03  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	791	mg/L		5		A2320 B	04/09/18 00:44 / mvr
Chloride	396	mg/L	D	5		E300.0	04/09/18 22:05 / ljl
Sulfate	6730	mg/L	D	20		E300.0	04/09/18 22:05 / ljl
Calcium	448	mg/L		1		E200.7	04/11/18 15:13 / eli-b
Magnesium	1280	mg/L		1		E200.7	04/11/18 15:13 / eli-b
Potassium	16	mg/L		1		E200.7	04/11/18 15:13 / eli-b
Sodium	587	mg/L	D	2		E200.7	04/11/18 15:13 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.35	s.u.	H	0.01		A4500-H B	04/09/18 11:43 / jeu
Solids, Total Dissolved TDS @ 180 C	10700	mg/L	D	100		A2540 C	04/09/18 14:25 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	40	mg/L	D	1		E353.2	04/09/18 11:11 / dmb
Nitrogen, Ammonia as N	18	mg/L	D	2		A4500-NH3 G	04/11/18 13:52 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.17	mg/L		0.03		E200.8	04/12/18 00:09 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:09 / eli-b
Cadmium	0.001	mg/L		0.001		E200.8	04/12/18 00:09 / eli-b
Cobalt	0.023	mg/L		0.005		E200.8	04/12/18 00:09 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 00:09 / eli-b
Manganese	7.92	mg/L		0.001		E200.8	04/12/18 00:09 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 00:09 / eli-b
Nickel	0.106	mg/L		0.005		E200.8	04/12/18 00:09 / eli-b
Uranium	0.0070	mg/L		0.0003		E200.8	04/12/18 00:09 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:09 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 22:13 / eli-h
Selenium-IV	0.003	mg/L		0.001		A3114 C	04/19/18 13:17 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	10000	mg/L				A1030 E	04/20/18 10:41 / tjp
A/C Balance	-3.90	%				A1030 E	04/20/18 10:41 / tjp
Anions	167	meq/L				A1030 E	04/20/18 10:41 / tjp
Cations	155	meq/L				A1030 E	04/20/18 10:41 / tjp
TDS Ratio	1.07	unitless				A1030 E	04/20/18 10:41 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	4.5	pCi/L				E900.1	04/16/18 11:29 / cnh
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	04/16/18 11:29 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:29 / cnh
Lead 210	1.8	pCi/L				E909.0	04/12/18 04:09 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	04/12/18 04:09 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 1  
Lab ID: C18040249-002  
Client Sample ID: 515-A

Report Date: 05/02/18  
Collection Date: 04/03/18 14:03  
Date Received: 04/06/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L			E909.0		04/12/18 04:09 / meh
Radium 226	2.0	pCi/L			E903.0		04/23/18 10:49 / arh
Radium 226 precision (±)	0.4	pCi/L			E903.0		04/23/18 10:49 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		04/23/18 10:49 / arh
Radium 228	2.7	pCi/L			RA-05		04/18/18 11:30 / plj
Radium 228 precision (±)	0.9	pCi/L			RA-05		04/18/18 11:30 / plj
Radium 228 MDC	1.4	pCi/L			RA-05		04/18/18 11:30 / plj
Thorium 230	0.5	pCi/L			E908.0		04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.3	pCi/L			E908.0		04/19/18 11:42 / dmf
Thorium 230 MDC	0.4	pCi/L			E908.0		04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		04/13/18 19:13 / eli-b
Bromoform	ND	ug/L		0.50	E624		04/13/18 19:13 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		04/13/18 19:13 / eli-b
Chloroform	137	ug/L		10	E624		04/16/18 18:59 / eli-b
Trihalomethanes, Total	137	ug/L		0.50	E624		04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139	E624		04/13/18 19:13 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127	E624		04/13/18 19:13 / eli-b
Surr: Toluene-d8	91.0	%REC		80-123	E624		04/13/18 19:13 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





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United Nuclear Corporation

Zone 1

Well ID:		515-A	515-A	515-A	515-A
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/2/2018	2/23/2018	11/10/2017	8/16/2017
Analyte	Units	C18040249-002	C18010386-002	C17100295-002	C17070470-002
Bicarbonate as HCO <sub>3</sub>	mg/L	791	787	862	829
Chloride	mg/L	396	386	364	371
Sulfate	mg/L	6730	6550	5800	6040
Calcium	mg/L	448	453	455	433
Magnesium	mg/L	1280	1340	1320	1260
Potassium	mg/L	16	18	18	18
Sodium	mg/L	587	592	603	567
pH	s.u.	6.35	6.29	6.14	6.21
Solids, Total Dissolved TDS @ 180 C	mg/L	10700	10500	10000	10500
Nitrogen, Ammonia as N	mg/L	18	23	21	21
Nitrogen, Nitrate+Nitrite as N	mg/L	40	39.5	35.9	40.0
Aluminum	mg/L	0.17	0.18	0.2	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	0.001	0.001	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.023	0.026	0.02	0.02
Lead	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Manganese	mg/L	7.92	8.00	8.04	8.46
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.106	0.105	0.11	0.11
Uranium	mg/L	0.0070	0.0089	0.0093	0.0084
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.001	ND(0.001)	0.001
Selenium-IV	mg/L	0.003	0.003	0.003	0.003
A/C Balance	%	-3.90	-0.67	3.92	-0.17
Anions	meq/L	167	163	147	153
Cations	meq/L	155	161	159	152
Solids, Total Dissolved - Calculated	mg/L	10000	9900	9100	9300
TDS Ratio	unitless	1.07	1.06	1.09	1.13
Gross Alpha minus Rn & U	pCi/L	4.5	2.7	2.9	2.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.1	0.8	0.9	0.8
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	0.6	0.5
Lead 210	pCi/L	1.8	0.7	1.3	1.6
Lead 210 precision (±)	pCi/L	0.9	0.9	0.9	1.2
Lead 210 MDC	pCi/L	1.2	1.5	1.3	1.8
Radium 226	pCi/L	2.0	1.7	2.0	1.5
Radium 226 precision (±)	pCi/L	0.4	0.4	0.5	0.4
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	2.7	4.9	6.5	2.7
Radium 228 precision (±)	pCi/L	0.9	1.5	1.6	1.2
Radium 228 MDC	pCi/L	1.4	1.8	1.7	1.9
Thorium 230	pCi/L	0.5	0.7	-0.0005	0.2
Thorium 230 precision (±)	pCi/L	0.3	0.4	0.09	0.2
Thorium 230 MDC	pCi/L	0.4	0.4	0.2	0.3
Trihalomethanes, Total	ug/L	137	151	305	340

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-003  
**Client Sample ID:** 604

**Report Date:** 02/23/18  
**Collection Date:** 01/09/18 14:54  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	26	mg/L		5		A2320 B	01/15/18 19:31 / mvr
Chloride	98	mg/L	D	2		E300.0	01/16/18 05:16 / ljl
Sulfate	4830	mg/L	D	8		E300.0	01/16/18 05:16 / ljl
Calcium	439	mg/L		1		E200.7	01/18/18 00:44 / eli-b
Magnesium	811	mg/L		1		E200.7	01/18/18 00:44 / eli-b
Potassium	11	mg/L		1		E200.7	01/22/18 14:11 / eli-b
Sodium	309	mg/L	D	3		E200.7	01/19/18 00:39 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	5.65	s.u.	H	0.01		A4500-H B	01/15/18 12:44 / jeu
Solids, Total Dissolved TDS @ 180 C	7140	mg/L	D	100		A2540 C	01/15/18 16:24 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	56.5	mg/L	D	0.2		E353.2	01/17/18 14:10 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/16/18 17:00 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.14	mg/L	D	0.04		E200.8	01/18/18 19:34 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 19:34 / eli-b
Cadmium	0.002	mg/L		0.001		E200.8	01/18/18 19:34 / eli-b
Cobalt	0.112	mg/L		0.005		E200.8	01/18/18 19:34 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 19:34 / eli-b
Manganese	4.19	mg/L	D	0.002		E200.8	01/18/18 19:34 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 19:34 / eli-b
Nickel	0.204	mg/L		0.005		E200.8	01/18/18 19:34 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	01/18/18 19:34 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 19:34 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 01:27 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:30 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.9	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Lead 210	-0.8	pCi/L	U			E909.0	01/26/18 03:55 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	01/26/18 03:55 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	01/26/18 03:55 / meh
Radium 226	1.1	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 precision (±)	0.3	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 228	5.4	pCi/L				RA-05	02/05/18 14:05 / trs
Radium 228 precision (±)	1.6	pCi/L				RA-05	02/05/18 14:05 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-003  
**Client Sample ID:** 604

**Report Date:** 02/23/18  
**Collection Date:** 01/09/18 14:54  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.7	pCi/L				RA-05	02/05/18 14:05 / trs
Thorium 230	0.2	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	02/02/18 10:24 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6800	mg/L				A1030 E	01/31/18 10:32 / tjp
A/C Balance	-2.62	%				A1030 E	01/31/18 10:32 / tjp
Anions	108	meq/L				A1030 E	01/31/18 10:32 / tjp
Cations	102	meq/L				A1030 E	01/31/18 10:32 / tjp
TDS Ratio	1.05	unitless				A1030 E	01/31/18 10:32 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 09:09 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 09:09 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 09:09 / eli-b
Chloroform	17	ug/L		0.50		E624	01/23/18 09:09 / eli-b
Trihalomethanes, Total	17	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	109	%REC		71-139		E624	01/23/18 09:09 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127		E624	01/23/18 09:09 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	01/23/18 09:09 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-003  
**Client Sample ID:** 604

**Report Date:** 05/02/18  
**Collection Date:** 04/03/18 15:07  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	28	mg/L		5		A2320 B	04/09/18 00:51 / mvr
Chloride	105	mg/L	D	2		E300.0	04/09/18 23:00 / ljl
Sulfate	4920	mg/L	D	8		E300.0	04/09/18 23:00 / ljl
Calcium	452	mg/L		1		E200.7	04/11/18 15:17 / eli-b
Magnesium	781	mg/L		1		E200.7	04/11/18 15:17 / eli-b
Potassium	11	mg/L		1		E200.7	04/11/18 15:17 / eli-b
Sodium	302	mg/L	D	2		E200.7	04/11/18 15:17 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	5.53	s.u.	H	0.01		A4500-H B	04/09/18 11:49 / jeu
Solids, Total Dissolved TDS @ 180 C	7380	mg/L	D	100		A2540 C	04/09/18 14:25 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	62	mg/L	D	1		E353.2	04/09/18 11:12 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	04/11/18 13:53 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.87	mg/L		0.03		E200.8	04/12/18 00:12 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:12 / eli-b
Cadmium	0.002	mg/L		0.001		E200.8	04/12/18 00:12 / eli-b
Cobalt	0.097	mg/L		0.005		E200.8	04/12/18 00:12 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 00:12 / eli-b
Manganese	4.06	mg/L		0.001		E200.8	04/12/18 00:12 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 00:12 / eli-b
Nickel	0.195	mg/L		0.005		E200.8	04/12/18 00:12 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	04/12/18 00:12 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:12 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 22:25 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:18 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6900	mg/L				A1030 E	04/20/18 10:41 / tjp
A/C Balance	-4.71	%				A1030 E	04/20/18 10:41 / tjp
Anions	110	meq/L				A1030 E	04/20/18 10:41 / tjp
Cations	100	meq/L				A1030 E	04/20/18 10:41 / tjp
TDS Ratio	1.07	unitless				A1030 E	04/20/18 10:41 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	2.0	pCi/L				E900.1	04/16/18 11:29 / cnh
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	04/16/18 11:29 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:29 / cnh
Lead 210	1.0	pCi/L	U			E909.0	04/12/18 07:17 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/12/18 07:17 / meh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 1  
Lab ID: C18040249-003  
Client Sample ID: 604

Report Date: 05/02/18  
Collection Date: 04/03/18 15:07  
Date Received: 04/06/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.1	pCi/L				E909.0	04/12/18 07:17 / meh
Radium 226	1.3	pCi/L				E903.0	04/23/18 10:49 / arh
Radium 226 precision (±)	0.3	pCi/L				E903.0	04/23/18 10:49 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 10:49 / arh
Radium 228	4.2	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	04/18/18 11:30 / plj
Thorium 230	0.03	pCi/L		U		E908.0	04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.08	pCi/L				E908.0	04/19/18 11:42 / dmf
Thorium 230 MDC	0.1	pCi/L				E908.0	04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/16/18 13:32 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/16/18 13:32 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/16/18 13:32 / eli-b
Chloroform	12	ug/L		0.50		E624	04/16/18 13:32 / eli-b
Trihalomethanes, Total	12	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	95.0	%REC		71-139		E624	04/16/18 13:32 / eli-b
Surr: p-Bromofluorobenzene	94.0	%REC		80-127		E624	04/16/18 13:32 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123		E624	04/16/18 13:32 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 1

Well ID:		604	604	604	604
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/2/2018	2/23/2018	11/10/2017	8/16/2017
Analyte	Units	C18040249-003	C18010386-003	C17100295-003	C17070470-003
Bicarbonate as HCO <sub>3</sub>	mg/L	28	26	31	29
Chloride	mg/L	105	98	96	94
Sulfate	mg/L	4920	4830	4380	4430
Calcium	mg/L	452	439	445	480
Magnesium	mg/L	781	811	803	863
Potassium	mg/L	11	11	12	12
Sodium	mg/L	302	309	308	321
pH	s.u.	5.53	5.65	5.43	5.62
Solids, Total Dissolved TDS @ 180 C	mg/L	7380	7140	6850	6930
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	62	56.5	55.5	59.5
Aluminum	mg/L	0.87	0.14	1.0	0.6
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.001
Cadmium	mg/L	0.002	0.002	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.097	0.112	0.11	0.10
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	4.06	4.19	4.04	3.86
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.195	0.204	0.22	0.21
Uranium	mg/L	ND(0.0003)	ND(0.0003)	0.0004	0.0007
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-4.71	-2.62	1.65	4.54
Anions	meq/L	110	108	98.7	99.8
Cations	meq/L	100	102	102	109
Solids, Total Dissolved - Calculated	mg/L	6900	6800	6400	6500
TDS Ratio	unitless	1.07	1.05	1.08	1.07
Gross Alpha minus Rn & U	pCi/L	2.0	1.9	1.9	1.0
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.7	0.7	0.7	0.5
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	0.6	0.5
Lead 210	pCi/L	1.0	-0.8	0.6	0.6
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.7
Lead 210 MDC	pCi/L	1.1	1.4	1.3	1.2
Radium 226	pCi/L	1.3	1.1	1.3	1.0
Radium 226 precision (±)	pCi/L	0.3	0.3	0.3	0.3
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	4.2	5.4	5.8	2.5
Radium 228 precision (±)	pCi/L	1.1	1.6	1.4	1.1
Radium 228 MDC	pCi/L	1.3	1.7	1.3	1.9
Thorium 230	pCi/L	0.03	0.2	0.0009	0.1
Thorium 230 precision (±)	pCi/L	0.08	0.1	0.08	0.1
Thorium 230 MDC	pCi/L	0.1	0.1	0.2	0.1
Trihalomethanes, Total	ug/L	12	17	13	12

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-001  
**Client Sample ID:** 614

**Report Date:** 02/23/18  
**Collection Date:** 01/09/18 12:34  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	825	mg/L		5		A2320 B	01/15/18 19:14 / mvr
Chloride	301	mg/L	D	5		E300.0	01/16/18 04:40 / ljl
Sulfate	3660	mg/L	D	20		E300.0	01/16/18 04:40 / ljl
Calcium	538	mg/L		1		E200.7	01/18/18 00:36 / eli-b
Magnesium	686	mg/L		1		E200.7	01/18/18 00:36 / eli-b
Potassium	15	mg/L		1		E200.7	01/19/18 19:48 / eli-b
Sodium	446	mg/L	D	3		E200.7	01/19/18 00:31 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.53	s.u.	H	0.01		A4500-H B	01/15/18 12:38 / jeu
Solids, Total Dissolved TDS @ 180 C	7280	mg/L	D	100		A2540 C	01/15/18 16:23 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	163	mg/L	D	0.5		E353.2	01/19/18 12:11 / dmb
Nitrogen, Ammonia as N	82	mg/L	D	5		A4500-NH <sub>3</sub> G	01/16/18 16:57 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.04	mg/L	D	0.04		E200.8	01/18/18 19:29 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 19:29 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 19:29 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 19:29 / eli-b
Lead	0.003	mg/L		0.001		E200.8	01/18/18 19:29 / eli-b
Manganese	0.889	mg/L	D	0.002		E200.8	01/18/18 19:29 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 19:29 / eli-b
Nickel	0.008	mg/L		0.005		E200.8	01/18/18 19:29 / eli-b
Uranium	0.0466	mg/L		0.0003		E200.8	01/18/18 19:29 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 19:29 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 20:48 / eli-h
Selenium-IV	0.002	mg/L		0.001		A3114 B	01/19/18 16:24 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1	pCi/L				E900.1	02/06/18 10:14 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	02/06/18 10:14 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 10:14 / dmf
Lead 210	-0.6	pCi/L	U			E909.0	01/25/18 21:05 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	01/25/18 21:05 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	01/25/18 21:05 / meh
Radium 226	0.6	pCi/L				E903.0	02/12/18 10:07 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/12/18 10:07 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/12/18 10:07 / arh
Radium 228	3.5	pCi/L				RA-05	02/05/18 14:05 / trs
Radium 228 precision (±)	1.3	pCi/L				RA-05	02/05/18 14:05 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-001  
**Client Sample ID:** 614

**Report Date:** 02/23/18  
**Collection Date:** 01/09/18 12:34  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.6	pCi/L				RA-05	02/05/18 14:05 / trs
Thorium 230	0.2	pCi/L	U			E908.0	02/06/18 09:51 / cnh
Thorium 230 precision (±)	0.2	pCi/L				E908.0	02/06/18 09:51 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/06/18 09:51 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6800	mg/L				A1030 E	01/31/18 10:31 / tjp
A/C Balance	-0.37	%				A1030 E	01/31/18 10:31 / tjp
Anions	110	meq/L				A1030 E	01/31/18 10:31 / tjp
Cations	109	meq/L				A1030 E	01/31/18 10:31 / tjp
TDS Ratio	1.07	unitless				A1030 E	01/31/18 10:31 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/22/18 15:21 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/22/18 15:21 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/22/18 15:21 / eli-b
Chloroform	46	ug/L		5.0		E624	01/22/18 17:15 / eli-b
Trihalomethanes, Total	46	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	01/22/18 15:21 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127		E624	01/22/18 15:21 / eli-b
Surr: Toluene-d8	122	%REC		80-123		E624	01/22/18 15:21 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-001  
**Client Sample ID:** 614

**Report Date:** 05/02/18  
**Collection Date:** 04/03/18 12:50  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	825	mg/L		5		A2320 B	04/09/18 00:35 / mvr
Chloride	315	mg/L	D	5		E300.0	04/09/18 21:46 / ljl
Sulfate	3730	mg/L	D	20		E300.0	04/09/18 21:46 / ljl
Calcium	551	mg/L		1		E200.7	04/11/18 15:09 / eli-b
Magnesium	665	mg/L		1		E200.7	04/11/18 15:09 / eli-b
Potassium	14	mg/L		1		E200.7	04/11/18 15:09 / eli-b
Sodium	465	mg/L	D	2		E200.7	04/11/18 15:09 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.58	s.u.	H	0.01		A4500-H B	04/09/18 11:27 / jeu
Solids, Total Dissolved TDS @ 180 C	7240	mg/L	D	100		A2540 C	04/09/18 14:24 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	178	mg/L	D	1		E353.2	04/09/18 11:10 / dmb
Nitrogen, Ammonia as N	83	mg/L	D	5		A4500-NH <sub>3</sub> G	04/11/18 13:51 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/12/18 00:06 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:06 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 00:06 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/12/18 00:06 / eli-b
Lead	0.003	mg/L		0.001		E200.8	04/12/18 00:06 / eli-b
Manganese	0.924	mg/L		0.001		E200.8	04/12/18 00:06 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 00:06 / eli-b
Nickel	0.010	mg/L		0.005		E200.8	04/12/18 00:06 / eli-b
Uranium	0.0407	mg/L		0.0003		E200.8	04/12/18 00:06 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:06 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 22:01 / eli-h
Selenium-IV	0.002	mg/L		0.001		A3114 C	04/19/18 13:12 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7000	mg/L				A1030 E	04/20/18 10:40 / tjp
A/C Balance	-1.77	%				A1030 E	04/20/18 10:40 / tjp
Anions	113	meq/L				A1030 E	04/20/18 10:40 / tjp
Cations	109	meq/L				A1030 E	04/20/18 10:40 / tjp
TDS Ratio	1.04	unitless				A1030 E	04/20/18 10:40 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.9	pCi/L				E900.1	04/16/18 11:29 / cnh
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	04/16/18 11:29 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:29 / cnh
Lead 210	0.3	pCi/L	U			E909.0	04/11/18 22:21 / meh
Lead 210 precision (±)	0.6	pCi/L				E909.0	04/11/18 22:21 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-001  
**Client Sample ID:** 614

**Report Date:** 05/02/18  
**Collection Date:** 04/03/18 12:50  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.1	pCi/L				E909.0	04/11/18 22:21 / meh
Radium 226	0.9	pCi/L				E903.0	04/23/18 10:49 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 10:49 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 10:49 / arh
Radium 228	2.6	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 precision (±)	0.9	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	04/18/18 11:30 / plj
Thorium 230	0.03	pCi/L	U			E908.0	04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/19/18 11:42 / dmf
Thorium 230 MDC	0.3	pCi/L				E908.0	04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/13/18 18:43 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/13/18 18:43 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/13/18 18:43 / eli-b
Chloroform	46	ug/L		5.0		E624	04/16/18 18:29 / eli-b
Trihalomethanes, Total	46	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	04/13/18 18:43 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127		E624	04/13/18 18:43 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	04/13/18 18:43 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 1

Well ID:		614	614	614	614
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/2/2018	2/23/2018	11/10/2017	8/16/2017
Analyte	Units	C18040249-001	C18010386-001	C17100295-001	C17070470-001
Bicarbonate as HCO <sub>3</sub>	mg/L	825	825	976	976
Chloride	mg/L	315	301	292	285
Sulfate	mg/L	3730	3660	3360	3400
Calcium	mg/L	551	538	555	555
Magnesium	mg/L	665	686	680	691
Potassium	mg/L	14	15	14	14
Sodium	mg/L	465	446	468	453
pH	s.u.	6.58	6.53	6.57	6.49
Solids, Total Dissolved TDS @ 180 C	mg/L	7240	7280	6930	7000
Nitrogen, Ammonia as N	mg/L	83	82	73	57
Nitrogen, Nitrate+Nitrite as N	mg/L	178	163	160	197
Aluminum	mg/L	ND(0.03)	0.04	0.1	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	0.003	0.003	0.005	0.004
Manganese	mg/L	0.924	0.889	0.93	1.07
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.010	0.008	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0407	0.0466	0.0464	0.0393
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	0.002	0.002	0.002	
A/C Balance	%	-1.77	-0.37	1.44	0.58
Anions	meq/L	113	110	106	107
Cations	meq/L	109	109	110	109
Solids, Total Dissolved - Calculated	mg/L	7000	6800	6600	6700
TDS Ratio	unitless	1.04	1.07	1.04	1.05
Gross Alpha minus Rn & U	pCi/L	1.9	1	1.1	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.6	0.4	0.5	0.4
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	0.6	0.5
Lead 210	pCi/L	0.3	-0.6	0	0.3
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.7
Lead 210 MDC	pCi/L	1.1	1.4	1.3	1.2
Radium 226	pCi/L	0.9	0.6	0.7	0.7
Radium 226 precision (±)	pCi/L	0.2	0.1	0.2	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	2.6	3.5	4.4	4.2
Radium 228 precision (±)	pCi/L	0.9	1.3	1.2	1.3
Radium 228 MDC	pCi/L	1.3	1.6	1.3	1.8
Thorium 230	pCi/L	0.03	0.2	0.07	0.1
Thorium 230 precision (±)	pCi/L	0.1	0.2	0.08	0.1
Thorium 230 MDC	pCi/L	0.3	0.2	0.1	0.2
Trihalomethanes, Total	ug/L	46	46	42	71

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-009  
**Client Sample ID:** TWQ-142

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 10:40  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	294	mg/L		5		A2320 B	01/15/18 20:26 / mvr
Chloride	18	mg/L		1		E300.0	01/16/18 08:18 / ljl
Sulfate	768	mg/L	D	2		E300.0	01/16/18 08:18 / ljl
Calcium	68	mg/L		1		E200.7	01/18/18 01:23 / eli-b
Magnesium	35	mg/L		1		E200.7	01/18/18 01:23 / eli-b
Potassium	4	mg/L		1		E200.7	01/22/18 15:26 / eli-b
Sodium	337	mg/L		1		E200.7	01/19/18 01:18 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	7.48	s.u.	H	0.01		A4500-H B	01/15/18 13:04 / jeu
Solids, Total Dissolved TDS @ 180 C	1340	mg/L	D	20		A2540 C	01/15/18 16:25 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.41	mg/L		0.01		E353.2	01/17/18 14:21 / dmb
Nitrogen, Ammonia as N	0.06	mg/L		0.05		A4500-NH3 G	01/16/18 17:11 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.07	mg/L		0.03		E200.8	01/18/18 19:57 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 19:57 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 19:57 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 19:57 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 19:57 / eli-b
Manganese	0.050	mg/L		0.001		E200.8	01/18/18 19:57 / eli-b
Molybdenum	0.004	mg/L		0.001		E200.8	01/18/18 19:57 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/18/18 19:57 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	01/18/18 19:57 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 19:57 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 02:39 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:43 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.0	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Lead 210	-0.8	pCi/L	U			E909.0	01/26/18 19:29 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	01/26/18 19:29 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	01/26/18 19:29 / meh
Radium 226	0.7	pCi/L				E903.0	02/12/18 11:40 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	02/12/18 11:40 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/12/18 11:40 / arh
Radium 228	1.7	pCi/L	U			RA-05	02/05/18 14:05 / trs
Radium 228 precision (±)	1.2	pCi/L				RA-05	02/05/18 14:05 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-009  
**Client Sample ID:** TWQ-142

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 10:40  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.9	pCi/L				RA-05	02/05/18 14:05 / trs
Thorium 230	0.05	pCi/L	U			E908.0	02/02/18 10:26 / cnh
Thorium 230 precision (±)	0.08	pCi/L				E908.0	02/02/18 10:26 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	02/02/18 10:26 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	1400	mg/L				A1030 E	01/31/18 10:34 / tjp
A/C Balance	-0.75	%				A1030 E	01/31/18 10:34 / tjp
Anions	21.4	meq/L				A1030 E	01/31/18 10:34 / tjp
Cations	21.1	meq/L				A1030 E	01/31/18 10:34 / tjp
TDS Ratio	0.96	unitless				A1030 E	01/31/18 10:34 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 13:45 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 13:45 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 13:45 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/23/18 13:45 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	108	%REC		71-139		E624	01/23/18 13:45 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	01/23/18 13:45 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	01/23/18 13:45 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-009  
**Client Sample ID:** TWQ-142

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 10:46  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	292	mg/L		5		A2320 B	04/09/18 01:47 / mvr
Chloride	18	mg/L		1		E300.0	04/10/18 01:27 / ljl
Sulfate	758	mg/L	D	2		E300.0	04/10/18 01:27 / ljl
Calcium	63	mg/L		1		E200.7	04/11/18 16:00 / eli-b
Magnesium	32	mg/L		1		E200.7	04/11/18 16:00 / eli-b
Potassium	4	mg/L		1		E200.7	04/11/18 16:00 / eli-b
Sodium	307	mg/L		1		E200.7	04/11/18 16:00 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	7.49	s.u.	H	0.01		A4500-H B	04/09/18 12:13 / jeu
Solids, Total Dissolved TDS @ 180 C	1370	mg/L	D	20		A2540 C	04/09/18 14:26 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.48	mg/L		0.01		E353.2	04/09/18 11:24 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	04/11/18 14:05 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.11	mg/L		0.03		E200.8	04/12/18 00:36 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:36 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 00:36 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/12/18 00:36 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 00:36 / eli-b
Manganese	0.054	mg/L		0.001		E200.8	04/12/18 00:36 / eli-b
Molybdenum	0.003	mg/L		0.001		E200.8	04/12/18 00:36 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/12/18 00:36 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	04/12/18 00:36 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:36 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 23:37 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:28 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	1300	mg/L				A1030 E	04/20/18 10:43 / tjp
A/C Balance	-4.72	%				A1030 E	04/20/18 10:43 / tjp
Anions	21.1	meq/L				A1030 E	04/20/18 10:43 / tjp
Cations	19.2	meq/L				A1030 E	04/20/18 10:43 / tjp
TDS Ratio	1.02	unitless				A1030 E	04/20/18 10:43 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:30 / cnh
Lead 210	-0.4	pCi/L	U			E909.0	04/13/18 03:23 / meh
Lead 210 precision (±)	0.6	pCi/L				E909.0	04/13/18 03:23 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-009  
**Client Sample ID:** TWQ-142

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 10:46  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.1	pCi/L				E909.0	04/13/18 03:23 / meh
Radium 226	0.7	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 228	3.2	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 precision (±)	1.3	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 MDC	1.4	pCi/L				RA-05	04/18/18 11:30 / plj
Thorium 230	0.003	pCi/L		U		E908.0	04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/19/18 11:42 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/13/18 17:15 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/13/18 17:15 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/13/18 17:15 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/13/18 17:15 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	04/13/18 17:15 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	04/13/18 17:15 / eli-b
Surr: Toluene-d8	89.0	%REC		80-123		E624	04/13/18 17:15 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 1

Well ID:		TMQ-142	TMQ-142	TMQ-142	TMQ-142
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/2/2018	2/23/2018	11/10/2017	8/16/2017
Analyte	Units	C18040249-009	C18010386-009	C17100295-009	C17070470-009
Bicarbonate as HCO <sub>3</sub>	mg/L	292	294	346	305
Chloride	mg/L	18	18	17	17
Sulfate	mg/L	758	768	667	676
Calcium	mg/L	63	68	66	63
Magnesium	mg/L	32	35	34	32
Potassium	mg/L	4	4	4	4
Sodium	mg/L	307	337	315	299
pH	s.u.	7.49	7.48	7.40	7.44
Solids, Total Dissolved TDS @ 180 C	mg/L	1370	1340	1310	1310
Nitrogen, Ammonia as N	mg/L	ND(0.05)	0.06	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	0.48	0.41	0.49	0.54
Aluminum	mg/L	0.11	0.07	ND(0.1)	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.054	0.050	0.04	0.02
Molybdenum	mg/L	0.003	0.004	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	ND(0.0003)	ND(0.0003)	ND(0.0003)	0.0007
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-4.72	-0.75	-0.55	-1.89
Anions	meq/L	21.1	21.4	20.1	19.6
Cations	meq/L	19.2	21.1	19.8	18.9
Solids, Total Dissolved - Calculated	mg/L	1300	1400	1300	1300
TDS Ratio	unitless	1.02	0.96	1.02	1.04
Gross Alpha minus Rn & U	pCi/L	1	1.0	0.8	1
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.5	0.4	0.4
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	0.5	0.5
Lead 210	pCi/L	-0.4	-0.8	1	0.5
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.7
Lead 210 MDC	pCi/L	1.1	1.4	1.3	1.2
Radium 226	pCi/L	0.7	0.7	0.7	0.7
Radium 226 precision (±)	pCi/L	0.2	0.2	0.2	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	3.2	1.7	2.9	0.8
Radium 228 precision (±)	pCi/L	1.3	1.2	1.2	1.3
Radium 228 MDC	pCi/L	1.4	1.9	1.7	2.2
Thorium 230	pCi/L	0.003	0.05	0.07	-0.003
Thorium 230 precision (±)	pCi/L	0.1	0.08	0.1	0.09
Thorium 230 MDC	pCi/L	0.2	0.1	0.2	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-007  
**Client Sample ID:** EPA-2

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 09:28  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	263	mg/L		5		A2320 B	01/15/18 20:01 / mvr
Chloride	25	mg/L		1		E300.0	01/16/18 07:41 / ljl
Sulfate	2170	mg/L	D	4		E300.0	01/16/18 07:41 / ljl
Calcium	421	mg/L		1		E200.7	01/18/18 01:15 / eli-b
Magnesium	203	mg/L		1		E200.7	01/18/18 01:15 / eli-b
Potassium	8	mg/L		1		E200.7	01/22/18 14:27 / eli-b
Sodium	233	mg/L	D	2		E200.7	01/19/18 01:10 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.96	s.u.	H	0.01		A4500-H B	01/15/18 12:58 / jeu
Solids, Total Dissolved TDS @ 180 C	3230	mg/L	D	40		A2540 C	01/15/18 16:24 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	01/17/18 14:15 / dmb
Nitrogen, Ammonia as N	0.34	mg/L		0.05		A4500-NH <sub>3</sub> G	01/16/18 17:09 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/18/18 19:52 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 19:52 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 19:52 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 19:52 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 19:52 / eli-b
Manganese	1.86	mg/L		0.001		E200.8	01/18/18 19:52 / eli-b
Molybdenum	0.001	mg/L		0.001		E200.8	01/18/18 19:52 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/18/18 19:52 / eli-b
Uranium	0.0014	mg/L		0.0003		E200.8	01/18/18 19:52 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 19:52 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 02:15 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:40 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	2.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U Precision (±)	0.8	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Lead 210	0.5	pCi/L	U			E909.0	01/29/18 23:09 / meh
Lead 210 precision (±)	0.6	pCi/L				E909.0	01/29/18 23:09 / meh
Lead 210 MDC	1.0	pCi/L				E909.0	01/29/18 23:09 / meh
Radium 226	1.2	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 precision (±)	0.3	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 228	3.0	pCi/L				RA-05	02/05/18 14:05 / trs
Radium 228 precision (±)	1.5	pCi/L				RA-05	02/05/18 14:05 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-007  
**Client Sample ID:** EPA-2

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 09:28  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	2.0	pCi/L				RA-05	02/05/18 14:05 / trs
Thorium 230	0.2	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/02/18 10:24 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3200	mg/L				A1030 E	01/31/18 10:33 / tjp
A/C Balance	-2.08	%				A1030 E	01/31/18 10:33 / tjp
Anions	50.1	meq/L				A1030 E	01/31/18 10:33 / tjp
Cations	48.1	meq/L				A1030 E	01/31/18 10:33 / tjp
TDS Ratio	1.01	unitless				A1030 E	01/31/18 10:33 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 11:35 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 11:35 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 11:35 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/23/18 11:35 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	111	%REC		71-139		E624	01/23/18 11:35 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	01/23/18 11:35 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	01/23/18 11:35 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-007  
**Client Sample ID:** EPA-2

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 09:34  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	273	mg/L		5		A2320 B	04/09/18 01:23 / mvr
Chloride	27	mg/L		1		E300.0	04/10/18 00:50 / ljl
Sulfate	2180	mg/L	D	4		E300.0	04/10/18 00:50 / ljl
Calcium	432	mg/L		1		E200.7	04/11/18 15:53 / eli-b
Magnesium	200	mg/L		1		E200.7	04/11/18 15:53 / eli-b
Potassium	7	mg/L		1		E200.7	04/11/18 15:53 / eli-b
Sodium	209	mg/L		1		E200.7	04/11/18 15:53 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.87	s.u.	H	0.01		A4500-H B	04/09/18 12:05 / jeu
Solids, Total Dissolved TDS @ 180 C	3380	mg/L	D	20		A2540 C	04/09/18 14:26 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.04	mg/L		0.01		E353.2	04/09/18 11:22 / dmb
Nitrogen, Ammonia as N	0.28	mg/L		0.05		A4500-NH <sub>3</sub> G	04/11/18 14:03 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/12/18 00:30 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:30 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 00:30 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/12/18 00:30 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 00:30 / eli-b
Manganese	1.99	mg/L		0.001		E200.8	04/12/18 00:30 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 00:30 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/12/18 00:30 / eli-b
Uranium	0.0007	mg/L		0.0003		E200.8	04/12/18 00:30 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:30 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 23:13 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:25 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3200	mg/L				A1030 E	04/20/18 10:42 / tjp
A/C Balance	-3.40	%				A1030 E	04/20/18 10:42 / tjp
Anions	50.6	meq/L				A1030 E	04/20/18 10:42 / tjp
Cations	47.3	meq/L				A1030 E	04/20/18 10:42 / tjp
TDS Ratio	1.05	unitless				A1030 E	04/20/18 10:42 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.6	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:30 / cnh
Lead 210	0.5	pCi/L	U			E909.0	04/12/18 20:28 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	04/12/18 20:28 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-007  
**Client Sample ID:** EPA-2

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 09:34  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.1	pCi/L				E909.0	04/12/18 20:28 / meh
Radium 226	1.2	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 226 precision (±)	0.3	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 228	8.3	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 precision (±)	1.9	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 MDC	1.4	pCi/L				RA-05	04/18/18 11:30 / plj
Thorium 230	0.1	pCi/L	U			E908.0	04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/19/18 11:42 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/13/18 16:16 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/13/18 16:16 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/13/18 16:16 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/13/18 16:16 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	04/13/18 16:16 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127		E624	04/13/18 16:16 / eli-b
Surr: Toluene-d8	94.0	%REC		80-123		E624	04/13/18 16:16 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration





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United Nuclear Corporation

Zone 1

Well ID:		EPA-2	EPA-2	EPA-2	EPA-2
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/2/2018	2/23/2018	11/10/2017	8/16/2017
Analyte	Units	C18040249-007	C18010386-007	C17100295-007	C17070470-007
Bicarbonate as HCO <sub>3</sub>	mg/L	273	263	290	287
Chloride	mg/L	27	25	24	24
Sulfate	mg/L	2180	2170	1890	1850
Calcium	mg/L	432	421	406	380
Magnesium	mg/L	200	203	194	177
Potassium	mg/L	7	8	7	7
Sodium	mg/L	209	233	207	191
pH	s.u.	6.87	6.96	6.93	7.00
Solids, Total Dissolved TDS @ 180 C	mg/L	3380	3230	3200	3060
Nitrogen, Ammonia as N	mg/L	0.28	0.34	0.27	0.08
Nitrogen, Nitrate+Nitrite as N	mg/L	0.04	ND(0.01)	0.10	0.07
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.004
Manganese	mg/L	1.99	1.86	1.83	1.76
Molybdenum	mg/L	ND(0.001)	0.001	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0007	0.0014	0.0013	0.0018
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-3.40	-2.08	0.56	-2.19
Anions	meq/L	50.6	50.1	44.9	43.9
Cations	meq/L	47.3	48.1	45.4	42.0
Solids, Total Dissolved - Calculated	mg/L	3200	3200	2900	2800
TDS Ratio	unitless	1.05	1.01	1.10	1.10
Gross Alpha minus Rn & U	pCi/L	1.6	2.5	1.8	1.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.6	0.8	0.7	0.6
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	0.5	0.5
Lead 210	pCi/L	0.5	0.5	1.1	1.6
Lead 210 precision (±)	pCi/L	0.7	0.6	0.9	0.9
Lead 210 MDC	pCi/L	1.1	1.0	1.3	1.3
Radium 226	pCi/L	1.2	1.2	1.5	1.1
Radium 226 precision (±)	pCi/L	0.3	0.3	0.4	0.3
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	8.3	3.0	5.6	3.1
Radium 228 precision (±)	pCi/L	1.9	1.5	1.5	1.3
Radium 228 MDC	pCi/L	1.4	2.0	1.4	1.8
Thorium 230	pCi/L	0.1	0.2	0.1	-0.008
Thorium 230 precision (±)	pCi/L	0.1	0.1	0.1	0.08
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

NOTE: The data presented on this form is intended for summary only. Laboratory approved data is contained within the database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-006  
**Client Sample ID:** EPA-4

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 08:21  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	146	mg/L		5		A2320 B	01/15/18 19:53 / mvr
Chloride	36	mg/L	D	2		E300.0	01/16/18 06:47 / ljl
Sulfate	3120	mg/L	D	8		E300.0	01/16/18 06:47 / ljl
Calcium	488	mg/L		1		E200.7	01/18/18 01:11 / eli-b
Magnesium	399	mg/L		1		E200.7	01/18/18 01:11 / eli-b
Potassium	9	mg/L		1		E200.7	01/22/18 14:23 / eli-b
Sodium	179	mg/L	D	2		E200.7	01/19/18 00:50 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.93	s.u.	H	0.01		A4500-H B	01/15/18 12:55 / jeu
Solids, Total Dissolved TDS @ 180 C	4380	mg/L	D	40		A2540 C	01/15/18 16:24 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.38	mg/L		0.01		E353.2	01/17/18 14:14 / dmb
Nitrogen, Ammonia as N	0.13	mg/L		0.05		A4500-NH3 G	01/16/18 17:06 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/29/18 14:57 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 19:43 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 19:43 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 19:43 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 19:43 / eli-b
Manganese	3.46	mg/L	D	0.002		E200.8	01/18/18 19:43 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 19:43 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/18/18 19:43 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	01/18/18 19:43 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 19:43 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 02:03 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:38 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	2.0	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Lead 210	-1	pCi/L	U			E909.0	01/26/18 11:56 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	01/26/18 11:56 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	01/26/18 11:56 / meh
Radium 226	1.2	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 precision (±)	0.3	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 228	3.4	pCi/L				RA-05	02/05/18 14:05 / trs
Radium 228 precision (±)	1.4	pCi/L				RA-05	02/05/18 14:05 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-006  
**Client Sample ID:** EPA-4

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 08:21  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.8	pCi/L				RA-05	02/05/18 14:05 / trs
Thorium 230	0.2	pCi/L	U			E908.0	02/02/18 10:24 / cnh
Thorium 230 precision (±)	0.2	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/02/18 10:24 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4300	mg/L				A1030 E	01/31/18 10:33 / tjp
A/C Balance	-2.30	%				A1030 E	01/31/18 10:33 / tjp
Anions	68.3	meq/L				A1030 E	01/31/18 10:33 / tjp
Cations	65.2	meq/L				A1030 E	01/31/18 10:33 / tjp
TDS Ratio	1.01	unitless				A1030 E	01/31/18 10:33 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 10:38 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 10:38 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 10:38 / eli-b
Chloroform	0.27	ug/L	J	0.50		E624	01/23/18 10:38 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	108	%REC		71-139		E624	01/23/18 10:38 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127		E624	01/23/18 10:38 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	01/23/18 10:38 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
J - Estimated value. The analyte was present but less than the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-006  
**Client Sample ID:** EPA-4

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 08:26  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	156	mg/L	H	5		A2320 B	04/20/18 16:35 / ljl
Chloride	36	mg/L	D	2		E300.0	04/20/18 18:51 / ljl
Sulfate	3020	mg/L	D	8		E300.0	04/20/18 18:51 / ljl
Calcium	497	mg/L		1		E200.7	04/23/18 14:46 / eli-b
Magnesium	388	mg/L		1		E200.7	04/23/18 14:46 / eli-b
Potassium	9	mg/L		1		E200.7	04/23/18 14:46 / eli-b
Sodium	185	mg/L		1		E200.7	04/23/18 14:46 / eli-b
- H-Original analysis was done within hold time. Data is from recheck analysis.							
<b>PHYSICAL PROPERTIES</b>							
pH	6.70	s.u.	H	0.01		A4500-H B	04/09/18 12:00 / jeu
Solids, Total Dissolved TDS @ 180 C	4690	mg/L	D	40		A2540 C	04/09/18 14:25 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.34	mg/L		0.01		E353.2	04/09/18 11:20 / dmb
Nitrogen, Ammonia as N	0.19	mg/L		0.05		A4500-NH3 G	04/11/18 14:02 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/12/18 00:27 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:27 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 00:27 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/12/18 00:27 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 00:27 / eli-b
Manganese	3.54	mg/L		0.001		E200.8	04/12/18 00:27 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 00:27 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/12/18 00:27 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	04/12/18 00:27 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:27 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 23:01 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:23 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4200	mg/L				A1030 E	04/24/18 11:36 / tjp
A/C Balance	-2.34	%				A1030 E	04/24/18 11:36 / tjp
Anions	66.6	meq/L				A1030 E	04/24/18 11:36 / tjp
Cations	63.5	meq/L				A1030 E	04/24/18 11:36 / tjp
TDS Ratio	1.11	unitless				A1030 E	04/24/18 11:36 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	2.1	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:30 / cnh
Lead 210	1.1	pCi/L				E909.0	04/12/18 17:11 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-006  
**Client Sample ID:** EPA-4

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 08:26  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/12/18 17:11 / meh
Lead 210 MDC	1.1	pCi/L				E909.0	04/12/18 17:11 / meh
Radium 226	1.1	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 226 precision (±)	0.3	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 228	4.1	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 precision (±)	1.3	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 MDC	1.2	pCi/L				RA-05	04/18/18 11:30 / plj
Thorium 230	0.08	pCi/L	U			E908.0	04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/19/18 11:42 / dmf
Thorium 230 MDC	0.1	pCi/L				E908.0	04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/13/18 15:47 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/13/18 15:47 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/13/18 15:47 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/13/18 15:47 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139		E624	04/13/18 15:47 / eli-b
Surr: p-Bromofluorobenzene	96.0	%REC		80-127		E624	04/13/18 15:47 / eli-b
Surr: Toluene-d8	91.0	%REC		80-123		E624	04/13/18 15:47 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 1

Well ID:		EPA-4	EPA-4	EPA-4	EPA-4
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/2/2018	2/23/2018	11/10/2017	8/16/2017
Analyte	Units	C18040249-006	C18010386-006	C17100295-006	C17070470-006
Bicarbonate as HCO <sub>3</sub>	mg/L	156	146	167	131
Chloride	mg/L	36	36	34	36
Sulfate	mg/L	3020	3120	2860	2850
Calcium	mg/L	497	488	484	474
Magnesium	mg/L	388	399	379	377
Potassium	mg/L	9	9	9	8
Sodium	mg/L	185	179	181	169
pH	s.u.	6.70	6.93	6.78	7.45
Solids, Total Dissolved TDS @ 180 C	mg/L	4690	4380	4470	4310
Nitrogen, Ammonia as N	mg/L	0.19	0.13	ND(0.05)	0.39
Nitrogen, Nitrate+Nitrite as N	mg/L	0.34	0.38	0.59	0.21
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.54	3.46	3.42	2.88
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	ND(0.0003)	ND(0.0003)	ND(0.0003)	ND(0.0003)
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.34	-2.30	0.10	-0.27
Anions	meq/L	66.6	68.3	63.3	62.6
Cations	meq/L	63.5	65.2	63.4	62.2
Solids, Total Dissolved - Calculated	mg/L	4200	4300	4000	4000
TDS Ratio	unitless	1.11	1.01	1.10	1.08
Gross Alpha minus Rn & U	pCi/L	2.1	2.0	1.5	1.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.7	0.7	0.6	0.6
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	0.6	0.5
Lead 210	pCi/L	1.1	-1	0.8	0.5
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.1	1.4	1.3	1.3
Radium 226	pCi/L	1.1	1.2	0.9	0.8
Radium 226 precision (±)	pCi/L	0.3	0.3	0.2	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	4.1	3.4	4.4	1.8
Radium 228 precision (±)	pCi/L	1.3	1.4	1.3	1.1
Radium 228 MDC	pCi/L	1.2	1.8	1.4	1.7
Thorium 230	pCi/L	0.08	0.2	-0.03	0.03
Thorium 230 precision (±)	pCi/L	0.1	0.2	0.08	0.1
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

NOTE: The data presented on this form is intended for summary only. Laboratory approved data is contained within the database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-005  
**Client Sample ID:** EPA-5

**Report Date:** 02/23/18  
**Collection Date:** 01/09/18 16:35  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	57	mg/L		5		A2320 B	01/15/18 19:46 / mvr
Chloride	36	mg/L	D	2		E300.0	01/16/18 05:52 / ljl
Sulfate	3260	mg/L	D	8		E300.0	01/16/18 05:52 / ljl
Calcium	452	mg/L		1		E200.7	01/18/18 01:07 / eli-b
Magnesium	480	mg/L		1		E200.7	01/18/18 01:07 / eli-b
Potassium	9	mg/L		1		E200.7	01/22/18 14:18 / eli-b
Sodium	106	mg/L	D	2		E200.7	01/19/18 00:46 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.30	s.u.	H	0.01		A4500-H B	01/15/18 12:49 / jeu
Solids, Total Dissolved TDS @ 180 C	4590	mg/L	D	40		A2540 C	01/15/18 16:24 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	10.7	mg/L	D	0.1		E353.2	01/17/18 14:12 / dmb
Nitrogen, Ammonia as N	15.9	mg/L	D	0.5		A4500-NH <sub>3</sub> G	01/16/18 17:02 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/29/18 14:40 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 19:40 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 19:40 / eli-b
Cobalt	0.037	mg/L		0.005		E200.8	01/18/18 19:40 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 19:40 / eli-b
Manganese	0.158	mg/L	D	0.002		E200.8	01/18/18 19:40 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 19:40 / eli-b
Nickel	0.038	mg/L		0.005		E200.8	01/18/18 19:40 / eli-b
Uranium	0.0011	mg/L		0.0003		E200.8	01/18/18 19:40 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 19:40 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 01:51 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:34 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.8	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Lead 210	-1	pCi/L	U			E909.0	01/26/18 09:14 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	01/26/18 09:14 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	01/26/18 09:14 / meh
Radium 226	1.2	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 precision (±)	0.3	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 228	3.6	pCi/L				RA-05	02/05/18 14:05 / trs
Radium 228 precision (±)	1.3	pCi/L				RA-05	02/05/18 14:05 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-005  
**Client Sample ID:** EPA-5

**Report Date:** 02/23/18  
**Collection Date:** 01/09/18 16:35  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.8	pCi/L				RA-05	02/05/18 14:05 / trs
Thorium 230	0.06	pCi/L	U			E908.0	02/02/18 10:24 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/02/18 10:24 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4400	mg/L				A1030 E	01/31/18 10:33 / tjp
A/C Balance	-1.89	%				A1030 E	01/31/18 10:33 / tjp
Anions	70.6	meq/L				A1030 E	01/31/18 10:33 / tjp
Cations	67.9	meq/L				A1030 E	01/31/18 10:33 / tjp
TDS Ratio	1.04	unitless				A1030 E	01/31/18 10:33 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 10:05 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 10:05 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 10:05 / eli-b
Chloroform	0.51	ug/L		0.50		E624	01/23/18 10:05 / eli-b
Trihalomethanes, Total	0.51	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	109	%REC		71-139		E624	01/23/18 10:05 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127		E624	01/23/18 10:05 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	01/23/18 10:05 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-005  
**Client Sample ID:** EPA-5

**Report Date:** 05/02/18  
**Collection Date:** 04/03/18 16:47  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	65	mg/L		5		A2320 B	04/09/18 01:06 / mvr
Chloride	40	mg/L	D	2		E300.0	04/10/18 00:14 / ljl
Sulfate	3320	mg/L	D	8		E300.0	04/10/18 00:14 / ljl
Calcium	468	mg/L		1		E200.7	04/11/18 15:25 / eli-b
Magnesium	448	mg/L		1		E200.7	04/11/18 15:25 / eli-b
Potassium	9	mg/L		1		E200.7	04/11/18 15:25 / eli-b
Sodium	103	mg/L		1		E200.7	04/11/18 15:25 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.06	s.u.	H	0.01		A4500-H B	04/09/18 11:56 / jeu
Solids, Total Dissolved TDS @ 180 C	4770	mg/L	D	40		A2540 C	04/09/18 14:25 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	12.2	mg/L	D	0.1		E353.2	04/09/18 11:17 / dmb
Nitrogen, Ammonia as N	13.2	mg/L	D	0.5		A4500-NH <sub>3</sub> G	04/11/18 13:58 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/12/18 00:24 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:24 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 00:24 / eli-b
Cobalt	0.034	mg/L		0.005		E200.8	04/12/18 00:24 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 00:24 / eli-b
Manganese	0.162	mg/L		0.001		E200.8	04/12/18 00:24 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 00:24 / eli-b
Nickel	0.037	mg/L		0.005		E200.8	04/12/18 00:24 / eli-b
Uranium	0.0003	mg/L		0.0003		E200.8	04/12/18 00:24 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:24 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 22:49 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:21 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4500	mg/L				A1030 E	04/20/18 10:42 / tjp
A/C Balance	-4.54	%				A1030 E	04/20/18 10:42 / tjp
Anions	72.2	meq/L				A1030 E	04/20/18 10:42 / tjp
Cations	65.9	meq/L				A1030 E	04/20/18 10:42 / tjp
TDS Ratio	1.06	unitless				A1030 E	04/20/18 10:42 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	3.4	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U Precision (±)	0.9	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:30 / cnh
Lead 210	1.1	pCi/L				E909.0	04/12/18 13:52 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/12/18 13:52 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-005  
**Client Sample ID:** EPA-5

**Report Date:** 05/02/18  
**Collection Date:** 04/03/18 16:47  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.1	pCi/L			E909.0		04/12/18 13:52 / meh
Radium 226	1.3	pCi/L			E903.0		04/23/18 10:50 / arh
Radium 226 precision (±)	0.3	pCi/L			E903.0		04/23/18 10:50 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		04/23/18 10:50 / arh
Radium 228	1.6	pCi/L			RA-05		04/18/18 11:30 / plj
Radium 228 precision (±)	0.9	pCi/L			RA-05		04/18/18 11:30 / plj
Radium 228 MDC	1.3	pCi/L			RA-05		04/18/18 11:30 / plj
Thorium 230	0.2	pCi/L	U		E908.0		04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.2	pCi/L			E908.0		04/19/18 11:42 / dmf
Thorium 230 MDC	0.2	pCi/L			E908.0		04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		04/16/18 16:32 / eli-b
Bromoform	ND	ug/L		0.50	E624		04/16/18 16:32 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		04/16/18 16:32 / eli-b
Chloroform	0.46	ug/L	J	0.50	E624		04/16/18 16:32 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139	E624		04/16/18 16:32 / eli-b
Surr: p-Bromofluorobenzene	95.0	%REC		80-127	E624		04/16/18 16:32 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123	E624		04/16/18 16:32 / eli-b

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
J - Estimated value. The analyte was present but less than the reporting limit.



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United Nuclear Corporation

Zone 1

Well ID:		EPA-5	EPA-5	EPA-5	EPA-5
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/2/2018	2/23/2018	11/10/2017	8/16/2017
Analyte	Units	C18040249-005	C18010386-005	C17100295-005	C17070470-005
Bicarbonate as HCO <sub>3</sub>	mg/L	65	57	48	51
Chloride	mg/L	40	36	36	36
Sulfate	mg/L	3320	3260	3010	3000
Calcium	mg/L	468	452	457	435
Magnesium	mg/L	448	480	465	445
Potassium	mg/L	9	9	7	7
Sodium	mg/L	103	106	105	89
pH	s.u.	6.06	6.30	6.01	6.23
Solids, Total Dissolved TDS @ 180 C	mg/L	4770	4590	4620	4770
Nitrogen, Ammonia as N	mg/L	13.2	15.9	8.8	9.4
Nitrogen, Nitrate+Nitrite as N	mg/L	12.2	10.7	8.05	8.35
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.034	0.037	0.03	0.03
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.162	0.158	0.17	0.20
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.037	0.038	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0003	0.0011	0.0019	0.0017
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.001
A/C Balance	%	-4.54	-1.89	0.93	-1.60
Anions	meq/L	72.2	70.6	65.3	65.1
Cations	meq/L	65.9	67.9	66.5	63.1
Solids, Total Dissolved - Calculated	mg/L	4500	4400	4200	4100
TDS Ratio	unitless	1.06	1.04	1.11	1.17
Gross Alpha minus Rn & U	pCi/L	3.4	1.8	2.1	1.8
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.9	0.6	0.7	0.6
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	0.6	0.5
Lead 210	pCi/L	1.1	-1	0.5	0.1
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	1.1
Lead 210 MDC	pCi/L	1.1	1.4	1.3	1.8
Radium 226	pCi/L	1.3	1.2	1.2	1.4
Radium 226 precision (±)	pCi/L	0.3	0.3	0.3	0.4
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	1.6	3.6	4.8	0.8
Radium 228 precision (±)	pCi/L	0.9	1.3	1.3	1.1
Radium 228 MDC	pCi/L	1.3	1.8	1.4	1.8
Thorium 230	pCi/L	0.2	0.06	0.0007	0.07
Thorium 230 precision (±)	pCi/L	0.2	0.1	0.06	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.1	0.1
Trihalomethanes, Total	ug/L	ND(0.50)	0.51	0.54	0.59

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-004  
**Client Sample ID:** EPA-7

**Report Date:** 02/23/18  
**Collection Date:** 01/09/18 15:53  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	583	mg/L		5		A2320 B	01/15/18 19:39 / mvr
Chloride	236	mg/L	D	5		E300.0	01/16/18 05:34 / ljl
Sulfate	4380	mg/L	D	20		E300.0	01/16/18 05:34 / ljl
Calcium	489	mg/L		1		E200.7	01/18/18 00:55 / eli-b
Magnesium	901	mg/L		1		E200.7	01/18/18 00:55 / eli-b
Potassium	8	mg/L		1		E200.7	01/22/18 14:15 / eli-b
Sodium	407	mg/L	D	3		E200.7	01/19/18 00:42 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.35	s.u.	H	0.01		A4500-H B	01/15/18 12:47 / jeu
Solids, Total Dissolved TDS @ 180 C	7670	mg/L	D	100		A2540 C	01/15/18 16:24 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	118	mg/L	D	0.2		E353.2	01/17/18 14:11 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/16/18 17:01 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.24	mg/L	D	0.04		E200.8	01/18/18 19:37 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 19:37 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 19:37 / eli-b
Cobalt	0.078	mg/L		0.005		E200.8	01/18/18 19:37 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 19:37 / eli-b
Manganese	1.87	mg/L	D	0.002		E200.8	01/18/18 19:37 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 19:37 / eli-b
Nickel	0.086	mg/L		0.005		E200.8	01/18/18 19:37 / eli-b
Uranium	0.0017	mg/L		0.0003		E200.8	01/18/18 19:37 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 19:37 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 01:39 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:32 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.3	pCi/L	U			E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Lead 210	-1	pCi/L	U			E909.0	01/26/18 06:33 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	01/26/18 06:33 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	01/26/18 06:33 / meh
Radium 226	0.5	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 228	2.2	pCi/L				RA-05	02/05/18 14:05 / trs
Radium 228 precision (±)	1.1	pCi/L				RA-05	02/05/18 14:05 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-004  
**Client Sample ID:** EPA-7

**Report Date:** 02/23/18  
**Collection Date:** 01/09/18 15:53  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.8	pCi/L				RA-05	02/05/18 14:05 / trs
Thorium 230	0.2	pCi/L				E908.0	02/06/18 09:51 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	02/06/18 09:51 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/06/18 09:51 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7200	mg/L				A1030 E	01/31/18 10:32 / tjp
A/C Balance	0.30	%				A1030 E	01/31/18 10:32 / tjp
Anions	116	meq/L				A1030 E	01/31/18 10:32 / tjp
Cations	116	meq/L				A1030 E	01/31/18 10:32 / tjp
TDS Ratio	1.06	unitless				A1030 E	01/31/18 10:32 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 09:37 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 09:37 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 09:37 / eli-b
Chloroform	1.2	ug/L		0.50		E624	01/23/18 09:37 / eli-b
Trihalomethanes, Total	1.2	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	110	%REC		71-139		E624	01/23/18 09:37 / eli-b
Surr: p-Bromofluorobenzene	107	%REC		80-127		E624	01/23/18 09:37 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	01/23/18 09:37 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-004  
**Client Sample ID:** EPA-7

**Report Date:** 05/02/18  
**Collection Date:** 04/03/18 16:04  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	586	mg/L		5		A2320 B	04/09/18 00:58 / mvr
Chloride	248	mg/L	D	5		E300.0	04/09/18 23:55 / ljl
Sulfate	4490	mg/L	D	20		E300.0	04/09/18 23:55 / ljl
Calcium	496	mg/L		1		E200.7	04/11/18 15:21 / eli-b
Magnesium	845	mg/L		1		E200.7	04/11/18 15:21 / eli-b
Potassium	8	mg/L		1		E200.7	04/11/18 15:21 / eli-b
Sodium	370	mg/L	D	2		E200.7	04/11/18 15:21 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.41	s.u.	H	0.01		A4500-H B	04/09/18 11:53 / jeu
Solids, Total Dissolved TDS @ 180 C	7860	mg/L	D	100		A2540 C	04/09/18 14:25 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	127	mg/L	D	1		E353.2	04/09/18 11:13 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	04/11/18 13:54 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.23	mg/L		0.03		E200.8	04/12/18 00:15 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:15 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 00:15 / eli-b
Cobalt	0.070	mg/L		0.005		E200.8	04/12/18 00:15 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 00:15 / eli-b
Manganese	1.83	mg/L		0.001		E200.8	04/12/18 00:15 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 00:15 / eli-b
Nickel	0.085	mg/L		0.005		E200.8	04/12/18 00:15 / eli-b
Uranium	0.0004	mg/L		0.0003		E200.8	04/12/18 00:15 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:15 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 22:37 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:20 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7300	mg/L				A1030 E	04/20/18 10:41 / tjp
A/C Balance	-3.74	%				A1030 E	04/20/18 10:41 / tjp
Anions	119	meq/L				A1030 E	04/20/18 10:41 / tjp
Cations	111	meq/L				A1030 E	04/20/18 10:41 / tjp
TDS Ratio	1.08	unitless				A1030 E	04/20/18 10:41 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.2	pCi/L				E900.1	04/16/18 11:29 / cnh
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	04/16/18 11:29 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:29 / cnh
Lead 210	1.2	pCi/L				E909.0	04/12/18 10:37 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/12/18 10:37 / meh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-004  
**Client Sample ID:** EPA-7

**Report Date:** 05/02/18  
**Collection Date:** 04/03/18 16:04  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.1	pCi/L				E909.0	04/12/18 10:37 / meh
Radium 226	0.8	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 228	2.0	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 precision (±)	0.9	pCi/L				RA-05	04/18/18 11:30 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	04/18/18 11:30 / plj
Thorium 230	0.02	pCi/L	U			E908.0	04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/19/18 11:42 / dmf
Thorium 230 MDC	0.3	pCi/L				E908.0	04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/13/18 20:11 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/13/18 20:11 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/13/18 20:11 / eli-b
Chloroform	0.91	ug/L		0.50		E624	04/13/18 20:11 / eli-b
Trihalomethanes, Total	0.91	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	04/13/18 20:11 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	04/13/18 20:11 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123		E624	04/13/18 20:11 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 1

Well ID:		EPA-7	EPA-7	EPA-7	EPA-7
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/2/2018	2/23/2018	11/10/2017	8/16/2017
Analyte	Units	C18040249-004	C18010386-004	C17100295-004	C17070470-004
Bicarbonate as HCO <sub>3</sub>	mg/L	586	583	642	628
Chloride	mg/L	248	236	233	492
Sulfate	mg/L	4490	4380	4010	4040
Calcium	mg/L	496	489	496	495
Magnesium	mg/L	845	901	871	865
Potassium	mg/L	8	8	8	10
Sodium	mg/L	370	407	380	373
pH	s.u.	6.41	6.35	6.34	6.40
Solids, Total Dissolved TDS @ 180 C	mg/L	7860	7670	7300	7320
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	127	118	116	122
Aluminum	mg/L	0.23	0.24	0.7	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.070	0.078	0.07	0.07
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	1.83	1.87	1.80	1.80
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.085	0.086	0.10	0.10
Uranium	mg/L	0.0004	0.0017	0.0019	0.0021
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-3.74	0.30	2.04	-2.00
Anions	meq/L	119	116	109	117
Cations	meq/L	111	116	113	112
Solids, Total Dissolved - Calculated	mg/L	7300	7200	6800	7100
TDS Ratio	unitless	1.08	1.06	1.07	1.03
Gross Alpha minus Rn & U	pCi/L	1.2	0.3	1.8	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.4	0.6	0.4
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	0.6	0.5
Lead 210	pCi/L	1.2	-1	0.2	0.9
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	1.1
Lead 210 MDC	pCi/L	1.1	1.4	1.3	1.8
Radium 226	pCi/L	0.8	0.5	0.5	0.4
Radium 226 precision (±)	pCi/L	0.2	0.1	0.2	0.2
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	2.0	2.2	3.3	0.6
Radium 228 precision (±)	pCi/L	0.9	1.1	1.0	1.1
Radium 228 MDC	pCi/L	1.3	1.8	1.4	1.8
Thorium 230	pCi/L	0.02	0.2	0.2	0.04
Thorium 230 precision (±)	pCi/L	0.1	0.1	0.09	0.09
Thorium 230 MDC	pCi/L	0.3	0.2	0.1	0.2
Trihalomethanes, Total	ug/L	0.91	1.2	0.95	1.2

**QUARTERLY SAMPLING**  
**SEMI-ANNUAL GROUND WATER MONITORING REPORT**  
**JANUARY TO JUNE OF 2018**

**ZONE-3**

\*517

EPA-14

420

\*711

\*613

\*708

EPA-13

717

719

**LEVELS ONLY**

EPA-9

702

710

712

713

714

701

706

707

402

446

424

**NOTE: \*POINT OF COMPLIANCE WELLS  
WATER LEVEL ONLY IS IN FIELD DATA SHEET**

**INTENTIONALLY LEFT BLANK**



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** Amec Foster Wheeler  
**Project:** Zone 3  
**Lab ID:** C18010515-007  
**Client Sample ID:** 517

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 09:20  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	514	mg/L				A2310 B	01/22/18 12:40 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/19/18 15:39 / mvr
Chloride	34	mg/L	D	2		E300.0	01/24/18 03:35 / ljl
Sulfate	4140	mg/L	D	8		E300.0	01/24/18 03:35 / ljl
Calcium	443	mg/L		1		E200.7	01/26/18 20:35 / eli-b
Magnesium	539	mg/L		1		E200.7	01/26/18 20:35 / eli-b
Potassium	14	mg/L		1		E200.7	01/26/18 20:35 / eli-b
Sodium	146	mg/L	D	2		E200.7	01/26/18 20:35 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.32	s.u.	H	0.01		A4500-H B	01/19/18 11:48 / jeu
Solids, Total Dissolved TDS @ 180 C	5890	mg/L	D	40		A2540 C	01/19/18 12:26 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	D	0.1		E353.2	02/02/18 12:57 / dmb
Nitrogen, Ammonia as N	8.1	mg/L	D	0.5		A4500-NH3 G	01/22/18 10:26 / dmb
Ran at 10X dilution due to metals and acidification interference							
<b>METALS, TOTAL</b>							
Aluminum	19.8	mg/L	D	0.04		E200.8	01/22/18 17:47 / eli-b
Beryllium	0.017	mg/L		0.001		E200.8	01/22/18 17:47 / eli-b
Cadmium	0.007	mg/L		0.001		E200.8	01/22/18 17:47 / eli-b
Cobalt	0.912	mg/L		0.005		E200.8	01/22/18 17:47 / eli-b
Lead	0.011	mg/L		0.001		E200.8	01/22/18 17:47 / eli-b
Manganese	13.1	mg/L	D	0.002		E200.8	01/22/18 17:47 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/22/18 17:47 / eli-b
Nickel	0.940	mg/L		0.005		E200.8	01/22/18 17:47 / eli-b
Uranium	0.366	mg/L		0.0003		E200.8	01/22/18 17:47 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/22/18 17:47 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 06:51 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:12 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	13.0	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U Precision (±)	2.7	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 13:31 / dmf
Lead 210	4.7	pCi/L				E909.0	01/28/18 01:49 / meh
Lead 210 precision (±)	1.6	pCi/L				E909.0	01/28/18 01:49 / meh
Lead 210 MDC	1.3	pCi/L				E909.0	01/28/18 01:49 / meh
Radium 226	6.3	pCi/L				E903.0	02/14/18 13:50 / arh
Radium 226 precision (±)	1.3	pCi/L				E903.0	02/14/18 13:50 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/14/18 13:50 / arh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Amec Foster Wheeler  
Project: Zone 3  
Lab ID: C18010515-007  
Client Sample ID: 517

Report Date: 02/28/18  
Collection Date: 01/15/18 09:20  
Date Received: 01/18/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228	11.9	pCi/L				RA-05	02/09/18 14:08 / trs
Radium 228 precision (±)	2.5	pCi/L				RA-05	02/09/18 14:08 / trs
Radium 228 MDC	1.6	pCi/L				RA-05	02/09/18 14:08 / trs
Thorium 230	7.1	pCi/L				E908.0	02/16/18 10:13 / cnh
Thorium 230 precision (±)	1.4	pCi/L				E908.0	02/16/18 10:13 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/16/18 10:13 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5400	mg/L				A1030 E	02/27/18 09:36 / tla
A/C Balance	-2.48	%				A1030 E	02/27/18 09:36 / tla
Anions	87.3	meq/L				A1030 E	02/27/18 09:36 / tla
Cations	83.1	meq/L				A1030 E	02/27/18 09:36 / tla
TDS Ratio	1.10	unitless				A1030 E	02/27/18 09:36 / tla
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/26/18 13:02 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/26/18 13:02 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/26/18 13:02 / eli-b
Chloroform	4.6	ug/L		0.50		E624	01/26/18 13:02 / eli-b
Trihalomethanes, Total	4.6	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	92.0	%REC		71-139		E624	01/26/18 13:02 / eli-b
Surr: p-Bromofluorobenzene	93.0	%REC		80-127		E624	01/26/18 13:02 / eli-b
Surr: Toluene-d8	97.0	%REC		80-123		E624	01/26/18 13:02 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-002  
**Client Sample ID:** 517

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 09:08  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	523	mg/L				A2310 B	04/17/18 15:46 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/13/18 20:13 / dmb
Chloride	33	mg/L	D	2.0		E300.0	04/14/18 02:39 / ljl
Sulfate	4160	mg/L	D	8.0		E300.0	04/14/18 02:39 / ljl
Calcium	476	mg/L	D	7		E200.7	04/19/18 10:01 / eli-b
Magnesium	555	mg/L		1		E200.7	04/17/18 03:27 / eli-b
Potassium	13	mg/L		1		E200.7	04/17/18 03:27 / eli-b
Sodium	151	mg/L	D	2		E200.7	04/17/18 03:27 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.28	s.u.	H	0.01		A4500-H B	04/13/18 11:19 / ljl
Solids, Total Dissolved TDS @ 180 C	6100	mg/L	D	40		A2540 C	04/13/18 13:06 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	04/13/18 16:52 / dmb
Nitrogen, Ammonia as N	8.0	mg/L	D	0.5		A4500-NH3 G	04/16/18 14:26 / dmb
<b>METALS, TOTAL</b>							
Aluminum	18.8	mg/L		0.03		E200.8	04/18/18 03:32 / eli-b
Beryllium	0.017	mg/L		0.001		E200.8	04/18/18 03:32 / eli-b
Cadmium	0.006	mg/L		0.001		E200.8	04/18/18 03:32 / eli-b
Cobalt	0.867	mg/L		0.005		E200.8	04/18/18 03:32 / eli-b
Lead	0.009	mg/L		0.001		E200.8	04/18/18 03:32 / eli-b
Manganese	12.9	mg/L		0.001		E200.8	04/18/18 03:32 / eli-b
Molybdenum	0.004	mg/L		0.001		E200.8	04/18/18 03:32 / eli-b
Nickel	0.957	mg/L		0.005		E200.8	04/18/18 03:32 / eli-b
Uranium	0.348	mg/L		0.0003		E200.8	04/18/18 03:32 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 03:32 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/20/18 14:57 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:50 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5400	mg/L				A1030 E	05/01/18 17:03 / tjp
A/C Balance	-0.31	%				A1030 E	05/01/18 17:03 / tjp
Anions	87.9	meq/L				A1030 E	05/01/18 17:03 / tjp
Cations	87.3	meq/L				A1030 E	05/01/18 17:03 / tjp
TDS Ratio	1.12	unitless				A1030 E	05/01/18 17:03 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	14.2	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U Precision (±)	2.9	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/23/18 15:33 / trs
Lead 210	1.8	pCi/L				E909.0	04/21/18 21:46 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-002  
**Client Sample ID:** 517

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 09:08  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 precision (±)	1	pCi/L			E909.0		04/21/18 21:46 / meh
Lead 210 MDC	1.3	pCi/L			E909.0		04/21/18 21:46 / meh
Radium 226	8.4	pCi/L			E903.0		04/24/18 10:39 / arh
Radium 226 precision (±)	1.7	pCi/L			E903.0		04/24/18 10:39 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		04/24/18 10:39 / arh
Radium 228	7.6	pCi/L			RA-05		04/19/18 10:49 / plj
Radium 228 precision (±)	1.7	pCi/L			RA-05		04/19/18 10:49 / plj
Radium 228 MDC	1.4	pCi/L			RA-05		04/19/18 10:49 / plj
Thorium 230	15.9	pCi/L			E908.0		05/11/18 13:08 / cnh
Thorium 230 precision (±)	3.0	pCi/L			E908.0		05/11/18 13:08 / cnh
Thorium 230 MDC	0.4	pCi/L			E908.0		05/11/18 13:08 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		04/17/18 06:50 / eli-b
Bromoform	ND	ug/L		0.50	E624		04/17/18 06:50 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		04/17/18 06:50 / eli-b
Chloroform	4.5	ug/L		0.50	E624		04/17/18 06:50 / eli-b
Trihalomethanes, Total	4.5	ug/L		0.50	E624		05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139	E624		04/17/18 06:50 / eli-b
Surr: p-Bromofluorobenzene	96.0	%REC		80-127	E624		04/17/18 06:50 / eli-b
Surr: Toluene-d8	94.0	%REC		80-123	E624		04/17/18 06:50 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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United Nuclear Corporation

Zone 3

Well ID:		517	517	517	517
Collection Date:		4/9/2018	1/15/2018	10/9/2017	7/17/2017
Receive Date:		4/12/2018	1/18/2018	10/12/2017	7/20/2017
Report Date:		5/15/2018	2/28/2018	11/6/2017	8/30/2017
Analyte	Units	C18040463-002	C18010515-007	C17100456-002	C17070656-002
Acidity, Total as CaCO <sub>3</sub>	mg/L	523	514	530	535
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	33	34	32	35
Sulfate	mg/L	4160	4140	4130	4220
Calcium	mg/L	476	443	437	451
Magnesium	mg/L	555	539	550	560
Potassium	mg/L	13	14	13	13
Sodium	mg/L	151	146	140	147
pH	s.u.	3.28	3.32	2.87	2.95
Solids, Total Dissolved TDS @ 180 C	mg/L	6100	5890	5670	5790
Nitrogen, Ammonia as N	mg/L	8.0	8.1	8.5	8.7
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.01)	ND(0.1)	0.01	ND(0.01)
Aluminum	mg/L	18.8	19.8	18.4	20.2
Beryllium	mg/L	0.017	0.017	0.017	0.018
Cadmium	mg/L	0.006	0.007	0.006	0.007
Cobalt	mg/L	0.867	0.912	0.85	0.97
Lead	mg/L	0.009	0.011	0.011	0.012
Manganese	mg/L	12.9	13.1	12.8	14.4
Molybdenum	mg/L	0.004	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.957	0.940	0.88	0.97
Uranium	mg/L	0.348	0.366	0.394	0.377
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-0.31	-2.48	-1.54	-1.52
Anions	meq/L	87.9	87.3	87.3	89.2
Cations	meq/L	87.3	83.1	84.6	86.6
Solids, Total Dissolved - Calculated	mg/L	5400	5400	5300	5400
TDS Ratio	unitless	1.12	1.10	1.06	1.07
Gross Alpha minus Rn & U	pCi/L	14.2	13.0	11.5	17.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.9	2.7	2.5	3.6
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.5	0.6	0.5
Lead 210	pCi/L	1.8	4.7	0.2	1.9
Lead 210 precision (±)	pCi/L	1	1.6	1.2	1
Lead 210 MDC	pCi/L	1.3	1.3	1.9	1.3
Radium 226	pCi/L	8.4	6.3	5.8	5.5
Radium 226 precision (±)	pCi/L	1.7	1.3	1.2	1.1
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	7.6	11.9	7.5	7.4
Radium 228 precision (±)	pCi/L	1.7	2.5	1.6	2.0
Radium 228 MDC	pCi/L	1.4	1.6	1.1	2.0
Thorium 230	pCi/L	15.9	7.1	15.2	23.4
Thorium 230 precision (±)	pCi/L	3.0	1.4	2.9	4.4
Thorium 230 MDC	pCi/L	0.4	0.2	0.7	0.3
Trihalomethanes, Total	ug/L	4.5	4.6	4.0	3.7

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010515-006  
**Client Sample ID:** EPA-14

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 16:47  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	10	mg/L		5		A2320 B	01/19/18 15:37 / mvr
Chloride	50	mg/L	D	2		E300.0	01/24/18 19:47 / ljl
Sulfate	2950	mg/L	D	8		E300.0	01/24/18 19:47 / ljl
Calcium	502	mg/L		1		E200.7	01/26/18 20:31 / eli-b
Magnesium	321	mg/L		1		E200.7	01/26/18 20:31 / eli-b
Potassium	15	mg/L		1		E200.7	01/26/18 20:31 / eli-b
Sodium	161	mg/L	D	2		E200.7	01/26/18 20:31 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	5.23	s.u.	H	0.01		A4500-H B	01/19/18 11:45 / jeu
Solids, Total Dissolved TDS @ 180 C	3960	mg/L	D	40		A2540 C	01/19/18 12:26 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.29	mg/L		0.01		E353.2	01/19/18 13:02 / dmb
Nitrogen, Ammonia as N	20	mg/L	D	1		A4500-NH3 G	01/22/18 10:25 / dmb
<b>METALS, TOTAL</b>							
Aluminum	3.37	mg/L	D	0.04		E200.8	01/22/18 17:44 / eli-b
Beryllium	0.004	mg/L		0.001		E200.8	01/22/18 17:44 / eli-b
Cadmium	0.004	mg/L		0.001		E200.8	01/22/18 17:44 / eli-b
Cobalt	0.332	mg/L		0.005		E200.8	01/22/18 17:44 / eli-b
Lead	0.002	mg/L		0.001		E200.8	01/22/18 17:44 / eli-b
Manganese	6.82	mg/L	D	0.002		E200.8	01/22/18 17:44 / eli-b
Molybdenum	0.016	mg/L		0.001		E200.8	01/22/18 17:44 / eli-b
Nickel	0.264	mg/L		0.005		E200.8	01/22/18 17:44 / eli-b
Uranium	0.0187	mg/L		0.0003		E200.8	01/22/18 17:44 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/22/18 17:44 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 06:39 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:10 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	6.1	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U Precision (±)	1.5	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 13:31 / dmf
Lead 210	1.3	pCi/L				E909.0	01/27/18 23:09 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	01/27/18 23:09 / meh
Lead 210 MDC	1.1	pCi/L				E909.0	01/27/18 23:09 / meh
Radium 226	4.1	pCi/L				E903.0	02/14/18 13:50 / arh
Radium 226 precision (±)	0.9	pCi/L				E903.0	02/14/18 13:50 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/14/18 13:50 / arh
Radium 228	13.7	pCi/L				RA-05	02/09/18 12:32 / trs
Radium 228 precision (±)	2.9	pCi/L				RA-05	02/09/18 12:32 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C18010515-006  
Client Sample ID: EPA-14

Report Date: 02/28/18  
Collection Date: 01/15/18 16:47  
Date Received: 01/18/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	02/09/18 12:32 / trs
Thorium 230	1.7	pCi/L				E908.0	02/06/18 17:12 / cnh
Thorium 230 precision (±)	0.3	pCi/L				E908.0	02/06/18 17:12 / cnh
Thorium 230 MDC	0.8	pCi/L				E908.0	02/06/18 17:12 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4000	mg/L				A1030 E	02/27/18 09:35 / tla
A/C Balance	-2.27	%				A1030 E	02/27/18 09:35 / tla
Anions	63.1	meq/L				A1030 E	02/27/18 09:35 / tla
Cations	60.3	meq/L				A1030 E	02/27/18 09:35 / tla
TDS Ratio	0.99	unitless				A1030 E	02/27/18 09:35 / tla
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/26/18 12:33 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/26/18 12:33 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/26/18 12:33 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/26/18 12:33 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	92.0	%REC		71-139		E624	01/26/18 12:33 / eli-b
Surr: p-Bromofluorobenzene	92.0	%REC		80-127		E624	01/26/18 12:33 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	01/26/18 12:33 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-007  
**Client Sample ID:** EPA-14

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 15:50  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	33	mg/L		5		A2320 B	04/13/18 20:44 / dmb
Chloride	50	mg/L		1.0		E300.0	04/14/18 04:10 / ljl
Sulfate	2820	mg/L	D	4.0		E300.0	04/14/18 04:10 / ljl
Calcium	476	mg/L		1		E200.7	04/19/18 11:00 / eli-b
Magnesium	321	mg/L		1		E200.7	04/17/18 03:55 / eli-b
Potassium	10	mg/L		1		E200.7	04/17/18 03:55 / eli-b
Sodium	159	mg/L		1		E200.7	04/17/18 03:55 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	5.47	s.u.	H	0.01		A4500-H B	04/13/18 11:46 / ljl
Solids, Total Dissolved TDS @ 180 C	4120	mg/L	D	40		A2540 C	04/13/18 13:08 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.23	mg/L		0.01		E353.2	04/17/18 14:13 / dmb
Nitrogen, Ammonia as N	18	mg/L	D	1		A4500-NH3 G	04/16/18 14:37 / dmb
<b>METALS, TOTAL</b>							
Aluminum	11.9	mg/L		0.03		E200.8	04/18/18 19:33 / eli-b
Beryllium	0.018	mg/L		0.001		E200.8	04/18/18 19:33 / eli-b
Cadmium	0.004	mg/L		0.001		E200.8	04/18/18 19:33 / eli-b
Cobalt	0.373	mg/L		0.005		E200.8	04/18/18 19:33 / eli-b
Lead	0.008	mg/L		0.001		E200.8	04/18/18 19:33 / eli-b
Manganese	7.69	mg/L		0.001		E200.8	04/18/18 19:33 / eli-b
Molybdenum	0.016	mg/L		0.001		E200.8	04/18/18 19:33 / eli-b
Nickel	0.340	mg/L		0.005		E200.8	04/18/18 19:33 / eli-b
Uranium	0.0867	mg/L		0.0003		E200.8	04/18/18 19:33 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 19:33 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/20/18 16:45 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 14:04 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3800	mg/L				A1030 E	05/01/18 17:05 / tjp
A/C Balance	-1.78	%				A1030 E	05/01/18 17:05 / tjp
Anions	60.7	meq/L				A1030 E	05/01/18 17:05 / tjp
Cations	58.6	meq/L				A1030 E	05/01/18 17:05 / tjp
TDS Ratio	1.07	unitless				A1030 E	05/01/18 17:05 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	8.6	pCi/L				E900.1	04/23/18 17:10 / trs
Gross Alpha minus Rn & U Precision (±)	1.9	pCi/L				E900.1	04/23/18 17:10 / trs
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/23/18 17:10 / trs
Lead 210	1.3	pCi/L				E909.0	04/22/18 13:37 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	04/22/18 13:37 / meh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C18040463-007  
Client Sample ID: EPA-14

Report Date: 05/15/18  
Collection Date: 04/09/18 15:50  
Date Received: 04/12/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/22/18 13:37 / meh
Radium 226	6.8	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 226 precision (±)	1.4	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 228	8.9	pCi/L				RA-05	04/19/18 10:49 / plj
Radium 228 precision (±)	2.0	pCi/L				RA-05	04/19/18 10:49 / plj
Radium 228 MDC	1.5	pCi/L				RA-05	04/19/18 10:49 / plj
Thorium 230	0.1	pCi/L	U			E908.0	05/09/18 12:08 / cnh
Thorium 230 precision (±)	0.7	pCi/L				E908.0	05/09/18 12:08 / cnh
Thorium 230 MDC	1.4	pCi/L				E908.0	05/09/18 12:08 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/17/18 00:52 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/17/18 00:52 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/17/18 00:52 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/17/18 00:52 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	96.0	%REC		71-139		E624	04/17/18 00:52 / eli-b
Surr: p-Bromofluorobenzene	95.0	%REC		80-127		E624	04/17/18 00:52 / eli-b
Surr: Toluene-d8	93.0	%REC		80-123		E624	04/17/18 00:52 / eli-b

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 3

Well ID:		EPA-14	EPA-14	EPA-14	EPA-14
Collection Date:		4/9/2018	1/15/2018	10/9/2017	7/18/2017
Receive Date:		4/12/2018	1/18/2018	10/12/2017	7/21/2017
Report Date:		5/15/2018	2/28/2018	11/6/2017	9/20/2017
Analyte	Units	C18040463-007	C18010515-006	C17100456-009	C17070708-001
Bicarbonate as HCO <sub>3</sub>	mg/L	33	10	5	ND(5)
Chloride	mg/L	50	50	51	56
Sulfate	mg/L	2820	2950	2990	2990
Calcium	mg/L	476	502	479	486
Magnesium	mg/L	321	321	333	365
Potassium	mg/L	10	15	10	11
Sodium	mg/L	159	161	152	167
pH	s.u.	5.47	5.23	4.97	4.83
Solids, Total Dissolved TDS @ 180 C	mg/L	4120	3960	4340	4440
Nitrogen, Ammonia as N	mg/L	18	20	22	24
Nitrogen, Nitrate+Nitrite as N	mg/L	0.23	0.29	0.14	0.07
Aluminum	mg/L	11.9	3.37	8.7	26.8
Beryllium	mg/L	0.018	0.004	0.011	0.032
Cadmium	mg/L	0.004	0.004	ND(0.005)	0.006
Cobalt	mg/L	0.373	0.332	0.40	0.48
Lead	mg/L	0.008	0.002	0.005	0.014
Manganese	mg/L	7.69	6.82	7.47	10.1
Molybdenum	mg/L	0.016	0.016	ND(0.1)	ND(0.1)
Nickel	mg/L	0.340	0.264	0.38	0.48
Uranium	mg/L	0.0867	0.0187	0.0507	0.134
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-1.78	-2.27	-3.43	-0.63
Anions	meq/L	60.7	63.1	64.0	64.3
Cations	meq/L	58.6	60.3	59.7	63.5
Solids, Total Dissolved - Calculated	mg/L	3800	4000	4000	4100
TDS Ratio	unitless	1.07	0.99	1.08	1.08
Gross Alpha minus Rn & U	pCi/L	8.6	6.1	6.3	7.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.9	1.5	1.5	1.7
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.5	0.6	0.5
Lead 210	pCi/L	1.3	1.3	4	2.2
Lead 210 precision (±)	pCi/L	0.9	0.8	0.9	1.1
Lead 210 MDC	pCi/L	1.3	1.1	1.7	1.4
Radium 226	pCi/L	6.8	4.1	5.8	7.0
Radium 226 precision (±)	pCi/L	1.4	0.9	1.2	1.4
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	8.9	13.7	12.0	12.1
Radium 228 precision (±)	pCi/L	2.0	2.9	2.5	2.7
Radium 228 MDC	pCi/L	1.5	1.3	1.1	1.6
Thorium 230	pCi/L	0.1	1.7	0.3	0.9
Thorium 230 precision (±)	pCi/L	0.7	0.3	0.5	0.6
Thorium 230 MDC	pCi/L	1.4	0.8	0.9	0.7
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010515-005  
**Client Sample ID:** 420

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 15:08  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	314	mg/L		5		A2320 B	01/19/18 15:30 / mvr
Chloride	44	mg/L		1		E300.0	01/24/18 02:22 / ljl
Sulfate	2430	mg/L	D	4		E300.0	01/24/18 02:22 / ljl
Calcium	687	mg/L		1		E200.7	01/26/18 20:21 / eli-b
Magnesium	193	mg/L		1		E200.7	01/26/18 20:21 / eli-b
Potassium	8	mg/L		1		E200.7	01/26/18 20:21 / eli-b
Sodium	149	mg/L		1		E200.7	01/26/18 20:21 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.98	s.u.	H	0.01		A4500-H B	01/19/18 11:42 / jeu
Solids, Total Dissolved TDS @ 180 C	3780	mg/L	D	40		A2540 C	01/19/18 12:26 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.20	mg/L		0.01		E353.2	01/19/18 13:01 / dmb
Nitrogen, Ammonia as N	0.88	mg/L		0.05		A4500-NH3 G	01/22/18 10:24 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.52	mg/L		0.03		E200.8	01/22/18 17:41 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/22/18 17:41 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/22/18 17:41 / eli-b
Cobalt	0.038	mg/L		0.005		E200.8	01/22/18 17:41 / eli-b
Lead	0.002	mg/L		0.001		E200.8	01/22/18 17:41 / eli-b
Manganese	2.93	mg/L		0.001		E200.8	01/22/18 17:41 / eli-b
Molybdenum	0.481	mg/L		0.001		E200.8	01/22/18 17:41 / eli-b
Nickel	0.043	mg/L		0.005		E200.8	01/22/18 17:41 / eli-b
Uranium	0.217	mg/L		0.0003		E200.8	01/22/18 17:41 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/22/18 17:41 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 06:03 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:09 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	4.5	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U Precision (±)	1.2	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 13:31 / dmf
Lead 210	0.5	pCi/L	U			E909.0	01/27/18 20:18 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/27/18 20:18 / meh
Lead 210 MDC	1.1	pCi/L				E909.0	01/27/18 20:18 / meh
Radium 226	2.9	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 226 precision (±)	0.6	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 228	7.1	pCi/L				RA-05	02/09/18 12:32 / trs
Radium 228 precision (±)	1.6	pCi/L				RA-05	02/09/18 12:32 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010515-005  
**Client Sample ID:** 420

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 15:08  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	02/09/18 12:32 / trs
Thorium 230	0.07	pCi/L	U			E908.0	02/02/18 10:26 / cnh
Thorium 230 precision (±)	0.09	pCi/L				E908.0	02/02/18 10:26 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	02/02/18 10:26 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3700	mg/L				A1030 E	02/27/18 09:34 / tla
A/C Balance	-0.02	%				A1030 E	02/27/18 09:34 / tla
Anions	56.9	meq/L				A1030 E	02/27/18 09:34 / tla
Cations	56.9	meq/L				A1030 E	02/27/18 09:34 / tla
TDS Ratio	1.03	unitless				A1030 E	02/27/18 09:34 / tla
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 17:36 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 17:36 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 17:36 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/23/18 17:36 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	110	%REC		71-139		E624	01/23/18 17:36 / eli-b
Surr: p-Bromofluorobenzene	118	%REC		80-127		E624	01/23/18 17:36 / eli-b
Surr: Toluene-d8	107	%REC		80-123		E624	01/23/18 17:36 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-006  
**Client Sample ID:** 420

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 14:15  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	328	mg/L		5		A2320 B	04/13/18 20:36 / dmb
Chloride	42	mg/L		1.0		E300.0	04/14/18 03:52 / ljl
Sulfate	2430	mg/L	D	4.0		E300.0	04/14/18 03:52 / ljl
Calcium	673	mg/L		1		E200.7	04/19/18 10:56 / eli-b
Magnesium	176	mg/L		1		E200.7	04/17/18 03:51 / eli-b
Potassium	7	mg/L		1		E200.7	04/17/18 03:51 / eli-b
Sodium	148	mg/L		1		E200.7	04/17/18 03:51 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	7.19	s.u.	H	0.01		A4500-H B	04/13/18 11:43 / ljl
Solids, Total Dissolved TDS @ 180 C	3870	mg/L	D	40		A2540 C	04/13/18 13:08 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.23	mg/L		0.01		E353.2	04/17/18 14:12 / dmb
Nitrogen, Ammonia as N	0.93	mg/L		0.05		A4500-NH3 G	04/16/18 14:36 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.20	mg/L		0.03		E200.8	04/18/18 19:30 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/18/18 19:30 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/18/18 19:30 / eli-b
Cobalt	0.051	mg/L		0.005		E200.8	04/18/18 19:30 / eli-b
Lead	0.001	mg/L		0.001		E200.8	04/18/18 19:30 / eli-b
Manganese	3.44	mg/L		0.001		E200.8	04/18/18 19:30 / eli-b
Molybdenum	0.434	mg/L		0.001		E200.8	04/18/18 19:30 / eli-b
Nickel	0.052	mg/L		0.005		E200.8	04/18/18 19:30 / eli-b
Uranium	0.205	mg/L		0.0003		E200.8	04/18/18 19:30 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 19:30 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/20/18 16:33 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:59 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3600	mg/L				A1030 E	05/01/18 17:05 / tjp
A/C Balance	-2.26	%				A1030 E	05/01/18 17:05 / tjp
Anions	57.3	meq/L				A1030 E	05/01/18 17:05 / tjp
Cations	54.8	meq/L				A1030 E	05/01/18 17:05 / tjp
TDS Ratio	1.06	unitless				A1030 E	05/01/18 17:05 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	4.3	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/23/18 15:33 / trs
Lead 210	0.3	pCi/L	U			E909.0	04/22/18 10:17 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	04/22/18 10:17 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-006  
**Client Sample ID:** 420

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 14:15  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L			E909.0		04/22/18 10:17 / meh
Radium 226	3.2	pCi/L			E903.0		04/24/18 10:39 / arh
Radium 226 precision (±)	0.7	pCi/L			E903.0		04/24/18 10:39 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		04/24/18 10:39 / arh
Radium 228	3.3	pCi/L			RA-05		04/19/18 10:48 / plj
Radium 228 precision (±)	1.1	pCi/L			RA-05		04/19/18 10:48 / plj
Radium 228 MDC	1.4	pCi/L			RA-05		04/19/18 10:48 / plj
Thorium 230	0.01	pCi/L	U		E908.0		05/09/18 12:08 / cnh
Thorium 230 precision (±)	0.1	pCi/L			E908.0		05/09/18 12:08 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		05/09/18 12:08 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		04/17/18 00:22 / eli-b
Bromoform	ND	ug/L		0.50	E624		04/17/18 00:22 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		04/17/18 00:22 / eli-b
Chloroform	ND	ug/L		0.50	E624		04/17/18 00:22 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139	E624		04/17/18 00:22 / eli-b
Surr: p-Bromofluorobenzene	96.0	%REC		80-127	E624		04/17/18 00:22 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123	E624		04/17/18 00:22 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 3

Well ID:		420	420	420	420
Collection Date:		4/9/2018	1/15/2018	10/9/2017	7/17/2017
Receive Date:		4/12/2018	1/18/2018	10/12/2017	7/20/2017
Report Date:		5/15/2018	2/28/2018	11/6/2017	8/30/2017
Analyte	Units	C18040463-006	C18010515-005	C17100456-006	C17070656-006
Bicarbonate as HCO <sub>3</sub>	mg/L	328	314	363	320
Chloride	mg/L	42	44	45	45
Sulfate	mg/L	2430	2430	2360	2250
Calcium	mg/L	673	687	645	687
Magnesium	mg/L	176	193	173	179
Potassium	mg/L	7	8	7	7
Sodium	mg/L	148	149	137	148
pH	s.u.	7.19	6.98	7.04	7.17
Solids, Total Dissolved TDS @ 180 C	mg/L	3870	3780	3690	3850
Nitrogen, Ammonia as N	mg/L	0.93	0.88	0.89	0.32
Nitrogen, Nitrate+Nitrite as N	mg/L	0.23	0.20	0.03	0.19
Aluminum	mg/L	0.20	0.52	ND(0.1)	0.1
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.051	0.038	0.04	0.03
Lead	mg/L	0.001	0.002	0.001	ND(0.001)
Manganese	mg/L	3.44	2.93	3.45	2.30
Molybdenum	mg/L	0.434	0.481	0.3	0.4
Nickel	mg/L	0.052	0.043	0.09	ND(0.05)
Uranium	mg/L	0.205	0.217	0.208	0.230
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.26	-0.02	-3.42	2.09
Anions	meq/L	57.3	56.9	56.3	53.4
Cations	meq/L	54.8	56.9	52.6	55.7
Solids, Total Dissolved - Calculated	mg/L	3600	3700	3600	3500
TDS Ratio	unitless	1.06	1.03	1.04	1.11
Gross Alpha minus Rn & U	pCi/L	4.3	4.5	3.1	4.1
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.1	1.2	0.9	1.1
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.5	0.6	0.5
Lead 210	pCi/L	0.3	0.5	-3	1.4
Lead 210 precision (±)	pCi/L	0.7	0.7	1	0.9
Lead 210 MDC	pCi/L	1.2	1.1	1.7	1.3
Radium 226	pCi/L	3.2	2.9	3.9	2.3
Radium 226 precision (±)	pCi/L	0.7	0.6	0.8	0.5
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	3.3	7.1	4.5	2.7
Radium 228 precision (±)	pCi/L	1.1	1.6	1.2	0.9
Radium 228 MDC	pCi/L	1.4	1.2	0.9	1.1
Thorium 230	pCi/L	0.01	0.07	0.1	0.06
Thorium 230 precision (±)	pCi/L	0.1	0.09	0.1	0.1
Thorium 230 MDC	pCi/L	0.2	0.1	0.2	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** Amec Foster Wheeler  
**Project:** Zone 3  
**Lab ID:** C18010515-003  
**Client Sample ID:** 711

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 12:45  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	360	mg/L				A2310 B	01/22/18 12:32 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/19/18 15:16 / mvr
Chloride	24	mg/L	D	2		E300.0	01/24/18 01:45 / ljl
Sulfate	3780	mg/L	D	8		E300.0	01/24/18 01:45 / ljl
Calcium	448	mg/L		1		E200.7	01/26/18 20:03 / eli-b
Magnesium	501	mg/L		1		E200.7	01/26/18 20:03 / eli-b
Potassium	11	mg/L		1		E200.7	01/26/18 20:03 / eli-b
Sodium	110	mg/L	D	2		E200.7	01/26/18 20:03 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.49	s.u.	H	0.01		A4500-H B	01/19/18 11:33 / jeu
Solids, Total Dissolved TDS @ 180 C	4920	mg/L	D	40		A2540 C	01/19/18 12:25 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.2	mg/L	D	0.1		E353.2	02/02/18 12:55 / dmb
Nitrogen, Ammonia as N	1.9	mg/L	D	0.2		A4500-NH3 G	01/22/18 10:19 / dmb
Ran at 10X dilution due to metals and acidification interference							
<b>METALS, TOTAL</b>							
Aluminum	25.5	mg/L	D	0.04		E200.8	01/22/18 17:36 / eli-b
Beryllium	0.042	mg/L		0.001		E200.8	01/22/18 17:36 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/22/18 17:36 / eli-b
Cobalt	0.828	mg/L		0.005		E200.8	01/22/18 17:36 / eli-b
Lead	0.002	mg/L		0.001		E200.8	01/22/18 17:36 / eli-b
Manganese	9.66	mg/L	D	0.002		E200.8	01/22/18 17:36 / eli-b
Molybdenum	0.116	mg/L		0.001		E200.8	01/22/18 17:36 / eli-b
Nickel	1.01	mg/L		0.005		E200.8	01/22/18 17:36 / eli-b
Uranium	0.301	mg/L		0.0003		E200.8	01/22/18 17:36 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/22/18 17:36 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 05:15 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:06 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	10	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U Precision (±)	2.2	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 13:31 / dmf
Lead 210	-0.2	pCi/L	U			E909.0	01/27/18 14:16 / meh
Lead 210 precision (±)	0.6	pCi/L				E909.0	01/27/18 14:16 / meh
Lead 210 MDC	1.1	pCi/L				E909.0	01/27/18 14:16 / meh
Radium 226	8.4	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 226 precision (±)	1.7	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/14/18 10:41 / arh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Amec Foster Wheeler  
Project: Zone 3  
Lab ID: C18010515-003  
Client Sample ID: 711

Report Date: 02/28/18  
Collection Date: 01/15/18 12:45  
Date Received: 01/18/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228	12.0	pCi/L				RA-05	02/09/18 12:32 / trs
Radium 228 precision (±)	2.5	pCi/L				RA-05	02/09/18 12:32 / trs
Radium 228 MDC	1.3	pCi/L				RA-05	02/09/18 12:32 / trs
Thorium 230	0.2	pCi/L	U			E908.0	02/06/18 17:12 / cnh
Thorium 230 precision (±)	0.3	pCi/L				E908.0	02/06/18 17:12 / cnh
Thorium 230 MDC	0.5	pCi/L				E908.0	02/06/18 17:12 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4900	mg/L				A1030 E	02/27/18 09:33 / tla
A/C Balance	-2.28	%				A1030 E	02/27/18 09:33 / tla
Anions	79.5	meq/L				A1030 E	02/27/18 09:33 / tla
Cations	76.0	meq/L				A1030 E	02/27/18 09:33 / tla
TDS Ratio	1.00	unitless				A1030 E	02/27/18 09:33 / tla
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 16:40 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 16:40 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 16:40 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/23/18 16:40 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	107	%REC		71-139		E624	01/23/18 16:40 / eli-b
Surr: p-Bromofluorobenzene	111	%REC		80-127		E624	01/23/18 16:40 / eli-b
Surr: Toluene-d8	110	%REC		80-123		E624	01/23/18 16:40 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 4.

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-004  
**Client Sample ID:** 711

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 11:43  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	352	mg/L				A2310 B	04/17/18 15:46 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/13/18 20:21 / dmb
Chloride	23	mg/L	D	2.0		E300.0	04/14/18 03:16 / ljl
Sulfate	3820	mg/L	D	8.0		E300.0	04/14/18 03:16 / ljl
Calcium	463	mg/L	D	4		E200.7	04/19/18 10:09 / eli-b
Magnesium	497	mg/L		1		E200.7	04/17/18 03:35 / eli-b
Potassium	11	mg/L		1		E200.7	04/17/18 03:35 / eli-b
Sodium	116	mg/L		1		E200.7	04/17/18 03:35 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.43	s.u.	H	0.01		A4500-H B	04/13/18 11:37 / ljl
Solids, Total Dissolved TDS @ 180 C	5450	mg/L	D	40		A2540 C	04/13/18 13:06 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	04/17/18 14:07 / dmb
Nitrogen, Ammonia as N	1.5	mg/L	D	0.2		A4500-NH3 G	04/16/18 14:28 / dmb
<b>METALS, TOTAL</b>							
Aluminum	25.4	mg/L		0.03		E200.8	04/18/18 03:38 / eli-b
Beryllium	0.042	mg/L		0.001		E200.8	04/18/18 03:38 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/18/18 03:38 / eli-b
Cobalt	0.778	mg/L		0.005		E200.8	04/18/18 03:38 / eli-b
Lead	0.003	mg/L		0.001		E200.8	04/18/18 03:38 / eli-b
Manganese	9.45	mg/L		0.001		E200.8	04/18/18 03:38 / eli-b
Molybdenum	0.058	mg/L		0.001		E200.8	04/18/18 03:38 / eli-b
Nickel	1.01	mg/L		0.005		E200.8	04/18/18 03:38 / eli-b
Uranium	0.307	mg/L		0.0003		E200.8	04/18/18 03:38 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 03:38 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/20/18 15:21 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:56 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5000	mg/L				A1030 E	05/01/18 17:04 / tjp
A/C Balance	-2.52	%				A1030 E	05/01/18 17:04 / tjp
Anions	80.5	meq/L				A1030 E	05/01/18 17:04 / tjp
Cations	76.5	meq/L				A1030 E	05/01/18 17:04 / tjp
TDS Ratio	1.10	unitless				A1030 E	05/01/18 17:04 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	10.9	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U Precision (±)	2.3	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/23/18 15:33 / trs
Lead 210	1.1	pCi/L	U			E909.0	04/22/18 03:49 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C18040463-004  
Client Sample ID: 711

Report Date: 05/15/18  
Collection Date: 04/09/18 11:43  
Date Received: 04/12/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/22/18 03:49 / meh
Lead 210 MDC	1.3	pCi/L				E909.0	04/22/18 03:49 / meh
Radium 226	7.5	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 226 precision (±)	1.5	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 228	8.3	pCi/L				RA-05	04/19/18 10:48 / plj
Radium 228 precision (±)	1.8	pCi/L				RA-05	04/19/18 10:48 / plj
Radium 228 MDC	1.4	pCi/L				RA-05	04/19/18 10:48 / plj
Thorium 230	0.1	pCi/L	U			E908.0	05/09/18 12:08 / cnh
Thorium 230 precision (±)	0.2	pCi/L				E908.0	05/09/18 12:08 / cnh
Thorium 230 MDC	0.3	pCi/L				E908.0	05/09/18 12:08 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/17/18 18:37 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/17/18 18:37 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/17/18 18:37 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/17/18 18:37 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	96.0	%REC		71-139		E624	04/17/18 18:37 / eli-b
Surr: p-Bromofluorobenzene	96.0	%REC		80-127		E624	04/17/18 18:37 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123		E624	04/17/18 18:37 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 3

Well ID:		711	711	711	711
Collection Date:		4/9/2018	1/15/2018	10/9/2017	7/17/2017
Receive Date:		4/12/2018	1/18/2018	10/12/2017	7/20/2017
Report Date:		5/15/2018	2/28/2018	11/6/2017	8/30/2017
Analyte	Units	C18040463-004	C18010515-003	C17100456-004	C17070656-004
Acidity, Total as CaCO <sub>3</sub>	mg/L	352	360	400	281
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	23	24	27	27
Sulfate	mg/L	3820	3780	3880	3650
Calcium	mg/L	463	448	452	462
Magnesium	mg/L	497	501	486	486
Potassium	mg/L	11	11	11	12
Sodium	mg/L	116	110	113	115
pH	s.u.	3.43	3.49	3.27	3.00
Solids, Total Dissolved TDS @ 180 C	mg/L	5450	4920	5160	5040
Nitrogen, Ammonia as N	mg/L	1.5	1.9	2.2	1.9
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.01)	0.2	0.01	ND(0.01)
Aluminum	mg/L	25.4	25.5	21.0	18.0
Beryllium	mg/L	0.042	0.042	0.036	0.038
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.778	0.828	0.78	0.81
Lead	mg/L	0.003	0.002	0.009	0.004
Manganese	mg/L	9.45	9.66	9.55	10.1
Molybdenum	mg/L	0.058	0.116	0.3	ND(0.1)
Nickel	mg/L	1.01	1.01	0.99	0.99
Uranium	mg/L	0.307	0.301	0.254	0.220
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	0.001	0.001
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.52	-2.28	-3.73	-1.90
Anions	meq/L	80.5	79.5	81.8	77.0
Cations	meq/L	76.5	76.0	75.9	74.1
Solids, Total Dissolved - Calculated	mg/L	5000	4900	5000	4800
TDS Ratio	unitless	1.10	1.00	1.03	1.06
Gross Alpha minus Rn & U	pCi/L	10.9	10	9.5	10.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.3	2.2	2.1	2.2
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.5	0.6	0.5
Lead 210	pCi/L	1.1	-0.2	-4	1.2
Lead 210 precision (±)	pCi/L	0.8	0.6	0.9	0.8
Lead 210 MDC	pCi/L	1.3	1.1	1.6	1.3
Radium 226	pCi/L	7.5	8.4	7.7	7.7
Radium 226 precision (±)	pCi/L	1.5	1.7	1.5	1.5
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	8.3	12.0	7.2	5.4
Radium 228 precision (±)	pCi/L	1.8	2.5	1.5	1.3
Radium 228 MDC	pCi/L	1.4	1.3	1.0	1.2
Thorium 230	pCi/L	0.1	0.2	0.2	0.06
Thorium 230 precision (±)	pCi/L	0.2	0.3	0.09	0.1
Thorium 230 MDC	pCi/L	0.3	0.5	0.1	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010515-001  
**Client Sample ID:** 613

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 08:30  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	3190	mg/L				A2310 B	01/22/18 12:04 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/19/18 15:10 / mvr
Chloride	109	mg/L	D	5		E300.0	01/24/18 01:09 / lji
Sulfate	8080	mg/L	D	20		E300.0	01/24/18 01:09 / lji
Calcium	440	mg/L		1		E200.7	01/26/18 19:56 / eli-b
Magnesium	735	mg/L		1		E200.7	01/26/18 19:56 / eli-b
Potassium	2	mg/L		1		E200.7	01/26/18 19:56 / eli-b
Sodium	234	mg/L	D	2		E200.7	01/26/18 19:56 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.02	s.u.	H	0.01		A4500-H B	01/19/18 11:27 / jeu
Solids, Total Dissolved TDS @ 180 C	11200	mg/L	D	100		A2540 C	01/19/18 12:24 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	1.28	mg/L		0.01		E353.2	01/19/18 12:54 / dmb
Nitrogen, Ammonia as N	140	mg/L	D	5		A4500-NH3 G	01/22/18 10:45 / dmb
<b>METALS, TOTAL</b>							
Aluminum	522	mg/L	D	0.08		E200.8	01/22/18 17:30 / eli-b
Beryllium	0.153	mg/L		0.001		E200.8	01/22/18 17:30 / eli-b
Cadmium	0.046	mg/L		0.001		E200.8	01/22/18 17:30 / eli-b
Cobalt	1.90	mg/L		0.005		E200.8	01/22/18 17:30 / eli-b
Lead	0.006	mg/L		0.001		E200.8	01/22/18 17:30 / eli-b
Manganese	47.7	mg/L	D	0.004		E200.8	01/22/18 17:30 / eli-b
Molybdenum	0.012	mg/L		0.001		E200.8	01/22/18 17:30 / eli-b
Nickel	1.89	mg/L		0.005		E200.8	01/22/18 17:30 / eli-b
Uranium	0.696	mg/L		0.0003		E200.8	01/22/18 17:30 / eli-b
Vanadium	1.10	mg/L		0.01		E200.8	01/22/18 17:30 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 04:51 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 17:59 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	34.3	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U Precision (±)	6.8	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 13:31 / dmf
Lead 210	0.8	pCi/L	U			E909.0	01/27/18 08:44 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/27/18 08:44 / meh
Lead 210 MDC	1.1	pCi/L				E909.0	01/27/18 08:44 / meh
Radium 226	9.1	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 226 precision (±)	1.8	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 228	1.5	pCi/L				RA-05	02/09/18 12:32 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010515-001  
**Client Sample ID:** 613

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 08:30  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 precision (±)	0.8	pCi/L				RA-05	02/09/18 12:32 / trs
Radium 228 MDC	1.3	pCi/L				RA-05	02/09/18 12:32 / trs
Thorium 230	491	pCi/L				E908.0	02/16/18 10:13 / cnh
Thorium 230 precision (±)	93.3	pCi/L				E908.0	02/16/18 10:13 / cnh
Thorium 230 MDC	13.2	pCi/L				E908.0	02/16/18 10:13 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	9800	mg/L				A1030 E	02/27/18 15:29 / tla
A/C Balance	-2.10	%				A1030 E	02/27/18 15:29 / tla
Anions	172	meq/L				A1030 E	02/27/18 15:29 / tla
Cations	165	meq/L				A1030 E	02/27/18 15:29 / tla
TDS Ratio	1.15	unitless				A1030 E	02/27/18 15:29 / tla
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 15:43 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 15:43 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 15:43 / eli-b
Chloroform	45	ug/L		5.0		E624	01/26/18 13:32 / eli-b
Trihalomethanes, Total	45	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	104	%REC		71-139		E624	01/23/18 15:43 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127		E624	01/23/18 15:43 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	01/23/18 15:43 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 3.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-001  
**Client Sample ID:** 613

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 08:21  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	3100	mg/L				A2310 B	04/17/18 15:45 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/13/18 20:10 / dmb
Chloride	108	mg/L	D	5.0		E300.0	04/14/18 02:21 / ljl
Sulfate	8180	mg/L	D	20		E300.0	04/14/18 02:21 / ljl
Calcium	447	mg/L	D	7		E200.7	04/19/18 09:57 / eli-b
Magnesium	684	mg/L		1		E200.7	04/17/18 03:23 / eli-b
Potassium	2	mg/L		1		E200.7	04/17/18 03:23 / eli-b
Sodium	230	mg/L	D	2		E200.7	04/17/18 03:23 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.01	s.u.	H	0.01		A4500-H B	04/13/18 11:16 / ljl
Solids, Total Dissolved TDS @ 180 C	10200	mg/L	D	100		A2540 C	04/14/18 17:44 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	1.54	mg/L	D	0.05		E353.2	04/13/18 16:51 / dmb
Nitrogen, Ammonia as N	155	mg/L	D	5		A4500-NH3 G	04/16/18 14:25 / dmb
<b>METALS, TOTAL</b>							
Aluminum	519	mg/L	D	0.3		E200.7	04/23/18 19:59 / eli-b
Beryllium	0.140	mg/L		0.001		E200.8	04/18/18 03:24 / eli-b
Cadmium	0.044	mg/L		0.001		E200.8	04/18/18 03:24 / eli-b
Cobalt	1.78	mg/L		0.005		E200.8	04/18/18 03:24 / eli-b
Lead	0.006	mg/L		0.001		E200.8	04/18/18 03:24 / eli-b
Manganese	45.7	mg/L		0.001		E200.8	04/18/18 03:24 / eli-b
Molybdenum	0.011	mg/L		0.001		E200.8	04/18/18 03:24 / eli-b
Nickel	1.82	mg/L		0.005		E200.8	04/18/18 03:24 / eli-b
Uranium	0.652	mg/L		0.0003		E200.8	04/18/18 03:24 / eli-b
Vanadium	1.11	mg/L		0.01		E200.8	04/18/18 03:24 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	0.001	mg/L		0.001		E1632AM	04/20/18 14:45 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:48 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	9800	mg/L				A1030 E	05/01/18 17:03 / tjp
A/C Balance	-3.69	%				A1030 E	05/01/18 17:03 / tjp
Anions	174	meq/L				A1030 E	05/01/18 17:03 / tjp
Cations	162	meq/L				A1030 E	05/01/18 17:03 / tjp
TDS Ratio	1.04	unitless				A1030 E	05/01/18 17:03 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	21.9	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U Precision (±)	4.4	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/23/18 15:33 / trs
Lead 210	0.9	pCi/L	U			E909.0	04/21/18 18:35 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-001  
**Client Sample ID:** 613

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 08:21  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/21/18 18:35 / meh
Lead 210 MDC	1.3	pCi/L				E909.0	04/21/18 18:35 / meh
Radium 226	13.0	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 226 precision (±)	2.5	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 228	0.5	pCi/L	U			RA-05	04/19/18 10:49 / plj
Radium 228 precision (±)	0.9	pCi/L				RA-05	04/19/18 10:49 / plj
Radium 228 MDC	1.4	pCi/L				RA-05	04/19/18 10:49 / plj
Thorium 230	476	pCi/L				E908.0	05/11/18 13:08 / cnh
Thorium 230 precision (±)	90.4	pCi/L				E908.0	05/11/18 13:08 / cnh
Thorium 230 MDC	13.5	pCi/L				E908.0	05/11/18 13:08 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/17/18 19:35 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/17/18 19:35 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/17/18 19:35 / eli-b
Chloroform	56	ug/L		5.0		E624	04/18/18 15:50 / eli-b
Trihalomethanes, Total	56	ug/L		0.50		E624	05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	04/17/18 19:35 / eli-b
Surr: p-Bromofluorobenzene	97.0	%REC		80-127		E624	04/17/18 19:35 / eli-b
Surr: Toluene-d8	94.0	%REC		80-123		E624	04/17/18 19:35 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 3

Well ID:		613	613	613	613
Collection Date:		4/9/2018	1/15/2018	10/9/2017	7/17/2017
Receive Date:		4/12/2018	1/18/2018	10/12/2017	7/20/2017
Report Date:		5/15/2018	2/28/2018	11/6/2017	8/30/2017
Analyte	Units	C18040463-001	C18010515-001	C17100456-001	C17070656-001
Acidity, Total as CaCO <sub>3</sub>	mg/L	3100	3120	3030	3430
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	108	109	104	126
Sulfate	mg/L	8180	8080	7730	8840
Calcium	mg/L	447	440	416	431
Magnesium	mg/L	684	735	678	695
Potassium	mg/L	2	2	2	1
Sodium	mg/L	230	234	211	229
pH	s.u.	3.01	3.02	3.01	3.00
Solids, Total Dissolved TDS @ 180 C	mg/L	10200	11200	10600	10700
Nitrogen, Ammonia as N	mg/L	155	140	151	144
Nitrogen, Nitrate+Nitrite as N	mg/L	1.54	1.28	1.90	1.87
Aluminum	mg/L	519	522	512	561
Beryllium	mg/L	0.140	0.153	0.131	0.165
Cadmium	mg/L	0.044	0.046	0.044	0.043
Cobalt	mg/L	1.78	1.90	1.81	1.97
Lead	mg/L	0.006	0.006	0.006	0.010
Manganese	mg/L	45.7	47.7	45.7	47.7
Molybdenum	mg/L	0.011	0.012	ND(0.1)	ND(0.1)
Nickel	mg/L	1.82	1.89	1.86	1.87
Uranium	mg/L	0.652	0.696	0.732	0.764
Vanadium	mg/L	1.11	1.10	1.1	1.3
Arsenic-III	mg/L	0.001	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-3.69	-2.10	-2.35	-4.82
Anions	meq/L	174	172	165	184
Cations	meq/L	162	165	157	167
Solids, Total Dissolved - Calculated	mg/L	9800	9800	9200	10000
TDS Ratio	unitless	1.04	1.15	1.16	1.06
Gross Alpha minus Rn & U	pCi/L	21.9	34.3	36.1	38.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	4.4	6.8	7.1	7.9
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.5	0.6	1.1
Lead 210	pCi/L	0.9	0.8	-4	1.6
Lead 210 precision (±)	pCi/L	0.8	0.7	0.9	0.9
Lead 210 MDC	pCi/L	1.3	1.1	1.7	1.3
Radium 226	pCi/L	13.0	9.1	10.6	12.1
Radium 226 precision (±)	pCi/L	2.5	1.8	2.1	2.4
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	0.5	1.5	0.8	1
Radium 228 precision (±)	pCi/L	0.9	0.8	0.7	1.3
Radium 228 MDC	pCi/L	1.4	1.3	1.1	2.1
Thorium 230	pCi/L	476	491	528	571
Thorium 230 precision (±)	pCi/L	90.4	93.3	100	108
Thorium 230 MDC	pCi/L	13.5	13.2	12.9	14.4
Trihalomethanes, Total	ug/L	56	45	61	68

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010515-002  
**Client Sample ID:** 708

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 10:42  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	812	mg/L				A2310 B	01/22/18 12:14 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/19/18 15:13 / mvr
Chloride	25	mg/L	D	2		E300.0	01/24/18 19:29 / lji
Sulfate	4560	mg/L	D	8		E300.0	01/24/18 19:29 / lji
Calcium	448	mg/L		1		E200.7	01/26/18 20:00 / eli-b
Magnesium	614	mg/L		1		E200.7	01/26/18 20:00 / eli-b
Potassium	13	mg/L		1		E200.7	01/26/18 20:00 / eli-b
Sodium	126	mg/L	D	2		E200.7	01/26/18 20:00 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.56	s.u.	H	0.01		A4500-H B	01/19/18 11:30 / jeu
Solids, Total Dissolved TDS @ 180 C	6640	mg/L	D	100		A2540 C	01/19/18 12:25 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	D	0.1		E353.2	02/02/18 12:54 / dmb
Nitrogen, Ammonia as N	1.06	mg/L		0.05		A4500-NH3 G	01/22/18 10:13 / dmb
Ran at 10X dilution due to metals and acidification interference							
<b>METALS, TOTAL</b>							
Aluminum	44.4	mg/L	D	0.04		E200.8	01/22/18 17:33 / eli-b
Beryllium	0.071	mg/L		0.001		E200.8	01/22/18 17:33 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/22/18 17:33 / eli-b
Cobalt	0.528	mg/L		0.005		E200.8	01/22/18 17:33 / eli-b
Lead	0.008	mg/L		0.001		E200.8	01/22/18 17:33 / eli-b
Manganese	13.8	mg/L	D	0.002		E200.8	01/22/18 17:33 / eli-b
Molybdenum	0.029	mg/L		0.001		E200.8	01/22/18 17:33 / eli-b
Nickel	0.578	mg/L		0.005		E200.8	01/22/18 17:33 / eli-b
Uranium	0.147	mg/L		0.0003		E200.8	01/22/18 17:33 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/22/18 17:33 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 05:03 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:04 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	15.1	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U Precision (±)	3.1	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 13:31 / dmf
Lead 210	0.9	pCi/L	U			E909.0	01/27/18 11:31 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/27/18 11:31 / meh
Lead 210 MDC	1.1	pCi/L				E909.0	01/27/18 11:31 / meh
Radium 226	7.9	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 226 precision (±)	1.6	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/14/18 10:41 / arh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010515-002  
**Client Sample ID:** 708

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 10:42  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228	5.1	pCi/L				RA-05	02/09/18 12:32 / trs
Radium 228 precision (±)	1.3	pCi/L				RA-05	02/09/18 12:32 / trs
Radium 228 MDC	1.3	pCi/L				RA-05	02/09/18 12:32 / trs
Thorium 230	0.9	pCi/L				E908.0	02/06/18 17:12 / cnh
Thorium 230 precision (±)	0.5	pCi/L				E908.0	02/06/18 17:12 / cnh
Thorium 230 MDC	0.8	pCi/L				E908.0	02/06/18 17:12 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5800	mg/L				A1030 E	02/27/18 09:33 / tla
A/C Balance	-0.47	%				A1030 E	02/27/18 09:33 / tla
Anions	96.4	meq/L				A1030 E	02/27/18 09:33 / tla
Cations	95.5	meq/L				A1030 E	02/27/18 09:33 / tla
TDS Ratio	1.14	unitless				A1030 E	02/27/18 09:33 / tla
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 16:11 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 16:11 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 16:11 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/23/18 16:11 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	105	%REC		71-139		E624	01/23/18 16:11 / eli-b
Surr: p-Bromofluorobenzene	114	%REC		80-127		E624	01/23/18 16:11 / eli-b
Surr: Toluene-d8	107	%REC		80-123		E624	01/23/18 16:11 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 4.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-003  
**Client Sample ID:** 708

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 10:14  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	777	mg/L				A2310 B	04/17/18 15:46 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/13/18 20:16 / dmb
Chloride	25	mg/L	D	2.0		E300.0	04/14/18 02:57 / ljl
Sulfate	4450	mg/L	D	8.0		E300.0	04/14/18 02:57 / ljl
Calcium	467	mg/L	D	7		E200.7	04/19/18 10:05 / eli-b
Magnesium	593	mg/L		1		E200.7	04/17/18 03:31 / eli-b
Potassium	13	mg/L		1		E200.7	04/17/18 03:31 / eli-b
Sodium	126	mg/L	D	2		E200.7	04/17/18 03:31 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.11	s.u.	H	0.01		A4500-H B	04/13/18 11:31 / ljl
Solids, Total Dissolved TDS @ 180 C	6450	mg/L	D	40		A2540 C	04/13/18 13:06 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	04/13/18 16:53 / dmb
Nitrogen, Ammonia as N	0.84	mg/L		0.05		A4500-NH3 G	04/16/18 14:27 / dmb
<b>METALS, TOTAL</b>							
Aluminum	40.3	mg/L		0.03		E200.8	04/18/18 03:35 / eli-b
Beryllium	0.066	mg/L		0.001		E200.8	04/18/18 03:35 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/18/18 03:35 / eli-b
Cobalt	0.504	mg/L		0.005		E200.8	04/18/18 03:35 / eli-b
Lead	0.008	mg/L		0.001		E200.8	04/18/18 03:35 / eli-b
Manganese	13.6	mg/L		0.001		E200.8	04/18/18 03:35 / eli-b
Molybdenum	0.006	mg/L		0.001		E200.8	04/18/18 03:35 / eli-b
Nickel	0.584	mg/L		0.005		E200.8	04/18/18 03:35 / eli-b
Uranium	0.137	mg/L		0.0003		E200.8	04/18/18 03:35 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 03:35 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	0.001	mg/L		0.001		E1632AM	04/20/18 15:09 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:51 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5700	mg/L				A1030 E	05/01/18 17:04 / tjp
A/C Balance	-0.33	%				A1030 E	05/01/18 17:04 / tjp
Anions	94.1	meq/L				A1030 E	05/01/18 17:04 / tjp
Cations	93.5	meq/L				A1030 E	05/01/18 17:04 / tjp
TDS Ratio	1.13	unitless				A1030 E	05/01/18 17:04 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	14.3	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U Precision (±)	3.0	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/23/18 15:33 / trs
Lead 210	1.2	pCi/L	U			E909.0	04/22/18 00:44 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C18040463-003  
Client Sample ID: 708

Report Date: 05/15/18  
Collection Date: 04/09/18 10:14  
Date Received: 04/12/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 precision (±)	0.9	pCi/L			E909.0		04/22/18 00:44 / meh
Lead 210 MDC	1.3	pCi/L			E909.0		04/22/18 00:44 / meh
Radium 226	10.8	pCi/L			E903.0		04/24/18 10:39 / arh
Radium 226 precision (±)	2.1	pCi/L			E903.0		04/24/18 10:39 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		04/24/18 10:39 / arh
Radium 228	4.3	pCi/L			RA-05		04/19/18 10:48 / plj
Radium 228 precision (±)	1.3	pCi/L			RA-05		04/19/18 10:48 / plj
Radium 228 MDC	1.4	pCi/L			RA-05		04/19/18 10:48 / plj
Thorium 230	0.7	pCi/L		U	E908.0		05/09/18 12:08 / cnh
Thorium 230 precision (±)	0.9	pCi/L			E908.0		05/09/18 12:08 / cnh
Thorium 230 MDC	1.5	pCi/L			E908.0		05/09/18 12:08 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		04/17/18 19:06 / eli-b
Bromoform	ND	ug/L		0.50	E624		04/17/18 19:06 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		04/17/18 19:06 / eli-b
Chloroform	0.23	ug/L	J	0.50	E624		04/17/18 19:06 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139	E624		04/17/18 19:06 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127	E624		04/17/18 19:06 / eli-b
Surr: Toluene-d8	98.0	%REC		80-123	E624		04/17/18 19:06 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
J - Estimated value. The analyte was present but less than the reporting limit.



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United Nuclear Corporation

Zone 3

Well ID:		708	708	708	708
Collection Date:		4/9/2018	1/15/2018	10/9/2017	7/17/2017
Receive Date:		4/12/2018	1/18/2018	10/12/2017	7/20/2017
Report Date:		5/15/2018	2/28/2018	11/6/2017	8/30/2017
Analyte	Units	C18040463-003	C18010515-002	C17100456-003	C17070656-003
Acidity, Total as CaCO <sub>3</sub>	mg/L	777	833	820	866
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	25	25	26	28
Sulfate	mg/L	4450	4560	4450	4530
Calcium	mg/L	467	448	426	432
Magnesium	mg/L	593	614	573	577
Potassium	mg/L	13	13	13	12
Sodium	mg/L	126	126	115	117
pH	s.u.	3.11	3.56	3.31	3.01
Solids, Total Dissolved TDS @ 180 C	mg/L	6450	6640	6410	6260
Nitrogen, Ammonia as N	mg/L	0.84	1.06	0.87	0.81
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.01)	ND(0.1)	0.01	ND(0.01)
Aluminum	mg/L	40.3	44.4	42.9	47.6
Beryllium	mg/L	0.066	0.071	0.069	0.074
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.504	0.528	0.48	0.54
Lead	mg/L	0.008	0.008	0.008	0.007
Manganese	mg/L	13.6	13.8	13.5	14.6
Molybdenum	mg/L	0.006	0.029	ND(0.1)	ND(0.1)
Nickel	mg/L	0.584	0.578	0.56	0.60
Uranium	mg/L	0.137	0.147	0.148	0.137
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.001	ND(0.001)	0.001	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-0.33	-0.47	-2.12	-2.23
Anions	meq/L	94.1	96.4	94.0	96.0
Cations	meq/L	93.5	95.5	90.1	91.8
Solids, Total Dissolved - Calculated	mg/L	5700	5800	5600	5700
TDS Ratio	unitless	1.13	1.14	1.13	1.10
Gross Alpha minus Rn & U	pCi/L	14.3	15.1	16.2	15.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	3.0	3.1	3.4	3.8
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.5	0.6	1.6
Lead 210	pCi/L	1.2	0.9	-4	2.1
Lead 210 precision (±)	pCi/L	0.9	0.7	0.9	1.0
Lead 210 MDC	pCi/L	1.3	1.1	1.7	1.3
Radium 226	pCi/L	10.8	7.9	8.6	8.3
Radium 226 precision (±)	pCi/L	2.1	1.6	1.7	1.6
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	4.3	5.1	2.9	2.8
Radium 228 precision (±)	pCi/L	1.3	1.3	0.9	0.9
Radium 228 MDC	pCi/L	1.4	1.3	1.1	1.1
Thorium 230	pCi/L	0.7	0.9	0.2	0.4
Thorium 230 precision (±)	pCi/L	0.9	0.5	0.3	0.4
Thorium 230 MDC	pCi/L	1.5	0.8	0.6	0.7
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010515-004  
**Client Sample ID:** EPA-13

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 13:56  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	50	mg/L		5		A2320 B	01/19/18 15:23 / mvr
Chloride	40	mg/L	D	5		E300.0	01/24/18 02:04 / ljl
Sulfate	5420	mg/L	D	20		E300.0	01/24/18 02:04 / ljl
Calcium	482	mg/L		1		E200.7	01/26/18 20:17 / eli-b
Magnesium	1000	mg/L		1		E200.7	01/26/18 20:17 / eli-b
Potassium	15	mg/L		1		E200.7	01/26/18 20:17 / eli-b
Sodium	181	mg/L	D	2		E200.7	01/26/18 20:17 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.25	s.u.	H	0.01		A4500-H B	01/19/18 11:36 / jeu
Solids, Total Dissolved TDS @ 180 C	7650	mg/L	D	100		A2540 C	01/19/18 12:25 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.07	mg/L		0.01		E353.2	01/19/18 13:00 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	01/22/18 10:23 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L	D	0.04		E200.8	01/22/18 17:39 / eli-b
Beryllium	0.002	mg/L		0.001		E200.8	01/22/18 17:39 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/22/18 17:39 / eli-b
Cobalt	0.127	mg/L		0.005		E200.8	01/22/18 17:39 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/22/18 17:39 / eli-b
Manganese	7.06	mg/L	D	0.002		E200.8	01/22/18 17:39 / eli-b
Molybdenum	0.303	mg/L		0.001		E200.8	01/22/18 17:39 / eli-b
Nickel	0.293	mg/L		0.005		E200.8	01/22/18 17:39 / eli-b
Uranium	0.0124	mg/L		0.0003		E200.8	01/22/18 17:39 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/22/18 17:39 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	0.014	mg/L		0.001		E1632AM	01/23/18 05:27 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:07 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	7.3	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U Precision (±)	1.7	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 13:31 / dmf
Lead 210	0.2	pCi/L	U			E909.0	01/27/18 17:21 / meh
Lead 210 precision (±)	0.6	pCi/L				E909.0	01/27/18 17:21 / meh
Lead 210 MDC	1.1	pCi/L				E909.0	01/27/18 17:21 / meh
Radium 226	4.0	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 226 precision (±)	0.8	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/14/18 10:41 / arh
Radium 228	10.6	pCi/L				RA-05	02/09/18 12:32 / trs
Radium 228 precision (±)	2.3	pCi/L				RA-05	02/09/18 12:32 / trs

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010515-004  
**Client Sample ID:** EPA-13

**Report Date:** 02/28/18  
**Collection Date:** 01/15/18 13:56  
**Date Received:** 01/18/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.4	pCi/L				RA-05	02/09/18 12:32 / trs
Thorium 230	0.4	pCi/L				E908.0	02/06/18 17:12 / cnh
Thorium 230 precision (±)	0.2	pCi/L				E908.0	02/06/18 17:12 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/06/18 17:12 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7200	mg/L				A1030 E	02/27/18 09:34 / tla
A/C Balance	-0.05	%				A1030 E	02/27/18 09:34 / tla
Anions	115	meq/L				A1030 E	02/27/18 09:34 / tla
Cations	115	meq/L				A1030 E	02/27/18 09:34 / tla
TDS Ratio	1.06	unitless				A1030 E	02/27/18 09:34 / tla
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 17:08 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 17:08 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 17:08 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/23/18 17:08 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	112	%REC		71-139		E624	01/23/18 17:08 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127		E624	01/23/18 17:08 / eli-b
Surr: Toluene-d8	112	%REC		80-123		E624	01/23/18 17:08 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-005  
**Client Sample ID:** EPA-13

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 12:57  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	50	mg/L		5		A2320 B	04/13/18 20:28 / dmb
Chloride	43	mg/L	D	2.0		E300.0	04/14/18 03:34 / ljl
Sulfate	5460	mg/L	D	8.0		E300.0	04/14/18 03:34 / ljl
Calcium	490	mg/L	D	7		E200.7	04/19/18 10:13 / eli-b
Magnesium	974	mg/L		1		E200.7	04/17/18 03:47 / eli-b
Potassium	14	mg/L		1		E200.7	04/17/18 03:47 / eli-b
Sodium	189	mg/L	D	2		E200.7	04/17/18 03:47 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.20	s.u.	H	0.01		A4500-H B	04/13/18 11:40 / ljl
Solids, Total Dissolved TDS @ 180 C	7700	mg/L	D	100		A2540 C	04/13/18 13:07 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.06	mg/L		0.01		E353.2	04/17/18 14:10 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	04/16/18 14:32 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/18/18 19:27 / eli-b
Beryllium	0.002	mg/L		0.001		E200.8	04/18/18 19:27 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/18/18 19:27 / eli-b
Cobalt	0.140	mg/L		0.005		E200.8	04/18/18 19:27 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/18/18 19:27 / eli-b
Manganese	7.56	mg/L		0.001		E200.8	04/18/18 19:27 / eli-b
Molybdenum	0.238	mg/L		0.001		E200.8	04/18/18 19:27 / eli-b
Nickel	0.337	mg/L		0.005		E200.8	04/18/18 19:27 / eli-b
Uranium	0.0094	mg/L		0.0003		E200.8	04/18/18 19:27 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 19:27 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	0.012	mg/L		0.001		E1632AM	04/20/18 15:57 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:58 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7200	mg/L				A1030 E	05/01/18 17:04 / tjp
A/C Balance	-1.16	%				A1030 E	05/01/18 17:04 / tjp
Anions	116	meq/L				A1030 E	05/01/18 17:04 / tjp
Cations	113	meq/L				A1030 E	05/01/18 17:04 / tjp
TDS Ratio	1.07	unitless				A1030 E	05/01/18 17:04 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	7.5	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U Precision (±)	1.7	pCi/L				E900.1	04/23/18 15:33 / trs
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/23/18 15:33 / trs
Lead 210	0.3	pCi/L	U			E909.0	04/22/18 06:57 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	04/22/18 06:57 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040463-005  
**Client Sample ID:** EPA-13

**Report Date:** 05/15/18  
**Collection Date:** 04/09/18 12:57  
**Date Received:** 04/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	04/22/18 06:57 / meh
Radium 226	5.9	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 226 precision (±)	1.2	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/24/18 10:39 / arh
Radium 228	6.6	pCi/L				RA-05	04/19/18 10:48 / plj
Radium 228 precision (±)	1.6	pCi/L				RA-05	04/19/18 10:48 / plj
Radium 228 MDC	1.4	pCi/L				RA-05	04/19/18 10:48 / plj
Thorium 230	0.2	pCi/L	U			E908.0	05/09/18 12:08 / cnh
Thorium 230 precision (±)	0.3	pCi/L				E908.0	05/09/18 12:08 / cnh
Thorium 230 MDC	0.6	pCi/L				E908.0	05/09/18 12:08 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/18/18 15:21 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/18/18 15:21 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/18/18 15:21 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/18/18 15:21 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	04/18/18 15:21 / eli-b
Surr: p-Bromofluorobenzene	97.0	%REC		80-127		E624	04/18/18 15:21 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	04/18/18 15:21 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 3

Well ID:		EPA-13	EPA-13	EPA-13	EPA-13
Collection Date:		4/9/2018	1/15/2018	10/9/2017	7/17/2017
Receive Date:		4/12/2018	1/18/2018	10/12/2017	7/20/2017
Report Date:		5/15/2018	2/28/2018	11/6/2017	8/30/2017
Analyte	Units	C18040463-005	C18010515-004	C17100456-005	C17070656-005
Bicarbonate as HCO <sub>3</sub>	mg/L	50	50	66	41
Chloride	mg/L	43	40	42	45
Sulfate	mg/L	5460	5420	5310	5170
Calcium	mg/L	490	482	432	437
Magnesium	mg/L	974	1000	950	943
Potassium	mg/L	14	15	14	13
Sodium	mg/L	189	181	172	174
pH	s.u.	6.20	6.25	6.09	6.27
Solids, Total Dissolved TDS @ 180 C	mg/L	7700	7650	7240	5700
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	0.07	0.10
Nitrogen, Nitrate+Nitrite as N	mg/L	0.06	0.07	0.07	0.05
Aluminum	mg/L	ND(0.03)	ND(0.04)	ND(0.1)	ND(0.1)
Beryllium	mg/L	0.002	0.002	ND(0.001)	0.003
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.140	0.127	0.13	0.13
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	7.56	7.06	7.24	7.46
Molybdenum	mg/L	0.238	0.303	0.3	0.3
Nickel	mg/L	0.337	0.293	0.35	0.31
Uranium	mg/L	0.0094	0.0124	0.0090	0.0160
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.012	0.014	0.011	0.022
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-1.16	-0.05	-2.42	-1.09
Anions	meq/L	116	115	113	110
Cations	meq/L	113	115	108	107
Solids, Total Dissolved - Calculated	mg/L	7200	7200	7000	6800
TDS Ratio	unitless	1.07	1.06	1.04	0.84
Gross Alpha minus Rn & U	pCi/L	7.5	7.3	6.8	6.9
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.7	1.7	1.6	1.6
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.5	0.6	0.5
Lead 210	pCi/L	0.3	0.2	4	1.4
Lead 210 precision (±)	pCi/L	0.7	0.6	0.9	0.9
Lead 210 MDC	pCi/L	1.2	1.1	1.7	1.3
Radium 226	pCi/L	5.9	4.0	5.0	4.0
Radium 226 precision (±)	pCi/L	1.2	0.8	1.0	0.8
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	6.6	10.6	8.4	4.3
Radium 228 precision (±)	pCi/L	1.6	2.3	1.8	1.1
Radium 228 MDC	pCi/L	1.4	1.4	1.1	1.3
Thorium 230	pCi/L	0.2	0.4	0.07	0.1
Thorium 230 precision (±)	pCi/L	0.3	0.2	0.1	0.1
Thorium 230 MDC	pCi/L	0.6	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-001  
**Client Sample ID:** 717

**Report Date:** 02/27/18  
**Collection Date:** 01/16/18 09:06  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	1810	mg/L	H			A2310 B	02/26/18 16:25 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/22/18 19:05 / mvr
Chloride	58	mg/L	D	2		E300.0	01/25/18 03:59 / ljl
Sulfate	5530	mg/L	D	8		E300.0	01/25/18 03:59 / ljl
Calcium	450	mg/L		1		E200.7	01/24/18 15:58 / eli-b
Magnesium	509	mg/L		1		E200.7	01/24/18 15:58 / eli-b
Potassium	3	mg/L		1		E200.7	01/24/18 15:58 / eli-b
Sodium	178	mg/L	D	3		E200.7	01/24/18 15:58 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.28	s.u.	H	0.01		A4500-H B	01/22/18 12:46 / jeu
Solids, Total Dissolved TDS @ 180 C	7550	mg/L	D	100		A2540 C	01/22/18 12:39 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	15.0	mg/L	D	0.1		E353.2	01/23/18 12:02 / dmb
Nitrogen, Ammonia as N	36	mg/L	D	2		A4500-NH3 G	01/22/18 10:30 / dmb
<b>METALS, TOTAL</b>							
Aluminum	315	mg/L	D	0.09		E200.7	01/25/18 19:33 / eli-b
Beryllium	0.164	mg/L		0.001		E200.8	01/25/18 16:47 / eli-b
Cadmium	0.021	mg/L		0.001		E200.8	01/24/18 22:28 / eli-b
Cobalt	1.12	mg/L		0.005		E200.8	01/24/18 22:28 / eli-b
Lead	0.045	mg/L		0.001		E200.8	01/24/18 22:28 / eli-b
Manganese	19.9	mg/L	D	0.002		E200.8	01/24/18 22:28 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/26/18 12:36 / eli-b
Nickel	1.28	mg/L		0.005		E200.8	01/24/18 22:28 / eli-b
Uranium	0.656	mg/L		0.0003		E200.8	01/24/18 22:28 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/24/18 22:28 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/30/18 19:22 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:17 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	28.0	pCi/L				E900.1	02/16/18 09:40 / dmf
Gross Alpha minus Rn & U Precision (±)	5.6	pCi/L				E900.1	02/16/18 09:40 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	02/16/18 09:40 / dmf
Lead 210	3.7	pCi/L				E909.0	01/31/18 08:25 / meh
Lead 210 precision (±)	1.5	pCi/L				E909.0	01/31/18 08:25 / meh
Lead 210 MDC	1.6	pCi/L				E909.0	01/31/18 08:25 / meh
Radium 226	5.8	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 precision (±)	1.2	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 228	5.9	pCi/L				RA-05	02/14/18 12:16 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-001  
**Client Sample ID:** 717

**Report Date:** 02/27/18  
**Collection Date:** 01/16/18 09:06  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 precision (±)	1.5	pCi/L				RA-05	02/14/18 12:16 / plj
Radium 228 MDC	1.5	pCi/L				RA-05	02/14/18 12:16 / plj
Thorium 230	10.2	pCi/L				E908.0	02/16/18 10:13 / cnh
Thorium 230 precision (±)	1.9	pCi/L				E908.0	02/16/18 10:13 / cnh
Thorium 230 MDC	0.6	pCi/L				E908.0	02/16/18 10:13 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6900	mg/L				A1030 E	02/27/18 09:56 / tia
A/C Balance	-3.34	%				A1030 E	02/27/18 09:56 / tia
Anions	118	meq/L				A1030 E	02/27/18 09:56 / tia
Cations	111	meq/L				A1030 E	02/27/18 09:56 / tia
TDS Ratio	1.09	unitless				A1030 E	02/27/18 09:56 / tia
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/25/18 19:45 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/25/18 19:45 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/25/18 19:45 / eli-b
Chloroform	0.64	ug/L		0.50		E624	01/25/18 19:45 / eli-b
Trihalomethanes, Total	0.64	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	122	%REC		71-139		E624	01/25/18 19:45 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	01/25/18 19:45 / eli-b
Surr: Toluene-d8	121	%REC		80-123		E624	01/25/18 19:45 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 3.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-001  
**Client Sample ID:** 717

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 09:50  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	1800	mg/L				A2310 B	04/17/18 15:47 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/14/18 21:23 / mvr
Chloride	57	mg/L	D	2		E300.0	05/02/18 13:44 / ljl
Sulfate	5150	mg/L	D	8		E300.0	05/02/18 13:44 / ljl
Calcium	430	mg/L		1		E200.7	04/19/18 21:11 / eli-b
Magnesium	484	mg/L		1		E200.7	04/19/18 21:11 / eli-b
Potassium	3	mg/L		1		E200.7	04/19/18 21:11 / eli-b
Sodium	159	mg/L	D	2		E200.7	04/19/18 21:11 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.36	s.u.	H	0.01		A4500-H B	04/14/18 16:58 / mvr
Solids, Total Dissolved TDS @ 180 C	7390	mg/L	D	100		A2540 C	04/14/18 17:41 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	11.4	mg/L	D	0.05		E353.2	04/17/18 15:07 / dmb
Nitrogen, Ammonia as N	34	mg/L	D	2		A4500-NH3 G	04/16/18 14:40 / dmb
<b>METALS, TOTAL</b>							
Aluminum	290	mg/L		0.03		E200.8	04/18/18 23:31 / eli-b
Beryllium	0.198	mg/L		0.001		E200.8	04/18/18 23:31 / eli-b
Cadmium	0.021	mg/L		0.001		E200.8	04/18/18 23:31 / eli-b
Cobalt	1.19	mg/L		0.005		E200.8	04/18/18 23:31 / eli-b
Lead	0.033	mg/L		0.001		E200.8	04/18/18 23:31 / eli-b
Manganese	20.0	mg/L		0.001		E200.8	04/18/18 23:31 / eli-b
Molybdenum	0.001	mg/L		0.001		E200.8	04/18/18 23:31 / eli-b
Nickel	1.32	mg/L		0.005		E200.8	04/18/18 23:31 / eli-b
Uranium	0.666	mg/L		0.0003		E200.8	04/18/18 23:31 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 23:31 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	0.001	mg/L		0.001		E1632AM	04/20/18 16:57 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 14:06 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6500	mg/L				A1030 E	05/07/18 15:18 / tjp
A/C Balance	-1.69	%				A1030 E	05/07/18 15:18 / tjp
Anions	110	meq/L				A1030 E	05/07/18 15:18 / tjp
Cations	107	meq/L				A1030 E	05/07/18 15:18 / tjp
TDS Ratio	1.14	unitless				A1030 E	05/07/18 15:18 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	39.2	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U Precision (±)	7.7	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/26/18 12:44 / trs
Lead 210	3.0	pCi/L				E909.0	04/24/18 15:57 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C18040522-001  
Client Sample ID: 717

Report Date: 05/18/18  
Collection Date: 04/10/18 09:50  
Date Received: 04/13/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 precision (±)	1.2	pCi/L			E909.0		04/24/18 15:57 / meh
Lead 210 MDC	1.4	pCi/L			E909.0		04/24/18 15:57 / meh
Radium 226	10.3	pCi/L			E903.0		05/07/18 11:02 / arh
Radium 226 precision (±)	2.0	pCi/L			E903.0		05/07/18 11:02 / arh
Radium 226 MDC	0.1	pCi/L			E903.0		05/07/18 11:02 / arh
Radium 228	9.3	pCi/L			RA-05		05/02/18 12:02 / plj
Radium 228 precision (±)	2.1	pCi/L			RA-05		05/02/18 12:02 / plj
Radium 228 MDC	1.9	pCi/L			RA-05		05/02/18 12:02 / plj
Thorium 230	8.0	pCi/L			E908.0		05/11/18 13:08 / cnh
Thorium 230 precision (±)	1.5	pCi/L			E908.0		05/11/18 13:08 / cnh
Thorium 230 MDC	1.6	pCi/L			E908.0		05/11/18 13:08 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		04/19/18 12:17 / eli-b
Bromoform	ND	ug/L		0.50	E624		04/19/18 12:17 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		04/19/18 12:17 / eli-b
Chloroform	0.58	ug/L		0.50	E624		04/19/18 12:17 / eli-b
Trihalomethanes, Total	0.58	ug/L		0.50	E624		05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	104	%REC		71-139	E624		04/19/18 12:17 / eli-b
Surr: p-Bromofluorobenzene	110	%REC		80-127	E624		04/19/18 12:17 / eli-b
Surr: Toluene-d8	104	%REC		80-123	E624		04/19/18 12:17 / eli-b

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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United Nuclear Corporation

Zone 3

Well ID:		717	717	717	717
Collection Date:		4/10/2018	1/16/2018	10/9/2017	7/18/2017
Receive Date:		4/13/2018	1/19/2018	10/12/2017	7/21/2017
Report Date:		5/18/2018	2/27/2018	11/6/2017	9/20/2017
Analyte	Units	C18040522-001	C18010559-001	C17100456-007	C17070708-005
Acidity, Total as CaCO <sub>3</sub>	mg/L	1800	1810	1750	2010
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	57	58	57	64
Sulfate	mg/L	5150	5530	5230	5160
Calcium	mg/L	430	450	445	463
Magnesium	mg/L	484	509	496	506
Potassium	mg/L	3	3	2	1
Sodium	mg/L	159	178	163	181
pH	s.u.	3.36	3.28	3.20	3.11
Solids, Total Dissolved TDS @ 180 C	mg/L	7390	7550	7300	7650
Nitrogen, Ammonia as N	mg/L	34	36	39	40
Nitrogen, Nitrate+Nitrite as N	mg/L	11.4	15.0	17.6	19.2
Aluminum	mg/L	290	315	285	274
Beryllium	mg/L	0.198	0.164	0.156	0.130
Cadmium	mg/L	0.021	0.021	0.019	0.019
Cobalt	mg/L	1.19	1.12	1.16	1.09
Lead	mg/L	0.033	0.045	0.036	0.039
Manganese	mg/L	20.0	19.9	20.2	20.2
Molybdenum	mg/L	0.001	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	1.32	1.28	1.26	1.22
Uranium	mg/L	0.666	0.656	0.619	0.516
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.001	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-1.69	-3.34	-2.11	1.94
Anions	meq/L	110	118	113	111
Cations	meq/L	107	111	108	116
Solids, Total Dissolved - Calculated	mg/L	6500	6900	6500	6600
TDS Ratio	unitless	1.14	1.09	1.12	1.15
Gross Alpha minus Rn & U	pCi/L	39.2	28.0	24.4	30.8
Gross Alpha minus Rn & U Precision (±)	pCi/L	7.7	5.6	4.9	6.1
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.6	0.6	0.5
Lead 210	pCi/L	3.0	3.7	3	3.4
Lead 210 precision (±)	pCi/L	1.2	1.5	1	1.4
Lead 210 MDC	pCi/L	1.4	1.6	1.7	1.5
Radium 226	pCi/L	10.3	5.8	12.0	12.6
Radium 226 precision (±)	pCi/L	2.0	1.2	2.3	2.5
Radium 226 MDC	pCi/L	0.1	0.1	0.2	0.3
Radium 228	pCi/L	9.3	5.9	7.0	0.6
Radium 228 precision (±)	pCi/L	2.1	1.5	1.6	0.9
Radium 228 MDC	pCi/L	1.9	1.5	1.2	1.4
Thorium 230	pCi/L	8.0	10.2	19.4	19.8
Thorium 230 precision (±)	pCi/L	1.5	1.9	3.8	3.8
Thorium 230 MDC	pCi/L	1.6	0.6	24.3	0.8
Trihalomethanes, Total	ug/L	0.58	0.64	ND(0.50)	ND(0.50)

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-007  
**Client Sample ID:** 719

**Report Date:** 02/27/18  
**Collection Date:** 01/17/18 10:00  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	28	mg/L		5		A2320 B	01/23/18 18:05 / mvr
Chloride	31	mg/L	D	2		E300.0	01/25/18 05:48 / ljl
Sulfate	4410	mg/L	D	8		E300.0	01/25/18 05:48 / ljl
Calcium	447	mg/L		1		E200.7	01/24/18 16:48 / eli-b
Magnesium	676	mg/L		1		E200.7	01/24/18 16:48 / eli-b
Potassium	12	mg/L		1		E200.7	01/24/18 16:48 / eli-b
Sodium	139	mg/L	D	3		E200.7	01/24/18 16:48 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	5.71	s.u.	H	0.01		A4500-H B	01/23/18 11:28 / jeu
Solids, Total Dissolved TDS @ 180 C	5960	mg/L	DH	100		A2540 C	01/24/18 15:34 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	D	0.1		E353.2	02/02/18 12:59 / dmb
Nitrogen, Ammonia as N	0.45	mg/L		0.05		A4500-NH3 G	01/26/18 14:52 / dmb
Ran at 10X dilution due to metals and acidification interference							
<b>METALS, TOTAL</b>							
Aluminum	2.11	mg/L	D	0.06		E200.7	01/25/18 20:31 / eli-b
Beryllium	0.001	mg/L		0.001		E200.8	01/25/18 17:04 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/24/18 22:46 / eli-b
Cobalt	0.258	mg/L		0.005		E200.8	01/24/18 22:46 / eli-b
Lead	0.005	mg/L		0.001		E200.8	01/24/18 22:46 / eli-b
Manganese	6.00	mg/L	D	0.002		E200.8	01/24/18 22:46 / eli-b
Molybdenum	0.226	mg/L		0.001		E200.8	01/24/18 22:46 / eli-b
Nickel	0.359	mg/L		0.005		E200.8	01/24/18 22:46 / eli-b
Uranium	0.0267	mg/L		0.0003		E200.8	01/24/18 22:46 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/24/18 22:46 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	0.002	mg/L		0.001		E1632AM	01/30/18 21:10 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:30 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	7.2	pCi/L				E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U Precision (±)	1.7	pCi/L				E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	02/16/18 09:38 / dmf
Lead 210	0.7	pCi/L	U			E909.0	02/01/18 00:43 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	02/01/18 00:43 / meh
Lead 210 MDC	1.5	pCi/L				E909.0	02/01/18 00:43 / meh
Radium 226	3.6	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 precision (±)	0.7	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 228	10.2	pCi/L				RA-05	02/14/18 13:57 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-007  
**Client Sample ID:** 719

**Report Date:** 02/27/18  
**Collection Date:** 01/17/18 10:00  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 precision (±)	2.2	pCi/L				RA-05	02/14/18 13:57 / plj
Radium 228 MDC	1.4	pCi/L				RA-05	02/14/18 13:57 / plj
Thorium 230	0.3	pCi/L				E908.0	02/16/18 10:13 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	02/16/18 10:13 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	02/16/18 10:13 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5700	mg/L				A1030 E	02/01/18 09:55 / tjp
A/C Balance	-4.97	%				A1030 E	02/01/18 09:55 / tjp
Anions	93.1	meq/L				A1030 E	02/01/18 09:55 / tjp
Cations	84.3	meq/L				A1030 E	02/01/18 09:55 / tjp
TDS Ratio	1.04	unitless				A1030 E	02/01/18 09:55 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/26/18 15:59 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/26/18 15:59 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/26/18 15:59 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/26/18 15:59 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	91.0	%REC		71-139		E624	01/26/18 15:59 / eli-b
Surr: p-Bromofluorobenzene	93.0	%REC		80-127		E624	01/26/18 15:59 / eli-b
Surr: Toluene-d8	97.0	%REC		80-123		E624	01/26/18 15:59 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-005  
**Client Sample ID:** 719

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 16:10  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	36	mg/L		5		A2320 B	04/14/18 21:48 / mvr
Chloride	30	mg/L	D	2		E300.0	05/02/18 15:00 / ljl
Sulfate	4270	mg/L	D	8		E300.0	05/02/18 15:00 / ljl
Calcium	471	mg/L		1		E200.7	04/19/18 22:02 / eli-b
Magnesium	697	mg/L		1		E200.7	04/19/18 22:02 / eli-b
Potassium	14	mg/L		1		E200.7	04/19/18 22:02 / eli-b
Sodium	144	mg/L	D	2		E200.7	04/19/18 22:02 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	5.86	s.u.	H	0.01		A4500-H B	04/14/18 17:10 / mvr
Solids, Total Dissolved TDS @ 180 C	6300	mg/L	D	40		A2540 C	04/14/18 17:43 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.02	mg/L		0.01		E353.2	04/17/18 15:11 / dmb
Nitrogen, Ammonia as N	0.41	mg/L		0.05		A4500-NH3 G	04/16/18 14:45 / dmb
<b>METALS, TOTAL</b>							
Aluminum	3.42	mg/L		0.03		E200.8	04/18/18 23:54 / eli-b
Beryllium	0.002	mg/L		0.001		E200.8	04/18/18 23:54 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/18/18 23:54 / eli-b
Cobalt	0.282	mg/L		0.005		E200.8	04/18/18 23:54 / eli-b
Lead	0.007	mg/L		0.001		E200.8	04/18/18 23:54 / eli-b
Manganese	6.22	mg/L		0.001		E200.8	04/18/18 23:54 / eli-b
Molybdenum	0.607	mg/L		0.001		E200.8	04/18/18 23:54 / eli-b
Nickel	0.388	mg/L		0.005		E200.8	04/18/18 23:54 / eli-b
Uranium	0.0341	mg/L		0.0003		E200.8	04/18/18 23:54 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 23:54 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/20/18 17:45 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 14:15 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5600	mg/L				A1030 E	05/03/18 13:01 / tjp
A/C Balance	-1.37	%				A1030 E	05/03/18 13:01 / tjp
Anions	90.0	meq/L				A1030 E	05/03/18 13:01 / tjp
Cations	87.5	meq/L				A1030 E	05/03/18 13:01 / tjp
TDS Ratio	1.12	unitless				A1030 E	05/03/18 13:01 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	9.5	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U Precision (±)	2.1	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/26/18 12:44 / trs
Lead 210	0.5	pCi/L	U			E909.0	04/25/18 03:55 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	04/25/18 03:55 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-005  
**Client Sample ID:** 719

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 16:10  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L			E909.0		04/25/18 03:55 / meh
Radium 226	4.6	pCi/L			E903.0		05/07/18 11:02 / arh
Radium 226 precision (±)	0.9	pCi/L			E903.0		05/07/18 11:02 / arh
Radium 226 MDC	0.1	pCi/L			E903.0		05/07/18 11:02 / arh
Radium 228	13.6	pCi/L			RA-05		05/02/18 12:02 / plj
Radium 228 precision (±)	2.8	pCi/L			RA-05		05/02/18 12:02 / plj
Radium 228 MDC	1.7	pCi/L			RA-05		05/02/18 12:02 / plj
Thorium 230	0.4	pCi/L			E908.0		05/11/18 13:08 / cnh
Thorium 230 precision (±)	0.2	pCi/L			E908.0		05/11/18 13:08 / cnh
Thorium 230 MDC	0.3	pCi/L			E908.0		05/11/18 13:08 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		04/19/18 15:11 / eli-b
Bromoform	ND	ug/L		0.50	E624		04/19/18 15:11 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		04/19/18 15:11 / eli-b
Chloroform	ND	ug/L		0.50	E624		04/19/18 15:11 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	104	%REC		71-139	E624		04/19/18 15:11 / eli-b
Surr: p-Bromofluorobenzene	108	%REC		80-127	E624		04/19/18 15:11 / eli-b
Surr: Toluene-d8	103	%REC		80-123	E624		04/19/18 15:11 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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United Nuclear Corporation

Zone 3

Well ID:		719	719	719	719
Collection Date:		4/10/2018	1/16/2018	10/10/2017	7/18/2017
Receive Date:		4/13/2018	1/19/2018	10/13/2017	7/21/2017
Report Date:		5/18/2018	2/27/2018	11/14/2017	9/20/2017
Analyte	Units	C18040522-005	C18010559-007	C17100506-001	C17070708-002
Bicarbonate as HCO <sub>3</sub>	mg/L	36	28	17	8
Chloride	mg/L	30	31	34	30
Sulfate	mg/L	4270	4410	4390	4040
Calcium	mg/L	471	447	457	465
Magnesium	mg/L	697	676	698	709
Potassium	mg/L	14	12	12	12
Sodium	mg/L	144	139	145	150
pH	s.u.	5.86	5.71	5.68	5.65
Solids, Total Dissolved TDS @ 180 C	mg/L	6300	5960	6100	6130
Nitrogen, Ammonia as N	mg/L	0.41	0.45	0.51	0.41
Nitrogen, Nitrate+Nitrite as N	mg/L	0.02	ND(0.1)	0.02	0.07
Aluminum	mg/L	3.42	2.11	0.3	0.6
Beryllium	mg/L	0.002	0.001	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.282	0.258	0.27	0.26
Lead	mg/L	0.007	0.005	ND(0.001)	ND(0.001)
Manganese	mg/L	6.22	6.00	6.35	6.40
Molybdenum	mg/L	0.607	0.226	ND(0.1)	0.2
Nickel	mg/L	0.388	0.359	0.30	0.38
Uranium	mg/L	0.0341	0.0267	0.0166	0.0201
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.002	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-1.37	-4.97	-3.22	1.94
Anions	meq/L	90.0	93.1	92.7	85.0
Cations	meq/L	87.5	84.3	86.9	88.4
Solids, Total Dissolved - Calculated	mg/L	5600	5700	5800	5400
TDS Ratio	unitless	1.12	1.04	1.06	1.13
Gross Alpha minus Rn & U	pCi/L	9.5	7.2	4.9	5.8
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.1	1.7	1.2	1.4
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.6	0.6	0.5
Lead 210	pCi/L	0.5	0.7	1.3	1.4
Lead 210 precision (±)	pCi/L	0.7	0.9	1.0	1
Lead 210 MDC	pCi/L	1.2	1.5	1.5	1.4
Radium 226	pCi/L	4.6	3.6	3.8	5.2
Radium 226 precision (±)	pCi/L	0.9	0.7	0.8	1.1
Radium 226 MDC	pCi/L	0.1	0.1	0.1	0.2
Radium 228	pCi/L	13.6	10.2	11.7	9.3
Radium 228 precision (±)	pCi/L	2.8	2.2	2.4	2.0
Radium 228 MDC	pCi/L	1.7	1.4	1.2	1.6
Thorium 230	pCi/L	0.4	0.3	0.4	0.2
Thorium 230 precision (±)	pCi/L	0.2	0.1	0.3	0.1
Thorium 230 MDC	pCi/L	0.3	0.1	0.3	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**SEMI-ANNUAL GROUND WATER MONITORING REPORT**  
**SUPPLEMENTAL QUARTERLY/ MONTHLY SAMPLING**  
**JANUARY TO JUNE OF 2018**

**ZONE-3**

NBL-2  
RW-A  
NW-1  
NW-2  
NW-3  
NW-4  
NW-5  
MW-7

**LEVELS ONLY**

PB-2  
PB-3  
PB-4  
MW-6  
IW-A

NOTE: WATER LEVEL ONLY IS IN FIELD DATA SHEET

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010565-001  
**Client Sample ID:** NBL-2

**Report Date:** 02/01/18  
**Collection Date:** 01/16/18 13:20  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	313	mg/L		5		A2320 B	01/22/18 19:46 / mvr
Chloride	42	mg/L		1		E300.0	01/25/18 06:06 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	7.02	s.u.	H	0.01		A4500-H B	01/22/18 13:20 / jeu
Solids, Total Dissolved TDS @ 180 C	3610	mg/L	D	40		A2540 C	01/22/18 12:40 / jeu

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040523-001  
**Client Sample ID:** NBL-2

**Report Date:** 04/24/18  
**Collection Date:** 04/10/18 11:42  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	321	mg/L		5		A2320 B	04/14/18 22:05 / mvr
Chloride	43	mg/L		1		E300.0	04/17/18 03:03 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.68	s.u.	H	0.01		A4500-H B	04/14/18 17:21 / mvr
Solids, Total Dissolved TDS @ 180 C	3560	mg/L	D	40		A2540 C	04/14/18 17:43 / mvr

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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United Nuclear Corporation

Zone 3

Well ID:		NBL-2	NBL-2	NBL-2	NBL-2
Collection Date:		4/10/2018	1/16/2018	10/10/2017	7/18/2017
Receive Date:		4/13/2018	1/19/2018	10/13/2017	7/21/2017
Report Date:		4/24/2018	2/1/2018	11/14/2017	8/1/2017
Analyte	Units	C18040523-001	C18010565-001	C17100506-002	C17070709-001
Bicarbonate as HCO <sub>3</sub>	mg/L	321	313	344	309
Chloride	mg/L	43	42	45	43
pH	s.u.	6.68	7.02	6.76	6.57
Solids, Total Dissolved TDS @ 180 C	mg/L	3560	3610	3510	3470

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010565-006  
**Client Sample ID:** RW-A

**Report Date:** 02/01/18  
**Collection Date:** 01/17/18 11:00  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	43	mg/L		5		A2320 B	01/22/18 20:48 / mvr
Chloride	30	mg/L	D	2		E300.0	01/25/18 21:30 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	5.85	s.u.	H	0.01		A4500-H B	01/22/18 13:38 / jeu
Solids, Total Dissolved TDS @ 180 C	6090	mg/L	D	100		A2540 C	01/22/18 12:41 / jeu

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040523-006  
**Client Sample ID:** RW-A

**Report Date:** 04/24/18  
**Collection Date:** 04/11/18 10:35  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	47	mg/L		5		A2320 B	04/14/18 22:48 / mvr
Chloride	28	mg/L	D	2		E300.0	04/17/18 05:10 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	5.89	s.u.	H	0.01		A4500-H B	04/14/18 17:36 / mvr
Solids, Total Dissolved TDS @ 180 C	5810	mg/L	D	40		A2540 C	04/14/18 17:44 / mvr

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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United Nuclear Corporation

Zone 3

Well ID:		RW-A	RW-A	RW-A	RW-A
Collection Date:		4/10/2018	1/17/2018	10/10/2017	7/19/2017
Receive Date:		4/13/2018	1/19/2018	10/13/2017	7/21/2017
Report Date:		4/24/2018	2/1/2018	11/14/2017	8/1/2017
Analyte	Units	C18040523-006	C18010565-006	C17100506-007	C17070709-005
Bicarbonate as HCO <sub>3</sub>	mg/L	47	43	57	31
Chloride	mg/L	28	30	32	27
pH	s.u.	5.89	5.85	5.94	5.55
Solids, Total Dissolved TDS @ 180 C	mg/L	5810	6090	5950	5570

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010565-002  
**Client Sample ID:** NW-1

**Report Date:** 02/01/18  
**Collection Date:** 01/17/18 11:30  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	356	mg/L		5		A2320 B	01/22/18 19:55 / mvr
Chloride	13	mg/L		1		E300.0	01/25/18 20:10 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	7.10	s.u.	H	0.01		A4500-H B	01/22/18 13:24 / jeu
Solids, Total Dissolved TDS @ 180 C	3690	mg/L	D	40		A2540 C	01/22/18 12:41 / jeu

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040523-002  
**Client Sample ID:** NW-1

**Report Date:** 04/24/18  
**Collection Date:** 04/11/18 08:50  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	370	mg/L		5		A2320 B	04/14/18 22:22 / mvr
Chloride	16	mg/L		1		E300.0	04/17/18 03:58 / jji
<b>PHYSICAL PROPERTIES</b>							
pH	7.28	s.u.	H	0.01		A4500-H B	04/14/18 17:24 / mvr
Solids, Total Dissolved TDS @ 180 C	3820	mg/L	D	40		A2540 C	04/14/18 17:43 / mvr

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
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United Nuclear Corporation

Zone 3

Well ID:		NW-1	NW-1	NW-1	NW-1
Collection Date:		4/10/2018	1/17/2018	10/10/2017	7/19/2017
Receive Date:		4/13/2018	1/19/2018	10/13/2017	7/21/2017
Report Date:		4/24/2018	2/1/2018	11/14/2017	8/1/2017
Analyte	Units	C18040523-002	C18010565-002	C17100505-001	C17070709-002
Bicarbonate as HCO <sub>3</sub>	mg/L	370	356	428	409
Chloride	mg/L	16	13	17	16
pH	s.u.	7.28	7.10	7.15	7.13
Solids, Total Dissolved TDS @ 180 C	mg/L	3820	3690	3710	3700

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010565-004  
**Client Sample ID:** NW-2

**Report Date:** 02/01/18  
**Collection Date:** 01/17/18 10:25  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	116	mg/L		5		A2320 B	01/22/18 20:10 / mvr
Chloride	27	mg/L	D	2		E300.0	01/25/18 21:19 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.06	s.u.	H	0.01		A4500-H B	01/22/18 13:32 / jeu
Solids, Total Dissolved TDS @ 180 C	4950	mg/L	D	40		A2540 C	01/22/18 12:41 / jeu

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040523-004  
**Client Sample ID:** NW-2

**Report Date:** 04/24/18  
**Collection Date:** 04/11/18 09:50  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	96	mg/L		5		A2320 B	04/14/18 22:36 / mvr
Chloride	29	mg/L	D	2		E300.0	04/17/18 04:34 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	5.96	s.u.	H	0.01		A4500-H B	04/14/18 17:30 / mvr
Solids, Total Dissolved TDS @ 180 C	4970	mg/L	D	40		A2540 C	04/14/18 17:44 / mvr

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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United Nuclear Corporation

Zone 3

Well ID:		NW-2	NW-2	NW-2	NW-2
Collection Date:		4/10/2018	1/17/2018	10/10/2017	7/19/2017
Receive Date:		4/13/2018	1/19/2018	10/13/2017	7/21/2017
Report Date:		4/24/2018	2/1/2018	11/14/2017	8/1/2017
Analyte	Units	C18040523-004	C18010565-004	C17100505-003	C17070709-004
Bicarbonate as HCO <sub>3</sub>	mg/L	96	116	143	132
Chloride	mg/L	29	27	32	29
pH	s.u.	5.96	6.06	6.18	6.16
Solids, Total Dissolved TDS @ 180 C	mg/L	4970	4950	4850	4950

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C18010559-004  
Client Sample ID: NW-3

Report Date: 02/27/18  
Collection Date: 01/16/18 16:15  
Date Received: 01/19/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	303	mg/L		5		A2320 B	01/22/18 19:27 / mvr
Chloride	28	mg/L		1		E300.0	01/25/18 04:53 / ljl
Sulfate	2150	mg/L	D	4		E300.0	01/25/18 04:53 / ljl
Calcium	453	mg/L		1		E200.7	01/24/18 16:29 / eli-b
Magnesium	257	mg/L		1		E200.7	01/24/18 16:29 / eli-b
Potassium	8	mg/L		1		E200.7	01/24/18 16:29 / eli-b
Sodium	156	mg/L	D	2		E200.7	01/24/18 16:29 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.72	s.u.	H	0.01		A4500-H B	01/22/18 13:09 / jeu
Solids, Total Dissolved TDS @ 180 C	3440	mg/L	D	40		A2540 C	01/22/18 12:39 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	D	0.1		E353.2	02/02/18 12:58 / dmb
Nitrogen, Ammonia as N	0.25	mg/L		0.05		A4500-NH3 G	01/22/18 10:39 / dmb
Ran at 10X dilution due to metals and acidification interference							
<b>METALS, TOTAL</b>							
Aluminum	0.04	mg/L		0.03		E200.8	01/25/18 16:55 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/25/18 16:55 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/24/18 22:37 / eli-b
Cobalt	0.005	mg/L		0.005		E200.8	01/24/18 22:37 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/24/18 22:37 / eli-b
Manganese	0.953	mg/L		0.001		E200.8	01/24/18 22:37 / eli-b
Molybdenum	0.656	mg/L		0.001		E200.8	01/24/18 22:37 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/24/18 22:37 / eli-b
Uranium	0.126	mg/L		0.0003		E200.8	01/24/18 22:37 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/24/18 22:37 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	1.18	mg/L	D	0.02		E1632AM	01/30/18 22:34 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:21 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	26.8	pCi/L				E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U Precision (±)	5.4	pCi/L				E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	02/16/18 09:38 / dmf
Lead 210	1.0	pCi/L	U			E909.0	01/31/18 16:52 / meh
Lead 210 precision (±)	1	pCi/L				E909.0	01/31/18 16:52 / meh
Lead 210 MDC	1.5	pCi/L				E909.0	01/31/18 16:52 / meh
Radium 226	15.9	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 precision (±)	3.0	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 228	11.2	pCi/L				RA-05	02/14/18 13:57 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-004  
**Client Sample ID:** NW-3

**Report Date:** 02/27/18  
**Collection Date:** 01/16/18 16:15  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 precision (±)	2.3	pCi/L				RA-05	02/14/18 13:57 / plj
Radium 228 MDC	1.5	pCi/L				RA-05	02/14/18 13:57 / plj
Thorium 230	0.002	pCi/L	U			E908.0	02/07/18 14:23 / cnh
Thorium 230 precision (±)	0.09	pCi/L				E908.0	02/07/18 14:23 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/07/18 14:23 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3200	mg/L				A1030 E	02/01/18 09:54 / tjp
A/C Balance	0.21	%				A1030 E	02/01/18 09:54 / tjp
Anions	50.5	meq/L				A1030 E	02/01/18 09:54 / tjp
Cations	50.7	meq/L				A1030 E	02/01/18 09:54 / tjp
TDS Ratio	1.07	unitless				A1030 E	02/01/18 09:54 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/25/18 21:11 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/25/18 21:11 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/25/18 21:11 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/25/18 21:11 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	120	%REC		71-139		E624	01/25/18 21:11 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	01/25/18 21:11 / eli-b
Surr: Toluene-d8	113	%REC		80-123		E624	01/25/18 21:11 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-004  
**Client Sample ID:** NW-3

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 15:40  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	435	mg/L		5		A2320 B	04/14/18 21:42 / mvr
Chloride	35	mg/L	D	2		E300.0	04/17/18 01:14 / ljl
Sulfate	2730	mg/L	D	8		E300.0	04/17/18 01:14 / ljl
Calcium	540	mg/L		1		E200.7	04/19/18 21:58 / eli-b
Magnesium	300	mg/L		1		E200.7	04/19/18 21:58 / eli-b
Potassium	8	mg/L		1		E200.7	04/19/18 21:58 / eli-b
Sodium	172	mg/L		1		E200.7	04/19/18 21:58 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.99	s.u.	H	0.01		A4500-H B	04/14/18 17:07 / mvr
Solids, Total Dissolved TDS @ 180 C	4200	mg/L	D	40		A2540 C	04/14/18 17:42 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	04/17/18 15:10 / dmb
Nitrogen, Ammonia as N	0.22	mg/L		0.05		A4500-NH3 G	04/16/18 14:44 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.07	mg/L		0.03		E200.8	04/18/18 23:51 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/18/18 23:51 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/18/18 23:51 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/18/18 23:51 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/18/18 23:51 / eli-b
Manganese	1.31	mg/L		0.001		E200.8	04/18/18 23:51 / eli-b
Molybdenum	0.824	mg/L		0.001		E200.8	04/18/18 23:51 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/18/18 23:51 / eli-b
Uranium	0.135	mg/L		0.0003		E200.8	04/18/18 23:51 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 23:51 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	0.98	mg/L	D	0.02		E1632AM	04/25/18 12:36 / eli-h
Selenium-IV	0.001	mg/L		0.001		A3114 C	04/19/18 14:10 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4000	mg/L				A1030 E	05/01/18 17:06 / tjp
A/C Balance	-4.51	%				A1030 E	05/01/18 17:06 / tjp
Anions	64.9	meq/L				A1030 E	05/01/18 17:06 / tjp
Cations	59.3	meq/L				A1030 E	05/01/18 17:06 / tjp
TDS Ratio	1.04	unitless				A1030 E	05/01/18 17:06 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	26.9	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U Precision (±)	5.4	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/26/18 12:44 / trs
Lead 210	1.4	pCi/L				E909.0	04/25/18 00:51 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	04/25/18 00:51 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-004  
**Client Sample ID:** NW-3

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 15:40  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/25/18 00:51 / meh
Radium 226	22.6	pCi/L				E903.0	05/07/18 11:02 / arh
Radium 226 precision (±)	4.3	pCi/L				E903.0	05/07/18 11:02 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	05/07/18 11:02 / arh
Radium 228	15.2	pCi/L				RA-05	05/02/18 12:02 / plj
Radium 228 precision (±)	3.1	pCi/L				RA-05	05/02/18 12:02 / plj
Radium 228 MDC	1.7	pCi/L				RA-05	05/02/18 12:02 / plj
Thorium 230	0.1	pCi/L		U		E908.0	05/09/18 16:32 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	05/09/18 16:32 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	05/09/18 16:32 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/19/18 15:55 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/19/18 15:55 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/19/18 15:55 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/19/18 15:55 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	104	%REC		71-139		E624	04/19/18 15:55 / eli-b
Surr: p-Bromofluorobenzene	108	%REC		80-127		E624	04/19/18 15:55 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	04/19/18 15:55 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration





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United Nuclear Corporation

Zone 3

Well ID:		NW-3	NW-3	NW-3	NW-3
Collection Date:		4/10/2018	1/16/2018	10/10/2017	7/18/2017
Receive Date:		4/13/2018	1/19/2018	10/13/2017	7/21/2017
Report Date:		5/18/2018	2/27/2018	11/14/2017	9/20/2017
Analyte	Units	C18040522-004	C18010559-004	C17100506-004	C17070708-004
Bicarbonate as HCO <sub>3</sub>	mg/L	435	303	448	350
Chloride	mg/L	35	28	39	34
Sulfate	mg/L	2730	2150	2700	2530
Calcium	mg/L	540	453	544	526
Magnesium	mg/L	300	257	304	297
Potassium	mg/L	8	8	8	8
Sodium	mg/L	172	156	171	167
pH	s.u.	6.99	6.72	6.91	6.85
Solids, Total Dissolved TDS @ 180 C	mg/L	4200	3440	4080	4100
Nitrogen, Ammonia as N	mg/L	0.22	0.25	0.28	0.34
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.01)	ND(0.1)	0.02	ND(0.01)
Aluminum	mg/L	0.07	0.04	ND(0.1)	0.1
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	0.005	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	1.31	0.953	1.38	1.46
Molybdenum	mg/L	0.824	0.656	0.8	0.7
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.135	0.126	0.196	0.201
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.98	1.18	0.212	0.033
Selenium-IV	mg/L	0.001	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-4.51	0.21	-3.89	-0.97
Anions	meq/L	64.9	50.5	64.7	59.3
Cations	meq/L	59.3	50.7	59.9	58.2
Solids, Total Dissolved - Calculated	mg/L	4000	3200	4000	3800
TDS Ratio	unitless	1.04	1.07	1.02	1.09
Gross Alpha minus Rn & U	pCi/L	26.9	26.8	27.6	27.9
Gross Alpha minus Rn & U Precision (±)	pCi/L	5.4	5.4	5.5	5.5
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.6	0.6	0.5
Lead 210	pCi/L	1.4	1.0	2.4	1.8
Lead 210 precision (±)	pCi/L	0.9	1	1.2	1.0
Lead 210 MDC	pCi/L	1.3	1.5	1.6	1.4
Radium 226	pCi/L	22.6	15.9	20.0	29.0
Radium 226 precision (±)	pCi/L	4.3	3.0	3.8	5.6
Radium 226 MDC	pCi/L	0.1	0.1	0.1	0.2
Radium 228	pCi/L	15.2	11.2	15.1	15.4
Radium 228 precision (±)	pCi/L	3.1	2.3	3.0	3.1
Radium 228 MDC	pCi/L	1.7	1.5	1.3	1.7
Thorium 230	pCi/L	0.1	0.002	0.06	0.08
Thorium 230 precision (±)	pCi/L	0.1	0.09	0.1	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

NOTE: The data presented on this form is intended for summary only. Laboratory approved data is contained within the database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010565-003  
**Client Sample ID:** NW-4

**Report Date:** 02/01/18  
**Collection Date:** 01/17/18 10:09  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	33	mg/L		5		A2320 B	01/22/18 20:03 / mvr
Chloride	18	mg/L	D	2		E300.0	01/25/18 21:02 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.25	s.u.	H	0.01		A4500-H B	01/22/18 13:28 / jeu
Solids, Total Dissolved TDS @ 180 C	4410	mg/L	D	40		A2540 C	01/22/18 12:41 / jeu

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040523-003  
**Client Sample ID:** NW-4

**Report Date:** 04/24/18  
**Collection Date:** 04/11/18 09:20  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	27	mg/L		5		A2320 B	04/14/18 22:29 / mvr
Chloride	21	mg/L	D	2		E300.0	04/17/18 04:16 / jji
<b>PHYSICAL PROPERTIES</b>							
pH	6.20	s.u.	H	0.01		A4500-H B	04/14/18 17:27 / mvr
Solids, Total Dissolved TDS @ 180 C	4320	mg/L	D	40		A2540 C	04/14/18 17:44 / mvr

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
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United Nuclear Corporation

Zone 3

Well ID:		NW-4	NW-4	NW-4	NW-4
Collection Date:		4/10/2018	1/17/2018	10/10/2017	7/19/2017
Receive Date:		4/13/2018	1/19/2018	10/13/2017	7/21/2017
Report Date:		4/24/2018	2/1/2018	11/14/2017	8/1/2017
Analyte	RUnits	C18040523-003	C18010565-003	C17100505-002	C17070709-003
Bicarbonate as HCO <sub>3</sub>	mg/L	27	33	42	40
Chloride	mg/L	21	18	23	20
pH	s.u.	6.20	6.25	6.48	6.44
Solids, Total Dissolved TDS @ 180 C	mg/L	4320	4410	4370	4380

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010565-005  
**Client Sample ID:** NW-5

**Report Date:** 02/01/18  
**Collection Date:** 01/17/18 10:40  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/22/18 20:38 / mvr
Chloride	27	mg/L	D	2		E300.0	01/25/18 21:36 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	3.86	s.u.	H	0.01		A4500-H B	01/22/18 13:35 / jeu
Solids, Total Dissolved TDS @ 180 C	5690	mg/L	D	40		A2540 C	01/22/18 12:41 / jeu

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040523-005  
**Client Sample ID:** NW-5

**Report Date:** 04/24/18  
**Collection Date:** 04/11/18 10:10  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	188	mg/L				A2310 B	04/17/18 15:47 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/14/18 22:41 / mvr
Chloride	30	mg/L	D	2		E300.0	04/17/18 04:52 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	4.68	s.u.	H	0.01		A4500-H B	04/14/18 17:33 / mvr
Solids, Total Dissolved TDS @ 180 C	5480	mg/L	D	40		A2540 C	04/14/18 17:44 / mvr

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.





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United Nuclear Corporation

Zone 3

Well ID:		NW-5	NW-5	NW-5	NW-5
Collection Date:		4/10/2018	1/17/2018	10/10/2017	7/19/2017
Receive Date:		4/13/2018	1/19/2018	10/13/2017	7/21/2017
Report Date:		4/24/2018	2/1/2018	11/14/2017	8/1/2017
Analyte	Units	C18040523-005	C18010565-005	C17100505-004	C17070709-006
Acidity, Total as CaCO <sub>3</sub>	mg/L	188		100	
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	30	27	34	28
pH	s.u.	4.68	3.86	3.83	5.39
Solids, Total Dissolved TDS @ 180 C	mg/L	5480	5690	5320	5750

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-003  
**Client Sample ID:** MW-7

**Report Date:** 02/27/18  
**Collection Date:** 01/16/18 13:41  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	219	mg/L		5		A2320 B	01/22/18 19:19 / mvr
Chloride	32	mg/L	D	2		E300.0	01/25/18 04:35 / ljl
Sulfate	2890	mg/L	D	8		E300.0	01/25/18 04:35 / ljl
Calcium	582	mg/L		1		E200.7	01/24/18 16:25 / eli-b
Magnesium	316	mg/L		1		E200.7	01/24/18 16:25 / eli-b
Potassium	9	mg/L		1		E200.7	01/24/18 16:25 / eli-b
Sodium	147	mg/L	D	2		E200.7	01/24/18 16:25 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.76	s.u.	H	0.01		A4500-H B	01/22/18 13:05 / jeu
Solids, Total Dissolved TDS @ 180 C	4240	mg/L	D	40		A2540 C	01/22/18 12:39 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.23	mg/L		0.01		E353.2	01/23/18 12:04 / dmb
Nitrogen, Ammonia as N	0.39	mg/L		0.05		A4500-NH3 G	01/22/18 10:32 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.04	mg/L		0.03		E200.8	01/25/18 16:52 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/25/18 16:52 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/24/18 22:34 / eli-b
Cobalt	0.135	mg/L		0.005		E200.8	01/24/18 22:34 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/24/18 22:34 / eli-b
Manganese	4.69	mg/L		0.001		E200.8	01/24/18 22:34 / eli-b
Molybdenum	0.399	mg/L		0.001		E200.8	01/24/18 22:34 / eli-b
Nickel	0.154	mg/L		0.005		E200.8	01/24/18 22:34 / eli-b
Uranium	0.0621	mg/L		0.0003		E200.8	01/24/18 22:34 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/24/18 22:34 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	0.005	mg/L		0.001		E1632AM	01/30/18 20:10 / eli-b
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:20 / eli-b
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	11.2	pCi/L				E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U Precision (±)	2.4	pCi/L				E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	02/16/18 09:38 / dmf
Lead 210	0.9	pCi/L	U			E909.0	01/31/18 14:21 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	01/31/18 14:21 / meh
Lead 210 MDC	1.5	pCi/L				E909.0	01/31/18 14:21 / meh
Radium 226	8.2	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 precision (±)	1.6	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 228	10.8	pCi/L				RA-05	02/14/18 13:57 / plj
Radium 228 precision (±)	2.3	pCi/L				RA-05	02/14/18 13:57 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-003  
**Client Sample ID:** MW-7

**Report Date:** 02/27/18  
**Collection Date:** 01/16/18 13:41  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Radium 228 MDC	1.6	pCi/L	U			RA-05	02/14/18 13:57 / plj
Thorium 230	0.01	pCi/L				E908.0	02/07/18 14:23 / cnh
Thorium 230 precision (±)	0.07	pCi/L				E908.0	02/07/18 14:23 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	02/07/18 14:23 / cnh
DATA QUALITY							
Solids, Total Dissolved - Calculated	4100	mg/L				A1030 E	02/01/18 09:54 / tjp
A/C Balance	-2.43	%				A1030 E	02/01/18 09:54 / tjp
Anions	64.8	meq/L				A1030 E	02/01/18 09:54 / tjp
Cations	61.7	meq/L				A1030 E	02/01/18 09:54 / tjp
TDS Ratio	1.03	unitless				A1030 E	02/01/18 09:54 / tjp
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	01/25/18 20:42 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/25/18 20:42 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/25/18 20:42 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/25/18 20:42 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	112	%REC		71-139		E624	01/25/18 20:42 / eli-b
Surr: p-Bromofluorobenzene	101	%REC		80-127		E624	01/25/18 20:42 / eli-b
Surr: Toluene-d8	116	%REC		80-123		E624	01/25/18 20:42 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-003  
**Client Sample ID:** MW-7

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 12:17  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	239	mg/L		5		A2320 B	04/14/18 21:34 / mvr
Chloride	33	mg/L	D	2		E300.0	04/17/18 00:56 / ljl
Sulfate	2840	mg/L	D	8		E300.0	04/17/18 00:56 / ljl
Calcium	549	mg/L		1		E200.7	04/19/18 21:54 / eli-b
Magnesium	318	mg/L		1		E200.7	04/19/18 21:54 / eli-b
Potassium	9	mg/L		1		E200.7	04/19/18 21:54 / eli-b
Sodium	144	mg/L		1		E200.7	04/19/18 21:54 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.73	s.u.	H	0.01		A4500-H B	04/14/18 17:04 / mvr
Solids, Total Dissolved TDS @ 180 C	4200	mg/L	D	40		A2540 C	04/14/18 17:42 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	0.64	mg/L		0.01		E353.2	04/17/18 15:09 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	04/16/18 14:43 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.06	mg/L		0.03		E200.8	04/18/18 23:42 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/18/18 23:42 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/18/18 23:42 / eli-b
Cobalt	0.150	mg/L		0.005		E200.8	04/18/18 23:42 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/18/18 23:42 / eli-b
Manganese	4.65	mg/L		0.001		E200.8	04/18/18 23:42 / eli-b
Molybdenum	0.391	mg/L		0.001		E200.8	04/18/18 23:42 / eli-b
Nickel	0.157	mg/L		0.005		E200.8	04/18/18 23:42 / eli-b
Uranium	0.0590	mg/L		0.0003		E200.8	04/18/18 23:42 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 23:42 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/20/18 17:21 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 14:09 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4000	mg/L				A1030 E	05/01/18 17:05 / tjp
A/C Balance	-3.26	%				A1030 E	05/01/18 17:05 / tjp
Anions	64.1	meq/L				A1030 E	05/01/18 17:05 / tjp
Cations	60.1	meq/L				A1030 E	05/01/18 17:05 / tjp
TDS Ratio	1.04	unitless				A1030 E	05/01/18 17:05 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	12.3	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U Precision (±)	2.6	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/26/18 12:44 / trs
Lead 210	0.3	pCi/L	U			E909.0	04/24/18 21:28 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	04/24/18 21:28 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-003  
**Client Sample ID:** MW-7

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 12:17  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	04/24/18 21:28 / meh
Radium 226	10.5	pCi/L				E903.0	05/07/18 11:02 / arh
Radium 226 precision (±)	2.1	pCi/L				E903.0	05/07/18 11:02 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	05/07/18 11:02 / arh
Radium 228	14.2	pCi/L				RA-05	05/02/18 12:02 / plj
Radium 228 precision (±)	3.0	pCi/L				RA-05	05/02/18 12:02 / plj
Radium 228 MDC	1.7	pCi/L				RA-05	05/02/18 12:02 / plj
Thorium 230	0.07	pCi/L		U		E908.0	05/09/18 16:32 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	05/09/18 16:32 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	05/09/18 16:32 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/19/18 14:42 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/19/18 14:42 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/19/18 14:42 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/19/18 14:42 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139		E624	04/19/18 14:42 / eli-b
Surr: p-Bromofluorobenzene	108	%REC		80-127		E624	04/19/18 14:42 / eli-b
Surr: Toluene-d8	105	%REC		80-123		E624	04/19/18 14:42 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 3

Well ID:		MW-7	MW-7	MW-7	MW-7
Collection Date:		4/10/2018	1/16/2018	10/10/2017	7/18/2017
Receive Date:		4/13/2018	1/19/2018	10/13/2017	7/21/2017
Report Date:		5/18/2018	2/27/2018	11/14/2017	9/20/2017
Analyte	Units	C18040522-003	C18010559-003	C17100506-003	C17070708-003
Bicarbonate as HCO <sub>3</sub>	mg/L	239	219	263	220
Chloride	mg/L	33	32	37	34
Sulfate	mg/L	2840	2890	2810	2700
Calcium	mg/L	549	582	592	585
Magnesium	mg/L	318	316	311	319
Potassium	mg/L	9	9	9	9
Sodium	mg/L	144	147	145	148
pH	s.u.	6.73	6.76	7.20	7.67
Solids, Total Dissolved TDS @ 180 C	mg/L	4200	4240	4240	4330
Nitrogen, Ammonia as N	mg/L	ND(0.05)	0.39	ND(0.05)	0.25
Nitrogen, Nitrate+Nitrite as N	mg/L	0.64	0.23	0.64	0.41
Aluminum	mg/L	0.06	0.04	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.150	0.135	0.15	0.15
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	4.65	4.69	4.85	4.81
Molybdenum	mg/L	0.391	0.399	0.4	0.4
Nickel	mg/L	0.157	0.154	0.14	0.16
Uranium	mg/L	0.0590	0.0621	0.0615	0.0532
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.005	ND(0.001)	0.004
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-3.26	-2.43	-1.71	1.09
Anions	meq/L	64.1	64.8	63.8	60.8
Cations	meq/L	60.1	61.7	61.7	62.2
Solids, Total Dissolved - Calculated	mg/L	4000	4100	4000	3900
TDS Ratio	unitless	1.04	1.03	1.05	1.10
Gross Alpha minus Rn & U	pCi/L	12.3	11.2	10.3	11.9
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.6	2.4	2.2	2.5
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.6	0.6	0.5
Lead 210	pCi/L	0.3	0.9	0.7	2.1
Lead 210 precision (±)	pCi/L	0.7	0.9	0.9	1.1
Lead 210 MDC	pCi/L	1.2	1.5	1.5	1.4
Radium 226	pCi/L	10.5	8.2	8.3	10.7
Radium 226 precision (±)	pCi/L	2.1	1.6	1.6	2.1
Radium 226 MDC	pCi/L	0.1	0.1	0.1	0.2
Radium 228	pCi/L	14.2	10.8	15.0	15.3
Radium 228 precision (±)	pCi/L	3.0	2.3	3.0	3.2
Radium 228 MDC	pCi/L	1.7	1.6	1.4	1.6
Thorium 230	pCi/L	0.07	0.01	0.05	0.01
Thorium 230 precision (±)	pCi/L	0.1	0.07	0.06	0.1
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**SEMI-ANNUAL  
ENVIRONMENTAL MONITORING REPORT  
JANUARY TO JUNE OF 2018**

**AVAILABLE MONITORING DATA**

- **ENVIRONMENTAL INSPECTION REPORT (continued this procedure to show and maintain the integrity of the tailings area).**



## **ENVIRONMENTAL INSPECTION REPORTS**

# ENVIRONMENTAL INSPECTION

DATE: 1-29-18

TIME START: 1414

INSPECTOR: Wm. Chubbly J.

TIME END: 1533

**TAILINGS AREA:**

**OKAY**

## PROBLEM

## COMMENTS

- ## 1. Fences

✓

- ## 2. Air Monitors

—

NA

—

- ### 3. Radiation Warning Signs

✓

- #### 4. Locked Gates

✓

**ACTION TAKEN:**

---

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

ENVIRONMENTAL INSPECTION

DATE: 2-26-18

TIME START: 1350

INSPECTOR: Mal Chubbly J.

TIME END: 1500

TAILINGS AREA:

	OKAY	PROBLEM	COMMENTS
1. Fences	<u>✓</u>	<u></u>	<u></u>
2. Air Monitors	<u>-</u>	<u>NA</u>	<u>Under RWP</u>
3. Radiation Warning Signs	<u>✓</u>	<u></u>	<u></u>
4. Locked Gates	<u></u>	<u>✓</u>	<u>W. perimeter fence gate unlocked.</u>

ACTION TAKEN: Re-locked gate. Informed and reminded employees to  
check and make sure perimeter fence gates are locked after  
exiting tailings area.

ENVIRONMENTAL INSPECTION

DATE: 3-23-18

TIME START: 1146

INSPECTOR: Wp Chischilly J.

TIME END: 1320

TAILINGS AREA:

	<u>OKAY</u>	<u>PROBLEM</u>	<u>COMMENTS</u>
1. Fences	<u>✓</u>	<u>      </u>	<u>      </u>
2. Air Monitors	<u>- NA</u>	<u>-</u>	<u>Under RWP</u>
3. Radiation Warning Signs	<u>✓</u>	<u>      </u>	<u>      </u>
4. Locked Gates	<u>✓</u>	<u>      </u>	<u>      </u>

ACTION TAKEN: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ENVIRONMENTAL INSPECTION

DATE: 4-23-18

TIME START: 1106

INSPECTOR: Waf Chinchley Jr.

TIME END: 1300

TAILINGS AREA:

	<u>OKAY</u>	<u>PROBLEM</u>	<u>COMMENTS</u>
1. Fences	<u>✓</u>	<u></u>	<u></u>
2. Air Monitors	<u>- NA</u>	<u>-</u>	<u>Under RWP</u>
3. Radiation Warning Signs	<u>✓</u>	<u></u>	<u></u>
4. Locked Gates	<u>✓</u>	<u></u>	<u></u>

OTHER COMMENT:

ACTION TAKEN: Domestic water is being discharged into North and  
South evaporation ponds to maintain water depth of 0.5'.

### ENVIRONMENTAL INSPECTION

DATE: 5-29-18

TIME START: 1347

INSPECTOR: May Chinchelly J.

TIME END: 1529

TAILINGS AREA:

	<u>OKAY</u>	<u>PROBLEM</u>	<u>COMMENTS</u>
1. Fences	<u>✓</u>	<u>      </u>	<u>      </u>
2. Air Monitors	<u>—</u>	<u>NA —</u>	<u>Under RWP</u>
3. Radiation Warning Signs	<u>✓</u>	<u>      </u>	<u>      </u>
4. Locked Gates	<u>✓</u>	<u>      </u>	<u>      </u>

OTHER COMMENT:

ACTION TAKEN: Domestic water is discharging into North  
Evaporation Pond @ 1429 (water depth is 0.5' in South Pond and  
0.4' in North Pond).

## Weekly Evaporation pond inspection

Month:	May	Date:	5/1/2018	Inspected by:	Aaron Garoutte	
North pond water level:		South Pond water level:				
Extraction wells GPM:	1.23	Domestic well GPM:	40	Flow	/South pond	
Liner Inspected	Yes	Comments:	Flow switched to south pond @ 089:34 05/01/18			

## Weekly Evaporation pond inspection

Month:	May	Date:	5/7/2018	Inspected by:	Aaron Garoutte	
North pond water level:		South Pond water level:				
Extraction wells GPM:	1.08	Domestic well GPM:	39.82	Flow	North pond/	
Liner Inspected	Yes	Comments:	Flow switched to north pond @ 9:50 05/07/18			

## Weekly Evaporation pond inspection

Month:	May	Date:	5/14/2018	Inspected by:	Aaron Garoutte	
North pond water level:		South Pond water level:				
Extraction wells GPM:	1.1	Domestic well GPM:	40	Flow	outh pond	
Liner Inspected	Yes	Comments:	Flow switched to south pond at 11:08 5/14/18			

## Weekly Evaporation pond inspection

Month:	May	Date:	5/21/2018	Inspected by:	Aaron Garoutte	
North pond water level:		South Pond water level:				
Extraction wells GPM:	1.05	Domestic well GPM:	39	Flow	North pond/South pond	
Liner Inspected	Yes	Comments:	Flow switched to North pond at 09:15 5/21/18			

**Weekly Evaporation pond inspection**

<b>Month:</b>	<b>May</b>	<b>Date:</b>	<b>5/29/2018</b>	<b>Inspected by:</b>	<b>Aaron Garoutte</b>	
<b>North pond water level:</b>	<b>0.4 ft</b>	<b>South Pond water level:</b>	<b>0.5 ft</b>			
<b>Extraction wells GPM:</b>	<b>1.13</b>	<b>Domestic well GPM:</b>	<b>39.67</b>	<b>Flow</b>	<b>North pond/South pond</b>	
<b>Liner Inspected</b>	<b>Yes</b>	<b>Comments:</b>				



ENVIRONMENTAL INSPECTION

DATE: 6-25-18

TIME START: 1046

INSPECTOR: My Chubbly J

TIME END: 1214

TAILINGS AREA:

	<u>OKAY</u>	<u>PROBLEM</u>	<u>COMMENTS</u>
1. Fences	<u>✓</u>	<u>          </u>	<u>          </u>
2. Air Monitors	<u>-</u>	<u>NA</u>	<u>Under RWP</u>
3. Radiation Warning Signs	<u>✓</u>	<u>          </u>	<u>          </u>
4. Locked Gates	<u>✓</u>	<u>          </u>	<u>          </u>

ACTION TAKEN:           

OTHER COMMENT: Domestic water is discharging into North Evaporation  
Pond (water depth is 0.55' in South Pond and 0.15' in  
North Pond).

## Weekly Evaporation pond inspection

Month:	June	Date:	6/4/2018	Inspected by:	Aaron Garoutte		
North pond water level:			South Pond water level:				
Extraction wells GPM:	1.05	Domestic well GPM:	39.66	Flow	North pond/South pond		
Liner Inspected	Yes		Comments:	5/30/2018 10:35:00 AM flow switched from north			
to south pond.							

## Weekly Evaporation pond inspection

Month:	June	Date:	6/11/2018	Inspected by:	Aaron Garoutte		
North pond water level:			South Pond water level:				
Extraction wells GPM:		0.85	Domestic well GPM:		40	Flow	North pond
Liner Inspected		yes		Comments:		Flow switched to North pond on 6/6/18	

## Weekly Evaporation pond inspection

Month:	June	Date:	6/19/2018	Inspected by:	Aaron Garoutte		
North pond water level:		South Pond water level:					
Extraction wells GPM:	1.04	Domestic well GPM:	39.61	Flow	South pond		
Liner Inspected	Yes		Comments:	Flow switched to south pond 6/14/18 @ 11:55			
RW-A not running (extraction well)							

## Weekly Evaporation pond inspection

Month:	May	Date:	6/25/2018	Inspected by:	Aaron Garoutte		
North pond water level:		0.15	South Pond water level:		0.55		
Extraction wells GPM:		0.55	Domestic well GPM:	39.45	Flow	South pond	
Liner Inspected		Yes		Comments:	Flow switched to North pond 6/25/18 @ 9:35		

SEMI-ANNUAL GROUND WATER  
QUALITY ASSURANCE REPORT

FIRST HALF OF 2018  
(JANUARY THRU JUNE)

**SEMI – ANNUAL QUALITY ASSURANCE**

**CHURCH ROCK SITE**

**JANUARY TO JUNE OF 2018 SAMPLING EVENTS**

**AUGUST – 2018**

## **TABLE OF CONTENTS**

- 1.0 Requirements
- 2.0 Field Sampling Procedures and QA/QC Report
- 3.0 Chain of Custody
- 4.0 Laboratory Quality Control
- 5.0 Data Validation

- Appendix – A: Quarterly Field data sheet
- Appendix – B: Quarterly AQ/QC Field Blank and Duplicate Sample Report
- Appendix – C: Quarterly Chain of Custody
- Appendix – D: Quarterly Laboratory Quality Control and Performance Report  
(1 of 2&2 of 2)

## 1.0 REQUIREMENTS

The quality assurance and control procedures are contained in Sec. 3.0 of the Remedial Action Plan of Church Rock Site dated April 1989. The procedure addresses 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 U.S. Environmental Protection Agency (USEPA).

## 2.0 FIELD SAMPLING PROCEDURES AND QA/QC REPORT

Copies of the 2018 quarterly (1<sup>st</sup> and 2<sup>nd</sup>) field low flow purging and sampling data sheets are included in Appendix A. These sheets indicate the field parameter of pH, temperature, conductivity and the water level drop in the well if any, during the sampling. The quarterly QA/QC Field Blank, Rinsate and Duplicate analysis report are included in Appendix B.

## 3.0 CHAIN OF CUSTODY

Copies of the quarterly Chain of Custody report are included in Appendix C. Energy Laboratories, Inc., our contract laboratory is located in Casper, Wyoming. Energy Labs inspect the sample shipment upon arrival to verify the information of the Chain of Custody form and to determine if sample arrive at the appropriate temperature and preservation.

## 4.0 LABORATORY CONTROL

Copies of the quarterly internal Quality Control reports prepared by Energy Laboratories and associated EPA performance evaluations are included in Appendix D (1 of 2 and 2 of 2).

## 5.0 DATA EVALUATION

Analytical reports are reviewed by the Remedial Project Managers and site Radiation Safety Officer after receipt from Energy Labs. Significant increase or decrease 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**

**QUARTERLY**

**FIELD DATA SHEET**

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 1 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.02 1-8-18/0741 YH First QUARTER 2018 1413  $\mu$ S/cm 1/150 1-8-18/0741 YH  
 7-Buffer 7.07 1-8-18/0737 YH SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-8-18	509-D	84.47'	84.54'	6,310	6,420	6,440	6,720
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	0821	0.208'	0.207'	7.08	7.08	7.04	6.59
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				10.3	10.4	10.5	11.5
				Comments: Conductivity is in $\mu$ S/cm Temperature is in $^{\circ}$ C pH is in std. units Need to re-tighten fittings due to pressure leakage in line.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-8-18	EPA-23	61.04'	61.43'	4,440	4,510	4,620	4,660
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	0912	0.906'	0.559'	6.90	6.90	6.91	6.86
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				9.9	10.0	10.0	10.8
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-8-18	803	67.64'	67.72'	5,780	5,860	5,900	6,080
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	0956	7.181'	7.778'	6.76	6.75	6.75	6.64
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				10.2	10.2	10.2	12.6
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-8-18	808	54.87'	55.09'	5,360	5,470	5,740	6,170
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1050	8.820'	8.577'	7.09	7.03	6.99	6.63
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				11.6	11.7	11.8	12.6
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-8-18	802	53.06'	53.12'	6,070	6,200	6,300	6,640
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1138	14.653'	14.619'	6.69	6.69	6.70	6.64
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				12.1	12.1	12.2	13.3
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-8-18	632	49.62'	54.14'	6,520	6,540	6,580	6,670
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1223	7.432'	2.950'	7.09	7.00	6.90	6.68
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				11.9	11.9	11.9	12.1
				Comments: Water level dropped 4.52' during sample.			



PH Standard Verification Check (Quar. Performance Monitoring - Pg. 2 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu\text{S/cm}$  Reading Date/Time Initial  
 4-Buffer First QUARTER 2018 1413  $\mu\text{S/cm}$   
 7-Buffer SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-8-18	801			1st pH 7.07	2nd pH 7.05	Stable pH 7.04	Ending pH 6.75
		56.95'	58.71'	1st Temp. 11.4	2nd Temp. 11.4	Stable Temp. 11.4	Ending Temp. 12.3
				Comments:			
		1311	4.771'	3.042'			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-8-18	GW-1			1st pH 7.06	2nd pH 7.00	Stable pH 6.96	Ending pH 6.82
		66.61'	66.71'	1st Temp. 12.3	2nd Temp. 12.2	Stable Temp. 12.2	Ending Temp. 12.1
				Comments:			
		1401	4.154'	4.110'			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-8-18	EPA-28			1st pH 7.77	2nd pH 7.72	Stable pH 7.66	Ending pH 7.00
		67.46'	67.96'	1st Temp. 11.7	2nd Temp. 11.7	Stable Temp. 11.8	Ending Temp. 11.7
				Comments:			
		1456	2.980'	2.534'			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-8-18	EPA-28 DUPLICATE			1st pH 7.00	2nd pH 7.00	Stable pH 7.00	Ending pH 7.01
		67.96'	67.98'	1st Temp. 11.7	2nd Temp. 11.7	Stable Temp. 11.7	Ending Temp. 11.5
				Comments:			
		1540	2.534'	2.433'			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-8-18	624			1st pH 7.55	2nd pH 7.43	Stable pH 7.30	Ending pH 6.74
		55.35'	55.41'	1st Temp. 11.0	2nd Temp. 11.0	Stable Temp. 11.0	Ending Temp. 10.7
				Comments:			
		1645	7.223'	7.187'			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			

PH Standard Verification Check  
 STD. PH Reading Date/Time Initial  
 4-Buffer 4.00 1-9-18/0744 7.18  
 7-Buffer 7.05 1-9-18/0735 7.18

(Quar. Performance Monitoring - Pg. 3 of 7)  
 GROUND WATER MONITORING FIELD DATA SHEET  
 First QUARTER 2018  
 SAMPLING

Cond. Standard Verification Check  
 STD.  $\mu$ S/cm Reading Date/Time Initial  
 1413  $\mu$ S/cm 1480 1-9-18/0745 4.12

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-9-18	58L-1	Pre-Sample	Post Sample	2,730	2,750	2,770	2,580
	Time	Bubbler Start	Bubbler End	1st pH 7.65	2nd pH 7.60	Stable pH 7.44	Ending pH 6.62
	0851	51.33'	52.35'	1st Temp. 9.8	2nd Temp. 10.0	Stable Temp. 10.1	Ending Temp. 11.5
		3.493'	2.365'	Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-9-18	EPA-2.5	Pre-Sample	Post Sample	3,820	4,080	4,130	4,680
	Time	Bubbler Start	Bubbler End	1st pH 7.08	2nd pH 7.05	Stable pH 7.01	Ending pH 6.84
	0956	58.14'	58.24'	1st Temp. 12.0	2nd Temp. 12.0	Stable Temp. 12.0	Ending Temp. 12.7
		2.788'	2.737'	Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-9-18	627	Pre-Sample	Post Sample	3,770	4,040	4,170	4,280
	Time	Bubbler Start	Bubbler End	1st pH 7.36	2nd pH 7.33	Stable pH 7.22	Ending pH 6.93
	1100	62.01'	62.02'	1st Temp. 13.6	2nd Temp. 13.5	Stable Temp. 13.5	Ending Temp. 15.1
		0.596'	0.594'	Comments: Pumping unit will need maintenance work due to very low discharge rate.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-9-18	614	Pre-Sample	Post Sample	6,130	6,270	6,800	7,430
	Time	Bubbler Start	Bubbler End	1st pH 7.18	2nd pH 7.17	Stable pH 7.15	Ending pH 6.45
	1234	106.30'	106.92'	1st Temp. 14.5	2nd Temp. 14.6	Stable Temp. 14.6	Ending Temp. 14.7
		0.443'	0.234'	Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-9-18	515-A	Pre-Sample	Post Sample	8,580	8,670	9,090	9,340
	Time	Bubbler Start	Bubbler End	1st pH 7.61	2nd pH 7.61	Stable pH 7.62	Ending pH 6.17
	1353	107.55'	113.47'	1st Temp. 13.4	2nd Temp. 13.2	Stable Temp. 13.2	Ending Temp. 13.0
		5.731'	0.288'	Comments: Water level dropped 6.20' during sample.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-9-18	604	Pre-Sample	Post Sample	6,130	6,230	6,280	6,360
	Time	Bubbler Start	Bubbler End	1st pH 6.25	2nd pH 6.26	Stable pH 6.26	Ending pH 5.55
	1454	106.63'	107.17'	1st Temp. 12.5	2nd Temp. 12.5	Stable Temp. 12.5	Ending Temp. 12.9
		3.088'	2.309'	Comments:			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 4 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu\text{S/cm}$  Reading Date/Time Initial  
 4-Buffer 7.02 1-10-18/0733 JH First QUARTER 2018 1413  $\mu\text{S/cm}$  1477 1-10-18/0734 JH  
 7-Buffer 7.05 1-10-18/0730 JH SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-9-18	EPA-7	117.93'	119.66'	6,590	6,670	7,010	7,130
Time	1553	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
		9.458'	7.484'	8.00	8.03	8.04	6.22
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				12.8	12.8	12.8	13.4
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-9-18	EPA-5	128.23'	128.64'	4,050	4,200	4,230	4,460
Time	1635	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
		2.904'	2.221'	6.40	6.37	6.36	6.45
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				13.0	13.0	13.0	12.3
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-10-18	EPA-4	209.16'	209.51'	4,230	4,250	4,250	4,450
Time	0821	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
		13.989'	12.459'	7.57	7.61	7.64	6.90
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				10.3	10.4	10.4	10.0
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-10-18	EPA-2	175.32'	176.32'	3,450	3,440	3,460	3,450
Time	0928	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
		6.339'	5.601'	7.59	7.62	7.64	7.03
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				10.5	10.5	10.6	10.8
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-10-18	EPA-2 DUPLICATE	176.32'	176.32'	3,430	3,420	3,420	3,500
Time	1005	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
		5.601'	5.269'	7.01	7.01	7.00	7.03
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				10.9	10.9	10.9	10.8
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-10-18	TWQ-142	202.71'	203.32'	1,935	1,923	1,902	1,931
Time	1040	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
		18.279'	17.480'	7.96	7.97	7.97	8.05
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				9.4	9.3	9.3	10.2
				Comments:			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 5 of 7) Cond. Standard Verification Check  
 STD. PH. Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.03 1-15-18/0750 7.12 First QUARTER 2018 1413  $\mu$ S/cm 1442 1-15-18/0751 7.12  
 7-Buffer 7.06 1-15-18/0748 7.12 SAMPLING

Date	Well Number	WL w/Probe	WL w/Probe	1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	RINSE	Pre-Sample	Post Sample	1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
1-10-18	1130			Comments:			
Date	Well Number	WL w/Probe	WL w/Probe	1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	FIELD	Pre-Sample	Post Sample	1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
1-10-18	1140			Comments:			
Date	Well Number	WL w/Probe	WL w/Probe	1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
		Pre-Sample	Post Sample	1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe	WL w/Probe	1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	613	Pre-Sample	Post Sample	1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
1-15-18	0830	80.00'	81.09'	4.793'	3.717'		
Date	Well Number	WL w/Probe	WL w/Probe	1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	517	Pre-Sample	Post Sample	1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
1-15-18	0920	107.10'	110.62'	0.271'	0.270'	Comments: Collected sample after pump and line repair. Water level dropped 3.52' during sample.	
Date	Well Number	WL w/Probe	WL w/Probe	1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	708	Pre-Sample	Post Sample	1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
1-15-18	1042	159.13'	160.11'	0.337'	0.194'		

[illegible]



PH Standard Verification Check (Quar. Performance Monitoring - Pg. 7 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 3.98 1-17-18/0852    First QUARTER 2018 1413  $\mu$ S/cm 1454 1-17-18/0852     
 7-Buffer 7.05 1-17-18/0853    SAMPLING (meter #2)

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-16-18	RINSE			1st pH 8.03	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp. 10.6	2nd Temp.	Stable Temp.	Ending Temp.
	1707			Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-16-18	FIELD			1st pH 7.50	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp. 13.1	2nd Temp.	Stable Temp.	Ending Temp.
	1717			Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-17-18	719			1st pH 5.96	2nd pH 5.99	Stable pH 6.00	Ending pH 6.02
	Time	Bubbler Start	Bubbler End	1st Temp. 9.3	2nd Temp. 9.6	Stable Temp. 9.9	Ending Temp. 10.0
	1000	170.90'	171.35'	Comments: Collected sample after replacing malfunctioning 36" pump with a new 18" pump.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			

PH Standard Verification Check  
 STD. PH Reading Date/Time Initial  
 4-Buffer 4.04 1-16-18/0757 JH  
 7-Buffer 7.00 1-16-18/0754 JH

(Monthly/Quar. Supplemental - Pg. 1 of 2)  
 GROUND WATER MONITORING FIELD DATA SHEET  
 First QUARTER 2018  
 SAMPLING

Cond. Standard Verification Check  
 STD.  $\mu$ S/cm Reading Date/Time Initial  
 1413  $\mu$ S/cm 1454 1-16-18/0758 JH

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-16-18	NBL-2	173.23'	173.37'	1st pH 6.38	2nd pH 6.52	Stable pH 6.62	Ending pH 6.68
	Time 1320	Bubbler Start 7.018'	Bubbler End 6.932'	1st Temp. 12.3	2nd Temp. 12.2	Stable Temp. 12.1	Ending Temp. 12.1
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-16-18	NW-7	198.78'	198.80'	1st pH 7.65	2nd pH 7.66	Stable pH 7.66	Ending pH 7.66
	Time 1341	Bubbler Start	Bubbler End	1st Temp. 11.3	2nd Temp. 11.3	Stable Temp. 11.4	Ending Temp. 11.4
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-16-18	NW-3	193.22'	193.56'	1st pH 7.51	2nd pH 7.50	Stable pH 7.48	Ending pH 7.47
	Time 1615	Bubbler Start	Bubbler End	1st Temp. 11.3	2nd Temp. 11.4	Stable Temp. 11.5	Ending Temp. 11.5
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-17-18	NW-1	200.06'	200.60'	1st pH 5.81	2nd pH 6.31	Stable pH 6.56	Ending pH 6.77
	Time 1130	Bubbler Start	Bubbler End	1st Temp. 7.5	2nd Temp. 7.4	Stable Temp. 7.4	Ending Temp. 7.1
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-17-18	NW-4	196.53'	198.07'	1st pH 5.48	2nd pH 5.68	Stable pH 5.09	Ending pH 6.03
	Time 1009	Bubbler Start	Bubbler End	1st Temp. 11.6	2nd Temp. 11.6	Stable Temp. 11.6	Ending Temp. 11.8
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
1-17-18	NW-2	199.61'	199.84'	1st pH 5.20	2nd pH 5.54	Stable pH 5.78	Ending pH 5.89
	Time 1025	Bubbler Start	Bubbler End	1st Temp. 11.4	2nd Temp. 11.4	Stable Temp. 11.5	Ending Temp. 11.5
				Comments: In order to collect sample and water level, this extraction well was shut off @ 0853/restarted @ 1158.			

PH Standard Verification Check (Monthly/Quar. Supplemental - Pg. 2 of 2) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.02 1-17-18/0803 MC First QUARTER 2018 1413  $\mu$ S/cm 1440 1-17-18/0758 MC  
 7-Buffer 7.02 1-17-18/0800 MC SAMPLING (meter #1)

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-17-18	NW-5	193.25'	193.36'	4.750	4.810	4.820	4.840
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1040			5.56	5.32	5.23	5.14
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				10.9	10.9	10.9	10.9
				Comments: In order to collect sample and water level, this extraction well was shut off @ 0857/restarted @ 1205			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
1-17-18	AW-A	177.54'	177.96'	5.280	5.150	5.120	5.100
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1100			5.24	5.44	5.51	5.58
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				16.2	16.4	16.4	16.3
				Comments: In order to collect sample and water level, this extraction well was shut off @ 0906/restarted @ 1145.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			



PH Standard Verification Check (Quar. Performance Monitoring - Pg. 1 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu\text{S/cm}$  Reading Date/Time Initial  
 4-Buffer 4.01 4-2-18/0752 12 Second QUARTER 2018 1413  $\mu\text{S/cm}$  1410 4-2-18/0751 12  
 7-Buffer 7.02 4-2-18/0753 12 SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
4-2-18	509-D	84.52'	84.55'	5,580	5,680	5,880	6,420
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	0832	0.204'	0.214'	6.99	7.03	7.07	6.53
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				11.4	11.5	11.5	12.8
				Comments: Conductivity is in $\mu\text{S/cm}$ Temperature is in $^{\circ}\text{C}$ pH is in std. units			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
4-2-18	EPA-23	61.00'	61.40'	4,040	4,120	4,250	4,300
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	0933	0.902'	0.591'	6.88	6.86	6.85	6.72
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				12.6	12.5	12.5	14.9
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
4-2-18	803	67.56'	67.66'	4,100	4,780	5,520	5,820
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1022	9.220'	9.145'	7.13	7.11	7.06	6.54
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				13.9	13.9	13.8	14.7
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
4-2-18	808	54.78'	55.07'	4,340	4,620	5,350	6,100
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1112	8.855'	8.615'	7.01	6.90	6.82	6.55
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				13.8	13.6	13.6	14.6
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
4-2-18	802	53.07'	53.12'	5,550	5,900	6,000	6,420
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1158	14.613'	14.584'	6.64	6.62	6.62	6.55
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				19.2	14.8	14.6	15.7
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
4-2-18	632	49.62'	54.61'	5,120	5,500	6,260	6,600
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1240	7.382'	2.234'	7.18	7.13	6.87	6.47
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				14.5	14.4	14.0	14.0
				Comments: Water level dropped 4.99' during sample.			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 2 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer Second QUARTER 2018 1413  $\mu$ S/cm  
 7-Buffer SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-2-18	801	56.99'	58.78'	1st pH 6.67	2nd pH 6.65	Stable pH 6.65	Ending pH 6.64
	Time 1326	Bubbler Start 4.742'	Bubbler End 2.849'	1st Temp. 15.3	2nd Temp. 15.0	Stable Temp. 14.9	Ending Temp. 14.4
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-2-18	GW-1	66.66'	66.75'	1st pH 6.99	2nd pH 6.94	Stable pH 6.89	Ending pH 6.70
	Time 1417	Bubbler Start 4.081'	Bubbler End 4.025'	1st Temp. 14.4	2nd Temp. 14.3	Stable Temp. 14.3	Ending Temp. 14.9
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-2-18	EPA-28	67.47'	67.91'	1st pH 7.65	2nd pH 7.65	Stable pH 7.63	Ending pH 6.82
	Time 1512	Bubbler Start 2.944'	Bubbler End 2.503'	1st Temp. 15.1	2nd Temp. 14.9	Stable Temp. 15.0	Ending Temp. 15.5
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-2-18	EPA-28 DUPLICATE	67.91'	67.97'	1st pH 6.83	2nd pH 6.83	Stable pH 6.83	Ending pH 6.85
	Time 1555	Bubbler Start 2.503'	Bubbler End 2.386'	1st Temp. 15.7	2nd Temp. 15.4	Stable Temp. 15.2	Ending Temp. 15.9
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-2-18	624	55.40'	55.45'	1st pH 7.03	2nd pH 6.80	Stable pH 6.75	Ending pH 6.56
	Time 1642	Bubbler Start 7.122'	Bubbler End 7.095'	1st Temp. 14.6	2nd Temp. 14.4	Stable Temp. 14.3	Ending Temp. 14.7
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			

PH Standard Verification Check  
 STD. PH Reading Date/Time Initial  
 4-Buffer 4.04 4-3-18/0706 JH  
 7-Buffer 7.04 4-3-18/0703 JH

(Quar. Performance Monitoring - Pg. 3 of 7)  
 GROUND WATER MONITORING FIELD DATA SHEET  
 Second QUARTER 20 18  
 SAMPLING

Cond. Standard Verification Check  
 STD.  $\mu$ S/cm Reading Date/Time Initial  
 1413  $\mu$ S/cm 1492 4-3-18/0707 JH

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-3-18	SBL-1	51.28'	52.45'	1st pH 7.29	2nd pH 7.20	Stable pH 7.12	Ending pH 6.63
	Time 0838	Bubbler Start 3.441'	Bubbler End 2.251'	1st Temp. 11.7	2nd Temp. 11.8	Stable Temp. 11.8	Ending Temp. 12.9
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-3-18	EPA-25	58.32'	58.44'	1st pH 7.17	2nd pH 7.14	Stable pH 7.09	Ending pH 6.78
	Time 0945	Bubbler Start 2.599'	Bubbler End 2.489'	1st Temp. 12.5	2nd Temp. 12.6	Stable Temp. 12.5	Ending Temp. 13.4
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-3-18	627	62.20'	62.23'	1st pH 6.96	2nd pH 6.96	Stable pH 6.96	Ending pH 6.93
	Time 1047	Bubbler Start 0.386'	Bubbler End 0.314'	1st Temp. 14.4	2nd Temp. 14.4	Stable Temp. 14.4	Ending Temp. 16.7
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-3-18	614	106.09'	106.93'	1st pH 7.05	2nd pH 7.04	Stable pH 7.05	Ending pH 6.36
	Time 1250	Bubbler Start 0.414'	Bubbler End 0.212'	1st Temp. 14.3	2nd Temp. 14.4	Stable Temp. 14.3	Ending Temp. 16.2
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-3-18	515-A	107.42'	113.75'	1st pH 7.25	2nd pH 7.25	Stable pH 7.25	Ending pH 6.00
	Time 1403	Bubbler Start 5.563'	Bubbler End 0.217'	1st Temp. 14.6	2nd Temp. 14.5	Stable Temp. 14.4	Ending Temp. 17.2
				Comments: Water level dropped 6.33' during sample.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-3-18	604	106.54'	107.32'	1st pH 5.73	2nd pH 5.67	Stable pH 5.66	Ending pH 5.37
	Time 1507	Bubbler Start 2.878'	Bubbler End 2.113'	1st Temp. 15.4	2nd Temp. 15.2	Stable Temp. 15.0	Ending Temp. 15.5
				Comments:			

PH Standard Verification Check  
 STD. PH Reading Date/Time Initial  
 4-Buffer 4.05 4-4-18/0717 JH  
 7-Buffer 7.04 4-4-18/0715 JH

(Quar. Performance Monitoring - Pg. 4 of 7)  
 GROUND WATER MONITORING FIELD DATA SHEET  
 Second QUARTER 2018  
 SAMPLING

Cond. Standard Verification Check  
 STD.  $\mu\text{S/cm}$  Reading Date/Time Initial  
 1413  $\mu\text{S/cm}$  1491 4-4-18/0718 JH

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-3-18	EPA-7	117.82'	119.83'	1st pH 7.27	2nd pH 7.30	Stable pH 7.31	Ending pH 6.08
	Time 1604	Bubbler Start 9.297'	Bubbler End 7.281'	1st Temp. 14.8 2nd Temp. 14.6 Stable Temp. 14.5 Ending Temp. 14.8			
				Comments: Water level dropped 2.01' during sample.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-3-18	EPA-5	128.15'	128.89'	1st pH 5.31	2nd pH 5.18	Stable pH 5.15	Ending pH 6.23
	Time 1647	Bubbler Start 2.641'	Bubbler End 1.942'	1st Temp. 15.5 2nd Temp. 15.1 Stable Temp. 15.0 Ending Temp. 14.9			
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-4-18	EPA-4	209.43'	209.98'	1st pH 7.12	2nd pH 7.12	Stable pH 7.12	Ending pH 6.73
	Time 0826	Bubbler Start 13.584'	Bubbler End 12.877'	1st Temp. 11.9 2nd Temp. 11.9 Stable Temp. 11.8 Ending Temp. 13.3			
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-4-18	EPA-2	175.56'	176.39'	1st pH 7.14	2nd pH 7.14	Stable pH 7.14	Ending pH 6.94
	Time 0934	Bubbler Start 5.961'	Bubbler End 5.140'	1st Temp. 11.7 2nd Temp. 11.8 Stable Temp. 11.8 Ending Temp. 12.4			
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-4-18	EPA-2 DUPLICATE	176.39'	176.56'	1st pH 6.94	2nd pH 6.94	Stable pH 6.94	Ending pH 6.91
	Time 1005	Bubbler Start 5.140'	Bubbler End 4.921'	1st Temp. 12.4 2nd Temp. 12.4 Stable Temp. 12.4 Ending Temp. 13.4			
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-4-18	TWQ-142	202.93'	203.63'	1st pH 7.85	2nd pH 7.84	Stable pH 7.83	Ending pH 7.84
	Time 1046	Bubbler Start 17.981'	Bubbler End 17.310'	1st Temp. 14.2 2nd Temp. 14.2 Stable Temp. 14.2 Ending Temp. 15.3			
				Comments:			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 5 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu\text{S/cm}$  Reading Date/Time Initial  
 4-Buffer 4.06 4-9-18/0753 JH 1413  $\mu\text{S/cm}$  1422 4-9-18/0754 JH  
 7-Buffer 7.06 4-9-18/0748 JH  
 Second QUARTER 2018 SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-4-18	RINSATE			1st pH 7.47	2nd pH	Stable pH	Ending pH
	Time 1130	Bubbler Start	Bubbler End	1st Temp. 17.0	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-4-18	FIELD BLANK			1st pH 6.59	2nd pH	Stable pH	Ending pH
	Time 1140	Bubbler Start	Bubbler End	1st Temp. 14.6	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-9-18	613			1st Cond. 8,300	2nd Cond. 8,340	Stable Cond. 8,360	Ending Cond. 8,280
				1st pH 3.34	2nd pH 3.29	Stable pH 3.26	Ending pH 3.13
	Time 0821	80.19'	81.31'	1st Temp. 11.1	2nd Temp. 11.2	Stable Temp. 11.3	Ending Temp. 12.7
		Bubbler Start	Bubbler End	Comments:			
		4.622'	3.502'				
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-9-18	517			1st Cond. 4,480	2nd Cond. 5,150	Stable Cond. 5,270	Ending Cond. 5,290
				1st pH 3.26	2nd pH 3.28	Stable pH 3.32	Ending pH 3.33
	Time 0908	107.20'	110.88'	1st Temp. 12.4	2nd Temp. 12.6	Stable Temp. 12.6	Ending Temp. 12.6
		Bubbler Start	Bubbler End	Comments: Water level dropped 3.68' during sample and required a total 24 hr. recharge to resume/collect full sample volume, due to very low volume.			
		0.281'	0.318'				
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-9-18	708			1st Cond. 5,330	2nd Cond. 5,430	Stable Cond. 5,520	Ending Cond. 5,140
				1st pH 2.86	2nd pH 2.85	Stable pH 2.85	Ending pH 3.85
	Time 1014	159.30'	160.46'	1st Temp. 13.5	2nd Temp. 13.5	Stable Temp. 13.3	Ending Temp. 14.1
		Bubbler Start	Bubbler End	Comments: Check ball is not holding all the time in pump.			
		0.337'	0.244'				



PH Standard Verification Check (Quar. Performance Monitoring - Pg. 6 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.06 4-10-18/0741 JH Second QUARTER 2018 1413  $\mu$ S/cm 1407 4-10-18/0742 JH  
 7-Buffer 7.09 4-10-18/0737 JH SAMPLING (meter #2)

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-9-18	711	184.90'	186.28'	1st pH 3.19	2nd pH 3.18	Stable pH 3.18	Ending pH 4.04
	Time 1143	Bubbler Start 0.287'	Bubbler End 0.192'	1st Temp. 13.4 2nd Temp. 13.4 Stable Temp. 13.4 Ending Temp. 14.6 Comments: check pump bladder for breakage due to presence of bubbles in line.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-9-18	EPA-13	169.85'	170.86'	1st pH 6.47	2nd pH 6.57	Stable pH 6.60	Ending pH 5.98
	Time 1257	Bubbler Start 1.923'	Bubbler End 0.891'	1st Temp. 14.3 2nd Temp. 14.1 Stable Temp. 14.1 Ending Temp. 16.0 Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-9-18	420	157.60'	158.44'	1st pH 7.25	2nd pH 7.31	Stable pH 7.33	Ending pH 6.44
	Time 1415	Bubbler Start 0.248'	Bubbler End 0.129'	1st Temp. 14.1 2nd Temp. 14.0 Stable Temp. 14.1 Ending Temp. 16.6 Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-9-18	EPA-14	126.21'	127.01'	1st pH 6.99	2nd pH 6.94	Stable pH 6.90	Ending pH 5.57
	Time 1550	Bubbler Start 0.276'	Bubbler End 0.282'	1st Temp. 15.0 2nd Temp. 14.4 Stable Temp. 14.2 Ending Temp. 14.2 Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-10-18	717	136.77'	137.99'	1st pH 3.38	2nd pH 3.38	Stable pH 3.38	Ending pH 3.33
	Time 0950	Bubbler Start 0.255'	Bubbler End 0.259'	1st Temp. 15.4 2nd Temp. 15.1 Stable Temp. 15.0 Ending Temp. 15.9 Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-10-18	717 DUPLICATE	137.99'	139.02'	1st pH 3.34	2nd pH 3.34	Stable pH 3.35	Ending pH 3.44
	Time 1040	Bubbler Start 0.259'	Bubbler End 0.150	1st Temp. 15.7 2nd Temp. 15.5 Stable Temp. 15.6 Ending Temp. 16.6 Comments:			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 7 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu\text{S/cm}$  Reading Date/Time Initial  
 4-Buffer 1413  $\mu\text{S/cm}$   
 7-Buffer

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-10-18	719	170.99'	171.03'	1st pH 5.61	2nd pH 5.63	Stable pH 5.63	Ending pH 5.64
	Time 1610	Bubbler Start 0.339'	Bubbler End 0.299'	Comments: Collected sample after pump repair but required an 18 hr. recharge to resume/collect full sample due to very low volume in well.			
4-10-18	RINSE			1st Cond. 3	2nd Cond.	Stable Cond.	Ending Cond.
	Time 1730			1st pH 6.70	2nd pH	Stable pH	Ending pH
		Bubbler Start	Bubbler End	Comments:			
4-10-18	FIELD			1st Cond. 3	2nd Cond.	Stable Cond.	Ending Cond.
	Time 1740			1st pH 6.14	2nd pH	Stable pH	Ending pH
		Bubbler Start	Bubbler End	Comments:			
				1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
		Bubbler Start	Bubbler End	Comments:			
				1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
		Bubbler Start	Bubbler End	Comments:			
				1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
		Bubbler Start	Bubbler End	Comments:			

PH Standard Verification Check				(Monthly/Quar. Supplemental - Pg. 1 of 2)	Cond. Standard Verification Check			
STD.	PH Reading	Date/Time	Initial	GROUND WATER MONITORING FIELD DATA SHEET	STD.	µS/cm Reading	Date/Time	Initial
4-Buffer	4.00	4-10-18/1436	12	Second QUARTER 20 18	1413 µS/cm	1412	4-10-18/1434	12
7-Buffer	7.00	4-10-18/1435	12	SAMPLING	(meter #1)			

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-10-18	NBL-2			1st pH 2.95	2nd pH 6.87	Stable pH 6.89	Ending pH 6.60
		173.73'	173.89'	1st Temp. 22.6	2nd Temp. 16.0	Stable Temp. 16.1	Ending Temp. 16.3
		Bubbler Start	Bubbler End	Comments:			
		6.521'	6.434'				
4-10-18	NW-7			1st Cond. 3.580	2nd Cond. 3.640	Stable Cond. 3.680	Ending Cond. 3.720
		199.18'	199.00'	1st pH 7.53	2nd pH 7.54	Stable pH 7.54	Ending pH 7.53
		Bubbler Start	Bubbler End	1st Temp. 18.9	2nd Temp. 18.9	Stable Temp. 18.8	Ending Temp. 18.7
				Comments: Need to recheck pumping system due to very slow discharge rate and required collection at two different times for full sample.			
4-10-18	NW-3			1st Cond. 3.760	2nd Cond. 3.860	Stable Cond. 3.900	Ending Cond. 3.920
		193.52'	193.89'	1st pH 6.88	2nd pH 7.02	Stable pH 7.12	Ending pH 7.21
		Bubbler Start	Bubbler End	1st Temp. 15.6	2nd Temp. 15.3	Stable Temp. 14.9	Ending Temp. 14.7
				Comments: Used pH/Cond. meter #1			
4-11-18	NW-1			1st Cond. 3.500	2nd Cond. 3.540	Stable Cond. 3.550	Ending Cond. 3.570
		200.26'	200.60'	1st pH 5.91	2nd pH 6.39	Stable pH 6.65	Ending pH 6.99
		Bubbler Start	Bubbler End	1st Temp. 12.4	2nd Temp. 12.4	Stable Temp. 12.3	Ending Temp. 12.2
				Comments:			
4-11-18	NW-4			1st Cond. 3.610	2nd Cond. 3.740	Stable Cond. 3.780	Ending Cond. 3.800
		196.44'	198.13'	1st pH 6.71	2nd pH 6.72	Stable pH 6.59	Ending pH 6.42
		Bubbler Start	Bubbler End	1st Temp. 13.0	2nd Temp. 12.9	Stable Temp. 12.8	Ending Temp. 12.7
				Comments:			
4-11-18	NW-2			1st Cond. 4.000	2nd Cond. 4.170	Stable Cond. 4.250	Ending Cond. 4.300
		199.50'	199.81'	1st pH 6.33	2nd pH 6.17	Stable pH 6.08	Ending pH 6.02
		Bubbler Start	Bubbler End	1st Temp. 12.9	2nd Temp. 12.9	Stable Temp. 12.6	Ending Temp. 12.6
				Comments: In order to collect sample and water level, this extraction well was shut off @ 1819 on 4-10/restored @ 1510 on 4-11.			



PH Standard Verification Check (Monthly/Quar. Supplemental - Pg. 2 of 2) Cond. Standard Verification Check

STD.	PH Reading	Date/Time	Initial	GROUND WATER MONITORING FIELD DATA SHEET	STD.	µS/cm Reading	Date/Time	Initial
4-Buffer	4.01	4-11-18/0808	JL	Second QUARTER 2018	1413 µS/cm	1426	4-11-18/0809	JL
7-Buffer	7.03	4-11-18/0804	JL	SAMPLING				

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-11-18	NW-5	193.37'	193.50'	1st pH 6.16	2nd pH 5.64	Stable pH 5.48	Ending pH 4.52
	Time 1010	Bubbler Start	Bubbler End	1st Temp. 13.8	2nd Temp. 13.4	Stable Temp. 13.0	Ending Temp. 12.8
				Comments: In order to collect sample and water level, this extraction well was shutoff @ 1821 on 4-10/ restarted @ 1520 on 4-11.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
4-11-18	AW-A	176.28'	177.14'	1st pH 5.55	2nd pH 5.60	Stable pH 5.63	Ending pH 5.69
	Time 1035	Bubbler Start	Bubbler End	1st Temp. 15.7	2nd Temp. 15.7	Stable Temp. 15.8	Ending Temp. 15.6
				Comments: In order to collect sample and water level, this extraction well was shutoff @ 1815 on 4-10/ restarted @ 1528 on 4-11.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			

**APPENDIX B**  
**QUARTERLY SAMPLING**  
**SEMI-ANNUAL GROUND WATER MONITORING REPORT**  
**JANUARY TO JUNE OF 2018**

**QA/QC CONTROLS**

FIELD BLANKS  
RINSATES

EPA-28 AND EPA-28 DUPLICATES FOR SW ALLUVIUM

EPA-2 AND EPA-2 DUPLICATES FOR ZONE 1

717 AND 717 DUPLICATES FOR ZONE 3

**INTENTIONALLY LEFT BLANK**



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-011  
**Client Sample ID:** Field Blank

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 11:40  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/15/18 20:38 / mvr
Chloride	ND	mg/L		1		E300.0	01/16/18 08:54 / ljl
Sulfate	ND	mg/L		1		E300.0	01/16/18 08:54 / ljl
Calcium	ND	mg/L		1		E200.7	01/18/18 01:31 / eli-b
Magnesium	ND	mg/L		1		E200.7	01/18/18 01:31 / eli-b
Potassium	ND	mg/L		1		E200.7	01/19/18 21:18 / eli-b
Sodium	ND	mg/L		1		E200.7	01/19/18 01:26 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.05	s.u.	H	0.01		A4500-H B	01/15/18 13:10 / jeu
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	01/15/18 16:25 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	01/17/18 14:26 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/16/18 17:14 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/18/18 20:03 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 20:03 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 20:03 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 20:03 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 20:03 / eli-b
Manganese	ND	mg/L		0.001		E200.8	01/18/18 20:03 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 20:03 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/18/18 20:03 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	01/18/18 20:03 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 20:03 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 03:27 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:46 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.3	pCi/L	U			E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U Precision (±)	0.3	pCi/L				E900.1	02/06/18 13:31 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 13:31 / dmf
Lead 210	-0.7	pCi/L	U			E909.0	01/27/18 00:57 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	01/27/18 00:57 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	01/27/18 00:57 / meh
Radium 226	0.2	pCi/L				E903.0	02/12/18 11:40 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	02/12/18 11:40 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/12/18 11:40 / arh
Radium 228	0.2	pCi/L	U			RA-05	02/05/18 14:05 / trs
Radium 228 precision (±)	1.6	pCi/L				RA-05	02/05/18 14:05 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-011  
**Client Sample ID:** Field Blank

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 11:40  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	2.7	pCi/L				RA-05	02/05/18 14:05 / trs
Thorium 230	0.1	pCi/L	U			E908.0	02/02/18 10:26 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	02/02/18 10:26 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/02/18 10:26 / cnh
<b>DATA QUALITY</b>							
A/C Balance	25.6	%				A1030 E	01/31/18 10:35 / tjp
Anions	0	meq/L				A1030 E	01/31/18 10:35 / tjp
Cations	0.01	meq/L				A1030 E	01/31/18 10:35 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	1.6	ug/L		0.50		E624	01/23/18 11:07 / eli-b
Bromoform	1.0	ug/L		0.50		E624	01/23/18 11:07 / eli-b
Chlorodibromomethane	1.5	ug/L		0.50		E624	01/23/18 11:07 / eli-b
Chloroform	2.2	ug/L		0.50		E624	01/23/18 11:07 / eli-b
Trihalomethanes, Total	6.4	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	103	%REC		71-139		E624	01/23/18 11:07 / eli-b
Surr: p-Bromofluorobenzene	107	%REC		80-127		E624	01/23/18 11:07 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	01/23/18 11:07 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-006  
**Client Sample ID:** Field Blank

**Report Date:** 02/27/18  
**Collection Date:** 01/16/18 17:17  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/22/18 19:38 / mvr
Chloride	ND	mg/L		1		E300.0	01/25/18 05:30 / ljl
Sulfate	ND	mg/L		1		E300.0	01/25/18 05:30 / ljl
Calcium	ND	mg/L		1		E200.7	01/24/18 16:44 / eli-b
Magnesium	ND	mg/L		1		E200.7	01/24/18 16:44 / eli-b
Potassium	ND	mg/L		1		E200.7	01/24/18 16:44 / eli-b
Sodium	ND	mg/L		1		E200.7	01/24/18 16:44 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.06	s.u.	H	0.01		A4500-H B	01/22/18 13:17 / jeu
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	01/22/18 12:40 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	01/23/18 12:07 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/22/18 10:44 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/25/18 20:27 / eli-b
Beryllium	ND	mg/L		0.001		E200.7	01/25/18 20:27 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/24/18 22:43 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/24/18 22:43 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/24/18 22:43 / eli-b
Manganese	ND	mg/L		0.001		E200.8	01/24/18 22:43 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/25/18 17:01 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/24/18 22:43 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	01/24/18 22:43 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/24/18 22:43 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/30/18 20:46 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:29 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.5	pCi/L	U			E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	02/16/18 09:38 / dmf
Lead 210	-0.05	pCi/L	U			E909.0	01/31/18 22:00 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	01/31/18 22:00 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	01/31/18 22:00 / meh
Radium 226	0.2	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 228	0.4	pCi/L	U			RA-05	02/14/18 13:57 / plj
Radium 228 precision (±)	1.2	pCi/L				RA-05	02/14/18 13:57 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-006  
**Client Sample ID:** Field Blank

**Report Date:** 02/27/18  
**Collection Date:** 01/16/18 17:17  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	2.0	pCi/L				RA-05	02/14/18 13:57 / plj
Thorium 230	0.04	pCi/L	U			E908.0	02/07/18 14:23 / cnh
Thorium 230 precision (±)	0.09	pCi/L				E908.0	02/07/18 14:23 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/07/18 14:23 / cnh
<b>DATA QUALITY</b>							
A/C Balance	48.4	%				A1030 E	02/01/18 09:54 / tjp
Anions	0	meq/L				A1030 E	02/01/18 09:54 / tjp
Cations	0.02	meq/L				A1030 E	02/01/18 09:54 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	1.3	ug/L		0.50		E624	01/26/18 16:28 / eli-b
Bromoform	0.56	ug/L		0.50		E624	01/26/18 16:28 / eli-b
Chlorodibromomethane	1.2	ug/L		0.50		E624	01/26/18 16:28 / eli-b
Chloroform	4.0	ug/L		0.50		E624	01/26/18 16:28 / eli-b
Trihalomethanes, Total	7.0	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	93.0	%REC		71-139		E624	01/26/18 16:28 / eli-b
Surr: p-Bromofluorobenzene	95.0	%REC		80-127		E624	01/26/18 16:28 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123		E624	01/26/18 16:28 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-010  
**Client Sample ID:** Rinsate

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 11:30  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/15/18 20:32 / mvr
Chloride	ND	mg/L		1		E300.0	01/16/18 08:36 / ljl
Sulfate	2	mg/L		1		E300.0	01/16/18 08:36 / ljl
Calcium	ND	mg/L		1		E200.7	01/18/18 01:27 / eli-b
Magnesium	ND	mg/L		1		E200.7	01/18/18 01:27 / eli-b
Potassium	ND	mg/L		1		E200.7	01/19/18 21:06 / eli-b
Sodium	1	mg/L		1		E200.7	01/19/18 01:22 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.97	s.u.	H	0.01		A4500-H B	01/15/18 13:07 / jeu
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	01/15/18 16:25 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	01/17/18 14:24 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/16/18 17:13 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/18/18 20:00 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 20:00 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 20:00 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 20:00 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 20:00 / eli-b
Manganese	0.003	mg/L		0.001		E200.8	01/18/18 20:00 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 20:00 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/18/18 20:00 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	01/18/18 20:00 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 20:00 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 03:15 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:45 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.5	pCi/L	U			E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Lead 210	-2	pCi/L	U			E909.0	01/26/18 22:07 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	01/26/18 22:07 / meh
Lead 210 MDC	1.3	pCi/L				E909.0	01/26/18 22:07 / meh
Radium 226	0.1	pCi/L	U			E903.0	02/12/18 11:40 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/12/18 11:40 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/12/18 11:40 / arh
Radium 228	1.4	pCi/L	U			RA-05	02/05/18 14:05 / trs
Radium 228 precision (±)	1.5	pCi/L				RA-05	02/05/18 14:05 / trs

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 H - Analysis performed past recommended holding time.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 1  
Lab ID: C18010386-010  
Client Sample ID: Rinsate

Report Date: 02/23/18  
Collection Date: 01/10/18 11:30  
Date Received: 01/12/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	2.4	pCi/L				RA-05	02/05/18 14:05 / trs
Thorium 230	0.1	pCi/L	U			E908.0	02/02/18 10:26 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	02/02/18 10:26 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/02/18 10:26 / cnh
<b>DATA QUALITY</b>							
A/C Balance	6.18	%				A1030 E	01/31/18 10:35 / tjp
Anions	0.08	meq/L				A1030 E	01/31/18 10:35 / tjp
Cations	0.09	meq/L				A1030 E	01/31/18 10:35 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	1.7	ug/L		0.50		E624	01/23/18 13:16 / eli-b
Bromoform	1.1	ug/L		0.50		E624	01/23/18 13:16 / eli-b
Chlorodibromomethane	1.6	ug/L		0.50		E624	01/23/18 13:16 / eli-b
Chloroform	2.3	ug/L		0.50		E624	01/23/18 13:16 / eli-b
Trihalomethanes, Total	6.7	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	103	%REC		71-139		E624	01/23/18 13:16 / eli-b
Surr: p-Bromofluorobenzene	107	%REC		80-127		E624	01/23/18 13:16 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	01/23/18 13:16 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-005  
**Client Sample ID:** Rinsate

**Report Date:** 02/27/18  
**Collection Date:** 01/16/18 17:07  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/22/18 19:33 / mvr
Chloride	ND	mg/L		1		E300.0	01/25/18 05:12 / ljl
Sulfate	10	mg/L		1		E300.0	01/25/18 05:12 / ljl
Calcium	3	mg/L		1		E200.7	01/24/18 16:33 / eli-b
Magnesium	1	mg/L		1		E200.7	01/24/18 16:33 / eli-b
Potassium	ND	mg/L		1		E200.7	01/24/18 16:33 / eli-b
Sodium	ND	mg/L		1		E200.7	01/24/18 16:33 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.81	s.u.	H	0.01		A4500-H B	01/22/18 13:13 / jeu
Solids, Total Dissolved TDS @ 180 C	19	mg/L		10		A2540 C	01/22/18 12:40 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	01/23/18 12:06 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/22/18 10:43 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.7	01/25/18 20:23 / eli-b
Beryllium	ND	mg/L		0.001		E200.7	01/25/18 20:23 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/24/18 22:40 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/24/18 22:40 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/24/18 22:40 / eli-b
Manganese	0.012	mg/L		0.001		E200.8	01/24/18 22:40 / eli-b
Molybdenum	0.002	mg/L		0.001		E200.8	01/26/18 12:41 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/24/18 22:40 / eli-b
Uranium	0.0003	mg/L		0.0003		E200.8	01/24/18 22:40 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/24/18 22:40 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/30/18 20:34 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:34 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.2	pCi/L	U			E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	02/16/18 09:38 / dmf
Lead 210	0.4	pCi/L	U			E909.0	01/31/18 19:23 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	01/31/18 19:23 / meh
Lead 210 MDC	1.5	pCi/L				E909.0	01/31/18 19:23 / meh
Radium 226	0.3	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 228	-0.3	pCi/L	U			RA-05	02/14/18 13:57 / plj
Radium 228 precision (±)	1.2	pCi/L				RA-05	02/14/18 13:57 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-005  
**Client Sample ID:** Rinsate

**Report Date:** 02/27/18  
**Collection Date:** 01/16/18 17:07  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	2.0	pCi/L				RA-05	02/14/18 13:57 / plj
Thorium 230	0.4	pCi/L				E908.0	02/07/18 14:23 / cnh
Thorium 230 precision (±)	0.2	pCi/L				E908.0	02/07/18 14:23 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/07/18 14:23 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	16	mg/L				A1030 E	02/01/18 09:54 / tjp
A/C Balance	4.69	%				A1030 E	02/01/18 09:54 / tjp
Anions	0.25	meq/L				A1030 E	02/01/18 09:54 / tjp
Cations	0.27	meq/L				A1030 E	02/01/18 09:54 / tjp
TDS Ratio	1.19	unitless				A1030 E	02/01/18 09:54 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	1.3	ug/L		0.50		E624	01/26/18 16:58 / eli-b
Bromoform	0.61	ug/L		0.50		E624	01/26/18 16:58 / eli-b
Chlorodibromomethane	1.3	ug/L		0.50		E624	01/26/18 16:58 / eli-b
Chloroform	4.0	ug/L		0.50		E624	01/26/18 16:58 / eli-b
Trihalomethanes, Total	7.2	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	90.0	%REC		71-139		E624	01/26/18 16:58 / eli-b
Surr: p-Bromofluorobenzene	95.0	%REC		80-127		E624	01/26/18 16:58 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	01/26/18 16:58 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-011  
**Client Sample ID:** Field Blank

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 11:40  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/09/18 01:56 / mvr
Chloride	ND	mg/L		1		E300.0	04/10/18 02:04 / ljl
Sulfate	ND	mg/L		1		E300.0	04/10/18 02:04 / ljl
Calcium	ND	mg/L		1		E200.7	04/11/18 16:08 / eli-b
Magnesium	ND	mg/L		1		E200.7	04/11/18 16:08 / eli-b
Potassium	ND	mg/L		1		E200.7	04/11/18 16:08 / eli-b
Sodium	ND	mg/L		1		E200.7	04/11/18 16:08 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	5.92	s.u.	H	0.01		A4500-H B	04/09/18 12:22 / jeu
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	04/09/18 14:26 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	04/09/18 11:26 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	04/11/18 14:07 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/12/18 00:42 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:42 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 00:42 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/12/18 00:42 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 00:42 / eli-b
Manganese	ND	mg/L		0.001		E200.8	04/12/18 00:42 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 00:42 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/12/18 00:42 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	04/12/18 00:42 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:42 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/13/18 00:49 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:34 / eli-h
<b>DATA QUALITY</b>							
A/C Balance	-36.8	%				A1030 E	04/20/18 10:43 / tjp
Anions	0.05	meq/L				A1030 E	04/20/18 10:43 / tjp
Cations	0.02	meq/L				A1030 E	04/20/18 10:43 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.4	pCi/L	U			E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:30 / cnh
Lead 210	-0.02	pCi/L	U			E909.0	04/13/18 10:19 / meh
Lead 210 precision (±)	0.6	pCi/L				E909.0	04/13/18 10:19 / meh
Lead 210 MDC	1.1	pCi/L				E909.0	04/13/18 10:19 / meh
Radium 226	0.3	pCi/L				E903.0	04/23/18 10:50 / arh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-011  
**Client Sample ID:** Field Blank

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 11:40  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 228	1.1	pCi/L	U			RA-05	04/18/18 13:08 / plj
Radium 228 precision (±)	0.9	pCi/L				RA-05	04/18/18 13:08 / plj
Radium 228 MDC	1.9	pCi/L				RA-05	04/18/18 13:08 / plj
Thorium 230	0.1	pCi/L	U			E908.0	04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	04/19/18 11:42 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	0.85	ug/L		0.50		E624	04/13/18 18:14 / eli-b
Bromoform	0.48	ug/L	J	0.50		E624	04/13/18 18:14 / eli-b
Chlorodibromomethane	0.95	ug/L		0.50		E624	04/13/18 18:14 / eli-b
Chloroform	1.4	ug/L		0.50		E624	04/13/18 18:14 / eli-b
Trihalomethanes, Total	3.7	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	96.0	%REC		71-139		E624	04/13/18 18:14 / eli-b
Surr: p-Bromofluorobenzene	94.0	%REC		80-127		E624	04/13/18 18:14 / eli-b
Surr: Toluene-d8	94.0	%REC		80-123		E624	04/13/18 18:14 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
J - Estimated value. The analyte was present but less than the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-007  
**Client Sample ID:** Field Blank

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 17:40  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/14/18 21:57 / mvr
Chloride	ND	mg/L		1		E300.0	04/17/18 02:09 / ljl
Sulfate	ND	mg/L		1		E300.0	04/17/18 02:09 / ljl
Calcium	ND	mg/L		1		E200.7	04/19/18 22:18 / eli-b
Magnesium	ND	mg/L		1		E200.7	04/19/18 22:18 / eli-b
Potassium	ND	mg/L		1		E200.7	04/19/18 22:18 / eli-b
Sodium	ND	mg/L		1		E200.7	04/19/18 22:18 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.13	s.u.	H	0.01		A4500-H B	04/14/18 17:16 / mvr
Solids, Total Dissolved TDS @ 180 C	22	mg/L		10		A2540 C	04/14/18 17:43 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	04/17/18 15:16 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	04/16/18 14:52 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/19/18 00:00 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/19/18 00:00 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/19/18 00:00 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/19/18 00:00 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/19/18 00:00 / eli-b
Manganese	ND	mg/L		0.001		E200.8	04/19/18 00:00 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/19/18 00:00 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/19/18 00:00 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	04/19/18 00:00 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/19/18 00:00 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/20/18 18:09 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 14:18 / eli-h
<b>DATA QUALITY</b>							
A/C Balance	-12.3	%				A1030 E	05/01/18 17:06 / tjp
Anions	0.04	meq/L				A1030 E	05/01/18 17:06 / tjp
Cations	0.04	meq/L				A1030 E	05/01/18 17:06 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.4	pCi/L	U			E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/26/18 12:44 / trs
Lead 210	0.2	pCi/L	U			E909.0	04/25/18 10:44 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	04/25/18 10:44 / meh
Lead 210 MDC	1.2	pCi/L				E909.0	04/25/18 10:44 / meh
Radium 226	0.2	pCi/L	U			E903.0	05/07/18 12:37 / arh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-007  
**Client Sample ID:** Field Blank

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 17:40  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 226 precision (±)	0.1	pCi/L				E903.0	05/07/18 12:37 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	05/07/18 12:37 / arh
Radium 228	0.03	pCi/L	U			RA-05	05/02/18 13:35 / plj
Radium 228 precision (±)	1.8	pCi/L				RA-05	05/02/18 13:35 / plj
Radium 228 MDC	3.0	pCi/L				RA-05	05/02/18 13:35 / plj
Thorium 230	0.07	pCi/L	U			E908.0	05/09/18 16:32 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	05/09/18 16:32 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	05/09/18 16:32 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	0.62	ug/L		0.50		E624	04/20/18 07:44 / eli-b
Bromoform	0.62	ug/L		0.50		E624	04/20/18 07:44 / eli-b
Chlorodibromomethane	0.93	ug/L		0.50		E624	04/20/18 07:44 / eli-b
Chloroform	0.49	ug/L	J	0.50		E624	04/20/18 07:44 / eli-b
Trihalomethanes, Total	2.7	ug/L		0.50		E624	05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	04/20/18 07:44 / eli-b
Surr: p-Bromofluorobenzene	105	%REC		80-127		E624	04/20/18 07:44 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	04/20/18 07:44 / eli-b

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
J - Estimated value. The analyte was present but less than the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-010  
**Client Sample ID:** Rinsate

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 11:30  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/09/18 01:51 / mvr
Chloride	ND	mg/L		1		E300.0	04/10/18 01:46 / ljl
Sulfate	ND	mg/L		1		E300.0	04/10/18 01:46 / ljl
Calcium	ND	mg/L		1		E200.7	04/11/18 16:04 / eli-b
Magnesium	ND	mg/L		1		E200.7	04/11/18 16:04 / eli-b
Potassium	ND	mg/L		1		E200.7	04/11/18 16:04 / eli-b
Sodium	ND	mg/L		1		E200.7	04/11/18 16:04 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.16	s.u.	H	0.01		A4500-H B	04/09/18 12:18 / jeu
Solids, Total Dissolved TDS @ 180 C	15	mg/L		10		A2540 C	04/09/18 14:26 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	04/09/18 11:25 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	04/11/18 14:06 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/12/18 00:39 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:39 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 00:39 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/12/18 00:39 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 00:39 / eli-b
Manganese	ND	mg/L		0.001		E200.8	04/12/18 00:39 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 00:39 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/12/18 00:39 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	04/12/18 00:39 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:39 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/13/18 00:13 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:29 / eli-h
<b>DATA QUALITY</b>							
A/C Balance	-24.1	%				A1030 E	04/20/18 10:43 / tjp
Anions	0.05	meq/L				A1030 E	04/20/18 10:43 / tjp
Cations	0.03	meq/L				A1030 E	04/20/18 10:43 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.5	pCi/L	U			E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:30 / cnh
Lead 210	0.8	pCi/L	U			E909.0	04/13/18 06:56 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	04/13/18 06:56 / meh
Lead 210 MDC	1.1	pCi/L				E909.0	04/13/18 06:56 / meh
Radium 226	0.2	pCi/L	U			E903.0	04/23/18 10:50 / arh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-010  
**Client Sample ID:** Rinsate

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 11:30  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 226 precision (±)	0.1	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 10:50 / arh
Radium 228	0.6	pCi/L	U			RA-05	04/18/18 13:08 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	04/18/18 13:08 / plj
Radium 228 MDC	1.8	pCi/L				RA-05	04/18/18 13:08 / plj
Thorium 230	0.1	pCi/L	U			E908.0	04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/19/18 11:42 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	0.91	ug/L		0.50		E624	04/13/18 17:44 / eli-b
Bromoform	0.49	ug/L	J	0.50		E624	04/13/18 17:44 / eli-b
Chlorodibromomethane	0.96	ug/L		0.50		E624	04/13/18 17:44 / eli-b
Chloroform	1.4	ug/L		0.50		E624	04/13/18 17:44 / eli-b
Trihalomethanes, Total	3.8	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	04/13/18 17:44 / eli-b
Surr: p-Bromofluorobenzene	97.0	%REC		80-127		E624	04/13/18 17:44 / eli-b
Surr: Toluene-d8	94.0	%REC		80-123		E624	04/13/18 17:44 / eli-b

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
J - Estimated value. The analyte was present but less than the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-006  
**Client Sample ID:** Rinsate

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 17:30  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/14/18 21:53 / mvr
Chloride	ND	mg/L		1		E300.0	04/17/18 01:51 / ljl
Sulfate	11	mg/L		1		E300.0	04/17/18 01:51 / ljl
Calcium	1	mg/L		1		E200.7	04/19/18 22:14 / eli-b
Magnesium	2	mg/L		1		E200.7	04/19/18 22:14 / eli-b
Potassium	ND	mg/L		1		E200.7	04/19/18 22:14 / eli-b
Sodium	ND	mg/L		1		E200.7	04/19/18 22:14 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.07	s.u.	H	0.01		A4500-H B	04/14/18 17:13 / mvr
Solids, Total Dissolved TDS @ 180 C	31	mg/L		10		A2540 C	04/14/18 17:43 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	04/17/18 15:13 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	04/16/18 14:49 / dmb
<b>METALS, TOTAL</b>							
Aluminum	0.10	mg/L		0.03		E200.8	04/18/18 23:57 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/18/18 23:57 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/18/18 23:57 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/18/18 23:57 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/18/18 23:57 / eli-b
Manganese	0.016	mg/L		0.001		E200.8	04/18/18 23:57 / eli-b
Molybdenum	0.016	mg/L		0.001		E200.8	04/18/18 23:57 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/18/18 23:57 / eli-b
Uranium	0.0007	mg/L		0.0003		E200.8	04/18/18 23:57 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 23:57 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/20/18 17:57 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 14:17 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	16	mg/L				A1030 E	05/01/18 17:06 / tjp
A/C Balance	-3.62	%				A1030 E	05/01/18 17:06 / tjp
Anions	0.26	meq/L				A1030 E	05/01/18 17:06 / tjp
Cations	0.25	meq/L				A1030 E	05/01/18 17:06 / tjp
TDS Ratio	1.94	unitless				A1030 E	05/01/18 17:06 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	0.5	pCi/L	U			E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/26/18 12:44 / trs
Lead 210	-0.1	pCi/L	U			E909.0	04/25/18 07:14 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	04/25/18 07:14 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-006  
**Client Sample ID:** Rinsate

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 17:30  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L			E909.0		04/25/18 07:14 / meh
Radium 226	0.4	pCi/L			E903.0		05/07/18 12:37 / arh
Radium 226 precision (±)	0.2	pCi/L			E903.0		05/07/18 12:37 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		05/07/18 12:37 / arh
Radium 228	0.2	pCi/L	U		RA-05		05/02/18 12:02 / plj
Radium 228 precision (±)	1.3	pCi/L			RA-05		05/02/18 12:02 / plj
Radium 228 MDC	2.2	pCi/L			RA-05		05/02/18 12:02 / plj
Thorium 230	0.02	pCi/L	U		E908.0		05/09/18 16:32 / cnh
Thorium 230 precision (±)	0.09	pCi/L			E908.0		05/09/18 16:32 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		05/09/18 16:32 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	0.57	ug/L		0.50	E624		04/20/18 07:15 / eli-b
Bromoform	0.60	ug/L		0.50	E624		04/20/18 07:15 / eli-b
Chlorodibromomethane	0.83	ug/L		0.50	E624		04/20/18 07:15 / eli-b
Chloroform	0.47	ug/L	J	0.50	E624		04/20/18 07:15 / eli-b
Trihalomethanes, Total	2.5	ug/L		0.50	E624		05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139	E624		04/20/18 07:15 / eli-b
Surr: p-Bromofluorobenzene	105	%REC		80-127	E624		04/20/18 07:15 / eli-b
Surr: Toluene-d8	100	%REC		80-123	E624		04/20/18 07:15 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
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United Nuclear Corporation

SW Alluvium

Well ID:		EPA-28	EPA-28	EPA-28	EPA-28
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-009	C18010327-009	C17100193-009	C17070424-009
Bicarbonate as HCO <sub>3</sub>	mg/L	406	394	432	412
Chloride	mg/L	103	100	98	98
Sulfate	mg/L	3230	3210	2900	2930
Calcium	mg/L	541	512	491	491
Magnesium	mg/L	409	462	469	463
Potassium	mg/L	10	10	10	10
Sodium	mg/L	236	236	252	252
pH	s.u.	6.87	6.89	6.93	6.89
Solids, Total Dissolved TDS @ 180 C	mg/L	4970	4960	4830	4920
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	6.90	6.85	7.05	7.10
Aluminum	mg/L	0.03	0.03	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.590	0.628	0.46	0.51
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.008	0.009	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0213	0.0211	0.0211	0.0183
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-4.14	-1.59	2.51	1.95
Anions	meq/L	77.3	76.5	70.7	71.0
Cations	meq/L	71.2	74.1	74.4	73.9
Solids, Total Dissolved - Calculated	mg/L	4800	4800	4500	4500
TDS Ratio	unitless	1.04	1.04	1.08	1.10
Gross Alpha minus Rn & U	pCi/L	1.2	0.8	1	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.5	0.5	0.4
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.6	0.7	0.5
Lead 210	pCi/L	1.1	0.03	0.4	-0.02
Lead 210 precision (±)	pCi/L	0.9	0.7	0.8	0.8
Lead 210 MDC	pCi/L	1.3	1.2	1.4	1.3
Radium 226	pCi/L	0.7	0.3	0.3	0.2
Radium 226 precision (±)	pCi/L	0.2	0.1	0.1	0.1
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	1.5	-0.3	0.3	1.4
Radium 228 precision (±)	pCi/L	0.8	1.2	0.9	1.2
Radium 228 MDC	pCi/L	1.1	2.0	1.5	1.8
Thorium 230	pCi/L	0.1	0.2	0.02	0.1
Thorium 230 precision (±)	pCi/L	0.1	0.1	0.06	0.1
Thorium 230 MDC	pCi/L	0.1	0.2	0.1	0.1
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)



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United Nuclear Corporation

SW Alluvium

Well ID:		EPA-28 Duplicate	EPA-28 Duplicate	EPA-28 Duplicate	EPA-28 Duplicate
Collection Date:		4/2/2018	1/8/2018	10/2/2017	7/10/2017
Receive Date:		4/5/2018	1/11/2018	10/5/2017	7/13/2017
Report Date:		5/10/2018	2/13/2018	11/9/2017	9/5/2017
Analyte	Units	C18040172-010	C18010327-010	C17100193-010	C17070424-010
Bicarbonate as HCO <sub>3</sub>	mg/L	416	398	440	417
Chloride	mg/L	105	102	98	97
Sulfate	mg/L	3250	3210	2890	2930
Calcium	mg/L	535	502	482	515
Magnesium	mg/L	415	457	463	473
Potassium	mg/L	10	10	10	11
Sodium	mg/L	240	271	249	260
pH	s.u.	6.86	6.93	6.88	6.88
Solids, Total Dissolved TDS @ 180 C	mg/L	4960	4950	4950	4910
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	6.75	6.90	7.20	7.35
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.511	0.523	0.49	0.51
Molybdenum	mg/L	ND(0.001)	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.008	0.008	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0211	0.0223	0.0218	0.0204
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-4.22	-1.38	1.87	3.55
Anions	meq/L	77.8	76.8	70.6	71.0
Cations	meq/L	71.5	74.7	73.3	76.2
Solids, Total Dissolved - Calculated	mg/L	4800	4800	4400	4500
TDS Ratio	unitless	1.03	1.03	1.11	1.08
Gross Alpha minus Rn & U	pCi/L	1.1	1.1	0.7	0.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.5	0.5	0.3
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.6	0.7	0.5
Lead 210	pCi/L	0.4	0.2	-0.5	0.8
Lead 210 precision (±)	pCi/L	0.8	0.7	0.8	0.8
Lead 210 MDC	pCi/L	1.3	1.2	1.4	1.4
Radium 226	pCi/L	0.7	0.4	0.5	0.4
Radium 226 precision (±)	pCi/L	0.2	0.1	0.2	0.2
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	1.6	0.1	1.5	-0.002
Radium 228 precision (±)	pCi/L	1.0	1.0	0.8	1.1
Radium 228 MDC	pCi/L	1.1	1.8	1.3	1.8
Thorium 230	pCi/L	0.1	0.05	0.04	-0.01
Thorium 230 precision (±)	pCi/L	0.1	0.07	0.07	0.07
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-010  
**Client Sample ID:** EPA-28 Duplicate

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 15:40  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	398	mg/L		5		A2320 B	01/12/18 19:19 / mvr
Chloride	102	mg/L	D	2		E300.0	01/13/18 14:09 / ljl
Sulfate	3210	mg/L	D	8		E300.0	01/13/18 14:09 / ljl
Calcium	502	mg/L		1		E200.7	01/17/18 23:18 / eli-b
Magnesium	457	mg/L		1		E200.7	01/17/18 23:18 / eli-b
Potassium	10	mg/L		1		E200.7	01/22/18 13:11 / eli-b
Sodium	271	mg/L	D	3		E200.7	01/17/18 23:18 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.93	s.u.	H	0.01		A4500-H B	01/12/18 14:32 / jeu
Solids, Total Dissolved TDS @ 180 C	4950	mg/L	D	40		A2540 C	01/12/18 13:41 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	6.90	mg/L	D	0.05		E353.2	01/15/18 14:08 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	01/22/18 10:07 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/29/18 14:33 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 18:45 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 18:45 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 18:45 / eli-b
Lead	ND	mg/L		0.001		E200.8	01/18/18 18:45 / eli-b
Manganese	0.523	mg/L	D	0.002		E200.8	01/18/18 18:45 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/18/18 18:45 / eli-b
Nickel	0.008	mg/L		0.005		E200.8	01/18/18 18:45 / eli-b
Uranium	0.0223	mg/L		0.0003		E200.8	01/18/18 18:45 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 18:45 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/22/18 20:00 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/18/18 16:49 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4800	mg/L				A1030 E	01/31/18 10:29 / tjp
A/C Balance	-1.38	%				A1030 E	01/31/18 10:29 / tjp
Anions	76.8	meq/L				A1030 E	01/31/18 10:29 / tjp
Cations	74.7	meq/L				A1030 E	01/31/18 10:29 / tjp
TDS Ratio	1.03	unitless				A1030 E	01/31/18 10:29 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.1	pCi/L				E900.1	01/30/18 07:56 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	01/30/18 07:56 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	01/30/18 07:56 / dmf
Lead 210	0.2	pCi/L	U			E909.0	01/22/18 12:33 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	01/22/18 12:33 / meh

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18010327-010  
**Client Sample ID:** EPA-28 Duplicate

**Report Date:** 02/13/18  
**Collection Date:** 01/08/18 15:40  
**Date Received:** 01/11/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.2	pCi/L				E909.0	01/22/18 12:33 / meh
Radium 226	0.4	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	02/09/18 11:50 / trs
Radium 228	0.1	pCi/L	U			RA-05	01/30/18 15:34 / trs
Radium 228 precision (±)	1.0	pCi/L				RA-05	01/30/18 15:34 / trs
Radium 228 MDC	1.8	pCi/L				RA-05	01/30/18 15:34 / trs
Thorium 230	0.05	pCi/L	U			E908.0	01/30/18 08:18 / meh
Thorium 230 precision (±)	0.07	pCi/L				E908.0	01/30/18 08:18 / meh
Thorium 230 MDC	0.1	pCi/L				E908.0	01/30/18 08:18 / meh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/17/18 17:51 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/17/18 17:51 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/17/18 17:51 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/17/18 17:51 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	106	%REC		71-139		E624	01/17/18 17:51 / eli-b
Surr: p-Bromofluorobenzene	101	%REC		80-127		E624	01/17/18 17:51 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	01/17/18 17:51 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-010  
**Client Sample ID:** EPA-28 Duplicate

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 15:55  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	416	mg/L		5		A2320 B	04/08/18 20:03 / mvr
Chloride	105	mg/L	D	2		E300.0	04/07/18 03:40 / ljl
Sulfate	3250	mg/L	D	8		E300.0	04/07/18 03:40 / ljl
Calcium	535	mg/L	D	4		E200.7	04/09/18 18:44 / eli-b
Magnesium	415	mg/L		1		E200.7	04/09/18 18:44 / eli-b
Potassium	10	mg/L		1		E200.7	04/09/18 18:44 / eli-b
Sodium	240	mg/L		1		E200.7	04/09/18 18:44 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.86	s.u.	H	0.01		A4500-H B	04/06/18 11:27 / jeu
Solids, Total Dissolved TDS @ 180 C	4960	mg/L	D	40		A2540 C	04/06/18 14:13 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	6.75	mg/L	D	0.05		E353.2	04/06/18 11:40 / dmb
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	04/06/18 15:24 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/10/18 01:43 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 15:26 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/10/18 01:43 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/10/18 01:43 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/10/18 01:43 / eli-b
Manganese	0.511	mg/L		0.001		E200.8	04/10/18 01:43 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/10/18 01:43 / eli-b
Nickel	0.008	mg/L		0.005		E200.8	04/10/18 01:43 / eli-b
Uranium	0.0211	mg/L		0.0003		E200.8	04/10/18 01:43 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/10/18 01:43 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 20:48 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/09/18 17:37 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4800	mg/L				A1030 E	04/17/18 11:24 / tla
A/C Balance	-4.22	%				A1030 E	04/17/18 11:24 / tla
Anions	77.8	meq/L				A1030 E	04/17/18 11:24 / tla
Cations	71.5	meq/L				A1030 E	04/17/18 11:24 / tla
TDS Ratio	1.03	unitless				A1030 E	04/17/18 11:24 / tla
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	1.1	pCi/L				E900.1	04/16/18 12:35 / cnh
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	04/16/18 12:35 / cnh
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	04/16/18 12:35 / cnh
Lead 210	0.4	pCi/L	U			E909.0	04/13/18 15:42 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	04/13/18 15:42 / meh

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C18040172-010  
**Client Sample ID:** EPA-28 Duplicate

**Report Date:** 05/10/18  
**Collection Date:** 04/02/18 15:55  
**Date Received:** 04/05/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.3	pCi/L				E909.0	04/13/18 15:42 / meh
Radium 226	0.7	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	04/23/18 13:29 / arh
Radium 228	1.6	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 precision (±)	1.0	pCi/L				RA-05	04/17/18 14:10 / plj
Radium 228 MDC	1.1	pCi/L				RA-05	04/17/18 14:10 / plj
Thorium 230	0.1	pCi/L		U		E908.0	04/18/18 17:03 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	04/18/18 17:03 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	04/18/18 17:03 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/10/18 19:30 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/10/18 19:30 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/10/18 19:30 / eli-b
Chloroform	ND	ug/L		0.50		E624	04/10/18 19:30 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	04/10/18 19:30 / eli-b
Surr: p-Bromofluorobenzene	95.0	%REC		80-127		E624	04/10/18 19:30 / eli-b
Surr: Toluene-d8	93.0	%REC		80-123		E624	04/10/18 19:30 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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United Nuclear Corporation

Zone 1

Well ID:		EPA-2	EPA-2	EPA-2	EPA-2
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/2/2018	2/23/2018	11/10/2017	8/16/2017
Analyte	Units	C18040249-007	C18010386-007	C17100295-007	C17070470-007
Bicarbonate as HCO <sub>3</sub>	mg/L	273	263	290	287
Chloride	mg/L	27	25	24	24
Sulfate	mg/L	2180	2170	1890	1850
Calcium	mg/L	432	421	406	380
Magnesium	mg/L	200	203	194	177
Potassium	mg/L	7	8	7	7
Sodium	mg/L	209	233	207	191
pH	s.u.	6.87	6.96	6.93	7.00
Solids, Total Dissolved TDS @ 180 C	mg/L	3380	3230	3200	3060
Nitrogen, Ammonia as N	mg/L	0.28	0.34	0.27	0.08
Nitrogen, Nitrate+Nitrite as N	mg/L	0.04	ND(0.01)	0.10	0.07
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.004
Manganese	mg/L	1.99	1.86	1.83	1.76
Molybdenum	mg/L	ND(0.001)	0.001	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0007	0.0014	0.0013	0.0018
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-3.40	-2.08	0.56	-2.19
Anions	meq/L	50.6	50.1	44.9	43.9
Cations	meq/L	47.3	48.1	45.4	42.0
Solids, Total Dissolved - Calculated	mg/L	3200	3200	2900	2800
TDS Ratio	unitless	1.05	1.01	1.10	1.10
Gross Alpha minus Rn & U	pCi/L	1.6	2.5	1.8	1.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.6	0.8	0.7	0.6
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	0.5	0.5
Lead 210	pCi/L	0.5	0.5	1.1	1.6
Lead 210 precision (±)	pCi/L	0.7	0.6	0.9	0.9
Lead 210 MDC	pCi/L	1.1	1.0	1.3	1.3
Radium 226	pCi/L	1.2	1.2	1.5	1.1
Radium 226 precision (±)	pCi/L	0.3	0.3	0.4	0.3
Radium 226 MDC	pCi/L	0.2	0.2	0.2	0.2
Radium 228	pCi/L	8.3	3.0	5.6	3.1
Radium 228 precision (±)	pCi/L	1.9	1.5	1.5	1.3
Radium 228 MDC	pCi/L	1.4	2.0	1.4	1.8
Thorium 230	pCi/L	0.1	0.2	0.1	-0.008
Thorium 230 precision (±)	pCi/L	0.1	0.1	0.1	0.08
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)



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United Nuclear Corporation

Zone 1

Well ID:		EPA-2 Duplicate	EPA-2 Duplicate	EPA-2 Duplicate	EPA-2 Duplicate
Collection Date:		4/3/2018	1/9/2018	10/3/2017	7/11/2017
Receive Date:		4/6/2018	1/12/2018	10/6/2017	7/14/2017
Report Date:		5/2/2018	2/23/2018	11/10/2017	8/16/2017
Analyte	Units	C18040249-008	C18010386-008	C17100295-008	C17070470-008
Bicarbonate as HCO <sub>3</sub>	mg/L	283	275	303	296
Chloride	mg/L	27	24	24	23
Sulfate	mg/L	2170	2130	1880	1860
Calcium	mg/L	431	428	411	374
Magnesium	mg/L	199	205	195	177
Potassium	mg/L	7	8	7	6
Sodium	mg/L	210	234	208	185
pH	s.u.	6.77	6.77	6.72	6.76
Solids, Total Dissolved TDS @ 180 C	mg/L	3350	3270	3170	3110
Nitrogen, Ammonia as N	mg/L	0.43	0.41	0.43	0.41
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.01)	ND(0.01)	0.02	ND(0.01)
Aluminum	mg/L	ND(0.03)	ND(0.03)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.001)	ND(0.001)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.005)	ND(0.005)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	0.002	ND(0.001)	0.003
Manganese	mg/L	1.93	2.06	1.85	1.89
Molybdenum	mg/L	ND(0.001)	0.001	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.005)	ND(0.005)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0007	0.0014	0.0012	0.0011
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-3.49	-0.82	1.25	-3.28
Anions	meq/L	50.6	49.5	44.7	44.2
Cations	meq/L	47.2	48.7	45.8	41.4
Solids, Total Dissolved - Calculated	mg/L	3200	3200	2900	2800
TDS Ratio	unitless	1.04	1.03	1.09	1.12
Gross Alpha minus Rn & U	pCi/L	2.4	2.2	2.2	1.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.7	0.7	0.7	0.6
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	0.5	0.5
Lead 210	pCi/L	0.6	-0.8	1.3	0.7
Lead 210 precision (±)	pCi/L	0.7	0.8	0.9	0.7
Lead 210 MDC	pCi/L	1.1	1.4	1.3	1.2
Radium 226	pCi/L	1.6	1.3	1.6	1.5
Radium 226 precision (±)	pCi/L	0.4	0.3	0.4	0.4
Radium 226 MDC	pCi/L	0.2	0.1	0.2	0.2
Radium 228	pCi/L	3.8	2.4	5.1	2.7
Radium 228 precision (±)	pCi/L	1.2	1	1.3	1.1
Radium 228 MDC	pCi/L	1.3	1.6	1.5	2.0
Thorium 230	pCi/L	0.2	0.1	0.008	0.009
Thorium 230 precision (±)	pCi/L	0.2	0.1	0.05	0.05
Thorium 230 MDC	pCi/L	0.2	0.2	0.1	0.1
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-008  
**Client Sample ID:** EPA-2 Duplicate

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 10:05  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	275	mg/L		5		A2320 B	01/15/18 20:10 / mvr
Chloride	24	mg/L		1		E300.0	01/16/18 07:59 / ljl
Sulfate	2130	mg/L	D	4		E300.0	01/16/18 07:59 / ljl
Calcium	428	mg/L		1		E200.7	01/18/18 01:19 / eli-b
Magnesium	205	mg/L		1		E200.7	01/18/18 01:19 / eli-b
Potassium	8	mg/L		1		E200.7	01/22/18 14:31 / eli-b
Sodium	234	mg/L	D	2		E200.7	01/19/18 01:14 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.77	s.u.	H	0.01		A4500-H B	01/15/18 13:01 / jeu
Solids, Total Dissolved TDS @ 180 C	3270	mg/L	D	20		A2540 C	01/15/18 16:25 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	01/17/18 14:16 / dmb
Nitrogen, Ammonia as N	0.41	mg/L		0.05		A4500-NH <sub>3</sub> G	01/16/18 17:10 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	01/18/18 19:54 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	01/18/18 19:54 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	01/18/18 19:54 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	01/18/18 19:54 / eli-b
Lead	0.002	mg/L		0.001		E200.8	01/18/18 19:54 / eli-b
Manganese	2.06	mg/L		0.001		E200.8	01/18/18 19:54 / eli-b
Molybdenum	0.001	mg/L		0.001		E200.8	01/18/18 19:54 / eli-b
Nickel	ND	mg/L		0.005		E200.8	01/18/18 19:54 / eli-b
Uranium	0.0014	mg/L		0.0003		E200.8	01/18/18 19:54 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/18/18 19:54 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/23/18 02:27 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/19/18 16:41 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	2.2	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	02/06/18 10:15 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	02/06/18 10:15 / dmf
Lead 210	-0.8	pCi/L	U			E909.0	01/26/18 16:52 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	01/26/18 16:52 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	01/26/18 16:52 / meh
Radium 226	1.3	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 precision (±)	0.3	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/12/18 10:05 / arh
Radium 228	2.4	pCi/L				RA-05	02/15/18 10:28 / plj
Radium 228 precision (±)	1	pCi/L				RA-05	02/15/18 10:28 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18010386-008  
**Client Sample ID:** EPA-2 Duplicate

**Report Date:** 02/23/18  
**Collection Date:** 01/10/18 10:05  
**Date Received:** 01/12/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 MDC	1.6	pCi/L				RA-05	02/15/18 10:28 / plj
Thorium 230	0.1	pCi/L	U			E908.0	02/02/18 10:24 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	02/02/18 10:24 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	02/02/18 10:24 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3200	mg/L				A1030 E	01/31/18 10:34 / tjp
A/C Balance	-0.82	%				A1030 E	01/31/18 10:34 / tjp
Anions	49.5	meq/L				A1030 E	01/31/18 10:34 / tjp
Cations	48.7	meq/L				A1030 E	01/31/18 10:34 / tjp
TDS Ratio	1.03	unitless				A1030 E	01/31/18 10:34 / tjp
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/23/18 12:04 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/23/18 12:04 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/23/18 12:04 / eli-b
Chloroform	ND	ug/L		0.50		E624	01/23/18 12:04 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	106	%REC		71-139		E624	01/23/18 12:04 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	01/23/18 12:04 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	01/23/18 12:04 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-008  
**Client Sample ID:** EPA-2 Duplicate

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 10:05  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	283	mg/L		5		A2320 B	04/09/18 01:31 / mvr
Chloride	27	mg/L		1		E300.0	04/10/18 01:09 / ljl
Sulfate	2170	mg/L	D	4		E300.0	04/10/18 01:09 / ljl
Calcium	431	mg/L		1		E200.7	04/11/18 15:56 / eli-b
Magnesium	199	mg/L		1		E200.7	04/11/18 15:56 / eli-b
Potassium	7	mg/L		1		E200.7	04/11/18 15:56 / eli-b
Sodium	210	mg/L		1		E200.7	04/11/18 15:56 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	6.77	s.u.	H	0.01		A4500-H B	04/09/18 12:09 / jeu
Solids, Total Dissolved TDS @ 180 C	3350	mg/L	D	20		A2540 C	04/09/18 14:26 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	04/09/18 11:23 / dmb
Nitrogen, Ammonia as N	0.43	mg/L		0.05		A4500-NH <sub>3</sub> G	04/11/18 14:04 / dmb
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.03		E200.8	04/12/18 00:33 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	04/12/18 00:33 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	04/12/18 00:33 / eli-b
Cobalt	ND	mg/L		0.005		E200.8	04/12/18 00:33 / eli-b
Lead	ND	mg/L		0.001		E200.8	04/12/18 00:33 / eli-b
Manganese	1.93	mg/L		0.001		E200.8	04/12/18 00:33 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	04/12/18 00:33 / eli-b
Nickel	ND	mg/L		0.005		E200.8	04/12/18 00:33 / eli-b
Uranium	0.0007	mg/L		0.0003		E200.8	04/12/18 00:33 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/12/18 00:33 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/12/18 23:25 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 13:26 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3200	mg/L				A1030 E	04/20/18 10:42 / tjp
A/C Balance	-3.49	%				A1030 E	04/20/18 10:42 / tjp
Anions	50.6	meq/L				A1030 E	04/20/18 10:42 / tjp
Cations	47.2	meq/L				A1030 E	04/20/18 10:42 / tjp
TDS Ratio	1.04	unitless				A1030 E	04/20/18 10:42 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	2.4	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	04/16/18 11:30 / cnh
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/16/18 11:30 / cnh
Lead 210	0.6	pCi/L				E909.0	04/12/18 23:56 / meh
Lead 210 precision (±)	0.7	pCi/L	U			E909.0	04/12/18 23:56 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C18040249-008  
**Client Sample ID:** EPA-2 Duplicate

**Report Date:** 05/02/18  
**Collection Date:** 04/04/18 10:05  
**Date Received:** 04/06/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 MDC	1.1	pCi/L			E909.0		04/12/18 23:56 / meh
Radium 226	1.6	pCi/L			E903.0		04/23/18 10:50 / arh
Radium 226 precision (±)	0.4	pCi/L			E903.0		04/23/18 10:50 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		04/23/18 10:50 / arh
Radium 228	3.8	pCi/L			RA-05		04/18/18 11:30 / plj
Radium 228 precision (±)	1.2	pCi/L			RA-05		04/18/18 11:30 / plj
Radium 228 MDC	1.3	pCi/L			RA-05		04/18/18 11:30 / plj
Thorium 230	0.2	pCi/L			E908.0		04/19/18 11:42 / dmf
Thorium 230 precision (±)	0.2	pCi/L			E908.0		04/19/18 11:42 / dmf
Thorium 230 MDC	0.2	pCi/L			E908.0		04/19/18 11:42 / dmf
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		04/13/18 16:46 / eli-b
Bromoform	ND	ug/L		0.50	E624		04/13/18 16:46 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		04/13/18 16:46 / eli-b
Chloroform	ND	ug/L		0.50	E624		04/13/18 16:46 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		04/24/18 14:42 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139	E624		04/13/18 16:46 / eli-b
Surr: p-Bromofluorobenzene	96.0	%REC		80-127	E624		04/13/18 16:46 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123	E624		04/13/18 16:46 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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United Nuclear Corporation

Zone 3

Well ID:		717	717	717	717
Collection Date:		4/10/2018	1/16/2018	10/9/2017	7/18/2017
Receive Date:		4/13/2018	1/19/2018	10/12/2017	7/21/2017
Report Date:		5/18/2018	2/27/2018	11/6/2017	9/20/2017
Analyte	Units	C18040522-001	C18010559-001	C17100456-007	C17070708-005
Acidity, Total as CaCO <sub>3</sub>	mg/L	1800	1810	1750	2010
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	57	58	57	64
Sulfate	mg/L	5150	5530	5230	5160
Calcium	mg/L	430	450	445	463
Magnesium	mg/L	484	509	496	506
Potassium	mg/L	3	3	2	1
Sodium	mg/L	159	178	163	181
pH	s.u.	3.36	3.28	3.20	3.11
Solids, Total Dissolved TDS @ 180 C	mg/L	7390	7550	7300	7650
Nitrogen, Ammonia as N	mg/L	34	36	39	40
Nitrogen, Nitrate+Nitrite as N	mg/L	11.4	15.0	17.6	19.2
Aluminum	mg/L	290	315	285	274
Beryllium	mg/L	0.198	0.164	0.156	0.130
Cadmium	mg/L	0.021	0.021	0.019	0.019
Cobalt	mg/L	1.19	1.12	1.16	1.09
Lead	mg/L	0.033	0.045	0.036	0.039
Manganese	mg/L	20.0	19.9	20.2	20.2
Molybdenum	mg/L	0.001	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	1.32	1.28	1.26	1.22
Uranium	mg/L	0.666	0.656	0.619	0.516
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.001	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-1.69	-3.34	-2.11	1.94
Anions	meq/L	110	118	113	111
Cations	meq/L	107	111	108	116
Solids, Total Dissolved - Calculated	mg/L	6500	6900	6500	6600
TDS Ratio	unitless	1.14	1.09	1.12	1.15
Gross Alpha minus Rn & U	pCi/L	39.2	28.0	24.4	30.8
Gross Alpha minus Rn & U Precision (±)	pCi/L	7.7	5.6	4.9	6.1
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.6	0.6	0.5
Lead 210	pCi/L	3.0	3.7	3	3.4
Lead 210 precision (±)	pCi/L	1.2	1.5	1	1.4
Lead 210 MDC	pCi/L	1.4	1.6	1.7	1.5
Radium 226	pCi/L	10.3	5.8	12.0	12.6
Radium 226 precision (±)	pCi/L	2.0	1.2	2.3	2.5
Radium 226 MDC	pCi/L	0.1	0.1	0.2	0.3
Radium 228	pCi/L	9.3	5.9	7.0	0.6
Radium 228 precision (±)	pCi/L	2.1	1.5	1.6	0.9
Radium 228 MDC	pCi/L	1.9	1.5	1.2	1.4
Thorium 230	pCi/L	8.0	10.2	19.4	19.8
Thorium 230 precision (±)	pCi/L	1.5	1.9	3.8	3.8
Thorium 230 MDC	pCi/L	1.6	0.6	24.3	0.8
Trihalomethanes, Total	ug/L	0.58	0.64	ND(0.50)	ND(0.50)





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United Nuclear Corporation

Zone 3

Well ID:		717-Duplicate	717-Duplicate	717-Duplicate	717-Duplicate
Collection Date:		4/10/2018	1/16/2018	10/9/2017	7/18/2017
Receive Date:		4/13/2018	1/19/2018	10/12/2017	7/21/2017
Report Date:		5/18/2018	2/27/2018	11/6/2017	9/20/2017
Analyte	Units	C18040522-002	C18010559-002	C17100456-008	C17070708-006
Acidity, Total as CaCO <sub>3</sub>	mg/L	1780	1820	1790	2020
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	56	57	56	64
Sulfate	mg/L	5100	5530	5240	5550
Calcium	mg/L	443	452	447	455
Magnesium	mg/L	488	511	496	498
Potassium	mg/L	4	3	2	1
Sodium	mg/L	167	179	161	176
pH	s.u.	3.35	3.27	3.20	3.11
Solids, Total Dissolved TDS @ 180 C	mg/L	7590	7590	7270	7470
Nitrogen, Ammonia as N	mg/L	35	33	40	38
Nitrogen, Nitrate+Nitrite as N	mg/L	11.8	14.7	18.6	19.4
Aluminum	mg/L	293	319	282	273
Beryllium	mg/L	0.202	0.166	0.163	0.132
Cadmium	mg/L	0.021	0.020	0.019	0.018
Cobalt	mg/L	1.19	1.12	1.14	1.07
Lead	mg/L	0.025	0.024	0.028	0.029
Manganese	mg/L	19.7	19.8	20.1	19.9
Molybdenum	mg/L	0.002	ND(0.001)	ND(0.1)	ND(0.1)
Nickel	mg/L	1.31	1.28	1.27	1.16
Uranium	mg/L	0.680	0.666	0.615	0.512
Vanadium	mg/L	ND(0.01)	ND(0.01)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
WC Balance	%	-0.79	-3.20	4.28	-2.14
Anions	meq/L	109	118	122	119
Cations	meq/L	108	111	133	114
Solids, Total Dissolved - Calculated	mg/L	6500	6900	6900	7000
TDS Ratio	unitless	1.17	1.10	1.05	1.07
Gross Alpha minus Rn & U	pCi/L	40.5	28.6	23.8	33.0
Gross Alpha minus Rn & U Precision (±)	pCi/L	8.0	5.7	4.8	6.5
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.6	0.6	0.5
Lead 210	pCi/L	2.7	4.9	-1	4.7
Lead 210 precision (±)	pCi/L	1.2	1.8	1.1	1.7
Lead 210 MDC	pCi/L	1.3	1.7	1.9	1.6
Radium 226	pCi/L	9.9	6.3	17.1	13.3
Radium 226 precision (±)	pCi/L	1.9	1.3	3.3	2.6
Radium 226 MDC	pCi/L	0.1	0.1	0.2	0.3
Radium 228	pCi/L	10.1	8.6	5.9	0.7
Radium 228 precision (±)	pCi/L	2.2	2.0	1.4	0.9
Radium 228 MDC	pCi/L	1.9	1.6	1.2	1.4
Thorium 230	pCi/L	10.5	13.4	17.0	17.1
Thorium 230 precision (±)	pCi/L	2.0	2.6	3.3	3.3
Thorium 230 MDC	pCi/L	2.1	0.8	24.3	0.9
Trihalomethanes, Total	ug/L	0.65	0.66	0.52	ND(0.50)



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18010559-002  
**Client Sample ID:** 717 Duplicate

**Report Date:** 02/27/18  
**Collection Date:** 01/16/18 09:51  
**Date Received:** 01/19/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	1820	mg/L	H			A2310 B	02/26/18 16:25 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	01/22/18 19:11 / mvr
Chloride	57	mg/L	D	2		E300.0	01/25/18 04:17 / ljl
Sulfate	5530	mg/L	D	8		E300.0	01/25/18 04:17 / ljl
Calcium	452	mg/L		1		E200.7	01/24/18 16:02 / eli-b
Magnesium	511	mg/L		1		E200.7	01/24/18 16:02 / eli-b
Potassium	3	mg/L		1		E200.7	01/24/18 16:02 / eli-b
Sodium	179	mg/L	D	3		E200.7	01/24/18 16:02 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.27	s.u.	H	0.01		A4500-H B	01/22/18 12:59 / jeu
Solids, Total Dissolved TDS @ 180 C	7590	mg/L	D	100		A2540 C	01/22/18 12:39 / jeu
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	14.7	mg/L	D	0.1		E353.2	01/23/18 12:03 / dmb
Nitrogen, Ammonia as N	33	mg/L	D	2		A4500-NH3 G	01/22/18 10:31 / dmb
<b>METALS, TOTAL</b>							
Aluminum	319	mg/L	D	0.09		E200.7	01/25/18 19:37 / eli-b
Beryllium	0.166	mg/L		0.001		E200.8	01/25/18 16:50 / eli-b
Cadmium	0.020	mg/L		0.001		E200.8	01/24/18 22:31 / eli-b
Cobalt	1.12	mg/L		0.005		E200.8	01/24/18 22:31 / eli-b
Lead	0.024	mg/L		0.001		E200.8	01/24/18 22:31 / eli-b
Manganese	19.8	mg/L	D	0.002		E200.8	01/24/18 22:31 / eli-b
Molybdenum	ND	mg/L		0.001		E200.8	01/26/18 12:39 / eli-b
Nickel	1.28	mg/L		0.005		E200.8	01/24/18 22:31 / eli-b
Uranium	0.666	mg/L		0.0003		E200.8	01/24/18 22:31 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	01/24/18 22:31 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	01/30/18 19:58 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	01/29/18 18:18 / eli-h
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	28.6	pCi/L				E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U Precision (±)	5.7	pCi/L				E900.1	02/16/18 09:38 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	02/16/18 09:38 / dmf
Lead 210	4.9	pCi/L				E909.0	01/31/18 12:24 / meh
Lead 210 precision (±)	1.8	pCi/L				E909.0	01/31/18 12:24 / meh
Lead 210 MDC	1.7	pCi/L				E909.0	01/31/18 12:24 / meh
Radium 226	6.3	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 precision (±)	1.3	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	02/21/18 04:47 / arh
Radium 228	8.6	pCi/L				RA-05	02/14/18 12:16 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C18010559-002  
Client Sample ID: 717 Duplicate

Report Date: 02/27/18  
Collection Date: 01/16/18 09:51  
Date Received: 01/19/18  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Radium 228 precision (±)	2.0	pCi/L				RA-05	02/14/18 12:16 / plj
Radium 228 MDC	1.6	pCi/L				RA-05	02/14/18 12:16 / plj
Thorium 230	13.4	pCi/L				E908.0	02/16/18 10:13 / cnh
Thorium 230 precision (±)	2.6	pCi/L				E908.0	02/16/18 10:13 / cnh
Thorium 230 MDC	0.8	pCi/L				E908.0	02/16/18 10:13 / cnh
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6900	mg/L				A1030 E	02/27/18 09:53 / tla
A/C Balance	-3.20	%				A1030 E	02/27/18 09:53 / tla
Anions	118	meq/L				A1030 E	02/27/18 09:53 / tla
Cations	111	meq/L				A1030 E	02/27/18 09:53 / tla
TDS Ratio	1.10	unitless				A1030 E	02/27/18 09:53 / tla
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	01/25/18 20:14 / eli-b
Bromoform	ND	ug/L		0.50		E624	01/25/18 20:14 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	01/25/18 20:14 / eli-b
Chloroform	0.66	ug/L		0.50		E624	01/25/18 20:14 / eli-b
Trihalomethanes, Total	0.66	ug/L		0.50		E624	02/07/18 13:10 / sec
Surr: 1,2-Dichloroethane-d4	108	%REC		71-139		E624	01/25/18 20:14 / eli-b
Surr: p-Bromofluorobenzene	101	%REC		80-127		E624	01/25/18 20:14 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	01/25/18 20:14 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 3.							

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-002  
**Client Sample ID:** 717 Duplicate

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 10:40  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	1780	mg/L				A2310 B	04/17/18 15:47 / mvr
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	04/14/18 21:26 / mvr
Chloride	56	mg/L	D	2		E300.0	05/02/18 14:41 / ljl
Sulfate	5100	mg/L	D	8		E300.0	05/02/18 14:41 / ljl
Calcium	443	mg/L		1		E200.7	04/19/18 21:51 / eli-b
Magnesium	488	mg/L		1		E200.7	04/19/18 21:51 / eli-b
Potassium	4	mg/L		1		E200.7	04/19/18 21:51 / eli-b
Sodium	167	mg/L	D	2		E200.7	04/19/18 21:51 / eli-b
<b>PHYSICAL PROPERTIES</b>							
pH	3.35	s.u.	H	0.01		A4500-H B	04/14/18 17:01 / mvr
Solids, Total Dissolved TDS @ 180 C	7590	mg/L	D	100		A2540 C	04/14/18 17:42 / mvr
<b>NUTRIENTS</b>							
Nitrogen, Nitrate+Nitrite as N	11.8	mg/L	D	0.05		E353.2	04/17/18 15:08 / dmb
Nitrogen, Ammonia as N	35	mg/L	D	2		A4500-NH3 G	04/16/18 14:42 / dmb
<b>METALS, TOTAL</b>							
Aluminum	293	mg/L		0.03		E200.8	04/18/18 23:40 / eli-b
Beryllium	0.202	mg/L		0.001		E200.8	04/18/18 23:40 / eli-b
Cadmium	0.021	mg/L		0.001		E200.8	04/18/18 23:40 / eli-b
Cobalt	1.19	mg/L		0.005		E200.8	04/18/18 23:40 / eli-b
Lead	0.025	mg/L		0.001		E200.8	04/18/18 23:40 / eli-b
Manganese	19.7	mg/L		0.001		E200.8	04/18/18 23:40 / eli-b
Molybdenum	0.002	mg/L		0.001		E200.8	04/18/18 23:40 / eli-b
Nickel	1.31	mg/L		0.005		E200.8	04/18/18 23:40 / eli-b
Uranium	0.680	mg/L		0.0003		E200.8	04/18/18 23:40 / eli-b
Vanadium	ND	mg/L		0.01		E200.8	04/18/18 23:40 / eli-b
<b>METALS - SPECIATED - TOTAL</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	04/20/18 17:09 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 C	04/19/18 14:07 / eli-h
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6500	mg/L				A1030 E	05/07/18 15:18 / tjp
A/C Balance	-0.79	%				A1030 E	05/07/18 15:18 / tjp
Anions	109	meq/L				A1030 E	05/07/18 15:18 / tjp
Cations	108	meq/L				A1030 E	05/07/18 15:18 / tjp
TDS Ratio	1.17	unitless				A1030 E	05/07/18 15:18 / tjp
<b>RADIONUCLIDES, TOTAL</b>							
Gross Alpha minus Rn & U	40.5	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U Precision (±)	8.0	pCi/L				E900.1	04/26/18 12:44 / trs
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	04/26/18 12:44 / trs
Lead 210	2.7	pCi/L				E909.0	04/24/18 18:40 / meh

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C18040522-002  
**Client Sample ID:** 717 Duplicate

**Report Date:** 05/18/18  
**Collection Date:** 04/10/18 10:40  
**Date Received:** 04/13/18  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES, TOTAL</b>							
Lead 210 precision (±)	1.2	pCi/L				E909.0	04/24/18 18:40 / meh
Lead 210 MDC	1.3	pCi/L				E909.0	04/24/18 18:40 / meh
Radium 226	9.9	pCi/L				E903.0	05/07/18 11:02 / arh
Radium 226 precision (±)	1.9	pCi/L				E903.0	05/07/18 11:02 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	05/07/18 11:02 / arh
Radium 228	10.1	pCi/L				RA-05	05/02/18 12:02 / plj
Radium 228 precision (±)	2.2	pCi/L				RA-05	05/02/18 12:02 / plj
Radium 228 MDC	1.9	pCi/L				RA-05	05/02/18 12:02 / plj
Thorium 230	10.5	pCi/L				E908.0	05/11/18 13:08 / cnh
Thorium 230 precision (±)	2.0	pCi/L				E908.0	05/11/18 13:08 / cnh
Thorium 230 MDC	2.1	pCi/L				E908.0	05/11/18 13:08 / cnh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	04/19/18 12:46 / eli-b
Bromoform	ND	ug/L		0.50		E624	04/19/18 12:46 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	04/19/18 12:46 / eli-b
Chloroform	0.65	ug/L		0.50		E624	04/19/18 12:46 / eli-b
Trihalomethanes, Total	0.65	ug/L		0.50		E624	05/14/18 13:00 / sec
Surr: 1,2-Dichloroethane-d4	109	%REC		71-139		E624	04/19/18 12:46 / eli-b
Surr: p-Bromofluorobenzene	107	%REC		80-127		E624	04/19/18 12:46 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	04/19/18 12:46 / eli-b

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

**APPENDIX – C**

**QUARTERLY  
CHAIN OF CUSTODY REPORT**

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-805-6651

CHAIN OF CUSTODY

SW Alluvium

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

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

UNC Submittal No. TE-1-1-2018

Sample Description	Date	Time	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
			Filter 0.45u HNO <sub>3</sub>	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>		
509-D	1-8-18	0821	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓	M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub>
EPA-23	1-8-18	0912	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
803	1-8-18	0956	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		NO <sub>3</sub> , Pb, Pb-210, pH, Se,
808	1-8-18	1050	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		SO <sub>4</sub> , TDS, Th-230, U, V,
802	1-8-18	1138	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		Chloroform, Gross
632	1-8-18	1223	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		Alpha (-) U & Rn,
801	1-8-18	1311	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		Combined Ra-226 & Ra-228, Al,
GW-1	1-8-18	1401	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		Co, Mo & Total Trihalomethanes (TTHMs)
EPA-28	1-8-18	1456	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		
EPA-28 DUPLICATE	1-8-18	1540	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		C18010337
624	1-8-18	1645	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓	✓	

Sampled by: Mark Chandler J.

Received by: Frank Chis

Dispatched by: David

Date: 1-9-18 Time: 9:28

Carrier: UPS-Ground

6 iced cooler  
Method of Shipment

Date: 1-8-18 Time: 1730

Lab Receipt Signature: MARK TRIDER

Date: 1-11-18 Time: 10:58

The above analysis to be performed is authorized by:

Signature: Mark Chandler J.

Date: 1-9-2018



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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

## Work Order Receipt Checklist

United Nuclear Corporation

C18010327

Login completed by: Dorian Quis

Date Received: 1/11/2018

Reviewed by: Kasey Vidick

Received by: met

Reviewed Date: 1/12/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	3.4°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

---

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

---

### Contact and Corrective Action Comments:

None



### CHAIN OF CUSTODY



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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

## Work Order Receipt Checklist

United Nuclear Corporation

C18010384

Login completed by: Dorian Quis

Date Received: 1/12/2018

Reviewed by: Kasey Vidick

Received by: met

Reviewed Date: 1/15/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	3.0°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

---

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

---

### Contact and Corrective Action Comments:

None

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-905-6651

CHAIN OF CUSTODY

ZONE - 1

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-2-1-2018 (PA.2 OF 2)

Sample Description	Date	Time	Filter 0.45u HNO <sub>3</sub>	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
				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>	HCl		
614	1-9-18	1234	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub>
515-A	1-9-18	1353	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
604	1-9-18	1454	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			NO <sub>3</sub> , Pb, Pb-210, pH, Se,
EPA-7	1-9-18	1553	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			SO <sub>4</sub> , TDS, Th-230, U, V,
EPA-5	1-9-18	1635	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			Chloroform, Gross
EPA-4	1-10-18	0821	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			Alpha (-) U & Rn,
EPA-2	1-10-18	0928	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			Combined Ra-226 & Ra-228, Al,
EPA-2 DUPLICATE	1-10-18	1005	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			Co, Mo & Total Trihalomethanes (TTHMs)
TWQ-142	1-10-18	1040	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			
RINSE	1-10-18	1130	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			C18010386
FIELD BLANK	1-10-18	1140	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			

Sampled by: M. Chischilly

Dispatched by: [Signature]

Carrier: UPS - Ground

6 Iced cooler  
Method of Shipment

Received by: [Signature]

1-10-18 1:15  
Date Time

1-12-18 12:34  
Date Time

1-9-18 @ 1730  
1-10-18 @ 1200  
Date Time

[Signature]  
Lab Receipt Signature  
1-12-18 12:34  
Date Time

The above analysis to be performed is  
authorized by:

M. Chischilly  
Signature  
1-10-2018  
Date



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## Work Order Receipt Checklist

United Nuclear Corporation

C18010386

Login completed by: Dorian Quis

Date Received: 1/12/2018

Reviewed by: Kasey Vidick

Received by: met

Reviewed Date: 1/16/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	3.0°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

### CHAIN OF CUSTODY

**ZONE - 3**

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

UNC Submittal No. TE-3-1-2018

[illegible]

Date \_\_\_\_\_



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## Work Order Receipt Checklist

United Nuclear Corporation

C18010515

Login completed by: Dorian Quis

Date Received: 1/18/2018

Reviewed by: Kasey Vidick

Received by: kak

Reviewed Date: 1/19/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	2.8°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

### CHAIN OF CUSTODY

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

UNC Submittal No. TE-4-1-2018

**307-235-0515**  
**Phone No.**

C 18010559

1-16-18 1730  
1-17-18 1230  
Date \_\_\_\_\_ Time \_\_\_\_\_  
Lab Receipt Signature *Christina Deane*  
1/19/18 13:22  
Date \_\_\_\_\_ Time \_\_\_\_\_

Signature Wm. Chisley J.  
Date 1-17-18



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## Work Order Receipt Checklist

United Nuclear Corporation

C18010559

Login completed by: Dorian Quis

Date Received: 1/19/2018

Reviewed by: Kasey Vidick

Received by: kak

Reviewed Date: 1/23/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	4.2°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

---

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

---

### Contact and Corrective Action Comments:

None



### CHAIN OF CUSTODY

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

UNC Submittal No.      EW- 1-1- 2018

1-17-18  
Date



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## Work Order Receipt Checklist

United Nuclear Corporation

C18010565

Login completed by: Dorian Quis

Date Received: 1/19/2018

Reviewed by: Kasey Vidick

Received by: kak

Reviewed Date: 1/23/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	5.4°C On Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-805-6851

CHAIN OF CUSTODY

Energy Laboratories, Inc.  
Laboratory

SW Alluvium

2393 N. Salt Creek Highway  
Address

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

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

UNC Submittal No. TE-5-4-2018

Sample Description	Date	Time	Filter 0.45u HNO <sub>3</sub>	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
				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>	HCl		
509-D	4-2-18	0832	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub> ,
EPA-23	4-2-18	0933	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
803	4-2-18	1022	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			NO <sub>3</sub> , Pb, Pb-210, pH, Se,
808	4-2-18	1112	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			SO <sub>4</sub> , TDS, Th-230, U, V,
802	4-2-18	1158	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Chloroform, Gross
632	4-2-18	1240	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Alpha (-) U & Rn,
801	4-2-18	1326	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Combined Ra-226 & Ra-228, Al,
GW-1	4-2-18	1417	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Co, Mo & Total Trihalomethanes (TTHMs)
EPA-28	4-2-18	1512	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			
EPA-28 DUPLICATE	4-2-18	1555	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			C18040172
624	4-2-18	1642	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			

Sampled by: M. Chischilly J.

Received by: Good Chlo

4-2-18 1730

Dispatched by: [Signature]

4-3-18 9:55

Date Time

Carrier: UPS-Ground

Date Time

Lab Receipt Signature

5 iced cooler

Date Time

4/5/2018 1:05pm

Method of Shipment

Date Time

Date Time

The above analysis to be performed is  
authorized by:

M. Chischilly J.  
Signature

2-3-2018

Date



## Work Order Receipt Checklist

United Nuclear Corporation

C18040172

Login completed by: Dorian Quis

Date Received: 4/5/2018

Reviewed by: Kasey Vidick

Received by: cns

Reviewed Date: 4/6/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	4.2°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

---

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

---

### Contact and Corrective Action Comments:

None

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-905-6651

CHAIN OF CUSTODY

SW Alluvium

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-6-4-2018 (Pg. 1 of 2)

Sample Description	Date	Time	Filter	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
			0.45u HNO <sub>3</sub>	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>	HCl		
SBL-1	4-3-18	0838	1-(8oz.) ✓	2-✓	4-✓	1-✓	3-✓		M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub>
EPA-25	4-3-18	0945	1-(8oz.) ✓	2-✓	4-✓	1-✓	3-✓		M. Chischilly	K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
627	4-3-18	1047	1-(8oz.) ✓	2-✓	4-✓	1-✓	3-✓		M. Chischilly	NO <sub>3</sub> , Pb, Pb-210, pH, Se,
										SO <sub>4</sub> , TDS, Th-230, U, V,
										Chloroform, Gross
										Alpha (-) U & Rn,
										Combined Ra-226 & Ra-228, Al,
										Co, Mo & Total Trihalomethanes (TTHMs)
										C18040251

Sampled by: M. Chischilly

Dispatched by: [Signature]

Carrier: UPS-Ground

6 iced cooler

Method of Shipment

Received by: [Signature]

Date: 04/04/18 Time: 12:32

Date: 4-3-18 Time: 1740

Lab Receipt Signature: [Signature]

Date: 4/6/18 Time: 11:00

The above analysis to be performed is  
authorized by:

Signature: M. Chischilly

Date: 4-4-2018



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## Work Order Receipt Checklist

United Nuclear Corporation

C18040251

Login completed by: Dorian Quis

Date Received: 4/6/2018

Reviewed by: Kasey Vidick

Received by: tla

Reviewed Date: 4/8/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	5.2°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-905-6851

CHAIN OF CUSTODY

ZONE - 1

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

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

UNC Submittal No. TE-6-4-2018 (Pg. 2 of 2)

Sample Description	Date	Time	Filter 0.45u	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
				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>	HCl		
614	4-3-18	1250	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub> ,
515-A	4-3-18	1403	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓			K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
604	4-3-18	1507	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓			NO <sub>3</sub> , Pb, Pb-210, pH, Se,
EPA-7	4-3-18	1604	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓			SO <sub>4</sub> , TDS, Th-230, U, V,
EPA-5	4-3-18	1647	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓			Chloroform, Gross
EPA-4	4-4-18	0826	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓			Alpha (-) U & Rn,
EPA-2	4-4-18	0934	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓			Combined Ra-226 & Ra-228, Al,
EPA-2 DUPLICATE	4-4-18	1005	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓			Co, Mo & Total Trihalomethanes (TTHMs)
TWQ-142	4-4-18	1046	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓			
RINSATE	4-4-18	1130	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓			
FIELD BLANK	4-4-18	1140	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		✓	C18040249

Sampled by: M. Chischilly J.

Received by: [Signature]

Dispatched by: [Signature]

Date: 04/04/18 Time: 12:32

Carrier: UPS - Ground

6 iced cooler  
Method of Shipment

4-3-18 1740  
4-4-18 1200  
Date Time  
[Signature]  
Lab Receipt Signature  
4/10/18 11:00  
Date Time

The above analysis to be performed is authorized by:

M. Chischilly J.  
Signature  
4-4-2018  
Date



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## Work Order Receipt Checklist

United Nuclear Corporation

C18040249

Login completed by: Dorian Quis

Date Received: 4/6/2018

Reviewed by: Kasey Vidick

Received by: dmf

Reviewed Date: 4/8/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	14.4°C	No Ice	
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None



### CHAIN OF CUSTODY

UNC Submittal No. TE- 7-4-2018

The above analysis to be performed is  
authorized by:  
Walt Churchill J.  
Signature  
4-10-2018  
Date



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## Work Order Receipt Checklist

United Nuclear Corporation

C18040463

Login completed by: Dorian Quis

Date Received: 4/12/2018

Reviewed by: Kasey Vidick

Received by: cns

Reviewed Date: 4/13/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	7.6°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

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### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

---

### Contact and Corrective Action Comments:

None

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 10088  
Gallup, NM 87305-0088  
505-805-8851

CHAIN OF CUSTODY

ZONE - 3

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- 8-4-2018

Sample Description	Date	Time	Filter 0.45u HNO <sub>3</sub>	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
				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>	HCl		
717	4-10-18	0950	1-(8oz) ✓	2- ✓	4- ✓	1- ✓	3- ✓		M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub> ,
717 DUPLICATE	4-10-18	1040	1-(8oz) ✓	2- ✓	4- ✓	1- ✓	3- ✓			K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
NW-7	4-10-18	1217	1-(8oz) ✓	2- ✓	4- ✓	1- ✓	3- ✓			NO <sub>3</sub> , Pb, Pb-210, pH, Se,
NW-3	4-10-18	1540	1-(8oz) ✓	2- ✓	4- ✓	1- ✓	3- ✓			SO <sub>4</sub> , TDS, Th-230, U, V,
719	4-10-18	1610	1-(8oz) ✓	2- ✓	4- ✓	1- ✓	3- ✓			Chloroform, Gross
RINSE	4-10-18	1730	1-(8oz) ✓	2- ✓	4- ✓	1- ✓	3- ✓			Alpha (-) U & Rn,
FIELD BLANK	4-10-18	1740	1-(8oz) ✓	2- ✓	4- ✓	1- ✓	3- ✓		✓	Combined Ra-226 & Ra-228, Al, Co, Mo & Total Trihalomethanes (TTHMs)
										C18040522

Sampled by: M. Chischilly Received by: Monica R. G. G.  
Dispatched by: David Yang 4-11-18 12:25  
Carrier: UPS- Ground Date Time  
3 iced cooler  
Method of Shipment

4-10-18 1800  
Date Time  
M. Chischilly  
Lab Receipt Signature  
4/13/18 10:35  
Date Time

The above analysis to be performed is  
authorized by:  
M. Chischilly  
Signature  
4-11-2018  
Date



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## Work Order Receipt Checklist

United Nuclear Corporation

C18040522

Login completed by: Dorian Quis

Date Received: 4/13/2018

Reviewed by: Kasey Vidick

Received by: meh

Reviewed Date: 4/16/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	7.0°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

UNC MINING & MILLING  
(St. Rd. 566 - 21 Miles NE of Gallup)  
P. O. Box 1088  
Gallup, NM 87305-1088  
(505) 905-6651

CHAIN OF CUSTODY

ZONE - 3

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

Energy Laboratories, Inc.  
Laboratory  
2393 N. Salt Creek Highway  
Address  
Casper WY 82501  
City State Zip  
(307) 235-0515  
Phone No.

UNC Submittal No. EM-2-4-2018

Sample Description	Date	Time	Filter 0.45u	PRESERVATION & NUMBER OF CONTAINERS				NaOH	Preserved By	Analysis Required
				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>			
NBL-2	4-10-18	1142		1- ✓					M. Chisilley	Bicarbonate (HCO <sub>3</sub> ), Chloride (Cl), pH, TDS
NW-1	4-11-18	0850		1- ✓						
NW-4	4-11-18	0920		1- ✓						
NW-2	4-11-18	0950		1- ✓						
NW-5	4-11-18	1010		1- ✓						
NW-A	4-11-18	1035		1- ✓						
									C18040523	

Sampled By: M. Chisilley Jr.  
Dispatched By: Daniel 88  
Carrier: UPS - Ground  
3 iced cooler  
Method of Shipment

Received By: Jason A. Helt  
4-11-18 12:25  
Date Time

4-11-18 @ 1400  
4-10-18 @ 1800  
Date Time  
M. Chisilley Jr.  
Lab Receipt Signature  
4/13/18 10:20  
Date Time

The above analysis to be performed is  
authorized by:  
M. Chisilley Jr.  
Signature  
4-11-2018  
Date



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## Work Order Receipt Checklist

United Nuclear Corporation

C18040523

Login completed by: Dorian Quis

Date Received: 4/13/2018

Reviewed by: Kasey Vidick

Received by: meh

Reviewed Date: 4/16/2018

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	7.0°C Melted Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

**APPENDIX – D ( 1 OF 2 )**

**FIRST QUARTER**

**LABORATORY QUALITY CONTROL AND**

**PERFORMANCE REPORT**



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## ANALYTICAL SUMMARY REPORT

February 13, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18010327      Quote ID: C5148 - Quarterly Long List  
Project Name: SW Alluvium

Energy Laboratories, Inc. Casper WY received the following 11 samples for United Nuclear Corporation on 1/11/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18010327-001	509-D	01/08/18 08:21	01/11/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18010327-002	EPA-23	01/08/18 09:12	01/11/18	Aqueous	Same As Above
C18010327-003	803	01/08/18 09:56	01/11/18	Aqueous	Same As Above
C18010327-004	808	01/08/18 10:50	01/11/18	Aqueous	Same As Above
C18010327-005	802	01/08/18 11:38	01/11/18	Aqueous	Same As Above
C18010327-006	632	01/08/18 12:23	01/11/18	Aqueous	Same As Above
C18010327-007	801	01/08/18 13:11	01/11/18	Aqueous	Same As Above
C18010327-008	GW-1	01/08/18 14:01	01/11/18	Aqueous	Same As Above
C18010327-009	EPA-28	01/08/18 14:56	01/11/18	Aqueous	Same As Above
C18010327-010	EPA-28 Duplicate	01/08/18 15:40	01/11/18	Aqueous	Same As Above
C18010327-011	624	01/08/18 16:45	01/11/18	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.





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## ANALYTICAL SUMMARY REPORT

Report Approved By:

*Tracey H. Archer*  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.02.13 11:20:11 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Work Order:** C18010327

**Report Date:** 02/13/18

## **CASE NARRATIVE**

---

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/01/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Analytical Run: MANTECH_180112B
Lab ID: ICV		Initial Calibration Verification Standard								
pH		6.92	s.u.	0.010	101	98	102			01/12/18 14:33
Method: A2320 B										Batch: R231252
Lab ID: MBLK		Method Blank								
Bicarbonate as HCO <sub>3</sub>		2	mg/L	1						Run: MANTECH_180112B 01/12/18 14:40
Lab ID: LCS		Laboratory Control Sample								
Alkalinity, Total as CaCO <sub>3</sub>		251	mg/L	5.0	100	90	110			Run: MANTECH_180112B 01/12/18 14:48
Lab ID: C18010327-006ADUP		Sample Duplicate								
Bicarbonate as HCO <sub>3</sub>		1670	mg/L	5.0				0.3	10	Run: MANTECH_180112B 01/12/18 18:41

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/01/18

**Project:** SW Alluvium

**Work Order:** C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2540 C										Batch: TDS180112A
<b>Lab ID:</b> MB-1_180112A	Method Blank									
Solids, Total Dissolved TDS @ 180 C	9	mg/L	7							Run: BAL-16_180112B 01/12/18 13:35
<b>Lab ID:</b> LCS-2_180112A	Laboratory Control Sample									
Solids, Total Dissolved TDS @ 180 C	1100	mg/L	11	98	90	110				Run: BAL-16_180112B 01/12/18 13:36
<b>Lab ID:</b> C18010327-007A DUP	Sample Duplicate									
Solids, Total Dissolved TDS @ 180 C	6830	mg/L	100					0.1	5	Run: BAL-16_180112B 01/12/18 13:40

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/01/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_180112A
Lab ID: 6.86		Initial Calibration Verification Standard								
pH		6.90	s.u.	0.010	101	98	102			01/12/18 12:29
Method: A4500-H B										Batch: R231238
Lab ID: C18010327-007ADUP		Sample Duplicate								
pH		6.69	s.u.	0.010				0.0		Run: PHSC_101-C_180112A 01/12/18 14:23 1.5

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 02/01/18

**Work Order:** C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A4500-NH3 G</b> Analytical Run: FIA201-C_180116A										
<b>Lab ID: ICV</b>	Initial Calibration Verification Standard 01/16/18 16:13									
Nitrogen, Ammonia as N		1.05	mg/L	0.050	105	90	110			
<b>Method: A4500-NH3 G</b> Batch: R231351										
<b>Lab ID: MBLK</b>	Method Blank Run: FIA201-C_180116A 01/16/18 16:12									
Nitrogen, Ammonia as N		ND	mg/L	0.009						
<b>Lab ID: LFB</b>	Laboratory Fortified Blank Run: FIA201-C_180116A 01/16/18 16:14									
Nitrogen, Ammonia as N		0.972	mg/L	0.050	98	90	110			
<b>Lab ID: C18010327-002EMS</b>	Sample Matrix Spike Run: FIA201-C_180116A 01/16/18 16:33									
Nitrogen, Ammonia as N		6.21	mg/L	0.25	109	90	110			
<b>Lab ID: C18010327-002EMSD</b>	Sample Matrix Spike Duplicate Run: FIA201-C_180116A 01/16/18 16:34									
Nitrogen, Ammonia as N		6.72	mg/L	0.25	119	90	110	7.8	10	S
<b>Lab ID: C18010381-001DMS</b>	Sample Matrix Spike Run: FIA201-C_180116A 01/16/18 16:50									
Nitrogen, Ammonia as N		0.992	mg/L	0.050	94	90	110			
<b>Lab ID: C18010381-001DMSD</b>	Sample Matrix Spike Duplicate Run: FIA201-C_180116A 01/16/18 16:51									
Nitrogen, Ammonia as N		1.02	mg/L	0.050	97	90	110	2.8	10	
<b>Method: A4500-NH3 G</b> Analytical Run: FIA201-C_180122A										
<b>Lab ID: ICV</b>	Initial Calibration Verification Standard 01/22/18 09:57									
Nitrogen, Ammonia as N		1.04	mg/L	0.050	104	90	110			
<b>Method: A4500-NH3 G</b> Batch: R231500										
<b>Lab ID: MBLK</b>	Method Blank Run: FIA201-C_180122A 01/22/18 09:56									
Nitrogen, Ammonia as N		ND	mg/L	0.009						
<b>Lab ID: LFB</b>	Laboratory Fortified Blank Run: FIA201-C_180122A 01/22/18 09:59									
Nitrogen, Ammonia as N		1.07	mg/L	0.050	108	90	110			
<b>Lab ID: C18010515-002EMS</b>	Sample Matrix Spike Run: FIA201-C_180122A 01/22/18 10:14									
Nitrogen, Ammonia as N		1.97	mg/L	0.050	91	90	110			
<b>Lab ID: C18010515-002EMSD</b>	Sample Matrix Spike Duplicate Run: FIA201-C_180122A 01/22/18 10:15									
Nitrogen, Ammonia as N		2.03	mg/L	0.050	97	90	110	3.0	10	E

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/01/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC3-C_180112A
Lab ID: ICV	2	Initial Calibration Verification Standard								01/12/18 18:09
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		42.3	mg/L	1.0	106	90	110			
Method: E300.0										Batch: R231270
Lab ID: ICB	2	Method Blank								Run: IC3-C_180112A 01/12/18 18:27
Chloride		ND	mg/L	0.09						
Sulfate		ND	mg/L	0.10						
Lab ID: LFB	2	Laboratory Fortified Blank								Run: IC3-C_180112A 01/12/18 18:45
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		41.1	mg/L	1.0	103	90	110			
Lab ID: C18010324-003AMS	2	Sample Matrix Spike								Run: IC3-C_180112A 01/13/18 08:24
Chloride		26.7	mg/L	1.0	103	80	120			
Sulfate		191	mg/L	1.0	104	80	120			
Lab ID: C18010324-003AMSD	2	Sample Matrix Spike Duplicate								Run: IC3-C_180112A 01/13/18 08:42
Chloride		26.9	mg/L	1.0	104	80	120	0.5	20	
Sulfate		192	mg/L	1.0	104	80	120	0.3	20	
Lab ID: C18010327-006AMS	2	Sample Matrix Spike								Run: IC3-C_180112A 01/13/18 12:38
Chloride		756	mg/L	5.2	104	80	120			
Sulfate		5600	mg/L	21	104	80	120			
Lab ID: C18010327-006AMSD	2	Sample Matrix Spike Duplicate								Run: IC3-C_180112A 01/13/18 12:56
Chloride		755	mg/L	5.2	104	80	120	0.2	20	
Sulfate		5520	mg/L	21	100	80	120	1.5	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 02/01/18

**Work Order:** C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E353.2</b>										Analytical Run: FIA201-C_180115A
<b>Lab ID: ICV</b>										
Initial Calibration Verification Standard										
Nitrogen, Nitrate+Nitrite as N										
		0.995	mg/L	0.010	100	90	110			01/15/18 13:35
<b>Method: E353.2</b>										Batch: R231327
<b>Lab ID: MBLK</b>										
Method Blank										
Nitrogen, Nitrate+Nitrite as N										
		ND	mg/L	0.006						01/15/18 13:37
<b>Lab ID: LFB</b>										
Laboratory Fortified Blank										
Nitrogen, Nitrate+Nitrite as N										
		0.985	mg/L	0.010	99	90	110			01/15/18 13:38
<b>Lab ID: C18010344-001CMS</b>										
Sample Matrix Spike										
Nitrogen, Nitrate+Nitrite as N										
		6.82	mg/L	0.050	100	90	110			01/15/18 14:11
<b>Lab ID: C18010344-001CMSD</b>										
Sample Matrix Spike Duplicate										
Nitrogen, Nitrate+Nitrite as N										
		6.62	mg/L	0.050	96	90	110	3.0	10	01/15/18 14:12

### Qualifiers:

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MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Analytical Run: ICP203-B_180122A
Lab ID: ICV	2	Continuing Calibration Verification Standard								01/22/18 10:22
Potassium		23.8	mg/L	1.0	95	95	105			
Sodium		24.0	mg/L	1.0	96	95	105			
Method: E200.7										Batch: R293385
Lab ID: MB-6500DIS180122A	2	Method Blank								Run: ICP203-B_180122A 01/22/18 10:29
Potassium		ND	mg/L	0.08						
Sodium		ND	mg/L	0.03						
Lab ID: LFB-6500DIS180122A	2	Laboratory Fortified Blank								Run: ICP203-B_180122A 01/22/18 10:36
Potassium		49.4	mg/L	1.0	99	85	115			
Sodium		49.4	mg/L	1.0	99	85	115			
Lab ID: B18011041-001BMS2	2	Sample Matrix Spike								Run: ICP203-B_180122A 01/22/18 12:29
Potassium		273	mg/L	1.0	98	70	130			
Sodium		832	mg/L	1.0	107	70	130			
Lab ID: B18011041-001BMSD	2	Sample Matrix Spike Duplicate								Run: ICP203-B_180122A 01/22/18 12:32
Potassium		272	mg/L	1.0	98	70	130	0.5	20	
Sodium		830	mg/L	1.0	106	70	130	0.3	20	
Lab ID: C18010327-011BMS2	2	Sample Matrix Spike								Run: ICP203-B_180122A 01/22/18 14:01
Potassium		508	mg/L	1.0	100	70	130			
Sodium		825	mg/L	1.9	105	70	130			
Lab ID: C18010327-011BMSD	2	Sample Matrix Spike Duplicate								Run: ICP203-B_180122A 01/22/18 14:04
Potassium		507	mg/L	1.0	100	70	130	0.1	20	
Sodium		824	mg/L	1.9	105	70	130	0.0	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP204-B_180117A		
Lab ID: ICV	4	Continuing Calibration Verification Standard							01/17/18 10:56	
Calcium		25.0	mg/L	1.0	100	95	105			
Magnesium		24.7	mg/L	1.0	99	95	105			
Potassium		24.5	mg/L	1.0	98	95	105			
Sodium		24.4	mg/L	1.0	98	95	105			
Method: E200.7								Batch: R293163		
Lab ID: MB-7400DIS180117A	4	Method Blank							Run: ICP204-B_180117A 01/17/18 11:04	
Calcium		ND	mg/L	0.1						
Magnesium		ND	mg/L	0.006						
Potassium		ND	mg/L	0.09						
Sodium		ND	mg/L	0.04						
Lab ID: LFB-7400DIS180117A	4	Laboratory Fortified Blank							Run: ICP204-B_180117A 01/17/18 11:12	
Calcium		49.2	mg/L	1.0	98	85	115			
Magnesium		48.5	mg/L	1.0	97	85	115			
Potassium		48.7	mg/L	1.0	97	85	115			
Sodium		48.5	mg/L	1.0	97	85	115			
Lab ID: C18010327-003BMS2	4	Sample Matrix Spike							Run: ICP204-B_180117A 01/17/18 22:51	
Calcium		1100	mg/L	1.1	95	70	130			
Magnesium		1200	mg/L	1.0	102	70	130			
Potassium		527	mg/L	1.0	103	70	130			
Sodium		779	mg/L	3.4	100	70	130			
Lab ID: C18010327-003BMSD	4	Sample Matrix Spike Duplicate							Run: ICP204-B_180117A 01/17/18 22:55	
Calcium		1100	mg/L	1.1	94	70	130	0.2	20	
Magnesium		1200	mg/L	1.0	101	70	130	0.4	20	
Potassium		537	mg/L	1.0	105	70	130	1.8	20	
Sodium		782	mg/L	3.4	101	70	130	0.4	20	
Lab ID: B18011086-003BMS2	4	Sample Matrix Spike							Run: ICP204-B_180117A 01/17/18 23:49	
Calcium		400	mg/L	1.0	94	70	130			
Magnesium		288	mg/L	1.0	99	70	130			
Potassium		344	mg/L	1.0	134	70	130			S
Sodium		665	mg/L	1.7	119	70	130			
Lab ID: B18011086-003BMSD	4	Sample Matrix Spike Duplicate							Run: ICP204-B_180117A 01/17/18 23:53	
Calcium		401	mg/L	1.0	94	70	130	0.3	20	
Magnesium		288	mg/L	1.0	99	70	130	0.2	20	
Potassium		328	mg/L	1.0	127	70	130	4.9	20	
Sodium		646	mg/L	1.7	111	70	130	2.9	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>								Analytical Run: ICP204-B_180118A		
<b>Lab ID: ICV</b>	2	Continuing Calibration Verification Standard								01/18/18 12:36
Calcium		25.5	mg/L	1.0	102	95	105			
Magnesium		25.6	mg/L	1.0	102	95	105			
<b>Method: E200.7</b>								Batch: R293245		
<b>Lab ID: MB-7400DIS180118A</b>	2	Method Blank								01/18/18 12:44
Calcium		ND	mg/L	0.1						
Magnesium		ND	mg/L	0.006						
<b>Lab ID: LFB-7400DIS180118A</b>	2	Laboratory Fortified Blank								01/18/18 12:52
Calcium		50.4	mg/L	1.0	101	85	115			
Magnesium		50.0	mg/L	1.0	100	85	115			
<b>Lab ID: C18010327-005BMS2</b>	2	Sample Matrix Spike								01/18/18 23:10
Calcium		1080	mg/L	1.1	88	70	130			
Magnesium		1190	mg/L	1.0	95	70	130			
<b>Lab ID: C18010327-005BMSD</b>	2	Sample Matrix Spike Duplicate								01/18/18 23:14
Calcium		1080	mg/L	1.1	89	70	130	0.3	20	
Magnesium		1190	mg/L	1.0	96	70	130	0.6	20	
<b>Lab ID: B18011086-003BMS2</b>	2	Sample Matrix Spike								01/19/18 00:04
Calcium		397	mg/L	1.0	95	70	130			
Magnesium		280	mg/L	1.0	96	70	130			
<b>Lab ID: B18011086-003BMSD</b>	2	Sample Matrix Spike Duplicate								01/19/18 00:08
Calcium		401	mg/L	1.0	96	70	130	1.1	20	
Magnesium		284	mg/L	1.0	98	70	130	1.4	20	

### Qualifiers:

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>								Analytical Run: ICP204-B_180119A		
<b>Lab ID: - ICV</b>	2	Continuing Calibration Verification Standard								01/19/18 10:24
Calcium		25.7	mg/L	1.0	103	95	105			
Magnesium		25.9	mg/L	1.0	104	95	105			
<b>Method: E200.7</b>								Batch: R293306		
<b>Lab ID: MB-7400DIS180119A</b>	2	Method Blank								01/19/18 10:32
Calcium		ND	mg/L	0.1						
Magnesium		ND	mg/L	0.006						
<b>Lab ID: LFB-7400DIS180119A</b>	2	Laboratory Fortified Blank								01/19/18 10:40
Calcium		50.4	mg/L	1.0	101	85	115			
Magnesium		50.7	mg/L	1.0	101	85	115			
<b>Lab ID: C18010327-003BMS2</b>	2	Sample Matrix Spike								01/19/18 18:19
Calcium		1120	mg/L	1.1	94	70	130			
Magnesium		1210	mg/L	1.0	101	70	130			
<b>Lab ID: C18010327-003BMSD</b>	2	Sample Matrix Spike Duplicate								01/19/18 18:31
Calcium		1140	mg/L	1.1	98	70	130	1.7	20	
Magnesium		1230	mg/L	1.0	105	70	130	1.4	20	
<b>Lab ID: B18011086-002BMS2</b>	2	Sample Matrix Spike								01/19/18 19:25
Calcium		424	mg/L	1.0	103	70	130			
Magnesium		304	mg/L	1.0	104	70	130			
<b>Lab ID: B18011086-002BMSD</b>	2	Sample Matrix Spike Duplicate								01/19/18 19:29
Calcium		410	mg/L	1.0	97	70	130	3.5	20	
Magnesium		290	mg/L	1.0	98	70	130	4.8	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 01/30/18

**Project:** SW Alluvium

**Work Order:** C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8		Analytical Run: ICPMS206-B_180118A								
<b>Lab ID:</b> QCS	10	Initial Calibration Verification Standard							01/18/18 23:34	
Aluminum		0.247	mg/L	0.10	99	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0259	mg/L	0.0010	103	90	110			
Cobalt		0.0508	mg/L	0.010	102	90	110			
Lead		0.0500	mg/L	0.010	100	90	110			
Manganese		0.261	mg/L	0.010	104	90	110			
Molybdenum		0.0468	mg/L	0.0050	94	90	110			
Nickel		0.0502	mg/L	0.010	100	90	110			
Uranium		0.0211	mg/L	0.0010	106	90	110			
Vanadium		0.0489	mg/L	0.10	98	90	110			
<b>Method:</b> E200.8		Batch: 117626								
<b>Lab ID:</b> MB-117626	10	Method Blank							Run: ICPMS206-B_180118A	
Aluminum		ND	mg/L	0.0009					01/19/18 02:16	
Beryllium		ND	mg/L	0.00008						
Cadmium		ND	mg/L	0.00003						
Cobalt		ND	mg/L	0.00002						
Lead		ND	mg/L	0.00003						
Manganese		ND	mg/L	0.00006						
Molybdenum		ND	mg/L	0.00003						
Nickel		ND	mg/L	0.00009						
Uranium		ND	mg/L	0.00003						
Vanadium		ND	mg/L	0.00007						
<b>Lab ID:</b> LCS-117626	10	Laboratory Control Sample							Run: ICPMS206-B_180118A	
Aluminum		2.22	mg/L	0.030	89	85	115		01/19/18 02:34	
Beryllium		0.234	mg/L	0.0010	94	85	115			
Cadmium		0.250	mg/L	0.0010	100	85	115			
Cobalt		0.463	mg/L	0.0050	93	85	115			
Lead		0.486	mg/L	0.0010	97	85	115			
Manganese		2.39	mg/L	0.0010	96	85	115			
Molybdenum		0.460	mg/L	0.0010	92	85	115			
Nickel		0.461	mg/L	0.0050	92	85	115			
Uranium		0.473	mg/L	0.00030	95	85	115			
Vanadium		0.477	mg/L	0.010	95	85	115			
<b>Lab ID:</b> C18010327-005CMS3	10	Sample Matrix Spike							Run: ICPMS206-B_180118A	
Aluminum		2.44	mg/L	0.030	97	70	130		01/19/18 02:44	
Beryllium		0.239	mg/L	0.0010	96	70	130			
Cadmium		0.256	mg/L	0.0010	102	70	130			
Cobalt		0.478	mg/L	0.0050	95	70	130			
Lead		0.497	mg/L	0.0010	99	70	130			
Manganese		3.71	mg/L	0.0010	98	70	130			
Molybdenum		0.499	mg/L	0.0010	100	70	130			
Nickel		0.489	mg/L	0.0050	97	70	130			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: 117626
<b>Lab ID: C18010327-005CMS3</b>	10	Sample Matrix Spike		Run: ICPMS206-B_180118A				01/19/18 02:44		
Uranium		0.637	mg/L	0.00030	102	70	130			
Vanadium		0.504	mg/L	0.010	101	70	130			
<b>Lab ID: C18010327-005CMSD</b>										Batch: 117626
10	Sample Matrix Spike Duplicate		Run: ICPMS206-B_180118A				01/19/18 02:48			
Aluminum		2.35	mg/L	0.030	94	70	130	3.7	20	
Beryllium		0.231	mg/L	0.0010	92	70	130	3.7	20	
Cadmium		0.256	mg/L	0.0010	102	70	130	0.0	20	
Cobalt		0.477	mg/L	0.0050	95	70	130	0.2	20	
Lead		0.490	mg/L	0.0010	98	70	130	1.4	20	
Manganese		3.71	mg/L	0.0010	98	70	130	0.0	20	
Molybdenum		0.473	mg/L	0.0010	95	70	130	5.3	20	
Nickel		0.487	mg/L	0.0050	97	70	130	0.4	20	
Uranium		0.632	mg/L	0.00030	101	70	130	0.9	20	
Vanadium		0.502	mg/L	0.010	100	70	130	0.4	20	
<b>Method: E200.8</b>										Analytical Run: ICPMS206-B_180129A
<b>Lab ID: QCS</b>	Initial Calibration Verification Standard									01/29/18 12:14
Aluminum		0.245	mg/L	0.10	98	90	110			
<b>Method: E200.8</b>										Batch: 117587
<b>Lab ID: MB-117587</b>	Method Blank		Run: ICPMS206-B_180129A				01/29/18 13:27			
Aluminum		ND	mg/L	0.0009						

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8		Analytical Run: ICPMS207-B_180118A								
Lab ID: QCS	9	Initial Calibration Verification Standard							01/18/18 15:48	
Beryllium		0.0249	mg/L	0.0010	99	90	110			
Cadmium		0.0249	mg/L	0.0010	99	90	110			
Cobalt		0.0521	mg/L	0.010	104	90	110			
Lead		0.0492	mg/L	0.010	98	90	110			
Manganese		0.249	mg/L	0.010	100	90	110			
Molybdenum		0.0479	mg/L	0.0050	96	90	110			
Nickel		0.0500	mg/L	0.010	100	90	110			
Uranium		0.0210	mg/L	0.0010	105	90	110			
Vanadium		0.0489	mg/L	0.10	98	90	110			
Method: E200.8		Batch: 117587								
Lab ID: MB-117587	10	Method Blank							Run: ICPMS207-B_180118A 01/18/18 17:55	
Aluminum		ND	mg/L	0.008						
Beryllium		ND	mg/L	0.00002						
Cadmium		ND	mg/L	0.00001						
Cobalt		ND	mg/L	0.00002						
Lead		ND	mg/L	0.00007						
Manganese		ND	mg/L	0.0004						
Molybdenum		ND	mg/L	0.00005						
Nickel		ND	mg/L	0.00006						
Uranium		ND	mg/L	0.00002						
Vanadium		ND	mg/L	0.0004						
Lab ID: LCS-117587	10	Laboratory Control Sample							Run: ICPMS207-B_180118A 01/18/18 18:01	
Aluminum		2.58	mg/L	0.030	103	85	115			
Beryllium		0.256	mg/L	0.0010	103	85	115			
Cadmium		0.263	mg/L	0.0010	105	85	115			
Cobalt		0.512	mg/L	0.0050	102	85	115			
Lead		0.527	mg/L	0.0010	105	85	115			
Manganese		2.65	mg/L	0.0010	106	85	115			
Molybdenum		0.530	mg/L	0.0010	106	85	115			
Nickel		0.523	mg/L	0.0050	105	85	115			
Uranium		0.516	mg/L	0.00030	103	85	115			
Vanadium		0.537	mg/L	0.010	107	85	115			
Lab ID: B18011040-001CMS3	10	Sample Matrix Spike							Run: ICPMS207-B_180118A 01/18/18 18:09	
Aluminum		2.59	mg/L	0.030	103	70	130			
Beryllium		0.249	mg/L	0.0010	100	70	130			
Cadmium		0.253	mg/L	0.0010	101	70	130			
Cobalt		0.527	mg/L	0.0050	105	70	130			
Lead		0.544	mg/L	0.0010	109	70	130			
Manganese		2.70	mg/L	0.0010	108	70	130			
Molybdenum		0.549	mg/L	0.0010	110	70	130			
Nickel		0.526	mg/L	0.0050	104	70	130			
Uranium		0.549	mg/L	0.00030	110	70	130			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 117587
Lab ID: B18011040-001CMS3	10	Sample Matrix Spike		Run: ICPMS207-B_180118A			01/18/18 18:09			
Vanadium		0.556	mg/L	0.010	111	70	130			
Lab ID: B18011040-001CMSD	10	Sample Matrix Spike Duplicate		Run: ICPMS207-B_180118A			01/18/18 18:11			
Aluminum		2.52	mg/L	0.030	101	70	130	2.4	20	
Beryllium		0.240	mg/L	0.0010	96	70	130	3.7	20	
Cadmium		0.245	mg/L	0.0010	98	70	130	3.1	20	
Cobalt		0.502	mg/L	0.0050	100	70	130	4.9	20	
Lead		0.525	mg/L	0.0010	105	70	130	3.7	20	
Manganese		2.67	mg/L	0.0010	106	70	130	1.1	20	
Molybdenum		0.537	mg/L	0.0010	107	70	130	2.1	20	
Nickel		0.522	mg/L	0.0050	103	70	130	0.8	20	
Uranium		0.529	mg/L	0.00030	106	70	130	3.7	20	
Vanadium		0.549	mg/L	0.010	110	70	130	1.3	20	
Lab ID: C18010327-011CMS3	10	Sample Matrix Spike		Run: ICPMS207-B_180118A			01/18/18 18:51			
Aluminum		2.70	mg/L	0.039	108	70	130			
Beryllium		0.247	mg/L	0.0010	99	70	130			
Cadmium		0.266	mg/L	0.0010	106	70	130			
Cobalt		0.537	mg/L	0.0050	107	70	130			
Lead		0.553	mg/L	0.0010	111	70	130			
Manganese		2.84	mg/L	0.0022	108	70	130			
Molybdenum		0.530	mg/L	0.0010	106	70	130			
Nickel		0.524	mg/L	0.0050	105	70	130			
Uranium		0.586	mg/L	0.00030	109	70	130			
Vanadium		0.530	mg/L	0.010	106	70	130			
Lab ID: C18010327-011CMSD	10	Sample Matrix Spike Duplicate		Run: ICPMS207-B_180118A			01/18/18 18:53			
Aluminum		2.68	mg/L	0.039	107	70	130	0.7	20	
Beryllium		0.245	mg/L	0.0010	98	70	130	0.8	20	
Cadmium		0.270	mg/L	0.0010	108	70	130	1.6	20	
Cobalt		0.536	mg/L	0.0050	107	70	130	0.3	20	
Lead		0.552	mg/L	0.0010	110	70	130	0.3	20	
Manganese		2.84	mg/L	0.0022	109	70	130	0.2	20	
Molybdenum		0.539	mg/L	0.0010	108	70	130	1.8	20	
Nickel		0.536	mg/L	0.0050	107	70	130	2.3	20	
Uranium		0.601	mg/L	0.00030	112	70	130	2.4	20	
Vanadium		0.537	mg/L	0.010	107	70	130	1.3	20	

### Qualifiers:

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ND - Not detected at the reporting limit.





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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 01/29/18

Work Order: C18010327

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 B					tical Run: SELENIUM PSA MILLENIUM_180118B				
Lab ID: ICV-40235	Initial Calibration Verification Standard								01/18/18 16:10
Selenium-IV	0.0210	mg/L	0.0010	105	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								01/18/18 16:30
Selenium-IV	0.0183	mg/L	0.0010	92	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								01/18/18 16:52
Selenium-IV	0.0182	mg/L	0.0010	91	90	110			
Method: A3114 B					Batch: 40235				
Lab ID: MB-40235	Method Blank								01/18/18 16:16
Selenium-IV	ND	mg/L	0.0006				Run: SELENIUM PSA MILLENIUM_		
Lab ID: LFB-40235	Laboratory Fortified Blank								01/18/18 16:17
Selenium-IV	0.0194	mg/L	0.0010	97	85	115	Run: SELENIUM PSA MILLENIUM_		
Lab ID: H18010218-001A	Method Detection Level								01/18/18 16:19
Selenium-IV	0.00118	mg/L	0.0010	118	50	150	Run: SELENIUM PSA MILLENIUM_		
Lab ID: H18010218-002A	Method Detection Level								01/18/18 16:20
Selenium-IV	0.00116	mg/L	0.0010	116	50	150	Run: SELENIUM PSA MILLENIUM_		
Lab ID: H18010218-003A	Method Detection Level								01/18/18 16:22
Selenium-IV	0.000936	mg/L	0.0010	94	50	150	Run: SELENIUM PSA MILLENIUM_		
Lab ID: C18010327-001DMS	Sample Matrix Spike								01/18/18 16:33
Selenium-IV	0.0191	mg/L	0.0010	96	70	130	Run: SELENIUM PSA MILLENIUM_		
Lab ID: C18010327-001DMSD	Sample Matrix Spike Duplicate								01/18/18 16:35
Selenium-IV	0.0190	mg/L	0.0010	95	70	130	0.8	20	

### Qualifiers:

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 01/29/18

Work Order: C18010327

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 B					tical Run: SELENIUM PSA MILLENIUM_180119A				
Lab ID: ICV-40243	Initial Calibration Verification Standard								01/19/18 16:01
Selenium-IV	0.0204	mg/L	0.0010	102	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								01/19/18 16:37
Selenium-IV	0.0191	mg/L	0.0010	95	90	110			
Method: A3114 B					Batch: 40243				
Lab ID: MB-40243	Method Blank								01/19/18 16:05
Selenium-IV	ND	mg/L	0.0006						
Lab ID: LFB-40243	Laboratory Fortified Blank								01/19/18 16:07
Selenium-IV	0.0205	mg/L	0.0010	103	85	115			
Lab ID: H18010247-001DMS	Sample Matrix Spike								01/19/18 16:51
Selenium-IV	0.0195	mg/L	0.0010	97	70	130			
Lab ID: H18010247-001DMSD	Sample Matrix Spike Duplicate								01/19/18 16:52
Selenium-IV	0.0198	mg/L	0.0010	99	70	130	1.5	20	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 01/29/18

**Work Order:** C18010327

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E1632AM					Analytical Run: ARSENIC SPECIATION_180122A				
<b>Lab ID:</b> AS-ICV 25ppb-1/22/2018	Initial Calibration Verification Standard								01/22/18 16:21
Arsenic-III	25.2	ug/L	5.0	101	87.6	114			
<b>Lab ID:</b> AS-50.0-1/22/2018	Continuing Calibration Verification Standard								01/22/18 16:33
Arsenic-III	49.4	ug/L	5.0	99	85	115			
<b>Lab ID:</b> AS-50.0-1/22/2018	Continuing Calibration Verification Standard								01/22/18 20:12
Arsenic-III	50.5	ug/L	5.0	101	85	115			
<b>Method:</b> E1632AM					Batch: R131854				
<b>Lab ID:</b> AS-LFB 50ppb-1/22/2018	Laboratory Fortified Blank				Run: ARSENIC SPECIATION_1801				01/22/18 17:24
Arsenic-III	44.0	ug/L	5.0	88	55	146			
<b>Lab ID:</b> ICB	Method Blank				Run: ARSENIC SPECIATION_1801				01/22/18 17:36
Arsenic-III	ND	ug/L	0.2						
<b>Lab ID:</b> C18010327-001D MS	Sample Matrix Spike				Run: ARSENIC SPECIATION_1801				01/22/18 18:00
Arsenic-III	50.7	ug/L	5.0	101	55	146			
<b>Lab ID:</b> C18010327-001D MSD	Sample Matrix Spike Duplicate				Run: ARSENIC SPECIATION_1801				01/22/18 18:12
Arsenic-III	49.7	ug/L	5.0	99	55	146	2.0	20	
<b>Lab ID:</b> H18010246-001D MS	Sample Matrix Spike				Run: ARSENIC SPECIATION_1801				01/22/18 21:00
Arsenic-III	48.4	ug/L	5.0	96	55	146			
<b>Lab ID:</b> H18010246-001D MSD	Sample Matrix Spike Duplicate				Run: ARSENIC SPECIATION_1801				01/22/18 21:12
Arsenic-III	51.7	ug/L	5.0	102	55	146	6.5	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/12/18

**Project:** SW Alluvium

**Work Order:** C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E900.1										Batch: GA-1062
<b>Lab ID:</b> MB-GA-1062	3	Method Blank					Run: G5000W_180125A			01/29/18 17:25
Gross Alpha minus Rn & U		0.3	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.4	pCi/L							
Gross Alpha minus Rn & U MDC		0.6	pCi/L							
<b>Lab ID:</b> LCS-GA-1062		Laboratory Control Sample					Run: G5000W_180125A			01/29/18 17:25
Gross Alpha minus Rn & U		35	pCi/L	105		80	120			
<b>Lab ID:</b> C18010293-004CMS		Sample Matrix Spike					Run: G5000W_180125A			01/29/18 17:26
Gross Alpha minus Rn & U		61	pCi/L	85		70	130			
<b>Lab ID:</b> C18010293-004CMSD		Sample Matrix Spike Duplicate					Run: G5000W_180125A			01/29/18 17:26
Gross Alpha minus Rn & U		65	pCi/L	91		70	130	6.5	20	
<b>Lab ID:</b> C18010320-001CDUP	3	Sample Duplicate					Run: G5000W_180125A			01/31/18 17:19
Gross Alpha minus Rn & U		1.7	pCi/L					27	20	R
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.57	pCi/L							
Gross Alpha minus Rn & U MDC		0.48	pCi/L							

- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than the limit of 2.0. This batch is approved.

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/12/18

Project: SW Alluvium

Work Order: C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0								Batch: RA226-8810R		
Lab ID: LCS-RA226-8810	Laboratory Control Sample			Run: G542M_180124A			02/09/18 11:50			
Radium 226		9.7	pCi/L	95		80	120			
Lab ID: MB-RA226-8810	3	Method Blank			Run: G542M_180124A			02/09/18 11:50		
Radium 226		0.1	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
Lab ID: C18010327-001FMS	Sample Matrix Spike			Run: G542M_180124A			02/09/18 11:50			
Radium 226		16	pCi/L	80		70	130			
Lab ID: C18010327-001FMSD	Sample Matrix Spike Duplicate			Run: G542M_180124A			02/09/18 11:50			
Radium 226		18	pCi/L	90		70	130	13	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/12/18

**Project:** SW Alluvium

**Work Order:** C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E908.0										Batch: RA-TH-ISO-2666
<b>Lab ID:</b> LCS-RA-TH-ISO-2666	Laboratory Control Sample			Run: EGG-ORTEC_2_180122A			01/30/18 08:19			
Thorium 230	12	pCi/L		101	80	120				
<b>Lab ID:</b> C18010374-001CMS	Sample Matrix Spike			Run: EGG-ORTEC_2_180122A			01/30/18 08:18			
Thorium 230	23	pCi/L		103	70	130				
<b>Lab ID:</b> C18010374-001CMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_2_180122A			01/30/18 08:18			
Thorium 230	21	pCi/L		95	70	130	8.0	20		
<b>Lab ID:</b> MB-RA-TH-ISO-2666	3	Method Blank		Run: EGG-ORTEC_2_180122A			01/30/18 08:18			
Thorium 230		0.2	pCi/L							U
Thorium 230 precision ( $\pm$ )		0.2	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/12/18

**Project:** SW Alluvium

**Work Order:** C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E909.0										Batch: PB-210-0897
<b>Lab ID:</b> LCS-PB-210-0897	Laboratory Control Sample			Run: TRICARB LSC_180115A			01/19/18 11:39			
Lead 210		24	pCi/L	107	80	120				
<b>Lab ID:</b> MB-PB-210-0897	3	Method Blank		Run: TRICARB LSC_180115A			01/19/18 15:18			
Lead 210		0.5	pCi/L							U
Lead 210 precision (±)		0.7	pCi/L							
Lead 210 MDC		1	pCi/L							
<b>Lab ID:</b> C18010293-001CMS	Sample Matrix Spike			Run: TRICARB LSC_180115A			01/20/18 02:14			
Lead 210		41	pCi/L	96	70	130				
<b>Lab ID:</b> C18010293-001CMSD	Sample Matrix Spike Duplicate			Run: TRICARB LSC_180115A			01/20/18 05:52			
Lead 210		44	pCi/L	102	70	130	6.7	20		

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/12/18

**Project:** SW Alluvium

**Work Order:** C18010327

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05									Batch: RA228-5705	
Lab ID: LCS-228-RA226-8810	Laboratory Control Sample					Run: TENNELEC-3_180124A			01/30/18 15:34	
Radium 228		8.7	pCi/L		108	80	120			
Lab ID: MB-RA226-8810	3	Method Blank				Run: TENNELEC-3_180124A			01/30/18 15:34	
Radium 228		-2	pCi/L							U
Radium 228 precision (±)		1	pCi/L							
Radium 228 MDC		2	pCi/L							
Lab ID: C18010327-010FMS	Sample Matrix Spike					Run: TENNELEC-3_180124A			01/30/18 15:34	
Radium 228		22	pCi/L		117	70	130			
Lab ID: C18010327-010FMSD	Sample Matrix Spike Duplicate					Run: TENNELEC-3_180124A			01/30/18 15:34	
Radium 228		18	pCi/L		92	70	130	24	20	R

- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than the limit of 2.0. This batch is approved.

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.





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## ANALYTICAL SUMMARY REPORT

February 13, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18010384      Quote ID: C5148 - Quarterly Long List  
Project Name: SW Alluvium

Energy Laboratories, Inc. Casper WY received the following 3 samples for United Nuclear Corporation on 1/12/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18010384-001	SBL-1	01/09/18 08:51	01/12/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18010384-002	EPA-25	01/09/18 09:56	01/12/18	Aqueous	Same As Above
C18010384-003	627	01/09/18 11:00	01/12/18	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.02.13 12:11:11 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Work Order:** C18010384

**Report Date:** 02/13/18

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 01/31/18

Project: SW Alluvium

Work Order: C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B								Analytical Run: MANTECH_180115B		
Lab ID: ICV		Initial Calibration Verification Standard								01/15/18 15:02
pH		6.94	s.u.	0.010	101	98	102			
Method: A2320 B										Batch: R231275
Lab ID: MBLK		Method Blank					Run: MANTECH_180115B			01/15/18 18:24
Alkalinity, Total as CaCO3		ND	mg/L	1				Run: MANTECH_180115B		
Lab ID: LCS		Laboratory Control Sample					01/15/18 18:32			
Alkalinity, Total as CaCO3		251	mg/L	5.0	101	90	110			
Lab ID: C18010384-001ADUP		Sample Duplicate					Run: MANTECH_180115B			01/15/18 18:48
Alkalinity, Total as CaCO3		349	mg/L	5.0				0.1	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 01/31/18

**Project:** SW Alluvium

**Work Order:** C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS180115A	
Lab ID: MB-25_180115A	Method Blank					Run: BAL-16_180115A		01/15/18 16:22		
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-26_180115A	Laboratory Control Sample					Run: BAL-16_180115A		01/15/18 16:22		
Solids, Total Dissolved TDS @ 180 C		1060	mg/L	11	95	90	110			
Lab ID: C18010384-001A DUP	Sample Duplicate					Run: BAL-16_180115A		01/15/18 16:23		
Solids, Total Dissolved TDS @ 180 C		9370	mg/L	100				0.6	5	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 01/31/18

Project: SW Alluvium

Work Order: C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_180115A
Lab ID: 6.86		Initial Calibration Verification Standard								01/15/18 10:15
pH		6.88	s.u.	0.010	100	98	102			
Method: A4500-H B										Batch: R231268
Lab ID: C18010376-004ADUP		Sample Duplicate					Run: PHSC_101-C_180115A			01/15/18 12:21
pH		7.35	s.u.	0.010				0.1	1.5	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 01/31/18

Project: SW Alluvium

Work Order: C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G								Analytical Run: FIA201-C_180116A		
Lab ID: ICV		Initial Calibration Verification Standard							01/16/18 16:13	
Nitrogen, Ammonia as N		1.05	mg/L	0.050	105	90	110			
Method: A4500-NH3 G										Batch: R231351
Lab ID: MBLK		Method Blank				Run: FIA201-C_180116A			01/16/18 16:12	
Nitrogen, Ammonia as N		ND	mg/L	0.009						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_180116A			01/16/18 16:14	
Nitrogen, Ammonia as N		0.972	mg/L	0.050	98	90	110			
Lab ID: C18010381-001DMS		Sample Matrix Spike				Run: FIA201-C_180116A			01/16/18 16:50	
Nitrogen, Ammonia as N		0.992	mg/L	0.050	94	90	110			
Lab ID: C18010381-001DMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_180116A			01/16/18 16:51	
Nitrogen, Ammonia as N		1.02	mg/L	0.050	97	90	110	2.8	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 01/31/18

**Project:** SW Alluvium

**Work Order:** C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E300.0								Analytical Run: IC3-C_180115A		
<b>Lab ID:</b> ICV	2	Initial Calibration Verification Standard								01/15/18 16:48
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		42.0	mg/L	1.0	105	90	110			
<b>Method:</b> E300.0								Batch: R231323		
<b>Lab ID:</b> ICB	2	Method Blank								01/15/18 17:06
Chloride		ND	mg/L	0.09						
Sulfate		ND	mg/L	0.10						
<b>Method:</b> E300.0								Run: IC3-C_180115A		
<b>Lab ID:</b> LFB	2	Laboratory Fortified Blank								01/15/18 17:24
Chloride		9.94	mg/L	1.0	99	90	110			
Sulfate		40.5	mg/L	1.0	101	90	110			
<b>Method:</b> E300.0								Run: IC3-C_180115A		
<b>Lab ID:</b> C18010381-001AMS	2	Sample Matrix Spike								01/16/18 02:50
Chloride		98.7	mg/L	1.0	102	80	120			
Sulfate		195	mg/L	1.0	103	80	120			
<b>Method:</b> E300.0								Run: IC3-C_180115A		
<b>Lab ID:</b> C18010381-001AMSD	2	Sample Matrix Spike Duplicate								01/16/18 03:09
Chloride		98.2	mg/L	1.0	100	80	120	0.5	20	
Sulfate		195	mg/L	1.0	103	80	120	0.2	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 01/31/18

Project: SW Alluvium

Work Order: C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2									Analytical Run: FIA201-C_180117A	
Lab ID: ICV		Initial Calibration Verification Standard								01/17/18 13:41
Nitrogen, Nitrate+Nitrite as N		0.985	mg/L	0.010	99	90	110			
Method: E353.2										Batch: R231368
Lab ID: MBLK		Method Blank				Run: FIA201-C_180117A			01/17/18 13:43	
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_180117A			01/17/18 13:44	
Nitrogen, Nitrate+Nitrite as N		0.943	mg/L	0.010	95	90	110			
Lab ID: C18010384-002EMS		Sample Matrix Spike				Run: FIA201-C_180117A			01/17/18 14:04	
Nitrogen, Nitrate+Nitrite as N		84.3	mg/L	0.25	83	90	110			S
Lab ID: C18010384-002EMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_180117A			01/17/18 14:05	
Nitrogen, Nitrate+Nitrite as N		87.4	mg/L	0.25	95	90	110	3.5	10	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.





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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/26/18

Project: SW Alluvium

Work Order: C18010384

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7					Analytical Run: ICP204-B_180117A				
Lab ID: ICV	Continuing Calibration Verification Standard								01/17/18 10:56
Calcium	25.0	mg/L	1.0	100	95	105			
Magnesium	24.7	mg/L	1.0	99	95	105			
Potassium	24.5	mg/L	1.0	98	95	105			
Sodium	24.4	mg/L	1.0	98	95	105			
Method: E200.7					Batch: R293163				
Lab ID: MB-7400DIS180117A	Method Blank								Run: ICP204-B_180117A 01/17/18 11:04
Calcium	ND	mg/L	0.1						
Magnesium	ND	mg/L	0.006						
Potassium	ND	mg/L	0.09						
Sodium	ND	mg/L	0.04						
Lab ID: LFB-7400DIS180117A	Laboratory Fortified Blank								Run: ICP204-B_180117A 01/17/18 11:12
Calcium	49.2	mg/L	1.0	98	85	115			
Magnesium	48.5	mg/L	1.0	97	85	115			
Potassium	48.7	mg/L	1.0	97	85	115			
Sodium	48.5	mg/L	1.0	97	85	115			
Lab ID: MB-117613	Method Blank								Run: ICP204-B_180117A 01/17/18 21:02
Calcium	ND	mg/L	0.1						
Magnesium	ND	mg/L	0.006						
Potassium	ND	mg/L	0.09						
Sodium	0.2	mg/L	0.04						
Lab ID: B18011085-003BMS2	Sample Matrix Spike								Run: ICP204-B_180117A 01/17/18 22:51
Calcium	1100	mg/L	1.1	95	70	130			
Magnesium	1200	mg/L	1.0	102	70	130			
Potassium	527	mg/L	1.0	103	70	130			
Sodium	779	mg/L	3.4	100	70	130			
Lab ID: B18011085-003BMDS2	Sample Matrix Spike Duplicate								Run: ICP204-B_180117A 01/17/18 22:55
Calcium	1100	mg/L	1.1	94	70	130	0.2	20	
Magnesium	1200	mg/L	1.0	101	70	130	0.4	20	
Potassium	537	mg/L	1.0	105	70	130	1.8	20	
Sodium	782	mg/L	3.4	101	70	130	0.4	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 01/26/18

Work Order: C18010384

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7							Analytical Run: ICP204-B_180118A		
Lab ID: ICV	Continuing Calibration Verification Standard								01/18/18 12:36
Aluminum	2.50	mg/L	0.10	100	95	105			
Method: E200.7							Batch: 117586		
Lab ID: MB-117586	Method Blank								Run: ICP204-B_180118A
Aluminum	ND	mg/L	0.006						01/19/18 02:52
Lab ID: LCS-117586	Laboratory Control Sample								Run: ICP204-B_180118A
Aluminum	2.40	mg/L	0.10	96	85	115			01/19/18 02:56
Lab ID: B18011069-001CMS3	Sample Matrix Spike								Run: ICP204-B_180118A
Aluminum	2.43	mg/L	0.030	95	70	130			01/19/18 03:18
Lab ID: B18011069-001CMSD3	Sample Matrix Spike Duplicate								Run: ICP204-B_180118A
Aluminum	2.47	mg/L	0.030	97	70	130	1.7	20	01/19/18 03:22

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 01/26/18

**Project:** SW Alluvium

**Work Order:** C18010384

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8							Analytical Run: ICPMS206-B_180122A		
<b>Lab ID:</b> QCS	Initial Calibration Verification Standard								01/22/18 17:23
Aluminum	0.241	mg/L	0.10	97	90	110			
Manganese	0.257	mg/L	0.010	103	90	110			
Nickel	0.0524	mg/L	0.010	105	90	110			

<b>Method:</b> E200.8							Batch: 117586		
<b>Lab ID:</b> MB-117586	Method Blank								Run: ICPMS206-B_180122A 01/22/18 18:35
Aluminum	ND	mg/L	0.0009						
Beryllium	ND	mg/L	0.00008						
Cadmium	ND	mg/L	0.00003						
Cobalt	ND	mg/L	0.00002						
Lead	ND	mg/L	0.00003						
Manganese	ND	mg/L	0.00006						
Molybdenum	ND	mg/L	0.00003						
Nickel	ND	mg/L	0.00009						
Uranium	ND	mg/L	0.00003						
Vanadium	0.0001	mg/L	0.00007						

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/26/18

Project: SW Alluvium

Work Order: C18010384

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>					Analytical Run: ICPMS207-B_180118A				
<b>Lab ID: QCS</b>	Initial Calibration Verification Standard							01/18/18 15:48	
Aluminum	0.241	mg/L	0.10	96	90	110			
Beryllium	0.0249	mg/L	0.0010	99	90	110			
Cadmium	0.0249	mg/L	0.0010	99	90	110			
Cobalt	0.0521	mg/L	0.010	104	90	110			
Lead	0.0492	mg/L	0.010	98	90	110			
Manganese	0.249	mg/L	0.010	100	90	110			
Molybdenum	0.0479	mg/L	0.0050	96	90	110			
Nickel	0.0500	mg/L	0.010	100	90	110			
Uranium	0.0210	mg/L	0.0010	105	90	110			
Vanadium	0.0489	mg/L	0.10	98	90	110			
<b>Method: E200.8</b>					Batch: 117586				
<b>Lab ID: MB-117586</b>	Method Blank							Run: ICPMS207-B_180118A	
Aluminum	ND	mg/L	0.008						01/18/18 16:06
Beryllium	ND	mg/L	0.00002						
Cadmium	ND	mg/L	0.00001						
Cobalt	ND	mg/L	0.00002						
Lead	ND	mg/L	0.00007						
Manganese	ND	mg/L	0.0004						
Molybdenum	ND	mg/L	0.00005						
Nickel	ND	mg/L	0.00006						
Uranium	ND	mg/L	0.00002						
Vanadium	ND	mg/L	0.0004						
<b>Lab ID: LCS-117586</b>	Laboratory Control Sample							Run: ICPMS207-B_180118A	
Aluminum	2.45	mg/L	0.030	98	85	115			01/18/18 16:12
Beryllium	0.253	mg/L	0.0010	101	85	115			
Cadmium	0.256	mg/L	0.0010	103	85	115			
Cobalt	0.488	mg/L	0.0050	98	85	115			
Lead	0.504	mg/L	0.0010	101	85	115			
Manganese	2.49	mg/L	0.0010	100	85	115			
Molybdenum	0.507	mg/L	0.0010	101	85	115			
Nickel	0.499	mg/L	0.0050	100	85	115			
Uranium	0.501	mg/L	0.00030	100	85	115			
Vanadium	0.504	mg/L	0.010	101	85	115			
<b>Lab ID: C18010384-003CMS3</b>	Sample Matrix Spike							Run: ICPMS207-B_180118A	
Aluminum	2.59	mg/L	0.039	104	70	130			01/18/18 17:47
Beryllium	0.251	mg/L	0.0010	100	70	130			
Cadmium	0.266	mg/L	0.0010	106	70	130			
Cobalt	0.526	mg/L	0.0050	105	70	130			
Lead	0.542	mg/L	0.0010	108	70	130			
Manganese	2.86	mg/L	0.0022	113	70	130			

### Qualifiers:

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/26/18

Project: SW Alluvium

Work Order: C18010384

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8							Batch: 117586		
Lab ID: C18010384-003CMS3	Sample Matrix Spike		Run: ICPMS207-B_180118A				01/18/18 17:47		
Molybdenum	0.529	mg/L	0.0010	106	70	130			
Nickel	0.548	mg/L	0.0050	109	70	130			
Uranium	0.565	mg/L	0.00030	109	70	130			
Vanadium	0.552	mg/L	0.010	110	70	130			
Lab ID: C18010384-003CMSD3	Sample Matrix Spike Duplicate		Run: ICPMS207-B_180118A				01/18/18 17:49		
Aluminum	2.62	mg/L	0.039	105	70	130	1.3	20	
Beryllium	0.254	mg/L	0.0010	102	70	130	1.1	20	
Cadmium	0.265	mg/L	0.0010	106	70	130	0.3	20	
Cobalt	0.529	mg/L	0.0050	106	70	130	0.6	20	
Lead	0.544	mg/L	0.0010	109	70	130	0.5	20	
Manganese	2.80	mg/L	0.0022	110	70	130	2.2	20	
Molybdenum	0.522	mg/L	0.0010	104	70	130	1.3	20	
Nickel	0.540	mg/L	0.0050	108	70	130	1.4	20	
Uranium	0.565	mg/L	0.00030	109	70	130	0.0	20	
Vanadium	0.544	mg/L	0.010	109	70	130	1.5	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 01/30/18

Work Order: C18010384

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624							Analytical Run: R293192		
Lab ID: CCV011718_	Continuing Calibration Verification Standard						01/17/18 09:56		
Bromodichloromethane	5.35	ug/L	0.50	107	70	130			
Bromoform	4.49	ug/L	0.50	90	70	130			
Chlorodibromomethane	5.35	ug/L	0.50	107	70	130			
Chloroform	5.03	ug/L	0.50	101	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	102	71	139			
Surr: p-Bromofluorobenzene			0.50	97	80	127			
Surr: Toluene-d8			0.50	116	80	123			
Method: E624							Batch: R293192		
Lab ID: LCS011718_	Laboratory Control Sample						Run: VOA5975C.L_180117A 01/17/18 10:31		
Bromodichloromethane	6.00	ug/L	0.50	120	74	128			
Bromoform	4.48	ug/L	0.50	90	66	128			
Chlorodibromomethane	5.99	ug/L	0.50	120	74	125			
Chloroform	5.58	ug/L	0.50	112	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	103	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	115	80	123			
Lab ID: MBLK011718_	Method Blank						Run: VOA5975C.L_180117A 01/17/18 11:28		
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	106	71	139			
Surr: p-Bromofluorobenzene			0.50	105	80	127			
Surr: Toluene-d8			0.50	101	80	123			
Lab ID: C18010384-002GMS	Sample Matrix Spike						Run: VOA5975C.L_180117A 01/17/18 19:44		
Bromodichloromethane	5.82	ug/L	0.50	116	74	128			
Bromoform	4.75	ug/L	0.50	95	66	128			
Chlorodibromomethane	5.96	ug/L	0.50	119	74	125			
Chloroform	5.73	ug/L	0.50	115	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	113	71	139			
Surr: p-Bromofluorobenzene			0.50	92	80	127			
Surr: Toluene-d8			0.50	110	80	123			
- The sample was received in the laboratory with a pH > 2. The pH was 7.									
Lab ID: C18010384-002GMSD	Sample Matrix Spike Duplicate						Run: VOA5975C.L_180117A 01/17/18 20:13		
Bromodichloromethane	6.24	ug/L	0.50	125	74	128	6.9	20	
Bromoform	4.71	ug/L	0.50	94	66	128	0.8	20	
Chlorodibromomethane	6.58	ug/L	0.50	132	74	125	9.8	20	S
Chloroform	5.77	ug/L	0.50	115	68	124	0.6	20	
Surr: 1,2-Dichloroethane-d4			0.50	110	71	139			
Surr: p-Bromofluorobenzene			0.50	95	80	127			
Surr: Toluene-d8			0.50	113	80	123			
- The sample was received in the laboratory with a pH > 2. The pH was 7.									

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/12/18

**Project:** SW Alluvium

**Work Order:** C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E900.1										Batch: GA-1063
<b>Lab ID:</b> MB-GA-1063	3	Method Blank					Run: G542M-2_180202A			02/05/18 16:00
Gross Alpha minus Rn & U		0.004	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.3	pCi/L							
Gross Alpha minus Rn & U MDC		0.6	pCi/L							
<b>Lab ID:</b> LCS-GA-1063		Laboratory Control Sample					Run: G542M-2_180202A			02/05/18 16:00
Gross Alpha minus Rn & U		35	pCi/L		105	80	120			
<b>Lab ID:</b> C18010374-004CMS		Sample Matrix Spike					Run: G542M-2_180202A			02/05/18 18:30
Gross Alpha minus Rn & U		37	pCi/L		86	70	130			
<b>Lab ID:</b> C18010374-004CMSD		Sample Matrix Spike Duplicate					Run: G542M-2_180202A			02/05/18 18:30
Gross Alpha minus Rn & U		32	pCi/L		72	70	130	14	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/12/18

**Project:** SW Alluvium

**Work Order:** C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E903.0										Batch: RA226-8812R
<b>Lab ID:</b> LCS-RA226-8812	Laboratory Control Sample			Run: TENNELEC-3_180125C			02/06/18 13:32			
Radium 226		8.8	pCi/L	86		80	120			
<b>Lab ID:</b> MB-RA226-8812	3	Method Blank			Run: TENNELEC-3_180125C			02/06/18 13:32		
Radium 226		0.1	pCi/L							U
Radium 226 precision ( $\pm$ )		0.10	pCi/L							
Radium 226 MDC		0.1	pCi/L							
<b>Lab ID:</b> C18010374-001CMS	Sample Matrix Spike			Run: TENNELEC-3_180125C			02/06/18 13:32			
Radium 226		17	pCi/L	83		70	130			
<b>Lab ID:</b> C18010374-001CMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_180125C			02/06/18 13:32			
Radium 226		21	pCi/L	102		70	130	20	20	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/12/18

Project: SW Alluvium

Work Order: C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: E908.0								Batch: RA-TH-ISO-2668			
Lab ID: LCS-RA-TH-ISO-2668	Laboratory Control Sample			Run: EGG-ORTEC_180130A			02/02/18 10:24				
Thorium 230	12	pCi/L		102	80	120					
Lab ID: C18010374-003CMS	Sample Matrix Spike			Run: EGG-ORTEC_180130A			02/02/18 10:24				
Thorium 230	20	pCi/L		90	70	130					
Lab ID: C18010374-003CMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_180130A			02/02/18 10:24				
Thorium 230	22	pCi/L		101	70	130	12	20			
Lab ID: MB-RA-TH-ISO-2668	3	Method Blank			Run: EGG-ORTEC_180130A			02/02/18 10:24			
Thorium 230		0.07	pCi/L								
Thorium 230 precision (±)		0.1	pCi/L								
Thorium 230 MDC		0.2	pCi/L								

### Qualifiers:

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MDC - Minimum detectable concentration

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/12/18

**Project:** SW Alluvium

**Work Order:** C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E909.0										Batch: PB-210-0897
<b>Lab ID:</b> LCS-PB-210-0897	Laboratory Control Sample			Run: TRICARB LSC_180115A			01/19/18 11:39			
Lead 210	24	pCi/L		107	80	120				
<b>Lab ID:</b> MB-PB-210-0897	3	Method Blank		Run: TRICARB LSC_180115A			01/19/18 15:18			
Lead 210	0.5	pCi/L					U			
Lead 210 precision (±)	0.7	pCi/L								
Lead 210 MDC	1	pCi/L								
<b>Lab ID:</b> C18010293-001CMS	Sample Matrix Spike			Run: TRICARB LSC_180115A			01/20/18 02:14			
Lead 210	41	pCi/L		96	70	130				
<b>Lab ID:</b> C18010293-001CMSD	Sample Matrix Spike Duplicate			Run: TRICARB LSC_180115A			01/20/18 05:52			
Lead 210	44	pCi/L		102	70	130	6.7	20		

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/12/18

Project: SW Alluvium

Work Order: C18010384

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05										Batch: RA228-5706
Lab ID: LCS-228-RA226-8812	Laboratory Control Sample			Run: TENNELEC-3_180125A			01/31/18 12:11			
Radium 228		8.9	pCi/L	90	80	120				
Lab ID: MB-RA226-8812	3	Method Blank			Run: TENNELEC-3_180125A			01/31/18 12:11		
Radium 228		0.2	pCi/L							U
Radium 228 precision (±)		1.0	pCi/L							
Radium 228 MDC		2	pCi/L							
Lab ID: C18010374-006CMS	Sample Matrix Spike			Run: TENNELEC-3_180125A			01/31/18 12:11			
Radium 228		42	pCi/L	95	70	130				
Lab ID: C18010374-006CMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_180125A			01/31/18 12:11			
Radium 228		36	pCi/L	79	70	130	15	20		

### Qualifiers:

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## ANALYTICAL SUMMARY REPORT

February 23, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18010386      Quote ID: C5148 - Quarterly Long List  
Project Name: Zone 1

Energy Laboratories, Inc. Casper WY received the following 11 samples for United Nuclear Corporation on 1/12/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18010386-001	614	01/09/18 12:34	01/12/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18010386-002	515-A	01/09/18 13:53	01/12/18	Aqueous	Same As Above
C18010386-003	604	01/09/18 14:54	01/12/18	Aqueous	Same As Above
C18010386-004	EPA-7	01/09/18 15:53	01/12/18	Aqueous	Same As Above
C18010386-005	EPA-5	01/09/18 16:35	01/12/18	Aqueous	Same As Above
C18010386-006	EPA-4	01/10/18 08:21	01/12/18	Aqueous	Same As Above
C18010386-007	EPA-2	01/10/18 09:28	01/12/18	Aqueous	Same As Above
C18010386-008	EPA-2 Duplicate	01/10/18 10:05	01/12/18	Aqueous	Same As Above
C18010386-009	TWQ-142	01/10/18 10:40	01/12/18	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C18010386-010	Rinsate	01/10/18 11:30 01/12/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved 624-Purgeable Organics 624-Purgeable Organics
C18010386-011	Field Blank	01/10/18 11:40 01/12/18	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.02.23 09:27:06 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone 1  
**Work Order:** C18010386

**Report Date:** 02/23/18

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/09/18

Project: Zone 1

Work Order: C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Analytical Run: MANTECH_180115B
Lab ID: ICV		Initial Calibration Verification Standard								01/15/18 15:02
pH		6.94	s.u.	0.010	101	98	102			
Method: A2320 B										Batch: R231275
Lab ID: MBLK		Method Blank								01/15/18 15:08
Bicarbonate as HCO <sub>3</sub>		2	mg/L	1						Run: MANTECH_180115B
Lab ID: LCS		Laboratory Control Sample								01/15/18 15:16
Alkalinity, Total as CaCO <sub>3</sub>		248	mg/L	5.0	99	90	110			Run: MANTECH_180115B
Lab ID: C18010386-008ADUP		Sample Duplicate								01/15/18 20:18
Bicarbonate as HCO <sub>3</sub>		272	mg/L	5.0				1.0	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/09/18

**Project:** Zone 1

**Work Order:** C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2540 C										Batch: TDS180115A
<b>Lab ID:</b> MB-1_180115A		Method Blank					Run: BAL-16_180115A			01/15/18 16:18
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
<b>Lab ID:</b> LCS-2_180115A		Laboratory Control Sample					Run: BAL-16_180115A			01/15/18 16:18
Solids, Total Dissolved TDS @ 180 C		1080	mg/L	11	97	90	110			
<b>Lab ID:</b> C18010386-008A DUP		Sample Duplicate					Run: BAL-16_180115A			01/15/18 16:25
Solids, Total Dissolved TDS @ 180 C		3290	mg/L	20				0.6	5	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 02/09/18

Work Order: C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_180115A
Lab ID: 6.86		Initial Calibration Verification Standard								01/15/18 10:15
pH		6.88	s.u.	0.010	100	98	102			
Method: A4500-H B										Batch: R231268
Lab ID: C18010386-005ADUP		Sample Duplicate								Run: PHSC_101-C_180115A
pH		6.28	s.u.	0.010				0.3	1.5	01/15/18 12:52

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/09/18

**Project:** Zone 1

**Work Order:** C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A4500-NH3 G</b>										Analytical Run: FIA201-C_180116A
<b>Lab ID: ICV</b>	Initial Calibration Verification Standard									
Nitrogen, Ammonia as N		1.05	mg/L	0.050	105	90	110			01/16/18 16:13
<b>Method: A4500-NH3 G</b>										Batch: R231351
<b>Lab ID: MBLK</b>	Method Blank									
Nitrogen, Ammonia as N		ND	mg/L	0.009				Run: FIA201-C_180116A		01/16/18 16:12
<b>Lab ID: LFB</b>	Laboratory Fortified Blank									
Nitrogen, Ammonia as N		0.972	mg/L	0.050	98	90	110	Run: FIA201-C_180116A		01/16/18 16:14
<b>Lab ID: C18010386-006EMS</b>	Sample Matrix Spike									
Nitrogen, Ammonia as N		1.06	mg/L	0.050	93	90	110	Run: FIA201-C_180116A		01/16/18 17:07
<b>Lab ID: C18010386-006EMSD</b>	Sample Matrix Spike Duplicate									
Nitrogen, Ammonia as N		1.11	mg/L	0.050	98	90	110	4.7	10	01/16/18 17:08

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/09/18

Project: Zone 1

Work Order: C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E300.0</b>										Analytical Run: IC3-C_180115A
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								01/15/18 16:48
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		42.0	mg/L	1.0	105	90	110			
<b>Method: E300.0</b>										Batch: R231323
<b>Lab ID: ICB</b>	2	Method Blank								Run: IC3-C_180115A 01/15/18 17:06
Chloride		ND	mg/L	0.09						
Sulfate		ND	mg/L	0.10						
<b>Lab ID: LFB</b>	2	Laboratory Fortified Blank								Run: IC3-C_180115A 01/15/18 17:24
Chloride		9.94	mg/L	1.0	99	90	110			
Sulfate		40.5	mg/L	1.0	101	90	110			
<b>Lab ID: C18010386-006AMS</b>	2	Sample Matrix Spike								Run: IC3-C_180115A 01/16/18 07:05
Chloride		239	mg/L	2.1	102	80	120			
Sulfate		3930	mg/L	8.3	102	80	120			
<b>Lab ID: C18010386-006AMSD</b>	2	Sample Matrix Spike Duplicate								Run: IC3-C_180115A 01/16/18 07:23
Chloride		240	mg/L	2.1	102	80	120	0.3	20	
Sulfate		3980	mg/L	8.3	108	80	120	1.1	20	

### Qualifiers:

RL - Analyte reporting limit.

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 1

**Report Date:** 02/09/18

**Work Order:** C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E353.2</b> Analytical Run: FIA201-C_180117A										
<b>Lab ID: ICV</b>		Initial Calibration Verification Standard								
Nitrogen, Nitrate+Nitrite as N		0.985	mg/L	0.010	99	90	110			01/17/18 13:41
<b>Method: E353.2</b> Batch: R231368										
<b>Lab ID: MBLK</b>		Method Blank								
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						01/17/18 13:43
Run: FIA201-C_180117A										
<b>Lab ID: LFB</b>		Laboratory Fortified Blank								
Nitrogen, Nitrate+Nitrite as N		0.943	mg/L	0.010	95	90	110			01/17/18 13:44
Run: FIA201-C_180117A										
<b>Lab ID: C18010386-009EMS</b>		Sample Matrix Spike								
Nitrogen, Nitrate+Nitrite as N		1.41	mg/L	0.010	100	90	110			01/17/18 14:22
Run: FIA201-C_180117A										
<b>Lab ID: C18010386-009EMSD</b>		Sample Matrix Spike Duplicate								
Nitrogen, Nitrate+Nitrite as N		1.39	mg/L	0.010	98	90	110	1.4	10	01/17/18 14:23
<b>Method: E353.2</b> Analytical Run: FIA201-C_180119A										
<b>Lab ID: ICV</b>		Initial Calibration Verification Standard								
Nitrogen, Nitrate+Nitrite as N		1.01	mg/L	0.010	101	90	110			01/19/18 11:59
<b>Method: E353.2</b> Batch: R231457										
<b>Lab ID: MBLK</b>		Method Blank								
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						01/19/18 12:00
Run: FIA201-C_180119A										
<b>Lab ID: LFB</b>		Laboratory Fortified Blank								
Nitrogen, Nitrate+Nitrite as N		0.990	mg/L	0.010	100	90	110			01/19/18 12:01
Run: FIA201-C_180119A										
<b>Lab ID: C18010178-001DMS</b>		Sample Matrix Spike								
Nitrogen, Nitrate+Nitrite as N		3.25	mg/L	0.010	103	90	110			01/19/18 12:05
Run: FIA201-C_180119A										
<b>Lab ID: C18010178-001DMSD</b>		Sample Matrix Spike Duplicate								
Nitrogen, Nitrate+Nitrite as N		3.24	mg/L	0.010	102	90	110	0.3	10	01/19/18 12:06

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: Zone 1

Work Order: C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> Analytical Run: ICP203-B_180122A										
Lab ID: ICV	Continuing Calibration Verification Standard 01/22/18 10:22									
Potassium		23.8	mg/L	1.0	95	95	105			
<b>Method: E200.7</b> Batch: R293385										
Lab ID: MB-6500DIS180122A	Method Blank Run: ICP203-B_180122A 01/22/18 10:29									
Potassium		ND	mg/L	0.08						
Lab ID: LFB-6500DIS180122A	Laboratory Fortified Blank Run: ICP203-B_180122A 01/22/18 10:36									
Potassium		49.4	mg/L	1.0	99	85	115			
Lab ID: B18011085-011BMS2	Sample Matrix Spike Run: ICP203-B_180122A 01/22/18 14:01									
Potassium		508	mg/L	1.0	100	70	130			
Lab ID: B18011085-011BMSD	Sample Matrix Spike Duplicate Run: ICP203-B_180122A 01/22/18 14:04									
Potassium		507	mg/L	1.0	100	70	130	0.1	20	
Lab ID: B18011104-002BMS2	Sample Matrix Spike Run: ICP203-B_180122A 01/22/18 15:37									
Potassium		103	mg/L	1.0	98	70	130			
Lab ID: B18011104-002BMSD	Sample Matrix Spike Duplicate Run: ICP203-B_180122A 01/22/18 15:40									
Potassium		103	mg/L	1.0	98	70	130	0.5	20	
<b>Method: E200.7</b> Analytical Run: ICP204-B_180117A										
Lab ID: ICV	2 Continuing Calibration Verification Standard 01/17/18 10:56									
Calcium		25.0	mg/L	1.0	100	95	105			
Magnesium		24.7	mg/L	1.0	99	95	105			
<b>Method: E200.7</b> Batch: R293163										
Lab ID: MB-7400DIS180117A	2	Method Blank Run: ICP204-B_180117A 01/17/18 11:04								
Calcium		ND	mg/L	0.1						
Magnesium		ND	mg/L	0.006						
Lab ID: LFB-7400DIS180117A	2	Laboratory Fortified Blank Run: ICP204-B_180117A 01/17/18 11:12								
Calcium		49.2	mg/L	1.0	98	85	115			
Magnesium		48.5	mg/L	1.0	97	85	115			
Lab ID: C18010386-003BMS2	2	Sample Matrix Spike Run: ICP204-B_180117A 01/18/18 00:48								
Calcium		879	mg/L	1.1	88	70	130			
Magnesium		1300	mg/L	1.0	98	70	130			
Lab ID: C18010386-003BMSD	2	Sample Matrix Spike Duplicate Run: ICP204-B_180117A 01/18/18 00:52								
Calcium		903	mg/L	1.1	93	70	130	2.7	20	
Magnesium		1320	mg/L	1.0	101	70	130	1.2	20	

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: Zone 1

Work Order: C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> Analytical Run: ICP204-B_180118A										
<b>Lab ID: ICV</b>	Continuing Calibration Verification Standard									
Sodium		25.6	mg/L	1.0	102	95	105			01/18/18 12:36
<b>Method: E200.7</b> Batch: R293245										
<b>Lab ID: MB-7400DIS180118A</b>	Method Blank									
Sodium		0.1	mg/L	0.04						01/18/18 12:44
<b>Lab ID: LFB-7400DIS180118A</b>	Laboratory Fortified Blank									
Sodium		50.4	mg/L	1.0	101	85	115			01/18/18 12:52
<b>Lab ID: C18010386-006BMS2</b>	Sample Matrix Spike									
Sodium		458	mg/L	1.7	112	70	130			01/19/18 00:55
<b>Lab ID: C18010386-006BMSD</b>	Sample Matrix Spike Duplicate									
Sodium		463	mg/L	1.7	113	70	130	1.0	20	01/19/18 01:06
<b>Method: E200.7</b> Analytical Run: ICP204-B_180119A										
<b>Lab ID: ICV</b>	Continuing Calibration Verification Standard									
Potassium		26.0	mg/L	1.0	104	95	105			01/19/18 10:24
<b>Method: E200.7</b> Batch: R293306										
<b>Lab ID: MB-7400DIS180119A</b>	Method Blank									
Potassium		ND	mg/L	0.09						01/19/18 10:32
<b>Lab ID: LFB-7400DIS180119A</b>	Laboratory Fortified Blank									
Potassium		51.4	mg/L	1.0	103	85	115			01/19/18 10:40
<b>Lab ID: B18011086-002BMS2</b>	Sample Matrix Spike									
Potassium		262	mg/L	1.0	102	70	130			01/19/18 19:25
<b>Lab ID: B18011086-002BMSD</b>	Sample Matrix Spike Duplicate									
Potassium		250	mg/L	1.0	97	70	130	4.5	20	01/19/18 19:29
<b>Lab ID: B18011270-001BMS2</b>	Sample Matrix Spike									
Potassium		280	mg/L	1.0	101	70	130			01/19/18 21:45
<b>Lab ID: B18011270-001BMSD</b>	Sample Matrix Spike Duplicate									
Potassium		274	mg/L	1.0	98	70	130	2.2	20	01/19/18 21:49
<b>Lab ID: MB-117607</b>	Method Blank									
Potassium		0.2	mg/L	0.09						01/20/18 00:05

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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 01/30/18

**Project:** Zone 1

**Work Order:** C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8								Analytical Run: ICPMS206-B_180129A		
<b>Lab ID:</b> QCS		Initial Calibration Verification Standard								01/29/18 12:14
Aluminum		0.245	mg/L	0.10	98	90	110			
<b>Method:</b> E200.8								Batch: 117588		
<b>Lab ID:</b> MB-117588		Method Blank								01/29/18 13:31
Aluminum		ND	mg/L	0.0009						
Run: ICPMS206-B_180129A										

### Qualifiers:

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: Zone 1

Work Order: C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	E200.8	Analytical Run: ICPMS207-B_180118A								
Lab ID:	QCS	10 Initial Calibration Verification Standard								01/18/18 15:48
Aluminum		0.241	mg/L	0.10	96	90	110			
Beryllium		0.0249	mg/L	0.0010	99	90	110			
Cadmium		0.0249	mg/L	0.0010	99	90	110			
Cobalt		0.0521	mg/L	0.010	104	90	110			
Lead		0.0492	mg/L	0.010	98	90	110			
Manganese		0.249	mg/L	0.010	100	90	110			
Molybdenum		0.0479	mg/L	0.0050	96	90	110			
Nickel		0.0500	mg/L	0.010	100	90	110			
Uranium		0.0210	mg/L	0.0010	105	90	110			
Vanadium		0.0489	mg/L	0.10	98	90	110			
Method:	E200.8									Batch: 117588
Lab ID:	MB-117588	10 Method Blank				Run: ICPMS207-B_180118A			01/18/18 18:59	
Aluminum		ND	mg/L	0.008						
Beryllium		ND	mg/L	0.00002						
Cadmium		ND	mg/L	0.00001						
Cobalt		ND	mg/L	0.00002						
Lead		ND	mg/L	0.00007						
Manganese		ND	mg/L	0.0004						
Molybdenum		ND	mg/L	0.00005						
Nickel		ND	mg/L	0.00006						
Uranium		ND	mg/L	0.00002						
Vanadium		ND	mg/L	0.0004						
Lab ID:	LCS-117588	10 Laboratory Control Sample				Run: ICPMS207-B_180118A			01/18/18 19:05	
Aluminum		2.58	mg/L	0.030	103	85	115			
Beryllium		0.260	mg/L	0.0010	104	85	115			
Cadmium		0.271	mg/L	0.0010	108	85	115			
Cobalt		0.512	mg/L	0.0050	102	85	115			
Lead		0.535	mg/L	0.0010	107	85	115			
Manganese		2.63	mg/L	0.0010	105	85	115			
Molybdenum		0.534	mg/L	0.0010	107	85	115			
Nickel		0.549	mg/L	0.0050	110	85	115			
Uranium		0.528	mg/L	0.00030	106	85	115			
Vanadium		0.538	mg/L	0.010	108	85	115			
Lab ID:	B18011095-001CMS3	10 Sample Matrix Spike				Run: ICPMS207-B_180118A			01/18/18 19:10	
Aluminum		3.04	mg/L	0.030	108	70	130			
Beryllium		0.255	mg/L	0.0010	102	70	130			
Cadmium		0.274	mg/L	0.0010	110	70	130			
Cobalt		0.515	mg/L	0.0050	103	70	130			
Lead		0.538	mg/L	0.0010	108	70	130			
Manganese		2.66	mg/L	0.0010	106	70	130			
Molybdenum		0.560	mg/L	0.0010	109	70	130			
Nickel		0.529	mg/L	0.0050	106	70	130			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: Zone 1

Work Order: C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 117588
Lab ID: B18011095-001CMS3	10	Sample Matrix Spike		Run: ICPMS207-B_180118A			01/18/18 19:10			
Uranium		0.561	mg/L	0.00030	108	70	130			
Vanadium		0.570	mg/L	0.010	109	70	130			
Lab ID: B18011095-001CMSD	10	Sample Matrix Spike Duplicate		Run: ICPMS207-B_180118A			01/18/18 19:18			
Aluminum		3.00	mg/L	0.030	106	70	130	1.1	20	
Beryllium		0.252	mg/L	0.0010	101	70	130	1.2	20	
Cadmium		0.270	mg/L	0.0010	108	70	130	1.8	20	
Cobalt		0.502	mg/L	0.0050	100	70	130	2.5	20	
Lead		0.534	mg/L	0.0010	107	70	130	0.8	20	
Manganese		2.69	mg/L	0.0010	107	70	130	1.0	20	
Molybdenum		0.563	mg/L	0.0010	110	70	130	0.6	20	
Nickel		0.541	mg/L	0.0050	108	70	130	2.1	20	
Uranium		0.558	mg/L	0.00030	107	70	130	0.7	20	
Vanadium		0.577	mg/L	0.010	110	70	130	1.4	20	
Lab ID: C18010386-011CMS3	10	Sample Matrix Spike		Run: ICPMS207-B_180118A			01/18/18 20:06			
Aluminum		2.47	mg/L	0.030	99	70	130			
Beryllium		0.246	mg/L	0.0010	99	70	130			
Cadmium		0.262	mg/L	0.0010	105	70	130			
Cobalt		0.488	mg/L	0.0050	98	70	130			
Lead		0.511	mg/L	0.0010	102	70	130			
Manganese		2.53	mg/L	0.0010	101	70	130			
Molybdenum		0.530	mg/L	0.0010	106	70	130			
Nickel		0.508	mg/L	0.0050	102	70	130			
Uranium		0.516	mg/L	0.00030	103	70	130			
Vanadium		0.518	mg/L	0.010	104	70	130			
Lab ID: C18010386-011CMSD	10	Sample Matrix Spike Duplicate		Run: ICPMS207-B_180118A			01/18/18 20:08			
Aluminum		2.63	mg/L	0.030	105	70	130	6.2	20	
Beryllium		0.261	mg/L	0.0010	104	70	130	5.8	20	
Cadmium		0.276	mg/L	0.0010	110	70	130	5.1	20	
Cobalt		0.519	mg/L	0.0050	104	70	130	6.3	20	
Lead		0.547	mg/L	0.0010	109	70	130	6.8	20	
Manganese		2.70	mg/L	0.0010	108	70	130	6.2	20	
Molybdenum		0.537	mg/L	0.0010	107	70	130	1.4	20	
Nickel		0.569	mg/L	0.0050	114	70	130	11	20	
Uranium		0.533	mg/L	0.00030	107	70	130	3.2	20	
Vanadium		0.550	mg/L	0.010	110	70	130	5.9	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Report Date: 01/29/18

Project: Zone 1

Work Order: C18010386

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 B					tical Run: SELENIUM PSA MILLENIUM_180119A				
Lab ID: ICV-40243	Initial Calibration Verification Standard								01/19/18 16:01
Selenium-IV	0.0204	mg/L	0.0010	102	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								01/19/18 16:02
Selenium-IV	0.0197	mg/L	0.0010	99	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								01/19/18 16:37
Selenium-IV	0.0191	mg/L	0.0010	95	90	110			
Method: A3114 B					Batch: 40243				
Lab ID: MB-40243	Method Blank								01/19/18 16:05
Selenium-IV	ND	mg/L	0.0006				Run: SELENIUM PSA MILLENIUM_		
Lab ID: LFB-40243	Laboratory Fortified Blank								01/19/18 16:07
Selenium-IV	0.0205	mg/L	0.0010	103	85	115	Run: SELENIUM PSA MILLENIUM_		
Lab ID: C18010386-001DMS	Sample Matrix Spike								01/19/18 16:26
Selenium-IV	0.0212	mg/L	0.0010	98	70	130	Run: SELENIUM PSA MILLENIUM_		
Lab ID: C18010386-001DMSD	Sample Matrix Spike Duplicate								01/19/18 16:27
Selenium-IV	0.0217	mg/L	0.0010	100	70	130	2.1	20	
Lab ID: H18010247-001DMS	Sample Matrix Spike								01/19/18 16:51
Selenium-IV	0.0195	mg/L	0.0010	97	70	130	Run: SELENIUM PSA MILLENIUM_		
Lab ID: H18010247-001DMSD	Sample Matrix Spike Duplicate								01/19/18 16:52
Selenium-IV	0.0198	mg/L	0.0010	99	70	130	1.5	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 01/29/18

**Project:** Zone 1

**Work Order:** C18010386

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E1632AM</b>			Analytical Run: ARSENIC SPECIATION_180122A						
<b>Lab ID: AS-ICV 25ppb-1/22/2018</b>	Initial Calibration Verification Standard								01/22/18 16:21
Arsenic-III	25.2	ug/L	5.0	101	87.6	114			
<b>Lab ID: AS-50.0-1/22/2018</b>	Continuing Calibration Verification Standard								01/22/18 20:12
Arsenic-III	50.5	ug/L	5.0	101	85	115			
<b>Lab ID: AS-50.0-1/22/2018</b>	Continuing Calibration Verification Standard								01/23/18 02:51
Arsenic-III	50.1	ug/L	5.0	100	85	115			
<b>Method: E1632AM</b>			Batch: R131854						
<b>Lab ID: AS-LFB 50ppb-1/22/2018</b>	Laboratory Fortified Blank								01/22/18 17:24
Arsenic-III	44.0	ug/L	5.0	88	55	146			
<b>Lab ID: ICB</b>	Method Blank								01/22/18 17:36
Arsenic-III	ND	ug/L	0.2						
<b>Lab ID: C18010386-001D MS</b>	Sample Matrix Spike								01/22/18 21:00
Arsenic-III	48.4	ug/L	5.0	96	55	146			
<b>Lab ID: C18010386-001D MSD</b>	Sample Matrix Spike Duplicate								01/22/18 21:12
Arsenic-III	51.7	ug/L	5.0	102	55	146	6.5	20	
<b>Lab ID: H18010247-001D MS</b>	Sample Matrix Spike								01/23/18 03:51
Arsenic-III	49.5	ug/L	5.0	99	55	146			
<b>Lab ID: H18010247-001D MSD</b>	Sample Matrix Spike Duplicate								01/23/18 04:03
Arsenic-III	50.0	ug/L	5.0	100	55	146	1.1	20	

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 01/30/18

Work Order: C18010386

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
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Method: E624

Analytical Run: R293439

Lab ID: CCV012218\_

Continuing Calibration Verification Standard

01/22/18 13:01

Bromodichloromethane	5.83	ug/L	0.50	117	70	130			
Bromoform	4.56	ug/L	0.50	91	70	130			
Chlorodibromomethane	5.66	ug/L	0.50	113	70	130			
Chloroform	5.45	ug/L	0.50	109	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	102	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	115	80	123			

Method: E624

Batch: R293439

Lab ID: LCS012218\_

Laboratory Control Sample

Run: VOA5975C.I\_180122A

01/22/18 13:35

Bromodichloromethane	5.49	ug/L	0.50	110	74	128			
Bromoform	4.39	ug/L	0.50	88	66	128			
Chlorodibromomethane	5.41	ug/L	0.50	108	74	125			
Chloroform	5.31	ug/L	0.50	106	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	99	71	139			
Surr: p-Bromofluorobenzene			0.50	91	80	127			
Surr: Toluene-d8			0.50	110	80	123			

Lab ID: MBLK012218\_

Method Blank

Run: VOA5975C.I\_180122A

01/22/18 14:39

Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	103	71	139			
Surr: p-Bromofluorobenzene			0.50	108	80	127			
Surr: Toluene-d8			0.50	112	80	123			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 01/30/18

Work Order: C18010386

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b> Analytical Run: R293441									
<b>Lab ID: CCV012318_</b>	Continuing Calibration Verification Standard								01/23/18 06:40
Bromodichloromethane	6.12	ug/L	0.50	122	70	130			
Bromoform	4.45	ug/L	0.50	89	70	130			
Chlorodibromomethane	5.87	ug/L	0.50	117	70	130			
Chloroform	5.18	ug/L	0.50	104	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	108	71	139			
Surr: p-Bromofluorobenzene			0.50	98	80	127			
Surr: Toluene-d8			0.50	118	80	123			
<b>Method: E624</b> Batch: R293441									
<b>Lab ID: LCS012318_</b>	Laboratory Control Sample								01/23/18 07:08
Bromodichloromethane	6.06	ug/L	0.50	121	74	128			
Bromoform	4.57	ug/L	0.50	91	66	128			
Chlorodibromomethane	6.07	ug/L	0.50	121	74	125			
Chloroform	5.51	ug/L	0.50	110	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	107	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	123	80	123			
<b>Lab ID: MBLK012318_</b>	Method Blank								01/23/18 08:04
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	113	71	139			
Surr: p-Bromofluorobenzene			0.50	103	80	127			
Surr: Toluene-d8			0.50	105	80	123			
<b>Lab ID: C18010386-007GMS</b>	Sample Matrix Spike								01/23/18 14:13
Bromodichloromethane	5.83	ug/L	0.50	117	74	128			
Bromoform	4.98	ug/L	0.50	100	66	128			
Chlorodibromomethane	6.16	ug/L	0.50	123	74	125			
Chloroform	6.06	ug/L	0.50	121	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	110	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	98	80	123			
- The sample was received in the laboratory with a pH > 2. The pH was 7.									
<b>Lab ID: C18010386-007GMSD</b>	Sample Matrix Spike Duplicate								01/23/18 14:42
Bromodichloromethane	5.68	ug/L	0.50	114	74	128	2.6	20	
Bromoform	4.95	ug/L	0.50	99	66	128	0.5	20	
Chlorodibromomethane	6.09	ug/L	0.50	122	74	125	1.1	20	
Chloroform	5.92	ug/L	0.50	118	68	124	2.4	20	
Surr: 1,2-Dichloroethane-d4			0.50	109	71	139			
Surr: p-Bromofluorobenzene			0.50	97	80	127			
Surr: Toluene-d8			0.50	95	80	123			
- The sample was received in the laboratory with a pH > 2. The pH was 7.									

### Qualifiers:

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 1

**Report Date:** 02/17/18

**Work Order:** C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-1064
<b>Lab ID: MB-GA-1064</b>	3	Method Blank					Run: G542M-2_180202B			02/06/18 10:14
Gross Alpha minus Rn & U		0.4	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.4	pCi/L							
Gross Alpha minus Rn & U MDC		0.5	pCi/L							
<b>Lab ID: LCS-GA-1064</b>		Laboratory Control Sample					Run: G542M-2_180202B			02/06/18 10:14
Gross Alpha minus Rn & U		32	pCi/L		93	80	120			
<b>Lab ID: C18010386-005FMS</b>		Sample Matrix Spike					Run: G542M-2_180202B			02/06/18 10:15
Gross Alpha minus Rn & U		34	pCi/L		95	70	130			
<b>Lab ID: C18010386-005FMSD</b>		Sample Matrix Spike Duplicate					Run: G542M-2_180202B			02/06/18 10:15
Gross Alpha minus Rn & U		35	pCi/L		98	70	130	2.5	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/17/18

**Project:** Zone 1

**Work Order:** C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E903.0										Batch: RA226-8813
<b>Lab ID:</b> LCS-RA226-8813	Laboratory Control Sample			Run: G542M-2_180125B			02/12/18 10:07			
Radium 226		9.7	pCi/L		94	80	120			
<b>Lab ID:</b> MB-RA226-8813	3	Method Blank			Run: G542M-2_180125B			02/12/18 10:07		
Radium 226		0.3	pCi/L							
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.1	pCi/L							
<b>Lab ID:</b> C18010386-002FMS	Sample Matrix Spike			Run: G542M-2_180125B			02/12/18 10:05			
Radium 226		17	pCi/L		75	70	130			
<b>Lab ID:</b> C18010386-002FMSD	Sample Matrix Spike Duplicate			Run: G542M-2_180125B			02/12/18 10:05			
Radium 226		16	pCi/L		73	70	130	3.2	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/17/18

**Project:** Zone 1

**Work Order:** C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E908.0</b>										Batch: RA-TH-ISO-2668
<b>Lab ID: LCS-RA-TH-ISO-2668</b>	Laboratory Control Sample									
Thorium 230	12		pCi/L	102		80	120			02/02/18 10:24
<b>Lab ID: C18010374-003CMS</b>										Run: EGG-ORTEC_180130A
Thorium 230	20		pCi/L	90		70	130			02/02/18 10:24
<b>Lab ID: C18010374-003CMSD</b>										Run: EGG-ORTEC_180130A
Thorium 230	22		pCi/L	101		70	130	12	20	02/02/18 10:24
<b>Lab ID: MB-RA-TH-ISO-2668</b>										Run: EGG-ORTEC_180130A
Thorium 230	3	0.07	pCi/L							02/02/18 10:24
Thorium 230 precision (±)		0.1	pCi/L							U
Thorium 230 MDC		0.2	pCi/L							
<b>Method: E908.0</b>										Batch: RA-TH-ISO-2669
<b>Lab ID: LCS-RA-TH-ISO-2669</b>	Laboratory Control Sample									
Thorium 230	12		pCi/L	101		80	120			02/02/18 10:26

### Qualifiers:

RL - Analyte reporting limit.

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/17/18

Project: Zone 1

Work Order: C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0										Batch: PB-210-0899
Lab ID: LCS-PB-210-0899	Laboratory Control Sample			Run: TRICARB LSC_180118A			01/25/18 15:05			
Lead 210	21	pCi/L		99	80	120				
Lab ID: MB-PB-210-0899	3	Method Blank			Run: TRICARB LSC_180118A			01/25/18 16:01		
Lead 210		-0.7	pCi/L							U
Lead 210 precision (±)		0.8	pCi/L							
Lead 210 MDC		1	pCi/L							
Lab ID: C18010386-001FMS	Sample Matrix Spike			Run: TRICARB LSC_180118A			01/25/18 23:40			
Lead 210	39	pCi/L		92	70	130				
Lab ID: C18010386-001FMSD	Sample Matrix Spike Duplicate			Run: TRICARB LSC_180118A			01/26/18 00:38			
Lead 210	39	pCi/L		93	70	130	1.2	20		

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 02/17/18

Work Order: C18010386

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: RA-05</b>										Batch: RA228-5707
<b>Lab ID: LCS-228-RA226-8813</b>	Laboratory Control Sample			Run: TENNELEC-3_180125B			02/05/18 14:05			
Radium 228		9.3	pCi/L	92		80	120			
<b>Lab ID: MB-RA226-8813</b>	3	Method Blank			Run: TENNELEC-3_180125B			02/05/18 14:05		
Radium 228		0.4	pCi/L							U
Radium 228 precision (±)		1	pCi/L							
Radium 228 MDC		2	pCi/L							
<b>Lab ID: C18010386-011FMS</b>	Sample Matrix Spike			Run: TENNELEC-3_180125B			02/05/18 14:05			
Radium 228		17	pCi/L	88		70	130			
<b>Lab ID: C18010386-011FMSD</b>	Sample Matrix Spike Duplicate			Run: TENNELEC-3_180125B			02/05/18 14:05			
Radium 228		18	pCi/L	94		70	130	5.7	20	
<b>Method: RA-05</b>										Batch: RA228-5717
<b>Lab ID: LCS-228-RA226-8834</b>	Laboratory Control Sample			Run: TENNELEC-3_180212A			02/15/18 08:56			
Radium 228		9.7	pCi/L	93		80	120			
<b>Lab ID: MB-RA226-8834</b>	3	Method Blank			Run: TENNELEC-3_180212A			02/15/18 08:56		
Radium 228		0.9	pCi/L							U
Radium 228 precision (±)		0.8	pCi/L							
Radium 228 MDC		1	pCi/L							
<b>Lab ID: C18010829-001AMS</b>	Sample Matrix Spike			Run: TENNELEC-3_180212A			02/15/18 08:56			
Radium 228		17	pCi/L	88		70	130			
<b>Lab ID: C18010829-001AMSD</b>	Sample Matrix Spike Duplicate			Run: TENNELEC-3_180212A			02/15/18 08:56			
Radium 228		19	pCi/L	98		70	130	11	20	

### Qualifiers:

RL - Analyte reporting limit.

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ND - Not detected at the reporting limit.

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## ANALYTICAL SUMMARY REPORT

February 28, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18010515      Quote ID: C5148 - Quarterly Long List  
Project Name: Zone 3

Energy Laboratories, Inc. Casper WY received the following 7 samples for United Nuclear Corporation on 1/18/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18010515-001	613	01/15/18 08:30	01/18/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Acidity, Total as CaCO3 Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18010515-002	708	01/15/18 10:42	01/18/18	Aqueous	Same As Above
C18010515-003	711	01/15/18 12:45	01/18/18	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C18010515-004	EPA-13	01/15/18 13:56 01/18/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18010515-005	420	01/15/18 15:08 01/18/18	Aqueous	Same As Above
C18010515-006	EPA-14	01/15/18 16:47 01/18/18	Aqueous	Same As Above
C18010515-007	517	01/15/18 09:20 01/18/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Acidity, Total as CaCO3 Acidity, Total as CaCO3 Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.02.28 11:22:48 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone 3  
**Work Order:** C18010515

**Report Date:** 02/28/18

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/05/18

**Project:** Zone 3

**Work Order:** C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2320 B										Analytical Run: MANTECH_180119B
<b>Lab ID:</b> ICV										Initial Calibration Verification Standard
pH		6.92	s.u.	0.010	101	98	102			01/19/18 12:57
<b>Method:</b> A2320 B										Batch: R231455
<b>Lab ID:</b> MBLK										Method Blank
Bicarbonate as HCO <sub>3</sub>		1	mg/L	1						Run: MANTECH_180119B
										01/19/18 13:04
<b>Lab ID:</b> LCS										Laboratory Control Sample
Alkalinity, Total as CaCO <sub>3</sub>		249	mg/L	5.0	100	90	110			Run: MANTECH_180119B
										01/19/18 13:12
<b>Lab ID:</b> C18010508-002BDUP										Sample Duplicate
Bicarbonate as HCO <sub>3</sub>		337	mg/L	5.0				0.3	10	Run: MANTECH_180119B
										01/19/18 14:51

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/05/18

**Project:** Zone 3

**Work Order:** C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2540 C										Batch: TDS180119A
<b>Lab ID:</b> MB-25_180119A	Method Blank									
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						Run: BAL-16_180119C 01/19/18 12:25
<b>Lab ID:</b> LCS-26_180119A										Run: BAL-16_180119C 01/19/18 12:25
Solids, Total Dissolved TDS @ 180 C		1120	mg/L	11	101	90	110			
<b>Lab ID:</b> C18010515-004A DUP										Run: BAL-16_180119C 01/19/18 12:26
Solids, Total Dissolved TDS @ 180 C		7610	mg/L	100				0.5	5	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/05/18

Project: Zone 3

Work Order: C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_180119A
Lab ID: 6.86		Initial Calibration Verification Standard								
pH		6.91	s.u.	0.010	101	98	102			01/19/18 10:14
Method: A4500-H B										Batch: R231448
Lab ID: C18010515-004ADUP		Sample Duplicate								
pH		6.26	s.u.	0.010				0.2		01/19/18 11:39
									1.5	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/05/18

**Project:** Zone 3

**Work Order:** C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G								Analytical Run: FIA201-C_180122A		
Lab ID: ICV	Initial Calibration Verification Standard									01/22/18 09:57
Nitrogen, Ammonia as N		1.04	mg/L	0.050	104	90	110			
Method: A4500-NH3 G								Batch: R231500		
Lab ID: MBLK	Method Blank									01/22/18 09:56
Nitrogen, Ammonia as N		ND	mg/L	0.009				Run: FIA201-C_180122A		
Lab ID: LFB	Laboratory Fortified Blank									01/22/18 09:59
Nitrogen, Ammonia as N		1.07	mg/L	0.050	108	90	110			
Lab ID: C18010515-002EMS	Sample Matrix Spike									01/22/18 10:14
Nitrogen, Ammonia as N		1.97	mg/L	0.050	91	90	110			
Lab ID: C18010515-002EMSD	Sample Matrix Spike Duplicate									01/22/18 10:15
Nitrogen, Ammonia as N		2.03	mg/L	0.050	97	90	110	3.0	10	E

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 02/05/18

Work Order: C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC3-C_180123A
Lab ID: ICV	2	Initial Calibration Verification Standard								01/23/18 17:53
Chloride		9.99	mg/L	1.0	100	90	110			
Sulfate		41.1	mg/L	1.0	103	90	110			
Method: E300.0										Batch: R231612
Lab ID: ICB	2	Method Blank								01/23/18 18:11
Chloride		ND	mg/L	0.09						
Sulfate		ND	mg/L	0.10						
Lab ID: LFB	2	Laboratory Fortified Blank								01/23/18 18:29
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		41.2	mg/L	1.0	103	90	110			
Lab ID: C18010515-007AMS	2	Sample Matrix Spike								01/24/18 03:53
Chloride		239	mg/L	2.1	102	80	120			
Sulfate		4930	mg/L	8.3		80	120			A
Lab ID: C18010515-007AMSD	2	Sample Matrix Spike Duplicate								01/24/18 04:11
Chloride		240	mg/L	2.1	103	80	120	0.6	20	
Sulfate		4940	mg/L	8.3		80	120	0.3	20	A
Method: E300.0										Analytical Run: IC3-C_180125A
Lab ID: ICV	2	Initial Calibration Verification Standard								01/24/18 17:04
Chloride		9.99	mg/L	1.0	100	90	110			
Sulfate		41.0	mg/L	1.0	102	90	110			
Method: E300.0										Batch: R231660
Lab ID: ICB	2	Method Blank								01/24/18 17:22
Chloride		ND	mg/L	0.09						
Sulfate		ND	mg/L	0.10						
Lab ID: LFB	2	Laboratory Fortified Blank								01/24/18 17:40
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		41.2	mg/L	1.0	103	90	110			
Lab ID: C18010505-001AMS	2	Sample Matrix Spike								01/24/18 18:53
Chloride		15.9	mg/L	1.0	104	80	120			
Sulfate		331	mg/L	1.0		80	120			A
Lab ID: C18010505-001AMSD	2	Sample Matrix Spike Duplicate								01/24/18 19:11
Chloride		16.0	mg/L	1.0	105	80	120	0.5	20	
Sulfate		330	mg/L	1.0		80	120	0.4	20	A

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.  
MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 3

**Report Date:** 02/05/18

**Work Order:** C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E353.2</b>										Analytical Run: FIA201-C_180119A
<b>Lab ID: ICV</b>		Initial Calibration Verification Standard								01/19/18 11:59
Nitrogen, Nitrate+Nitrite as N		1.01	mg/L	0.010	101	90	110			
<b>Method: E353.2</b>										Batch: R231457
<b>Lab ID: MBLK</b>		Method Blank								01/19/18 12:00
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						
<b>Lab ID: LFB</b>		Laboratory Fortified Blank								01/19/18 12:01
Nitrogen, Nitrate+Nitrite as N		0.990	mg/L	0.010	100	90	110			
<b>Lab ID: C18010515-001EMS</b>		Sample Matrix Spike								01/19/18 12:55
Nitrogen, Nitrate+Nitrite as N		2.23	mg/L	0.010	95	90	110			
<b>Lab ID: C18010515-001EMSD</b>		Sample Matrix Spike Duplicate								01/19/18 12:56
Nitrogen, Nitrate+Nitrite as N		2.23	mg/L	0.010	95	90	110	0.0	10	
<b>Method: E353.2</b>										Analytical Run: FIA201-C_180202A
<b>Lab ID: ICV</b>		Initial Calibration Verification Standard								02/02/18 12:11
Nitrogen, Nitrate+Nitrite as N		1.01	mg/L	0.010	101	90	110			
<b>Method: E353.2</b>										Batch: R231948
<b>Lab ID: MBLK</b>		Method Blank								02/02/18 12:12
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						
<b>Lab ID: LFB</b>		Laboratory Fortified Blank								02/02/18 12:14
Nitrogen, Nitrate+Nitrite as N		1.01	mg/L	0.010	102	90	110			
<b>Lab ID: C18020016-007DMS</b>		Sample Matrix Spike								02/02/18 12:51
Nitrogen, Nitrate+Nitrite as N		9.65	mg/L	0.050	96	90	110			
<b>Lab ID: C18020016-007DMSD</b>		Sample Matrix Spike Duplicate								02/02/18 12:52
Nitrogen, Nitrate+Nitrite as N		9.65	mg/L	0.050	96	90	110	0.0	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 01/30/18

**Project:** Zone 3

**Work Order:** C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7										Analytical Run: ICP203-B_180126A
<b>Lab ID:</b> ICV	4	Continuing Calibration Verification Standard								01/26/18 10:40
Calcium		25.2	mg/L	1.0	101	95	105			
Magnesium		25.2	mg/L	1.0	101	95	105			
Potassium		25.4	mg/L	1.0	102	95	105			
Sodium		25.5	mg/L	1.0	102	95	105			
<b>Method:</b> E200.7										Batch: R293715
<b>Lab ID:</b> MB-6500DIS180126A	4	Method Blank								Run: ICP203-B_180126A 01/26/18 10:47
Calcium		ND	mg/L	0.01						
Magnesium		ND	mg/L	0.01						
Potassium		ND	mg/L	0.08						
Sodium		ND	mg/L	0.03						
<b>Lab ID:</b> LFB-6500DIS180126A	4	Laboratory Fortified Blank								Run: ICP203-B_180126A 01/26/18 10:54
Calcium		49.0	mg/L	1.0	98	85	115			
Magnesium		48.9	mg/L	1.0	98	85	115			
Potassium		49.7	mg/L	1.0	99	85	115			
Sodium		49.9	mg/L	1.0	100	85	115			
<b>Lab ID:</b> C18010515-003BMS2	4	Sample Matrix Spike								Run: ICP203-B_180126A 01/26/18 20:10
Calcium		963	mg/L	1.0	103	70	130			
Magnesium		1050	mg/L	1.0	110	70	130			
Potassium		516	mg/L	1.0	101	70	130			
Sodium		632	mg/L	1.9	104	70	130			
<b>Lab ID:</b> C18010515-003BMSD	4	Sample Matrix Spike Duplicate								Run: ICP203-B_180126A 01/26/18 20:14
Calcium		962	mg/L	1.0	103	70	130	0.1	20	
Magnesium		1050	mg/L	1.0	110	70	130	0.1	20	
Potassium		514	mg/L	1.0	101	70	130	0.4	20	
Sodium		628	mg/L	1.9	104	70	130	0.7	20	
<b>Lab ID:</b> B18011445-001CMS2	4	Sample Matrix Spike								Run: ICP203-B_180126A 01/26/18 21:00
Calcium		120	mg/L	1.0	100	70	130			
Magnesium		76.0	mg/L	1.0	107	70	130			
Potassium		53.0	mg/L	1.0	102	70	130			
Sodium		73.3	mg/L	1.0	104	70	130			
<b>Lab ID:</b> B18011445-001CMSD	4	Sample Matrix Spike Duplicate								Run: ICP203-B_180126A 01/26/18 21:03
Calcium		119	mg/L	1.0	97	70	130	1.3	20	
Magnesium		75.3	mg/L	1.0	105	70	130	0.9	20	
Potassium		52.7	mg/L	1.0	102	70	130	0.5	20	
Sodium		72.7	mg/L	1.0	103	70	130	0.9	20	

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: Zone 3

Work Order: C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8		Analytical Run: ICPMS207-B_180122A								
Lab ID: QCS	10	Initial Calibration Verification Standard							01/22/18 16:12	
Aluminum		0.240	mg/L	0.10	96	90	110			
Beryllium		0.0245	mg/L	0.0010	98	90	110			
Cadmium		0.0251	mg/L	0.0010	100	90	110			
Cobalt		0.0497	mg/L	0.010	99	90	110			
Lead		0.0485	mg/L	0.010	97	90	110			
Manganese		0.251	mg/L	0.010	101	90	110			
Molybdenum		0.0485	mg/L	0.0050	97	90	110			
Nickel		0.0499	mg/L	0.010	100	90	110			
Uranium		0.0203	mg/L	0.0010	101	90	110			
Vanadium		0.0492	mg/L	0.10	98	90	110			
Method: E200.8		Batch: 117704								
Lab ID: MB-117704	10	Method Blank							Run: ICPMS207-B_180122A 01/22/18 16:52	
Aluminum		ND	mg/L	0.008						
Beryllium		ND	mg/L	0.00002						
Cadmium		ND	mg/L	0.00001						
Cobalt		ND	mg/L	0.00002						
Lead		ND	mg/L	0.00007						
Manganese		ND	mg/L	0.0004						
Molybdenum		ND	mg/L	0.00005						
Nickel		ND	mg/L	0.00006						
Uranium		ND	mg/L	0.00002						
Vanadium		ND	mg/L	0.0004						
Lab ID: LCS-117704	10	Laboratory Control Sample							Run: ICPMS207-B_180122A 01/22/18 16:58	
Aluminum		2.36	mg/L	0.010	94	85	115			
Beryllium		0.235	mg/L	0.0010	94	85	115			
Cadmium		0.247	mg/L	0.0010	99	85	115			
Cobalt		0.478	mg/L	0.0010	96	85	115			
Lead		0.494	mg/L	0.0010	99	85	115			
Manganese		2.46	mg/L	0.0010	98	85	115			
Molybdenum		0.499	mg/L	0.0050	100	85	115			
Nickel		0.511	mg/L	0.0010	102	85	115			
Uranium		0.483	mg/L	0.0010	97	85	115			
Vanadium		0.500	mg/L	0.010	100	85	115			
Lab ID: B18011240-001BMS3	10	Sample Matrix Spike							Run: ICPMS207-B_180122A 01/22/18 17:00	
Aluminum		2.45	mg/L	0.030	98	70	130			
Beryllium		0.239	mg/L	0.0010	96	70	130			
Cadmium		0.242	mg/L	0.0010	97	70	130			
Cobalt		0.494	mg/L	0.0050	99	70	130			
Lead		0.519	mg/L	0.0010	104	70	130			
Manganese		2.82	mg/L	0.0010	101	70	130			
Molybdenum		0.519	mg/L	0.0010	103	70	130			
Nickel		0.511	mg/L	0.0050	102	70	130			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/30/18

Project: Zone 3

Work Order: C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: 117704
<b>Lab ID: B18011240-001BMS3</b>	10	Sample Matrix Spike								Run: ICPMS207-B_180122A 01/22/18 17:00
Uranium		0.527	mg/L	0.00030	103	70	130			
Vanadium		0.520	mg/L	0.010	104	70	130			
<b>Lab ID: B18011240-001BMSD</b>	10	Sample Matrix Spike Duplicate								Run: ICPMS207-B_180122A 01/22/18 17:02
Aluminum		2.40	mg/L	0.030	96	70	130	2.0	20	
Beryllium		0.232	mg/L	0.0010	93	70	130	2.7	20	
Cadmium		0.237	mg/L	0.0010	95	70	130	2.1	20	
Cobalt		0.489	mg/L	0.0050	98	70	130	1.1	20	
Lead		0.509	mg/L	0.0010	102	70	130	1.9	20	
Manganese		2.78	mg/L	0.0010	99	70	130	1.3	20	
Molybdenum		0.512	mg/L	0.0010	102	70	130	1.4	20	
Nickel		0.503	mg/L	0.0050	100	70	130	1.6	20	
Uranium		0.517	mg/L	0.00030	101	70	130	2.0	20	
Vanadium		0.511	mg/L	0.010	102	70	130	1.7	20	
<b>Lab ID: C18010515-007CMS3</b>	10	Sample Matrix Spike								Run: ICPMS207-B_180122A 01/22/18 17:50
Aluminum		22.4	mg/L	0.039		70	130			A
Beryllium		0.258	mg/L	0.0010	96	70	130			
Cadmium		0.264	mg/L	0.0010	103	70	130			
Cobalt		1.42	mg/L	0.0050	101	70	130			
Lead		0.540	mg/L	0.0010	106	70	130			
Manganese		15.8	mg/L	0.0022		70	130			A
Molybdenum		0.502	mg/L	0.0010	100	70	130			
Nickel		1.46	mg/L	0.0050	103	70	130			
Uranium		0.883	mg/L	0.00030	104	70	130			
Vanadium		0.504	mg/L	0.010	101	70	130			
<b>Lab ID: C18010515-007CMSD</b>	10	Sample Matrix Spike Duplicate								Run: ICPMS207-B_180122A 01/22/18 17:58
Aluminum		22.3	mg/L	0.039		70	130	0.1	20	A
Beryllium		0.264	mg/L	0.0010	99	70	130	2.4	20	
Cadmium		0.270	mg/L	0.0010	105	70	130	2.4	20	
Cobalt		1.40	mg/L	0.0050	98	70	130	1.0	20	
Lead		0.539	mg/L	0.0010	106	70	130	0.2	20	
Manganese		16.0	mg/L	0.0022		70	130	1.4	20	A
Molybdenum		0.514	mg/L	0.0010	103	70	130	2.5	20	
Nickel		1.48	mg/L	0.0050	108	70	130	1.5	20	
Uranium		0.872	mg/L	0.00030	101	70	130	1.3	20	
Vanadium		0.516	mg/L	0.010	103	70	130	2.4	20	

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A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



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## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/05/18

**Project:** Zone 3

**Work Order:** C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 B										tical Run: SELENIUM PSA MILLENIUM_180129B
<b>Lab ID:</b> ICV-40396		Initial Calibration Verification Standard								01/29/18 17:47
Selenium-IV		0.0180	mg/L	0.0010	90	90	110			
<b>Lab ID:</b> CCV		Continuing Calibration Verification Standard								01/29/18 17:48
Selenium-IV		0.0199	mg/L	0.0010	99	90	110			
<b>Method:</b> A3114 B										Batch: 40396
<b>Lab ID:</b> MB-40396		Method Blank								Run: SELENIUM PSA MILLENIUM_ 01/29/18 17:52
Selenium-IV		ND	mg/L	0.0006						
<b>Lab ID:</b> LFB-40396		Laboratory Fortified Blank								Run: SELENIUM PSA MILLENIUM_ 01/29/18 17:53
Selenium-IV		0.0197	mg/L	0.0010	99	85	115			
<b>Lab ID:</b> H18010218-007A		Method Detection Level								Run: SELENIUM PSA MILLENIUM_ 01/29/18 17:55
Selenium-IV		0.000711	mg/L	0.0010	71	50	150			
<b>Lab ID:</b> H18010218-008A		Method Detection Level								Run: SELENIUM PSA MILLENIUM_ 01/29/18 17:56
Selenium-IV		0.000675	mg/L	0.0010	68	50	150			
<b>Lab ID:</b> C18010515-001DMS		Sample Matrix Spike								Run: SELENIUM PSA MILLENIUM_ 01/29/18 18:01
Selenium-IV		0.0198	mg/L	0.0010	99	70	130			
<b>Lab ID:</b> C18010515-001DMSD		Sample Matrix Spike Duplicate								Run: SELENIUM PSA MILLENIUM_ 01/29/18 18:03
Selenium-IV		0.0194	mg/L	0.0010	97	70	130	1.8	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Report Date: 02/05/18

Project: Zone 3

Work Order: C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	E1632AM					Analytical Run: ARSENIC SPECIATION_180122A				
Lab ID:	AS-ICV 25ppb-1/22/20	Initial Calibration Verification Standard							01/22/18 16:21	
Arsenic-III		25.2	ug/L	5.0	101	87.6	114			
Lab ID:	AS-50.0-1/22/2018	Continuing Calibration Verification Standard							01/23/18 02:51	
Arsenic-III		50.1	ug/L	5.0	100	85	115			
Lab ID:	AS-50.0-1/22/2018	Continuing Calibration Verification Standard							01/23/18 05:39	
Arsenic-III		49.6	ug/L	5.0	99	85	115			
Method:	E1632AM					Batch: R131854				
Lab ID:	AS-LFB 50ppb-1/22/2	Laboratory Fortified Blank			Run: ARSENIC SPECIATION_1801			01/22/18 17:24		
Arsenic-III		44.0	ug/L	5.0	88	55	146			
Lab ID:	ICB	Method Blank			Run: ARSENIC SPECIATION_1801			01/22/18 17:36		
Arsenic-III		ND	ug/L	0.2						
Lab ID:	H18010247-001D MS	Sample Matrix Spike			Run: ARSENIC SPECIATION_1801			01/23/18 03:51		
Arsenic-III		49.5	ug/L	5.0	99	55	146			
Lab ID:	H18010247-001D MSD	Sample Matrix Spike Duplicate			Run: ARSENIC SPECIATION_1801			01/23/18 04:03		
Arsenic-III		50.0	ug/L	5.0	100	55	146	1.1	20	
Lab ID:	C18010515-005D MS	Sample Matrix Spike			Run: ARSENIC SPECIATION_1801			01/23/18 06:15		
Arsenic-III		44.4	ug/L	5.0	89	55	146			
Lab ID:	C18010515-005D MSD	Sample Matrix Spike Duplicate			Run: ARSENIC SPECIATION_1801			01/23/18 06:27		
Arsenic-III		45.6	ug/L	5.0	91	55	146	2.5	20	

### Qualifiers:

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ND - Not detected at the reporting limit.





## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 01/30/18

Work Order: C18010515

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b> Analytical Run: R293441									
<b>Lab ID: CCV012318_</b>	Continuing Calibration Verification Standard								01/23/18 06:40
Bromodichloromethane	6.12	ug/L	0.50	122	70	130			
Bromoform	4.45	ug/L	0.50	89	70	130			
Chlorodibromomethane	5.87	ug/L	0.50	117	70	130			
Chloroform	5.18	ug/L	0.50	104	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	108	71	139			
Surr: p-Bromofluorobenzene			0.50	98	80	127			
Surr: Toluene-d8			0.50	118	80	123			
<b>Method: E624</b> Batch: R293441									
<b>Lab ID: LCS012318_</b>	Laboratory Control Sample								01/23/18 07:08
Bromodichloromethane	6.06	ug/L	0.50	121	74	128			
Bromoform	4.57	ug/L	0.50	91	66	128			
Chlorodibromomethane	6.07	ug/L	0.50	121	74	125			
Chloroform	5.51	ug/L	0.50	110	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	107	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	123	80	123			
<b>Lab ID: MBLK012318_</b>	Method Blank								01/23/18 08:04
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	113	71	139			
Surr: p-Bromofluorobenzene			0.50	103	80	127			
Surr: Toluene-d8			0.50	105	80	123			
<b>Lab ID: B18011097-007GMS</b>	Sample Matrix Spike								01/23/18 14:13
Bromodichloromethane	5.83	ug/L	0.50	117	74	128			
Bromoform	4.98	ug/L	0.50	100	66	128			
Chlorodibromomethane	6.16	ug/L	0.50	123	74	125			
Chloroform	6.06	ug/L	0.50	121	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	110	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	98	80	123			
- The sample was received in the laboratory with a pH > 2. The pH was 7.									
<b>Lab ID: B18011097-007GMSD</b>	Sample Matrix Spike Duplicate								01/23/18 14:42
Bromodichloromethane	5.68	ug/L	0.50	114	74	128	2.6	20	
Bromoform	4.95	ug/L	0.50	99	66	128	0.5	20	
Chlorodibromomethane	6.09	ug/L	0.50	122	74	125	1.1	20	
Chloroform	5.92	ug/L	0.50	118	68	124	2.4	20	
Surr: 1,2-Dichloroethane-d4			0.50	109	71	139			
Surr: p-Bromofluorobenzene			0.50	97	80	127			
Surr: Toluene-d8			0.50	95	80	123			
- The sample was received in the laboratory with a pH > 2. The pH was 7.									

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 01/30/18

Work Order: C18010515

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624							Analytical Run: R293701		
Lab ID: CCV012618	Continuing Calibration Verification Standard						01/26/18 09:30		
Bromodichloromethane	4.79	ug/L	0.50	96	70	130			
Bromoform	5.18	ug/L	0.50	104	70	130			
Chlorodibromomethane	4.76	ug/L	0.50	95	70	130			
Chloroform	5.10	ug/L	0.50	102	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	87	71	139			
Surr: p-Bromofluorobenzene			0.50	93	80	127			
Surr: Toluene-d8			0.50	96	80	123			
Method: E624							Batch: R293701		
Lab ID: LCS012618	Laboratory Control Sample				Run: 5971A.I_180126A		01/26/18 10:06		
Bromodichloromethane	5.07	ug/L	0.50	101	74	128			
Bromoform	5.05	ug/L	0.50	101	66	128			
Chlorodibromomethane	5.12	ug/L	0.50	102	74	125			
Chloroform	5.03	ug/L	0.50	101	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	92	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	97	80	123			
Lab ID: BLK012618	Method Blank				Run: 5971A.I_180126A		01/26/18 11:05		
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	86	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	96	80	123			
Lab ID: C18010515-006Gms	Sample Matrix Spike				Run: 5971A.I_180126A		01/26/18 17:27		
Bromodichloromethane	10.3	ug/L	1.0	103	74	128			
Bromoform	9.62	ug/L	1.0	96	66	128			
Chlorodibromomethane	10.0	ug/L	1.0	100	74	125			
Chloroform	10.5	ug/L	1.0	105	68	124			
Surr: 1,2-Dichloroethane-d4			1.0	90	71	139			
Surr: p-Bromofluorobenzene			1.0	92	80	127			
Surr: Toluene-d8			1.0	99	80	123			
- The sample was received in the laboratory with a pH > 2. The pH was 7.									
Lab ID: C18010515-006Gmsd	Sample Matrix Spike Duplicate				Run: 5971A.I_180126A		01/26/18 17:56		
Bromodichloromethane	10.6	ug/L	1.0	106	74	128	2.8	20	
Bromoform	10.5	ug/L	1.0	105	66	128	9.0	20	
Chlorodibromomethane	10.4	ug/L	1.0	104	74	125	4.0	20	
Chloroform	10.8	ug/L	1.0	108	68	124	3.2	20	
Surr: 1,2-Dichloroethane-d4			1.0	95	71	139			
Surr: p-Bromofluorobenzene			1.0	93	80	127			
Surr: Toluene-d8			1.0	97	80	123			
- The sample was received in the laboratory with a pH > 2. The pH was 7.									

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/23/18

Project: Zone 3

Work Order: C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-1064
<b>Lab ID: MB-GA-1064</b>	3	Method Blank					Run: G542M-2_180202B			02/06/18 10:14
Gross Alpha minus Rn & U		0.4	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.4	pCi/L							
Gross Alpha minus Rn & U MDC		0.5	pCi/L							
<b>Lab ID: LCS-GA-1064</b>		Laboratory Control Sample					Run: G542M-2_180202B			02/06/18 10:14
Gross Alpha minus Rn & U		32	pCi/L	93		80	120			
<b>Lab ID: C18010386-005FMS</b>		Sample Matrix Spike					Run: G542M-2_180202B			02/06/18 10:15
Gross Alpha minus Rn & U		34	pCi/L	95		70	130			
<b>Lab ID: C18010386-005FMSD</b>		Sample Matrix Spike Duplicate					Run: G542M-2_180202B			02/06/18 10:15
Gross Alpha minus Rn & U		35	pCi/L	98		70	130	2.5	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 3

**Report Date:** 02/23/18

**Work Order:** C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E903.0										Batch: RA226-8818
<b>Lab ID:</b> LCS-RA226-8818	Laboratory Control Sample			Run: G5000W_180130C			02/14/18 10:41			
Radium 226		8.6	pCi/L	85		80	120			
<b>Lab ID:</b> MB-RA226-8818	3	Method Blank			Run: G5000W_180130C			02/14/18 10:41		
Radium 226		0.08	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
<b>Lab ID:</b> C18010501-002GMS	Sample Matrix Spike			Run: G5000W_180130C			02/14/18 10:41			
Radium 226		14	pCi/L	70		70	130			
<b>Lab ID:</b> C18010501-002GMSD	Sample Matrix Spike Duplicate			Run: G5000W_180130C			02/14/18 10:41			
Radium 226		17	pCi/L	82		70	130	16	20	

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 02/23/18

Work Order: C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E908.0</b>										Batch: RA-TH-ISO-2669
<b>Lab ID: LCS-RA-TH-ISO-2669</b>	Laboratory Control Sample									
Thorium 230		12	pCi/L		101	80	120			02/02/18 10:26
<b>Lab ID: C18010399-003CMS</b>	Sample Matrix Spike									
Thorium 230		15	pCi/L		65	70	130			02/02/18 10:26 S
<b>Lab ID: C18010399-003CMSD</b>	Sample Matrix Spike Duplicate									
Thorium 230		24	pCi/L		107	70	130	49	20	02/02/18 10:26 R
- For all R qualified analytes the RERs are less than the limit of 2.0.										
<b>Lab ID: MB-RA-TH-ISO-2669</b>	3	Method Blank								
Thorium 230		0.2	pCi/L							Run: EGG-ORTEC_2_180130A 02/06/18 17:12
Thorium 230 precision (±)		0.08	pCi/L							
Thorium 230 MDC		0.09	pCi/L							
<b>Method: E908.0</b>										Batch: RA-TH-ISO-2673
<b>Lab ID: LCS-RA-TH-ISO-2673</b>	Laboratory Control Sample									
Thorium 230		5.4	pCi/L		91	80	120			Run: EGG-ORTEC_2_180206A 02/16/18 10:13
<b>Lab ID: C18010735-011CMS</b>	Sample Matrix Spike									
Thorium 230		20	pCi/L		100	70	130			Run: EGG-ORTEC_2_180206A 02/16/18 10:13
<b>Lab ID: C18010735-011CMSD</b>	Sample Matrix Spike Duplicate									
Thorium 230		20	pCi/L		99	70	130	2.1	20	Run: EGG-ORTEC_2_180206A 02/16/18 10:13
<b>Lab ID: MB-RA-TH-ISO-2673</b>	3	Method Blank								
Thorium 230		0.1	pCi/L							Run: EGG-ORTEC_2_180206A 02/16/18 10:13 U
Thorium 230 precision (±)		0.1	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 02/23/18

Work Order: C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0										Batch: PB-210-0898
Lab ID: LCS-PB-210-0898		Laboratory Control Sample								Run: PACKARD 3100TR_180118B 01/25/18 10:39
Lead 210		20	pCi/L		95	80	120			
Lab ID: MB-PB-210-0898	3	Method Blank								Run: PACKARD 3100TR_180118B 01/25/18 11:37
Lead 210		-0.2	pCi/L							U
Lead 210 precision (±)		0.6	pCi/L							
Lead 210 MDC		1	pCi/L							
Lab ID: C18010320-001CMS		Sample Matrix Spike								Run: PACKARD 3100TR_180118B 01/25/18 20:58
Lead 210		38	pCi/L		88	70	130			
Lab ID: C18010320-001CMSD		Sample Matrix Spike Duplicate								Run: PACKARD 3100TR_180118B 01/25/18 21:59
Lead 210		43	pCi/L		102	70	130	14	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/23/18

Project: Zone 3

Work Order: C18010515

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: RA-05</b>										Batch: RA228-5710
<b>Lab ID: LCS-228-RA226-8818</b>	Laboratory Control Sample									
Radium 228		8.7	pCi/L	84		80	120			Run: TENNELEC-3_180130A 02/09/18 12:32
<b>Lab ID: MB-RA226-8818</b>	3	Method Blank								
Radium 228		0.6	pCi/L							Run: TENNELEC-3_180130A 02/09/18 12:32
Radium 228 precision (±)		0.8	pCi/L							U
Radium 228 MDC		1	pCi/L							
<b>Lab ID: C18010508-002FMS</b>	Sample Matrix Spike									
Radium 228		15	pCi/L	76		70	130			Run: TENNELEC-3_180130A 02/09/18 14:03
<b>Lab ID: C18010508-002FMSD</b>	Sample Matrix Spike Duplicate									
Radium 228		16	pCi/L	84		70	130	10.0	20	Run: TENNELEC-3_180130A 02/09/18 14:03

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



## ANALYTICAL SUMMARY REPORT

February 27, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18010559      Quote ID: C5148 - Quarterly Long List  
Project Name: Zone 3

Energy Laboratories, Inc. Casper WY received the following 7 samples for United Nuclear Corporation on 1/19/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18010559-001	717	01/16/18 09:06	01/19/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Acidity, Total as CaCO3 Acidity, Total as CaCO3 Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18010559-002	717 Duplicate	01/16/18 09:51	01/19/18	Aqueous	Same As Above
C18010559-003	MW-7	01/16/18 13:41	01/19/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics





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## ANALYTICAL SUMMARY REPORT

C18010559-004	NW-3	01/16/18 16:15 01/19/18	Aqueous	Same As Above
C18010559-005	Rinsate	01/16/18 17:07 01/19/18	Aqueous	Same As Above
C18010559-006	Field Blank	01/16/18 17:17 01/19/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved 624-Purgeable Organics 624-Purgeable Organics
C18010559-007	719	01/17/18 10:00 01/19/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.02.27 11:51:20 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone 3  
**Work Order:** C18010559

**Report Date:** 02/27/18

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/15/18

Project: Zone 3

Work Order: C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B Analytical Run: MANTECH_180122C										
Lab ID: ICV	Initial Calibration Verification Standard									
pH		6.92	s.u.	0.010	101	98	102			01/22/18 17:16
Method: A2320 B Batch: R231526										
Lab ID: MBLK	Method Blank									
Alkalinity, Total as CaCO <sub>3</sub>		2	mg/L	1				Run: MANTECH_180122C		01/22/18 17:22
Method: A2320 B Batch: R231526										
Lab ID: LCS	Laboratory Control Sample									
Alkalinity, Total as CaCO <sub>3</sub>		248	mg/L	5.0	98	90	110	Run: MANTECH_180122C		01/22/18 17:31
Method: A2320 B Batch: R231526										
Lab ID: C18010559-001ADUP	Sample Duplicate									
Alkalinity, Total as CaCO <sub>3</sub>		ND	mg/L	5.0				Run: MANTECH_180122C		01/22/18 19:08 10
Method: A2320 B Analytical Run: MANTECH_180123C										
Lab ID: ICV	Initial Calibration Verification Standard									
pH		6.91	s.u.	0.010	101	98	102			01/23/18 17:41
Method: A2320 B Batch: R231564										
Lab ID: MBLK	Method Blank									
Alkalinity, Total as CaCO <sub>3</sub>		4	mg/L	1				Run: MANTECH_180123C		01/23/18 17:49
Method: A2320 B Batch: R231564										
Lab ID: LCS	Laboratory Control Sample									
Alkalinity, Total as CaCO <sub>3</sub>		247	mg/L	5.0	97	90	110	Run: MANTECH_180123C		01/23/18 17:58
Method: A2320 B Batch: R231564										
Lab ID: C18010559-007ADUP	Sample Duplicate									
Alkalinity, Total as CaCO <sub>3</sub>		22.4	mg/L	5.0				Run: MANTECH_180123C	1.0	01/23/18 18:13 10

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/15/18

Project: Zone 3

Work Order: C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS180122A
Lab ID: MB-1_180122A		Method Blank					Run: BAL-16_180122B			01/22/18 12:35
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-2_180122A		Laboratory Control Sample					Run: BAL-16_180122B			01/22/18 12:35
Solids, Total Dissolved TDS @ 180 C		1120	mg/L	11	101	90	110			
Lab ID: C18010554-001A DUP		Sample Duplicate					Run: BAL-16_180122B			01/22/18 12:37
Solids, Total Dissolved TDS @ 180 C		469	mg/L	10				1.3	5	
Lab ID: MB-25_180122A		Method Blank					Run: BAL-16_180122B			01/22/18 12:39
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-26_180122A		Laboratory Control Sample					Run: BAL-16_180122B			01/22/18 12:40
Solids, Total Dissolved TDS @ 180 C		1120	mg/L	11	101	90	110			
Lab ID: C18010559-005A DUP		Sample Duplicate					Run: BAL-16_180122B			01/22/18 12:40
Solids, Total Dissolved TDS @ 180 C		21.8	mg/L	10				14	5	R
- Since the difference between the analytical result for the sample and its duplicate is less than the reporting limit, the RPD variance is not considered significant.										
Method: A2540 C										Batch: TDS180124A
Lab ID: MB-1_180124A		Method Blank					Run: BAL-16_180124A			01/24/18 13:21
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-2_180124A		Laboratory Control Sample					Run: BAL-16_180124A			01/24/18 13:21
Solids, Total Dissolved TDS @ 180 C		1100	mg/L	11	99	90	110			
Lab ID: C18010614-001A DUP		Sample Duplicate					Run: BAL-16_180124A			01/24/18 13:23
Solids, Total Dissolved TDS @ 180 C		269	mg/L	10				1.1	5	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/15/18

**Project:** Zone 3

**Work Order:** C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A4500-H B Analytical Run: PHSC_101-C_180122A										
<b>Lab ID:</b> 6.86	Initial Calibration Verification Standard 01/22/18 10:37									
pH		6.86	s.u.	0.010	100	98	102			
<b>Method:</b> A4500-H B Batch: R231492										
<b>Lab ID:</b> C18010559-002ADUP	Sample Duplicate Run: PHSC_101-C_180122A 01/22/18 13:02									
pH		3.22	s.u.	0.010				1.5	1.5	R
<b>Method:</b> A4500-H B Analytical Run: PHSC_101-C_180123A										
<b>Lab ID:</b> 6.86	Initial Calibration Verification Standard 01/23/18 09:49									
pH		6.90	s.u.	0.010	101	98	102			
<b>Method:</b> A4500-H B Batch: R231546										
<b>Lab ID:</b> C18010559-007ADUP	Sample Duplicate Run: PHSC_101-C_180123A 01/23/18 11:31									
pH		5.73	s.u.	0.010				0.3	1.5	

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/15/18

Project: Zone 3

Work Order: C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G								Analytical Run: FIA201-C_180122A		
Lab ID: ICV		Initial Calibration Verification Standard							01/22/18 09:57	
Nitrogen, Ammonia as N		1.04	mg/L	0.050	104	90	110			
Method: A4500-NH3 G										Batch: R231500
Lab ID: MBLK		Method Blank				Run: FIA201-C_180122A			01/22/18 09:56	
Nitrogen, Ammonia as N		ND	mg/L	0.009						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_180122A			01/22/18 09:59	
Nitrogen, Ammonia as N		1.07	mg/L	0.050	108	90	110			
Lab ID: C18010559-003EMS		Sample Matrix Spike				Run: FIA201-C_180122A			01/22/18 10:33	
Nitrogen, Ammonia as N		1.26	mg/L	0.050	88	90	110			S
Lab ID: C18010559-003EMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_180122A			01/22/18 10:35	
Nitrogen, Ammonia as N		1.36	mg/L	0.050	98	90	110	7.7		10
Lab ID: C18010559-004EMS		Sample Matrix Spike				Run: FIA201-C_180122A			01/22/18 10:41	
Nitrogen, Ammonia as N		1.19	mg/L	0.050	94	90	110			
Lab ID: C18010559-004EMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_180122A			01/22/18 10:42	
Nitrogen, Ammonia as N		1.20	mg/L	0.050	95	90	110	0.8		10
Method: A4500-NH3 G								Analytical Run: FIA201-C_180126A		
Lab ID: ICV		Initial Calibration Verification Standard							01/26/18 14:25	
Nitrogen, Ammonia as N		1.04	mg/L	0.050	104	90	110			
Method: A4500-NH3 G										Batch: R231733
Lab ID: MBLK		Method Blank				Run: FIA201-C_180126A			01/26/18 14:24	
Nitrogen, Ammonia as N		ND	mg/L	0.009						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_180126A			01/26/18 14:27	
Nitrogen, Ammonia as N		1.00	mg/L	0.050	101	90	110			
Lab ID: C18010581-001CMS		Sample Matrix Spike				Run: FIA201-C_180126A			01/26/18 14:29	
Nitrogen, Ammonia as N		1.07	mg/L	0.050	95	90	110			
Lab ID: C18010581-001CMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_180126A			01/26/18 14:30	
Nitrogen, Ammonia as N		1.04	mg/L	0.050	92	90	110	2.9		10

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 3

**Report Date:** 02/15/18

**Work Order:** C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E300.0										Analytical Run: IC3-C_180125A
<b>Lab ID:</b> ICV	2	Initial Calibration Verification Standard								01/24/18 17:04
Chloride		9.99	mg/L	1.0	100	90	110			
Sulfate		41.0	mg/L	1.0	102	90	110			
<b>Method:</b> E300.0										Batch: R231660
<b>Lab ID:</b> ICB	2	Method Blank								Run: IC3-C_180125A 01/24/18 17:22
Chloride		ND	mg/L	0.09						
Sulfate		ND	mg/L	0.10						
<b>Lab ID:</b> LFB	2	Laboratory Fortified Blank								Run: IC3-C_180125A 01/24/18 17:40
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		41.2	mg/L	1.0	103	90	110			
<b>Lab ID:</b> C18010554-005AMS	2	Sample Matrix Spike								Run: IC3-C_180125A 01/25/18 03:04
Chloride		199	mg/L	1.0	103	80	120			
Sulfate		1070	mg/L	4.2	104	80	120			
<b>Lab ID:</b> C18010554-005AMSD	2	Sample Matrix Spike Duplicate								Run: IC3-C_180125A 01/25/18 03:22
Chloride		198	mg/L	1.0	102	80	120	0.8	20	
Sulfate		1070	mg/L	4.2	102	80	120	0.5	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/15/18

Project: Zone 3

Work Order: C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2 Analytical Run: FIA201-C_180123A										
Lab ID: ICV		Initial Calibration Verification Standard								01/23/18 11:33
Nitrogen, Nitrate+Nitrite as N		1.01	mg/L	0.010	101	90	110			
Method: E353.2 Batch: R231561										
Lab ID: MBLK		Method Blank								01/23/18 11:34
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						
Run: FIA201-C_180123A										
Lab ID: LFB		Laboratory Fortified Blank								01/23/18 11:35
Nitrogen, Nitrate+Nitrite as N		0.900	mg/L	0.010	91	90	110			
Run: FIA201-C_180123A										
Lab ID: C18010553-001CMS		Sample Matrix Spike								01/23/18 11:58
Nitrogen, Nitrate+Nitrite as N		1.63	mg/L	0.010	103	90	110			
Run: FIA201-C_180123A										
Lab ID: C18010553-001CMSD		Sample Matrix Spike Duplicate								01/23/18 11:59
Nitrogen, Nitrate+Nitrite as N		1.63	mg/L	0.010	103	90	110	0.0	10	
Method: E353.2 Analytical Run: FIA201-C_180202A										
Lab ID: ICV		Initial Calibration Verification Standard								02/02/18 12:11
Nitrogen, Nitrate+Nitrite as N		1.01	mg/L	0.010	101	90	110			
Method: E353.2 Batch: R231948										
Lab ID: MBLK		Method Blank								02/02/18 12:12
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						
Run: FIA201-C_180202A										
Lab ID: LFB		Laboratory Fortified Blank								02/02/18 12:14
Nitrogen, Nitrate+Nitrite as N		1.01	mg/L	0.010	102	90	110			
Run: FIA201-C_180202A										
Lab ID: C18020016-007DMS		Sample Matrix Spike								02/02/18 12:51
Nitrogen, Nitrate+Nitrite as N		9.65	mg/L	0.050	96	90	110			
Run: FIA201-C_180202A										
Lab ID: C18020016-007DMSD		Sample Matrix Spike Duplicate								02/02/18 12:52
Nitrogen, Nitrate+Nitrite as N		9.65	mg/L	0.050	96	90	110	0.0	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/31/18

Project: Zone 3

Work Order: C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> Analytical Run: ICP204-B_180124A										
<b>Lab ID: ICV</b>	4	Continuing Calibration Verification Standard								01/24/18 13:45
Calcium		24.9	mg/L	1.0	100	95	105			
Magnesium		25.1	mg/L	1.0	100	95	105			
Potassium		24.9	mg/L	1.0	99	95	105			
Sodium		24.8	mg/L	1.0	99	95	105			
<b>Method: E200.7</b> Batch: R293560										
<b>Lab ID: MB-7400DIS180124A</b>	4	Method Blank								01/24/18 13:52
Calcium		ND	mg/L	0.1						
Magnesium		ND	mg/L	0.006						
Potassium		ND	mg/L	0.09						
Sodium		0.10	mg/L	0.04						
<b>Lab ID: LFB-7400DIS180124A</b>	4	Laboratory Fortified Blank								01/24/18 14:00
Calcium		48.9	mg/L	1.0	98	85	115			
Magnesium		48.9	mg/L	1.0	98	85	115			
Potassium		49.3	mg/L	1.0	99	85	115			
Sodium		48.6	mg/L	1.0	97	85	115			
<b>Lab ID: C18010559-002BMS2</b>	4	Sample Matrix Spike								01/24/18 16:17
Calcium		933	mg/L	1.1	96	70	130			
Magnesium		1020	mg/L	1.0	102	70	130			
Potassium		504	mg/L	1.0	100	70	130			
Sodium		675	mg/L	3.4	99	70	130			
<b>Lab ID: C18010559-002BMSD</b>	4	Sample Matrix Spike Duplicate								01/24/18 16:21
Calcium		927	mg/L	1.1	95	70	130	0.7	20	
Magnesium		1010	mg/L	1.0	100	70	130	0.5	20	
Potassium		502	mg/L	1.0	100	70	130	0.4	20	
Sodium		671	mg/L	3.4	98	70	130	0.5	20	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/31/18

Project: Zone 3

Work Order: C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> Analytical Run: ICP204-B_180125A										
<b>Lab ID: ICV</b>	2	Continuing Calibration Verification Standard								01/25/18 11:36
Aluminum		2.48	mg/L	0.10	99	95	105			
Beryllium		1.25	mg/L	0.010	100	95	105			
<b>Method: E200.7</b> Batch: 117814										
<b>Lab ID: MB-117814</b>	2	Method Blank								01/25/18 19:26
Aluminum		ND	mg/L	0.006						
Beryllium		ND	mg/L	0.0002						
<b>Lab ID: LCS-117814</b>	2	Laboratory Control Sample								01/25/18 19:30
Aluminum		2.58	mg/L	0.10	103	85	115			
Beryllium		0.235	mg/L	0.010	94	85	115			
<b>Lab ID: B18011616-002AMS3</b>	2	Sample Matrix Spike								01/25/18 20:46
Aluminum		2.71	mg/L	0.030	100	70	130			
Beryllium		0.242	mg/L	0.0010	97	70	130			
<b>Lab ID: B18011616-002AMSD</b>	2	Sample Matrix Spike Duplicate								01/25/18 20:50
Aluminum		2.69	mg/L	0.030	99	70	130	0.5	20	
Beryllium		0.240	mg/L	0.0010	96	70	130	0.8	20	

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/31/18

Project: Zone 3

Work Order: C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>		Analytical Run: ICPMS207-B_180124A								
<b>Lab ID: QCS</b>	8	Initial Calibration Verification Standard							01/24/18 15:59	
Cadmium		0.0250	mg/L	0.0010	100	90	110			
Cobalt		0.0495	mg/L	0.010	99	90	110			
Lead		0.0490	mg/L	0.010	98	90	110			
Manganese		0.245	mg/L	0.010	98	90	110			
Molybdenum		0.0474	mg/L	0.0050	95	90	110			
Nickel		0.0496	mg/L	0.010	99	90	110			
Uranium		0.0209	mg/L	0.0010	105	90	110			
Vanadium		0.0494	mg/L	0.10	99	90	110			
<b>Method: E200.8</b>		Batch: 117814								
<b>Lab ID: MB-117814</b>	10	Method Blank							Run: ICPMS207-B_180124A	
Aluminum		ND	mg/L	0.008						01/24/18 22:10
Beryllium		ND	mg/L	0.00002						
Cadmium		0.00002	mg/L	0.00001						
Cobalt		0.00002	mg/L	0.00002						
Lead		0.00010	mg/L	0.00007						
Manganese		ND	mg/L	0.0004						
Molybdenum		0.002	mg/L	0.00005						
Nickel		ND	mg/L	0.00006						
Uranium		0.00008	mg/L	0.00002						
Vanadium		ND	mg/L	0.0004						
<b>Lab ID: LCS-117814</b>	10	Laboratory Control Sample							Run: ICPMS207-B_180124A	
Aluminum		2.27	mg/L	0.010	91	85	115			01/24/18 22:21
Beryllium		0.230	mg/L	0.0010	92	85	115			
Cadmium		0.244	mg/L	0.0010	98	85	115			
Cobalt		0.459	mg/L	0.0010	92	85	115			
Lead		0.490	mg/L	0.0010	98	85	115			
Manganese		2.40	mg/L	0.0010	96	85	115			
Molybdenum		0.475	mg/L	0.0050	95	85	115			
Nickel		0.478	mg/L	0.0010	96	85	115			
Uranium		0.492	mg/L	0.0010	98	85	115			
Vanadium		0.497	mg/L	0.010	99	85	115			
<b>Lab ID: B18011574-001CMS3</b>	10	Sample Matrix Spike							Run: ICPMS207-B_180124A	
Aluminum		2.27	mg/L	0.030	89	70	130			01/24/18 22:24
Beryllium		0.220	mg/L	0.0010	88	70	130			
Cadmium		0.238	mg/L	0.0010	95	70	130			
Cobalt		0.450	mg/L	0.0050	90	70	130			
Lead		0.487	mg/L	0.0010	97	70	130			
Manganese		2.39	mg/L	0.0010	95	70	130			
Molybdenum		0.502	mg/L	0.0010	100	70	130			
Nickel		0.467	mg/L	0.0050	93	70	130			
Uranium		0.494	mg/L	0.00030	98	70	130			
Vanadium		0.502	mg/L	0.010	99	70	130			

### Qualifiers:

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 01/31/18

Project: Zone 3

Work Order: C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 117814
Lab ID: B18011574-001CMS3	10	Sample Matrix Spike					Run: ICPMS207-B_180124A			01/24/18 22:24
Lab ID: B18011574-001CMSD	10	Sample Matrix Spike Duplicate					Run: ICPMS207-B_180124A			01/24/18 22:26
Aluminum		2.30	mg/L	0.030	90	70	130	1.5	20	
Beryllium		0.223	mg/L	0.0010	89	70	130	1.3	20	
Cadmium		0.237	mg/L	0.0010	95	70	130	0.2	20	
Cobalt		0.453	mg/L	0.0050	91	70	130	0.6	20	
Lead		0.490	mg/L	0.0010	98	70	130	0.6	20	
Manganese		2.40	mg/L	0.0010	95	70	130	0.4	20	
Molybdenum		0.488	mg/L	0.0010	97	70	130	2.8	20	
Nickel		0.469	mg/L	0.0050	93	70	130	0.3	20	
Uranium		0.492	mg/L	0.00030	98	70	130	0.4	20	
Vanadium		0.504	mg/L	0.010	100	70	130	0.4	20	
Lab ID: B18011616-002AMS3	10	Sample Matrix Spike					Run: ICPMS207-B_180124A			01/24/18 23:09
Aluminum		2.44	mg/L	0.030	98	70	130			
Beryllium		0.214	mg/L	0.0010	86	70	130			
Cadmium		0.243	mg/L	0.0010	97	70	130			
Cobalt		0.451	mg/L	0.0050	90	70	130			
Lead		0.490	mg/L	0.0010	98	70	130			
Manganese		2.41	mg/L	0.0010	96	70	130			
Molybdenum		0.494	mg/L	0.0010	99	70	130			
Nickel		0.480	mg/L	0.0050	96	70	130			
Uranium		0.489	mg/L	0.00030	98	70	130			
Vanadium		0.502	mg/L	0.010	100	70	130			
Lab ID: B18011616-002AMSD	10	Sample Matrix Spike Duplicate					Run: ICPMS207-B_180124A			01/24/18 23:11
Aluminum		2.48	mg/L	0.030	99	70	130	1.7	20	
Beryllium		0.216	mg/L	0.0010	86	70	130	0.9	20	
Cadmium		0.242	mg/L	0.0010	97	70	130	0.4	20	
Cobalt		0.454	mg/L	0.0050	91	70	130	0.8	20	
Lead		0.491	mg/L	0.0010	98	70	130	0.1	20	
Manganese		2.41	mg/L	0.0010	96	70	130	0.1	20	
Molybdenum		0.493	mg/L	0.0010	99	70	130	0.3	20	
Nickel		0.479	mg/L	0.0050	96	70	130	0.2	20	
Uranium		0.492	mg/L	0.00030	98	70	130	0.7	20	
Vanadium		0.504	mg/L	0.010	101	70	130	0.3	20	

### Qualifiers:

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 01/31/18

**Project:** Zone 3

**Work Order:** C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> Analytical Run: ICPMS207-B_180125A										
<b>Lab ID: QCS</b>	3	Initial Calibration Verification Standard 01/25/18 11:06								
Aluminum		0.242	mg/L	0.10	97	90	110			
Beryllium		0.0250	mg/L	0.0010	100	90	110			
Molybdenum		0.0475	mg/L	0.0050	95	90	110			
<b>Method: E200.8</b> Batch: 117814										
<b>Lab ID: MB-117814</b>	3	Method Blank Run: ICPMS207-B_180125A 01/25/18 16:44								
Aluminum		ND	mg/L	0.008						
Beryllium		ND	mg/L	0.00002						
Molybdenum		0.002	mg/L	0.00005						
<b>Method: E200.8</b> Analytical Run: ICPMS207-B_180126A										
<b>Lab ID: QCS</b>		Initial Calibration Verification Standard 01/26/18 11:29								
Molybdenum		0.0476	mg/L	0.0050	95	90	110			
<b>Method: E200.8</b> Batch: 117814										
<b>Lab ID: MB-117814</b>		Method Blank Run: ICPMS207-B_180126A 01/26/18 12:20								
Molybdenum		ND	mg/L	0.00005						

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Report Date: 02/05/18

Project: Zone 3

Work Order: C18010559

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 B									
tical Run: SELENIUM PSA MILLENIUM_180129B									
Lab ID: ICV-40396	Initial Calibration Verification Standard								01/29/18 17:47
Selenium-IV	0.0180	mg/L	0.0010	90	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								01/29/18 18:15
Selenium-IV	0.0193	mg/L	0.0010	96	90	110			
Method: A3114 B									
Batch: 40396									
Lab ID: MB-40396	Method Blank								01/29/18 17:52
Selenium-IV	ND	mg/L	0.0006						
Lab ID: LFB-40396	Laboratory Fortified Blank								01/29/18 17:53
Selenium-IV	0.0197	mg/L	0.0010	99	85	115			
Lab ID: H18010218-007A	Method Detection Level								01/29/18 17:55
Selenium-IV	0.000711	mg/L	0.0010	71	50	150			
Lab ID: H18010218-008A	Method Detection Level								01/29/18 17:56
Selenium-IV	0.000675	mg/L	0.0010	68	50	150			
Lab ID: C18010559-005DMS	Sample Matrix Spike								01/29/18 18:35
Selenium-IV	0.0191	mg/L	0.0010	95	70	130			
Lab ID: C18010559-005DMSD	Sample Matrix Spike Duplicate								01/29/18 18:37
Selenium-IV	0.0193	mg/L	0.0010	96	70	130	1.0	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/05/18

**Project:** Zone 3

**Work Order:** C18010559

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E1632AM			Analytical Run: ARSENIC SPECIATION_180130A						
<b>Lab ID:</b> AS-ICV 25ppb-1/30/2018	Initial Calibration Verification Standard								01/30/18 14:30
Arsenic-III	24.5	ug/L	5.0	98	87.6	114			
<b>Lab ID:</b> AS-50.0-1/30/2018	Continuing Calibration Verification Standard								01/30/18 14:42
Arsenic-III	48.5	ug/L	5.0	97	85	115			
<b>Lab ID:</b> AS-50.0-1/30/2018	Continuing Calibration Verification Standard								01/30/18 18:58
Arsenic-III	43.7	ug/L	5.0	87	85	115			
<b>Lab ID:</b> AS-50.0-1/30/2018	Continuing Calibration Verification Standard								01/30/18 21:58
Arsenic-III	47.6	ug/L	5.0	95	85	115			
<b>Method:</b> E1632AM			Batch: R132053						
<b>Lab ID:</b> AS-LFB 50ppb-1/30/2018	Laboratory Fortified Blank								01/30/18 15:06
Arsenic-III	44.1	ug/L	5.0	88	55	146			
<b>Lab ID:</b> ICB	Method Blank								01/30/18 15:18
Arsenic-III	ND	ug/L	0.2						
<b>Lab ID:</b> C18010559-001D MS	Sample Matrix Spike								01/30/18 19:34
Arsenic-III	44.8	ug/L	5.0	90	55	146			
<b>Lab ID:</b> C18010559-001D MSD	Sample Matrix Spike Duplicate								01/30/18 19:46
Arsenic-III	45.8	ug/L	5.0	92	55	146	2.3	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 01/31/18

Work Order: C18010559

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
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Method: E624

Analytical Run: R293682

Lab ID: CCV012518\_

Continuing Calibration Verification Standard

01/25/18 09:48

Bromodichloromethane	5.17	ug/L	0.50	103	70	130			
Bromoform	3.96	ug/L	0.50	79	70	130			
Chlorodibromomethane	5.43	ug/L	0.50	109	70	130			
Chloroform	5.00	ug/L	0.50	100	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	103	71	139			
Surr: p-Bromofluorobenzene			0.50	95	80	127			
Surr: Toluene-d8			0.50	117	80	123			

Method: E624

Batch: R293682

Lab ID: LCS012518\_

Laboratory Control Sample

Run: VOA5975C.L\_180125B

01/25/18 10:24

Bromodichloromethane	5.26	ug/L	0.50	105	74	128			
Bromoform	4.13	ug/L	0.50	74	66	128			
Chlorodibromomethane	5.34	ug/L	0.50	107	74	125			
Chloroform	5.58	ug/L	0.50	112	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	107	71	139			
Surr: p-Bromofluorobenzene			0.50	95	80	127			
Surr: Toluene-d8			0.50	112	80	123			

Lab ID: MBLK012518\_

Method Blank

Run: VOA5975C.L\_180125B

01/25/18 11:30

Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	110	71	139			
Surr: p-Bromofluorobenzene			0.50	101	80	127			
Surr: Toluene-d8			0.50	100	80	123			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 01/31/18

Work Order: C18010559

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>							Analytical Run: R293701		
<b>Lab ID: CCV012618</b>	Continuing Calibration Verification Standard						01/26/18 09:30		
Bromodichloromethane	4.79	ug/L	0.50	96	70	130			
Bromoform	5.18	ug/L	0.50	104	70	130			
Chlorodibromomethane	4.76	ug/L	0.50	95	70	130			
Chloroform	5.10	ug/L	0.50	102	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	87	71	139			
Surr: p-Bromofluorobenzene			0.50	93	80	127			
Surr: Toluene-d8			0.50	96	80	123			
<b>Method: E624</b>							Batch: R293701		
<b>Lab ID: LCS012618</b>	Laboratory Control Sample						Run: 5971A.I_180126A		
							01/26/18 10:06		
Bromodichloromethane	5.07	ug/L	0.50	101	74	128			
Bromoform	5.05	ug/L	0.50	101	66	128			
Chlorodibromomethane	5.12	ug/L	0.50	102	74	125			
Chloroform	5.03	ug/L	0.50	101	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	92	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	97	80	123			
<b>Lab ID: BLK012618</b>	Method Blank						Run: 5971A.I_180126A		
							01/26/18 11:05		
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	86	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	96	80	123			
<b>Lab ID: b18011393-006gms</b>	Sample Matrix Spike						Run: 5971A.I_180126A		
							01/26/18 17:27		
Bromodichloromethane	10.3	ug/L	1.0	103	74	128			
Bromoform	9.62	ug/L	1.0	96	66	128			
Chlorodibromomethane	10.0	ug/L	1.0	100	74	125			
Chloroform	10.5	ug/L	1.0	105	68	124			
Surr: 1,2-Dichloroethane-d4			1.0	90	71	139			
Surr: p-Bromofluorobenzene			1.0	92	80	127			
Surr: Toluene-d8			1.0	99	80	123			
- The sample was received in the laboratory with a pH > 2. The pH was 7.									
<b>Lab ID: b18011393-006gmsd</b>	Sample Matrix Spike Duplicate						Run: 5971A.I_180126A		
							01/26/18 17:56		
Bromodichloromethane	10.6	ug/L	1.0	106	74	128	2.8	20	
Bromoform	10.5	ug/L	1.0	105	66	128	9.0	20	
Chlorodibromomethane	10.4	ug/L	1.0	104	74	125	4.0	20	
Chloroform	10.8	ug/L	1.0	108	68	124	3.2	20	
Surr: 1,2-Dichloroethane-d4			1.0	95	71	139			
Surr: p-Bromofluorobenzene			1.0	93	80	127			
Surr: Toluene-d8			1.0	97	80	123			
- The sample was received in the laboratory with a pH > 2. The pH was 7.									

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 3

**Report Date:** 02/26/18

**Work Order:** C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-1065-1066
<b>Lab ID: MB-GA-1065</b>	3	Method Blank					Run: G542M-2_180213B		02/16/18 09:40	
Gross Alpha minus Rn & U		0.5	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.4	pCi/L							
Gross Alpha minus Rn & U MDC		0.6	pCi/L							
<b>Lab ID: LCS-GA-1065</b>		Laboratory Control Sample					Run: G542M-2_180213B		02/16/18 09:40	
Gross Alpha minus Rn & U		35	pCi/L	104		80	120			
<b>Lab ID: C18010739-001EMS</b>		Sample Matrix Spike					Run: G542M-2_180213B		02/16/18 09:38	
Gross Alpha minus Rn & U		100	pCi/L	91		70	130			
<b>Lab ID: C18010739-001EMSD</b>		Sample Matrix Spike Duplicate					Run: G542M-2_180213B		02/16/18 09:38	
Gross Alpha minus Rn & U		97	pCi/L	80		70	130	3.6	20	
<b>Lab ID: MB-GA-1066</b>	3	Method Blank					Run: G542M-2_180213B		02/16/18 11:21	
Gross Alpha minus Rn & U		0.2	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.3	pCi/L							
Gross Alpha minus Rn & U MDC		0.5	pCi/L							
<b>Lab ID: C18010671-001EDUP</b>	3	Sample Duplicate					Run: G542M-2_180213B		02/16/18 11:21	
Gross Alpha minus Rn & U		2.2	pCi/L					8.4	20	
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.72	pCi/L							
Gross Alpha minus Rn & U MDC		0.52	pCi/L							
<b>Lab ID: C18010671-001EDUP</b>	3	Sample Duplicate					Run: G542M-2_180213B		02/16/18 11:21	
Gross Alpha minus Rn & U		2.0	pCi/L					17	20	
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.67	pCi/L							
Gross Alpha minus Rn & U MDC		0.52	pCi/L							

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 02/26/18

Project: Zone 3

Work Order: C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E903.0</b>										Batch: RA226-8819R
<b>Lab ID: LCS-RA226-8819</b>	Laboratory Control Sample									
Radium 226		8.6	pCi/L	85		80	120			02/21/18 04:47
<b>Lab ID: MB-RA226-8819</b>	3	Method Blank								
Radium 226		0.08	pCi/L							02/21/18 04:47
Radium 226 precision (±)		0.09	pCi/L							U
Radium 226 MDC		0.1	pCi/L							
<b>Lab ID: C18010671-001EMS</b>	Sample Matrix Spike									
Radium 226		18	pCi/L	82		70	130			02/21/18 06:34
<b>Lab ID: C18010671-001EMSD</b>	Sample Matrix Spike Duplicate									
Radium 226		16	pCi/L	74		70	130	8.8	20	02/21/18 06:34

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/26/18

**Project:** Zone 3

**Work Order:** C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: E908.0								Batch: RA-TH-ISO-2672			
Lab ID: LCS-RA-TH-ISO-2672	Laboratory Control Sample			Run: EGG-ORTEC_180202A			02/07/18 14:23				
Thorium 230	11	pCi/L		96	80	120					
Lab ID: C18010671-002EMS	Sample Matrix Spike			Run: EGG-ORTEC_180202A			02/07/18 14:23				
Thorium 230	20	pCi/L		86	70	130					
Lab ID: C18010671-002EMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_180202A			02/07/18 14:23				
Thorium 230	24	pCi/L		103	70	130	18	20			
Lab ID: MB-RA-TH-ISO-2672	3	Method Blank			Run: EGG-ORTEC_180202A			02/07/18 14:23			
Thorium 230		0.07	pCi/L							U	
Thorium 230 precision (±)		0.1	pCi/L								
Thorium 230 MDC		0.2	pCi/L								
Method: E908.0								Batch: RA-TH-ISO-2673			
Lab ID: LCS-RA-TH-ISO-2673	Laboratory Control Sample			Run: EGG-ORTEC_2_180206A			02/16/18 10:13				
Thorium 230	5.4	pCi/L		91	80	120					
Lab ID: C18010735-011CMS	Sample Matrix Spike			Run: EGG-ORTEC_2_180206A			02/16/18 10:13				
Thorium 230	20	pCi/L		100	70	130					
Lab ID: C18010735-011CMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_2_180206A			02/16/18 10:13				
Thorium 230	20	pCi/L		99	70	130	2.1	20			
Lab ID: MB-RA-TH-ISO-2673	3	Method Blank			Run: EGG-ORTEC_2_180206A			02/16/18 10:13			
Thorium 230		0.1	pCi/L							U	
Thorium 230 precision (±)		0.1	pCi/L								
Thorium 230 MDC		0.2	pCi/L								

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 02/26/18

Work Order: C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E909.0</b>										Batch: PB-210-0901
<b>Lab ID: LCS-PB-210-0901</b>	Laboratory Control Sample									Run: TRICARB LSC_180126A 01/30/18 20:52
Lead 210		25	pCi/L		118	80	120			
<b>Lab ID: MB-PB-210-0901</b>	3	Method Blank								
Lead 210		-0.2	pCi/L							Run: TRICARB LSC_180126A 01/30/18 21:46
Lead 210 precision (±)		0.8	pCi/L							U
Lead 210 MDC		1	pCi/L							
<b>Lab ID: C18010559-001FMS</b>	Sample Matrix Spike									Run: TRICARB LSC_180126A 01/31/18 10:30
Lead 210		44	pCi/L		94	70	130			
<b>Lab ID: C18010559-001FMSD</b>	Sample Matrix Spike Duplicate									Run: TRICARB LSC_180126A 01/31/18 11:29
Lead 210		49	pCi/L		106	70	130	11	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 02/26/18

**Project:** Zone 3

**Work Order:** C18010559

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> RA-05										Batch: RA228-5711
<b>Lab ID:</b> LCS-228-RA226-8819	Laboratory Control Sample			Run: TENNELEC-3_180131A			02/14/18 12:16			
Radium 228		8.5	pCi/L	91		80	120			
<b>Lab ID:</b> MB-RA226-8819	3	Method Blank			Run: TENNELEC-3_180131A			02/14/18 12:16		
Radium 228		-0.2	pCi/L							U
Radium 228 precision (±)		0.8	pCi/L							
Radium 228 MDC		1	pCi/L							
<b>Lab ID:</b> C18010671-002EMS	Sample Matrix Spike			Run: TENNELEC-3_180131A			02/14/18 12:16			
Radium 228		25	pCi/L	108		70	130			
<b>Lab ID:</b> C18010671-002EMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_180131A			02/14/18 12:16			
Radium 228		22	pCi/L	96		70	130	9.0	20	

### Qualifiers:

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## ANALYTICAL SUMMARY REPORT

February 01, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18010565

Project Name: Zone 3

Energy Laboratories, Inc. Casper WY received the following 6 samples for United Nuclear Corporation on 1/19/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18010565-001	NBL-2	01/16/18 13:20	01/19/18	Aqueous	Alkalinity Anions by Ion Chromatography pH Solids, Total Dissolved
C18010565-002	NW-1	01/17/18 11:30	01/19/18	Aqueous	Same As Above
C18010565-003	NW-4	01/17/18 10:09	01/19/18	Aqueous	Same As Above
C18010565-004	NW-2	01/17/18 10:25	01/19/18	Aqueous	Same As Above
C18010565-005	NW-5	01/17/18 10:40	01/19/18	Aqueous	Acidity, Total as CaCO <sub>3</sub> Alkalinity Anions by Ion Chromatography pH Solids, Total Dissolved
C18010565-006	RW-A	01/17/18 11:00	01/19/18	Aqueous	Alkalinity Anions by Ion Chromatography pH Solids, Total Dissolved

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.02.01 10:26:59 -07:00



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 01/26/18

**Project:** Zone 3

**Work Order:** C18010565

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2320 B										Batch: R231526
<b>Lab ID:</b> MBLK		Method Blank					Run: MANTECH_180122C			01/22/18 20:27
Bicarbonate as HCO <sub>3</sub>		ND	mg/L	1						
<b>Lab ID:</b> LCS		Laboratory Control Sample					Run: MANTECH_180122C			01/22/18 20:35
Alkalinity, Total as CaCO <sub>3</sub>		248	mg/L	5.0	99	90	110			
<b>Lab ID:</b> C18010565-005ADUP		Sample Duplicate					Run: MANTECH_180122C			01/22/18 20:41
Bicarbonate as HCO <sub>3</sub>		ND	mg/L	5.0						10

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 01/26/18

Project: Zone 3

Work Order: C18010565

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C								Batch: TDS180122A		
Lab ID: MB-1_180122A	Method Blank					Run: BAL-16_180122B		01/22/18 12:35		
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-2_180122A	Laboratory Control Sample					Run: BAL-16_180122B		01/22/18 12:35		
Solids, Total Dissolved TDS @ 180 C		1120	mg/L	11	101	90	110			
Lab ID: C18010441-001A DUP	Sample Duplicate					Run: BAL-16_180122B		01/22/18 13:26		
Solids, Total Dissolved TDS @ 180 C		4690	mg/L	40				3.3	5	

### Qualifiers:

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 01/26/18

**Project:** Zone 3

**Work Order:** C18010565

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	A4500-H B							Analytical Run: PHSC_101-C_180122A		
Lab ID:	6.86	Initial Calibration Verification Standard								01/22/18 10:37
pH		6.86	s.u.	0.010	100	98	102			
Method:	A4500-H B							Batch: R231492		
Lab ID:	C18010565-006ADUP	Sample Duplicate				Run: PHSC_101-C_180122A			01/22/18 13:41	
pH		5.84	s.u.	0.010				0.2	1.5	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 01/26/18

Project: Zone 3

Work Order: C18010565

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC3-C_180125A
Lab ID: ICV		Initial Calibration Verification Standard								01/24/18 17:04
Chloride		9.99	mg/L	1.0	100	90	110			
Method: E300.0										Batch: R231660
Lab ID: ICB		Method Blank								Run: IC3-C_180125A
Chloride		ND	mg/L	0.09						01/24/18 17:22
Lab ID: LFB		Laboratory Fortified Blank								Run: IC3-C_180125A
Chloride		10.1	mg/L	1.0	101	90	110			01/24/18 17:40
Lab ID: C18010554-005AMS		Sample Matrix Spike								Run: IC3-C_180125A
Chloride		199	mg/L	1.0	103	80	120			01/25/18 03:04
Lab ID: C18010554-005AMSD		Sample Matrix Spike Duplicate								Run: IC3-C_180125A
Chloride		198	mg/L	1.0	102	80	120	0.8	20	01/25/18 03:22

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

**APPENDIX – D ( 2 OF 2 )**

**SECOND QUARTER**

**LABORATORY QUALITY CONTROL AND**

**PERFORMANCE REPORT**



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## ANALYTICAL SUMMARY REPORT

May 10, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18040172      Quote ID: C5148 - Quarterly Long List  
Project Name: SW Alluvium

Energy Laboratories, Inc. Casper WY received the following 11 samples for United Nuclear Corporation on 4/5/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18040172-001	509-D	04/02/18 08:32	04/05/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18040172-002	EPA-23	04/02/18 09:33	04/05/18	Aqueous	Same As Above
C18040172-003	803	04/02/18 10:22	04/05/18	Aqueous	Same As Above
C18040172-004	808	04/02/18 11:12	04/05/18	Aqueous	Same As Above
C18040172-005	802	04/02/18 11:58	04/05/18	Aqueous	Same As Above
C18040172-006	632	04/02/18 12:40	04/05/18	Aqueous	Same As Above
C18040172-007	801	04/02/18 13:26	04/05/18	Aqueous	Same As Above
C18040172-008	GW-1	04/02/18 14:17	04/05/18	Aqueous	Same As Above
C18040172-009	EPA-28	04/02/18 15:12	04/05/18	Aqueous	Same As Above
C18040172-010	EPA-28 Duplicate	04/02/18 15:55	04/05/18	Aqueous	Same As Above
C18040172-011	624	04/02/18 16:42	04/05/18	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.



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## ANALYTICAL SUMMARY REPORT

Report Approved By:

*Tracey Archer*  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.05.10 12:12:12 -06:00



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**CLIENT:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Work Order:** C18040172

**Report Date:** 05/10/18

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

**Sample ID 509-D:**

Nitrogen, Nitrate+Nitrite as N, reported by method E353.2, does not match the data obtained by method E300.0, which is used as an internal data check. The data from both methods was confirmed by re-analysis. Method E353.2 is analyzed from the sulfuric acid preserved sample and method E300.0 is analyzed from the unpreserved sample. Nitrogen, Nitrate+Nitrite as N by method E300.0 was 15.0 mg/L.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/18/18

**Project:** SW Alluvium

**Work Order:** C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2320 B</b>										
Analytical Run: MANTECH_180408B										
<b>Lab ID: ICV</b>	Initial Calibration Verification Standard									
pH		6.94	s.u.	0.010	101	98	102			04/08/18 16:33
<b>Method: A2320 B</b>										
Batch: R234002										
<b>Lab ID: MBLK</b>	Method Blank									
Bicarbonate as HCO <sub>3</sub>		3	mg/L	1				Run: MANTECH_180408B		04/08/18 16:37
<b>Lab ID: LCS</b>										
Laboratory Control Sample										
Alkalinity, Total as CaCO <sub>3</sub>		246	mg/L	5.0	98	90	110	Run: MANTECH_180408B		04/08/18 16:45
<b>Lab ID: C18040172-002ADUP</b>										
Sample Duplicate										
Bicarbonate as HCO <sub>3</sub>		1280	mg/L	5.0				Run: MANTECH_180408B		04/08/18 18:39
								0.0	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 04/18/18

**Work Order:** C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2540 C</b>										Batch: TDS180406A
<b>Lab ID: MB-1_180406A</b>		Method Blank					Run: BAL-16_180406A			04/06/18 14:10
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
<b>Lab ID: LCS-2_180406A</b>		Laboratory Control Sample					Run: BAL-16_180406A			04/06/18 14:10
Solids, Total Dissolved TDS @ 180 C		1110	mg/L	11	100	90	110			
<b>Lab ID: C18040172-006A DUP</b>		Sample Duplicate					Run: BAL-16_180406A			04/06/18 14:12
Solids, Total Dissolved TDS @ 180 C		6820	mg/L	100				1.6	5	
<b>Lab ID: C18040212-001A DUP</b>		Sample Duplicate					Run: BAL-16_180406A			04/06/18 14:14
Solids, Total Dissolved TDS @ 180 C		1040	mg/L	10				0.2	5	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/18/18

Project: SW Alluvium

Work Order: C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_180406A
Lab ID: 6.86		Initial Calibration Verification Standard								
pH		6.86	s.u.	0.010	100	98	102			04/06/18 09:22
Method: A4500-H B										Batch: R233978
Lab ID: C18040172-004ADUP		Sample Duplicate								
pH		6.58	s.u.	0.010				0.2		04/06/18 11:09
Lab ID: C18040204-002ADUP		Sample Duplicate								
pH		7.51	s.u.	0.010				0.4		04/06/18 11:53

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 04/18/18

**Work Order:** C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A4500-NH3 G</b> Analytical Run: FIA201-C_180406B										
<b>Lab ID: ICV</b>		Initial Calibration Verification Standard								
Nitrogen, Ammonia as N		0.971	mg/L	0.050	97	90	110			
<b>Method: A4500-NH3 G</b> Batch: R233994										
<b>Lab ID: MBLK</b>		Method Blank								
Nitrogen, Ammonia as N		ND	mg/L	0.009						
						Run: FIA201-C_180406B				04/06/18 14:55
<b>Lab ID: LFB</b>		Laboratory Fortified Blank								
Nitrogen, Ammonia as N		0.903	mg/L	0.050	91	90	110			
						Run: FIA201-C_180406B				04/06/18 14:58
<b>Lab ID: C18040172-007EMS</b>		Sample Matrix Spike								
Nitrogen, Ammonia as N		7.73	mg/L	0.25	91	90	110			
						Run: FIA201-C_180406B				04/06/18 15:19
<b>Lab ID: C18040172-007EMSD</b>		Sample Matrix Spike Duplicate								
Nitrogen, Ammonia as N		7.27	mg/L	0.25	81	90	110	6.1	10	S
						Run: FIA201-C_180406B				04/06/18 15:20
<b>Method: A4500-NH3 G</b> Analytical Run: FIA201-C_180411A										
<b>Lab ID: ICV</b>		Initial Calibration Verification Standard								
Nitrogen, Ammonia as N		0.988	mg/L	0.050	99	90	110			
<b>Method: A4500-NH3 G</b> Batch: R234128										
<b>Lab ID: MBLK</b>		Method Blank								
Nitrogen, Ammonia as N		ND	mg/L	0.009						
						Run: FIA201-C_180411A				04/11/18 13:38
<b>Lab ID: LFB</b>		Laboratory Fortified Blank								
Nitrogen, Ammonia as N		0.933	mg/L	0.050	94	90	110			
						Run: FIA201-C_180411A				04/11/18 13:40
<b>Lab ID: C18040172-004EMS</b>		Sample Matrix Spike								
Nitrogen, Ammonia as N		6.92	mg/L	0.25	95	90	110			
						Run: FIA201-C_180411A				04/11/18 13:46
<b>Lab ID: C18040172-004EMSD</b>		Sample Matrix Spike Duplicate								
Nitrogen, Ammonia as N		6.67	mg/L	0.25	90	90	110	3.7	10	
						Run: FIA201-C_180411A				04/11/18 13:47

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ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/18/18

Project: SW Alluvium

Work Order: C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E300.0</b>										Analytical Run: IC2-C_180406A
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								04/06/18 17:51
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		40.6	mg/L	1.0	101	90	110			
<b>Method: E300.0</b>										Batch: R234015
<b>Lab ID: ICB</b>	2	Method Blank								Run: IC2-C_180406A 04/06/18 18:09
Chloride		ND	mg/L	0.03						
Sulfate		ND	mg/L	0.04						
<b>Lab ID: LFB</b>	2	Laboratory Fortified Blank								Run: IC2-C_180406A 04/06/18 18:28
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.1	mg/L	1.0	103	90	110			
<b>Lab ID: C18040171-001AMS</b>	2	Sample Matrix Spike								Run: IC2-C_180406A 04/06/18 23:41
Chloride		12.0	mg/L	1.0	105	80	120			
Sulfate		51.3	mg/L	1.0	104	80	120			
<b>Lab ID: C18040171-001AMSD</b>	2	Sample Matrix Spike Duplicate								Run: IC2-C_180406A 04/06/18 23:59
Chloride		12.1	mg/L	1.0	106	80	120	1.1	20	
Sulfate		52.0	mg/L	1.0	106	80	120	1.5	20	
<b>Lab ID: C18040172-010AMS</b>	2	Sample Matrix Spike								Run: IC2-C_180406A 04/07/18 03:59
Chloride		318	mg/L	2.1	106	80	120			
Sulfate		4020	mg/L	8.3		80	120			A
<b>Lab ID: C18040172-010AMSD</b>	2	Sample Matrix Spike Duplicate								Run: IC2-C_180406A 04/07/18 04:17
Chloride		318	mg/L	2.1	107	80	120	0.1	20	
Sulfate		4010	mg/L	8.3		80	120	0.2	20	A

### Qualifiers:

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ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.  
MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/18/18

**Project:** SW Alluvium

**Work Order:** C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E353.2										Analytical Run: FIA201-C_180406A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									
Nitrogen, Nitrate+Nitrite as N		0.989	mg/L	0.010	99	90	110			04/06/18 11:10
<b>Method:</b> E353.2										Batch: R233992
<b>Lab ID:</b> MBLK	Method Blank									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						04/06/18 11:11
<b>Lab ID:</b> LFB										
Nitrogen, Nitrate+Nitrite as N		1.02	mg/L	0.010	103	90	110			04/06/18 11:12
<b>Lab ID:</b> C18040008-003DMS										
Nitrogen, Nitrate+Nitrite as N		9.19	mg/L	0.050	104	90	110			04/06/18 11:16
<b>Lab ID:</b> C18040008-003DMSD										
Nitrogen, Nitrate+Nitrite as N		9.09	mg/L	0.050	102	90	110	1.1	10	04/06/18 11:17
<b>Lab ID:</b> C18040172-004EMS										
Nitrogen, Nitrate+Nitrite as N		30.6	mg/L	0.10	113	90	110			04/06/18 11:31 S
<b>Lab ID:</b> C18040172-004EMSD										
Nitrogen, Nitrate+Nitrite as N		29.5	mg/L	0.10	102	90	110	3.7	10	04/06/18 11:33
<b>Lab ID:</b> C18040176-001CMS										
Nitrogen, Nitrate+Nitrite as N		4.17	mg/L	0.010	119	90	110			04/06/18 11:48 S
<b>Lab ID:</b> C18040176-001CMSD										
Nitrogen, Nitrate+Nitrite as N		4.11	mg/L	0.010	113	90	110	1.5	10	04/06/18 11:49 S

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/16/18

Project: SW Alluvium

Work Order: C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	E200.7									Analytical Run: ICP203-B_180409A
Lab ID:	ICV	4	Continuing Calibration Verification Standard						04/09/18 10:44	
Calcium		24.5	mg/L	1.0	98	95	105			
Magnesium		25.3	mg/L	1.0	101	95	105			
Potassium		25.9	mg/L	1.0	104	95	105			
Sodium		25.6	mg/L	1.0	102	95	105			
Method:	E200.7									Batch: R297819
Lab ID:	MB-6500DIS180405A	4	Method Blank			Run: ICP203-B_180409A			04/09/18 10:51	
Calcium		ND	mg/L	0.07						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.1						
Sodium		ND	mg/L	0.1						
Lab ID:	LFB-6500DIS180405A	4	Laboratory Fortified Blank			Run: ICP203-B_180409A			04/09/18 10:59	
Calcium		48.3	mg/L	1.0	97	85	115			
Magnesium		49.6	mg/L	1.0	99	85	115			
Potassium		50.8	mg/L	1.0	102	85	115			
Sodium		50.1	mg/L	1.0	100	85	115			
Lab ID:	C18040172-004BMS2	4	Sample Matrix Spike			Run: ICP203-B_180409A			04/09/18 18:13	
Calcium		1260	mg/L	1.0	110	70	130			
Magnesium		1060	mg/L	1.0	88	70	130			
Potassium		475	mg/L	1.5	93	70	130			
Sodium		797	mg/L	2.0	93	70	130			
Lab ID:	C18040172-004BMSD	4	Sample Matrix Spike Duplicate			Run: ICP203-B_180409A			04/09/18 18:24	
Calcium		1280	mg/L	1.0	113	70	130	1.1	20	
Magnesium		1060	mg/L	1.0	88	70	130	0.1	20	
Potassium		478	mg/L	1.5	94	70	130	0.7	20	
Sodium		802	mg/L	2.0	94	70	130	0.6	20	

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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 04/16/18

**Work Order:** C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	E200.7	Analytical Run: ICP204-B_180410A								
Lab ID:	ICV	4	Continuing Calibration Verification Standard						04/10/18 10:36	
Calcium		25.3	mg/L	1.0	101	95	105			
Magnesium		25.2	mg/L	1.0	101	95	105			
Potassium		25.1	mg/L	1.0	100	95	105			
Sodium		25.1	mg/L	1.0	101	95	105			
Method:	E200.7									Batch: R297922
Lab ID:	MB-7400DIS180410A	4	Method Blank			Run: ICP204-B_180410A			04/10/18 10:44	
Calcium		ND	mg/L	0.07						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.1						
Sodium		ND	mg/L	0.1						
Lab ID:	LFB-7400DIS180410A	4	Laboratory Fortified Blank			Run: ICP204-B_180410A			04/10/18 10:52	
Calcium		49.2	mg/L	1.0	98	85	115			
Magnesium		47.9	mg/L	1.0	96	85	115			
Potassium		47.5	mg/L	1.0	95	85	115			
Sodium		47.0	mg/L	1.0	94	85	115			
Lab ID:	B18040475-003BMS2	4	Sample Matrix Spike			Run: ICP204-B_180410A			04/10/18 14:03	
Calcium		138	mg/L	1.0	95	70	130			
Magnesium		65.0	mg/L	1.0	103	70	130			
Potassium		53.1	mg/L	1.0	103	70	130			
Sodium		75.9	mg/L	1.0	100	70	130			
Lab ID:	B18040475-003BMSD	4	Sample Matrix Spike Duplicate			Run: ICP204-B_180410A			04/10/18 14:07	
Calcium		138	mg/L	1.0	96	70	130	0.3	20	
Magnesium		64.9	mg/L	1.0	103	70	130	0.1	20	
Potassium		53.2	mg/L	1.0	103	70	130	0.2	20	
Sodium		75.6	mg/L	1.0	99	70	130	0.3	20	

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## QA/QC Summary Report

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Client: United Nuclear Corporation

Report Date: 04/16/18

Project: SW Alluvium

Work Order: C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> Analytical Run: ICPMS207-B_180409A										
<b>Lab ID: QCS</b>	9	Initial Calibration Verification Standard 04/09/18 22:54								
Aluminum		0.252	mg/L	0.10	101	90	110			
Cadmium		0.0252	mg/L	0.0010	101	90	110			
Cobalt		0.0534	mg/L	0.010	107	90	110			
Lead		0.0491	mg/L	0.010	98	90	110			
Manganese		0.254	mg/L	0.010	101	90	110			
Molybdenum		0.0480	mg/L	0.0050	96	90	110			
Nickel		0.0508	mg/L	0.010	102	90	110			
Uranium		0.0198	mg/L	0.0010	99	90	110			
Vanadium		0.0495	mg/L	0.10	99	90	110			
<b>Method: E200.8</b> Batch: 120142										
<b>Lab ID: MB-120142</b>	10	Method Blank Run: ICPMS207-B_180409A 04/10/18 00:42								
Aluminum		0.001	mg/L	0.001						
Beryllium		ND	mg/L	0.0001						
Cadmium		0.00003	mg/L	0.00003						
Cobalt		0.00007	mg/L	0.00004						
Lead		ND	mg/L	0.00008						
Manganese		0.0002	mg/L	0.0001						
Molybdenum		0.0005	mg/L	0.0001						
Nickel		ND	mg/L	0.0008						
Uranium		0.00006	mg/L	0.00005						
Vanadium		ND	mg/L	0.0006						
<b>Lab ID: LCS-120142</b>	10	Laboratory Control Sample Run: ICPMS207-B_180409A 04/10/18 00:45								
Aluminum		2.41	mg/L	0.010	96	85	115			
Beryllium		0.240	mg/L	0.0010	96	85	115			
Cadmium		0.227	mg/L	0.0010	91	85	115			
Cobalt		0.463	mg/L	0.0010	93	85	115			
Lead		0.496	mg/L	0.0010	99	85	115			
Manganese		2.50	mg/L	0.0010	100	85	115			
Molybdenum		0.482	mg/L	0.0050	96	85	115			
Nickel		0.493	mg/L	0.0010	99	85	115			
Uranium		0.489	mg/L	0.0010	98	85	115			
Vanadium		0.491	mg/L	0.010	98	85	115			
<b>Lab ID: B18040420-001AMS3</b>	10	Sample Matrix Spike Run: ICPMS207-B_180409A 04/10/18 00:51								
Aluminum		2.42	mg/L	0.030	97	70	130			
Beryllium		0.236	mg/L	0.0010	95	70	130			
Cadmium		0.223	mg/L	0.0010	89	70	130			
Cobalt		0.469	mg/L	0.0050	94	70	130			
Lead		0.500	mg/L	0.0010	100	70	130			
Manganese		2.54	mg/L	0.0010	101	70	130			
Molybdenum		0.492	mg/L	0.0010	98	70	130			
Nickel		0.488	mg/L	0.0050	98	70	130			
Uranium		0.500	mg/L	0.00030	100	70	130			

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## QA/QC Summary Report

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Report Date: 04/16/18

Project: SW Alluvium

Work Order: C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										
Batch: 120142										
Lab ID: B18040420-001AMS3	10	Sample Matrix Spike		Run: ICPMS207-B_180409A			04/10/18 00:51			
Vanadium		0.499	mg/L	0.010	99	70	130			
Lab ID: B18040420-001AMSD	10	Sample Matrix Spike Duplicate		Run: ICPMS207-B_180409A			04/10/18 00:53			
Aluminum		2.40	mg/L	0.030	96	70	130	0.5	20	
Beryllium		0.237	mg/L	0.0010	95	70	130	0.2	20	
Cadmium		0.223	mg/L	0.0010	89	70	130	0.4	20	
Cobalt		0.467	mg/L	0.0050	93	70	130	0.3	20	
Lead		0.502	mg/L	0.0010	100	70	130	0.4	20	
Manganese		2.50	mg/L	0.0010	100	70	130	1.3	20	
Molybdenum		0.487	mg/L	0.0010	97	70	130	0.9	20	
Nickel		0.484	mg/L	0.0050	97	70	130	0.9	20	
Uranium		0.501	mg/L	0.00030	100	70	130	0.2	20	
Vanadium		0.493	mg/L	0.010	98	70	130	1.3	20	
Lab ID: C18040172-011CMS3	10	Sample Matrix Spike		Run: ICPMS207-B_180409A			04/10/18 01:49			
Aluminum		2.24	mg/L	0.030	89	70	130			
Beryllium		0.194	mg/L	0.0010	77	70	130			
Cadmium		0.208	mg/L	0.0010	83	70	130			
Cobalt		0.448	mg/L	0.0050	89	70	130			
Lead		0.502	mg/L	0.0010	100	70	130			
Manganese		2.58	mg/L	0.0010	99	70	130			
Molybdenum		0.489	mg/L	0.0010	98	70	130			
Nickel		0.455	mg/L	0.0050	91	70	130			
Uranium		0.556	mg/L	0.00030	103	70	130			
Vanadium		0.497	mg/L	0.010	99	70	130			
Lab ID: C18040172-011CMSD	10	Sample Matrix Spike Duplicate		Run: ICPMS207-B_180409A			04/10/18 01:52			
Aluminum		2.24	mg/L	0.030	89	70	130	0.2	20	
Beryllium		0.198	mg/L	0.0010	79	70	130	2.0	20	
Cadmium		0.207	mg/L	0.0010	83	70	130	0.7	20	
Cobalt		0.441	mg/L	0.0050	88	70	130	1.4	20	
Lead		0.497	mg/L	0.0010	99	70	130	1.0	20	
Manganese		2.56	mg/L	0.0010	98	70	130	1.1	20	
Molybdenum		0.485	mg/L	0.0010	97	70	130	0.9	20	
Nickel		0.450	mg/L	0.0050	90	70	130	1.0	20	
Uranium		0.552	mg/L	0.00030	102	70	130	0.8	20	
Vanadium		0.490	mg/L	0.010	98	70	130	1.4	20	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/16/18

Project: SW Alluvium

Work Order: C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8	Analytical Run: ICPMS207-B_180410A									
Lab ID: QCS	10	Initial Calibration Verification Standard							04/10/18 18:14	
Aluminum		0.254	mg/L	0.10	102	90	110			
Beryllium		0.0254	mg/L	0.0010	102	90	110			
Cadmium		0.0254	mg/L	0.0010	102	90	110			
Cobalt		0.0530	mg/L	0.010	106	90	110			
Lead		0.0494	mg/L	0.010	99	90	110			
Manganese		0.255	mg/L	0.010	102	90	110			
Molybdenum		0.0478	mg/L	0.0050	96	90	110			
Nickel		0.0515	mg/L	0.010	103	90	110			
Uranium		0.0200	mg/L	0.0010	100	90	110			
Vanadium		0.0502	mg/L	0.10	100	90	110			
Method: E200.8	Batch: 120142									
Lab ID: MB-120142	10	Method Blank							Run: ICPMS207-B_180410A 04/10/18 15:30	
Aluminum		ND	mg/L	0.001						
Beryllium		ND	mg/L	0.0001						
Cadmium		ND	mg/L	0.00003						
Cobalt		ND	mg/L	0.00004						
Lead		ND	mg/L	0.00008						
Manganese		ND	mg/L	0.0001						
Molybdenum		ND	mg/L	0.00006						
Nickel		ND	mg/L	0.0008						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.0006						
Method: E200.8	Batch: 120197									
Lab ID: MB-120197	10	Method Blank							Run: ICPMS207-B_180410A 04/10/18 22:27	
Aluminum		0.005	mg/L	0.001						
Beryllium		ND	mg/L	0.0001						
Cadmium		ND	mg/L	0.00003						
Cobalt		ND	mg/L	0.00004						
Lead		0.0003	mg/L	0.00008						
Manganese		0.0003	mg/L	0.0001						
Molybdenum		0.00007	mg/L	0.00006						
Nickel		ND	mg/L	0.0008						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.0006						
Lab ID: LCS-120197	10	Laboratory Control Sample							Run: ICPMS207-B_180410A 04/10/18 22:30	
Aluminum		2.37	mg/L	0.010	95	85	115			
Beryllium		0.229	mg/L	0.0010	91	85	115			
Cadmium		0.226	mg/L	0.0010	91	85	115			
Cobalt		0.464	mg/L	0.0010	93	85	115			
Lead		0.501	mg/L	0.0010	100	85	115			
Manganese		2.47	mg/L	0.0010	99	85	115			
Molybdenum		0.467	mg/L	0.0050	93	85	115			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/16/18

**Project:** SW Alluvium

**Work Order:** C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: 120197
<b>Lab ID:</b> LCS-120197	10	Laboratory Control Sample				Run: ICPMS207-B_180410A			04/10/18 22:30	
Nickel		0.492	mg/L	0.0010	98	85	115			
Uranium		0.493	mg/L	0.0010	99	85	115			
Vanadium		0.484	mg/L	0.010	97	85	115			
<b>Lab ID:</b> B18032149-001EMS3										04/10/18 22:35
10	Sample Matrix Spike				Run: ICPMS207-B_180410A					
Aluminum		3.40	mg/L	0.030	102	70	130			
Beryllium		0.222	mg/L	0.0010	89	70	130			
Cadmium		0.223	mg/L	0.0010	89	70	130			
Cobalt		0.450	mg/L	0.0050	90	70	130			
Lead		0.495	mg/L	0.0010	99	70	130			
Manganese		2.49	mg/L	0.0010	98	70	130			
Molybdenum		0.467	mg/L	0.0010	93	70	130			
Nickel		0.487	mg/L	0.0050	97	70	130			
Uranium		0.494	mg/L	0.00030	99	70	130			
Vanadium		0.486	mg/L	0.010	97	70	130			
<b>Lab ID:</b> B18032149-001EMSD										04/10/18 22:44
10	Sample Matrix Spike Duplicate				Run: ICPMS207-B_180410A					
Aluminum		3.40	mg/L	0.030	102	70	130	0.1	20	
Beryllium		0.222	mg/L	0.0010	89	70	130	0.1	20	
Cadmium		0.227	mg/L	0.0010	91	70	130	2.0	20	
Cobalt		0.451	mg/L	0.0050	90	70	130	0.2	20	
Lead		0.504	mg/L	0.0010	101	70	130	1.8	20	
Manganese		2.53	mg/L	0.0010	100	70	130	1.6	20	
Molybdenum		0.475	mg/L	0.0010	94	70	130	1.7	20	
Nickel		0.491	mg/L	0.0050	98	70	130	0.9	20	
Uranium		0.502	mg/L	0.00030	100	70	130	1.6	20	
Vanadium		0.492	mg/L	0.010	98	70	130	1.2	20	
<b>Method:</b> E200.8										Analytical Run: ICPMS207-B_180411A
<b>Lab ID:</b> QCS	Initial Calibration Verification Standard							04/11/18 16:35		
Beryllium		0.0256	mg/L	0.0010	102	90	110			
<b>Method:</b> E200.8										Batch: 120142
<b>Lab ID:</b> MB-120142	Method Blank				Run: ICPMS207-B_180411A			04/11/18 17:48		
Beryllium		ND	mg/L	0.0001						
<b>Method:</b> E200.8										Analytical Run: ICPMS207-B_180412A
<b>Lab ID:</b> QCS	Initial Calibration Verification Standard							04/12/18 12:14		
Beryllium		0.0255	mg/L	0.0010	102	90	110			
<b>Method:</b> E200.8										Batch: 120142
<b>Lab ID:</b> MB-120142	Method Blank				Run: ICPMS207-B_180412A			04/12/18 15:08		
Beryllium		ND	mg/L	0.0001						

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## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/17/18

**Project:** SW Alluvium

**Work Order:** C18040172

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 C			tical Run: SELENIUM PSA MILLENIUM_180409B						
<b>Lab ID:</b> ICV-40993	Initial Calibration Verification Standard								04/09/18 17:06
Selenium-IV	0.0191	mg/L	0.0010	96	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								04/09/18 17:07
Selenium-IV	0.0192	mg/L	0.0010	96	90	110			
<b>Lab ID:</b> CCV	Continuing Calibration Verification Standard								04/09/18 17:28
Selenium-IV	0.0186	mg/L	0.0010	93	90	110			
<b>Method:</b> A3114 C			Batch: 40993						
<b>Lab ID:</b> MB-40993	Method Blank								04/09/18 17:10
Selenium-IV	ND	mg/L	0.0006						
<b>Lab ID:</b> LCS-40993	Laboratory Control Sample								04/09/18 17:12
Selenium-IV	0.0197	mg/L	0.0010	98	90	110			
<b>Lab ID:</b> H18040003-041AMS	Sample Matrix Spike								04/09/18 17:17
Selenium-IV	0.0212	mg/L	0.0010	106	70	130			
<b>Lab ID:</b> H18040003-041AMSD	Sample Matrix Spike Duplicate								04/09/18 17:18
Selenium-IV	0.0194	mg/L	0.0010	97	70	130	9.1	20	
<b>Lab ID:</b> C18040172-010DMS	Sample Matrix Spike								04/09/18 17:39
Selenium-IV	0.0191	mg/L	0.0010	95	70	130			
<b>Lab ID:</b> C18040172-010DMSD	Sample Matrix Spike Duplicate								04/09/18 17:40
Selenium-IV	0.0188	mg/L	0.0010	94	70	130	1.4	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 04/17/18

Work Order: C18040172

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1632AM					Analytical Run: ARSENIC SPECIATION_180412A				
Lab ID: AS-ICV 25ppb-4/12/2018	Initial Calibration Verification Standard								04/12/18 14:48
Arsenic-III	24.8	ug/L	5.0	99	87.6	114			
Lab ID: AS-50.0-4/12/2018	Continuing Calibration Verification Standard								04/12/18 18:12
Arsenic-III	49.2	ug/L	5.0	98	85	115			
Lab ID: AS-50.0-4/12/2018	Continuing Calibration Verification Standard								04/12/18 21:00
Arsenic-III	50.0	ug/L	5.0	100	85	115			
Method: E1632AM					Batch: R133862				
Lab ID: AS-LFB 50ppb-4/12/2018	Laboratory Fortified Blank				Run: ARSENIC SPECIATION_1804		04/12/18 15:24		
Arsenic-III	50.6	ug/L	5.0	101	78	121			
Lab ID: ICB	Method Blank				Run: ARSENIC SPECIATION_1804		04/12/18 15:36		
Arsenic-III	ND	ug/L	0.2						
Lab ID: C18040172-001D MS	Sample Matrix Spike				Run: ARSENIC SPECIATION_1804		04/12/18 18:48		
Arsenic-III	51.5	ug/L	5.0	103	78	121			
Lab ID: C18040172-001D MSD	Sample Matrix Spike Duplicate				Run: ARSENIC SPECIATION_1804		04/12/18 19:00		
Arsenic-III	57.8	ug/L	5.0	116	78	121	11	20	
Lab ID: C18040172-011D MS	Sample Matrix Spike				Run: ARSENIC SPECIATION_1804		04/12/18 21:37		
Arsenic-III	49.6	ug/L	5.0	99	78	121			
Lab ID: C18040172-011D MSD	Sample Matrix Spike Duplicate				Run: ARSENIC SPECIATION_1804		04/12/18 21:49		
Arsenic-III	50.8	ug/L	5.0	102	78	121	2.4	20	

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 04/17/18

Work Order: C18040172

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>							Analytical Run: R297894		
<b>Lab ID: CCV040918</b>	Continuing Calibration Verification Standard						04/09/18 09:57		
Bromodichloromethane	5.14	ug/L	0.50	103	70	130			
Bromoform	4.89	ug/L	0.50	98	70	130			
Chlorodibromomethane	5.17	ug/L	0.50	103	70	130			
Chloroform	5.07	ug/L	0.50	101	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	96	71	139			
Surr: p-Bromofluorobenzene			0.50	95	80	127			
Surr: Toluene-d8			0.50	94	80	123			
<b>Method: E624</b>							Batch: R297894		
<b>Lab ID: LCS040918</b>	Laboratory Control Sample						Run: 5971A.I_180409B		
Bromodichloromethane	5.21	ug/L	0.50	104	74	128			04/09/18 10:29
Bromoform	4.78	ug/L	0.50	96	66	128			
Chlorodibromomethane	5.09	ug/L	0.50	102	74	125			
Chloroform	4.98	ug/L	0.50	100	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	99	71	139			
Surr: p-Bromofluorobenzene			0.50	95	80	127			
Surr: Toluene-d8			0.50	94	80	123			
<b>Lab ID: BLK040918</b>	Method Blank						Run: 5971A.I_180409B		
Bromodichloromethane	ND	ug/L	0.50						04/09/18 11:27
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	100	71	139			
Surr: p-Bromofluorobenzene			0.50	98	80	127			
Surr: Toluene-d8			0.50	93	80	123			
<b>Lab ID: B18040550-002CMS</b>	Sample Matrix Spike						Run: 5971A.I_180409B		
Bromodichloromethane	11.0	ug/L	1.0	110	74	128			04/09/18 20:16
Bromoform	10.1	ug/L	1.0	101	66	128			
Chlorodibromomethane	11.2	ug/L	1.0	112	74	125			
Chloroform	10.5	ug/L	1.0	103	68	124			
Surr: 1,2-Dichloroethane-d4			1.0	103	71	139			
Surr: p-Bromofluorobenzene			1.0	97	80	127			
Surr: Toluene-d8			1.0	97	80	123			
<b>Lab ID: B18040550-002CMSD</b>	Sample Matrix Spike Duplicate						Run: 5971A.I_180409B		
Bromodichloromethane	10.7	ug/L	1.0	107	74	128	3.0	20	04/09/18 20:46
Bromoform	10.2	ug/L	1.0	102	66	128	0.8	20	
Chlorodibromomethane	10.5	ug/L	1.0	105	74	125	5.7	20	
Chloroform	10.1	ug/L	1.0	99	68	124	3.6	20	
Surr: 1,2-Dichloroethane-d4			1.0	101	71	139			
Surr: p-Bromofluorobenzene			1.0	99	80	127			
Surr: Toluene-d8			1.0	98	80	123			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 04/17/18

Work Order: C18040172

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>							Analytical Run: R298008		
<b>Lab ID: CCV041018</b>	Continuing Calibration Verification Standard							04/10/18 10:00	
Bromodichloromethane	4.85	ug/L	0.50	97	70	130			
Bromoform	4.63	ug/L	0.50	93	70	130			
Chlorodibromomethane	4.97	ug/L	0.50	99	70	130			
Chloroform	4.87	ug/L	0.50	97	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	99	71	139			
Surr: p-Bromofluorobenzene			0.50	93	80	127			
Surr: Toluene-d8			0.50	96	80	123			
<b>Method: E624</b>							Batch: R298008		
<b>Lab ID: LCS041018</b>	Laboratory Control Sample							Run: 5971A.I_180410C	
Bromodichloromethane	5.28	ug/L	0.50	106	74	128		04/10/18 10:41	
Bromoform	4.62	ug/L	0.50	92	66	128			
Chlorodibromomethane	5.26	ug/L	0.50	105	74	125			
Chloroform	4.94	ug/L	0.50	99	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	99	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	96	80	123			
<b>Lab ID: BLK041018</b>	Method Blank							Run: 5971A.I_180410C	
Bromodichloromethane	ND	ug/L	0.50					04/10/18 11:40	
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	96	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	93	80	123			
<b>Lab ID: C18040172-008GMS</b>	Sample Matrix Spike							Run: 5971A.I_180410C	
Bromodichloromethane	10.1	ug/L	1.0	101	74	128		04/10/18 17:32	
Bromoform	9.66	ug/L	1.0	97	66	128			
Chlorodibromomethane	9.88	ug/L	1.0	99	74	125			
Chloroform	10.3	ug/L	1.0	97	68	124			
Surr: 1,2-Dichloroethane-d4			1.0	95	71	139			
Surr: p-Bromofluorobenzene			1.0	99	80	127			
Surr: Toluene-d8			1.0	94	80	123			
<b>Lab ID: C18040172-008GMSD</b>	Sample Matrix Spike Duplicate							Run: 5971A.I_180410C	
Bromodichloromethane	10.7	ug/L	1.0	107	74	128	5.7	20	
Bromoform	9.59	ug/L	1.0	96	66	128	0.8	20	
Chlorodibromomethane	10.5	ug/L	1.0	105	74	125	5.6	20	
Chloroform	10.8	ug/L	1.0	103	68	124	5.4	20	
Surr: 1,2-Dichloroethane-d4			1.0	98	71	139			
Surr: p-Bromofluorobenzene			1.0	97	80	127			
Surr: Toluene-d8			1.0	96	80	123			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/24/18

Project: SW Alluvium

Work Order: C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-1078
<b>Lab ID: MB-GA-1078</b>	3	Method Blank					Run: G5000W_180411A			04/16/18 11:00
Gross Alpha minus Rn & U		0.2	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.3	pCi/L							
Gross Alpha minus Rn & U MDC		0.5	pCi/L							
<b>Lab ID: LCS-GA-1078</b>		Laboratory Control Sample					Run: G5000W_180411A			04/16/18 11:00
Gross Alpha minus Rn & U		31	pCi/L	91		80	120			
<b>Lab ID: C18040140-001EMS</b>		Sample Matrix Spike					Run: G5000W_180411A			04/16/18 11:00
Gross Alpha minus Rn & U		59	pCi/L	85		70	130			
<b>Lab ID: C18040140-001EMSD</b>		Sample Matrix Spike Duplicate					Run: G5000W_180411A			04/16/18 11:00
Gross Alpha minus Rn & U		62	pCi/L	90		70	130	4.7	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/24/18

**Project:** SW Alluvium

**Work Order:** C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E903.0										Batch: RA226-8901
<b>Lab ID:</b> LCS-RA226-8901	Laboratory Control Sample			Run: G5000W_180409B			04/23/18 13:29			
Radium 226		12	pCi/L	120		80	120			
<b>Lab ID:</b> MB-RA226-8901	3	Method Blank			Run: G5000W_180409B			04/23/18 13:29		
Radium 226		0.2	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
<b>Lab ID:</b> C18040259-002CMS	Sample Matrix Spike			Run: G5000W_180409B			04/23/18 15:37			
Radium 226		20	pCi/L	97		70	130			
<b>Lab ID:</b> C18040259-002CMSD	Sample Matrix Spike Duplicate			Run: G5000W_180409B			04/23/18 15:37			
Radium 226		22	pCi/L	107		70	130	9.0	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/24/18

Project: SW Alluvium

Work Order: C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0		Batch: RA-TH-ISO-2704								
Lab ID: LCS-RA-TH-ISO-2704	Laboratory Control Sample					Run: EGG-ORTEC_2_180412A			04/18/18 08:58	
Thorium 230	12	pCi/L		104	80	120				
Lab ID: C18040140-002EMS	Sample Matrix Spike					Run: EGG-ORTEC_2_180412A			04/18/18 08:59	
Thorium 230	25	pCi/L		98	70	130				
Lab ID: C18040140-002EMSD	Sample Matrix Spike Duplicate					Run: EGG-ORTEC_2_180412A			04/18/18 08:58	
Thorium 230	26	pCi/L		102	70	130	3.5	20		
Lab ID: MB-RA-TH-ISO-2704	3	Method Blank					Run: EGG-ORTEC_2_180412A			04/18/18 17:03
Thorium 230		0.2	pCi/L							U
Thorium 230 precision (±)		0.2	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/24/18

**Project:** SW Alluvium

**Work Order:** C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	E909.0								Batch: PB-210-0923	
Lab ID:	LCS-PB-210-0923	Laboratory Control Sample				Run: TRICARB LSC_180406B			04/11/18 15:46	
Lead 210		25	pCi/L		118	80	120			
Lab ID:	MB-PB-210-0923	3	Method Blank				Run: TRICARB LSC_180406B			04/11/18 16:50
Lead 210		-0.3	pCi/L							U
Lead 210 precision (±)		0.8	pCi/L							
Lead 210 MDC		1	pCi/L							
Lab ID:	C18040140-002EMS	Sample Matrix Spike				Run: TRICARB LSC_180406B			04/12/18 11:05	
Lead 210		44	pCi/L		100	70	130			
Lab ID:	C18040140-002EMSD	Sample Matrix Spike Duplicate				Run: TRICARB LSC_180406B			04/12/18 12:14	
Lead 210		49	pCi/L		113	70	130	11	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/24/18

**Project:** SW Alluvium

**Work Order:** C18040172

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> RA-05										Batch: RA228-5757
<b>Lab ID:</b> LCS-228-RA226-8901	Laboratory Control Sample									
Radium 228		8.8	pCi/L		82	80	120			Run: TENNELEC-3_180409D 04/17/18 14:10
<b>Lab ID:</b> MB-RA226-8901	3	Method Blank								
Radium 228		1	pCi/L							Run: TENNELEC-3_180409D 04/17/18 14:10
Radium 228 precision (±)		0.8	pCi/L							
Radium 228 MDC		1	pCi/L							
<b>Lab ID:</b> C18040259-003CMS	Sample Matrix Spike									
Radium 228		19	pCi/L		99	70	130			Run: TENNELEC-3_180409D 04/17/18 14:10
<b>Lab ID:</b> C18040259-003CMSD	Sample Matrix Spike Duplicate									
Radium 228		18	pCi/L		90	70	130	9.3	20	Run: TENNELEC-3_180409D 04/17/18 14:10

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## ANALYTICAL SUMMARY REPORT

May 04, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18040251

Quote ID: C5148 - Quarterly Long List

Project Name: SW Alluvium

Energy Laboratories, Inc. Casper WY received the following 3 samples for United Nuclear Corporation on 4/6/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18040251-001	SBL-1	04/03/18 08:38	04/06/18	Aqueous	Metals by ICP/CPMS, Dissolved Metals by ICP/CPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18040251-002	EPA-25	04/03/18 09:45	04/06/18	Aqueous	Same As Above
C18040251-003	627	04/03/18 10:47	04/06/18	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.05.04 11:32:19 -06:00



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**CLIENT:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Work Order:** C18040251

**Report Date:** 05/04/18

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/17/18

**Project:** SW Alluvium

**Work Order:** C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2320 B Analytical Run: MANTECH_180408B										
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									
pH		6.94	s.u.	0.010	101	98	102			04/08/18 16:33
<b>Method:</b> A2320 B Batch: R234002										
<b>Lab ID:</b> MBLK	Method Blank									
Alkalinity, Total as CaCO <sub>3</sub>		2	mg/L	0.8						04/08/18 23:43
Run: MANTECH_180408B										
<b>Lab ID:</b> LCS	Laboratory Control Sample									
Alkalinity, Total as CaCO <sub>3</sub>		250	mg/L	5.0	99	90	110			04/08/18 23:51
Run: MANTECH_180408B										
<b>Lab ID:</b> C18040249-008ADUP	Sample Duplicate									
Alkalinity, Total as CaCO <sub>3</sub>		232	mg/L	5.0				0.1	10	04/09/18 01:39

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/17/18

**Project:** SW Alluvium

**Work Order:** C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2540 C</b>										Batch: TDS180409A
<b>Lab ID: MB-25_180409A</b>	Method Blank									
Solids, Total Dissolved TDS @ 180 C				ND	mg/L	7				
Run: BAL-16_180409A										04/09/18 14:23
<b>Lab ID: LCS-26_180409A</b>	Laboratory Control Sample									
Solids, Total Dissolved TDS @ 180 C				1110	mg/L	11	100	90	110	
Run: BAL-16_180409A										04/09/18 14:23
<b>Lab ID: C18040249-006A DUP</b>	Sample Duplicate									
Solids, Total Dissolved TDS @ 180 C				4700	mg/L	40		0.3	5	
Run: BAL-16_180409A										04/09/18 14:26

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/17/18

**Project:** SW Alluvium

**Work Order:** C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	A4500-H B							Analytical Run: PHSC_101-C_180409A		
Lab ID:	6.86	Initial Calibration Verification Standard								04/09/18 08:30
pH		6.90	s.u.	0.010	101	98	102			
Method:	A4500-H B							Batch: R234006		
Lab ID:	C18040250-001ADUP	Sample Duplicate				Run: PHSC_101-C_180409A			04/09/18 12:28	
pH		8.06	s.u.	0.010				0.1	1.5	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/17/18

**Project:** SW Alluvium

**Work Order:** C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G								Analytical Run: FIA201-C_180411A		
Lab ID: ICV		Initial Calibration Verification Standard							04/11/18 13:39	
Nitrogen, Ammonia as N		0.988	mg/L	0.050	99	90	110			
Method: A4500-NH3 G										Batch: R234128
Lab ID: MBLK		Method Blank				Run: FIA201-C_180411A		04/11/18 13:38		
Nitrogen, Ammonia as N		ND	mg/L	0.009						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_180411A		04/11/18 13:40		
Nitrogen, Ammonia as N		0.933	mg/L	0.050	94	90	110			
Lab ID: C18040251-003EMS		Sample Matrix Spike				Run: FIA201-C_180411A		04/11/18 14:12		
Nitrogen, Ammonia as N		0.887	mg/L	0.050	89	90	110			S
Lab ID: C18040251-003EMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_180411A		04/11/18 14:13		
Nitrogen, Ammonia as N		0.870	mg/L	0.050	87	90	110	2.0	10	S

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/17/18

Project: SW Alluvium

Work Order: C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC3-C_180411A
Lab ID: ICV	2	Initial Calibration Verification Standard								04/11/18 15:46
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
Method: E300.0										Batch: R234155
Lab ID: ICB	2	Method Blank								Run: IC3-C_180411A 04/11/18 16:04
Chloride		ND	mg/L	0.09						
Sulfate		0.1	mg/L	0.10						
Lab ID: LFB	2	Laboratory Fortified Blank								Run: IC3-C_180411A 04/11/18 16:22
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		41.1	mg/L	1.0	102	90	110			
Lab ID: C18030456-001AMS	2	Sample Matrix Spike								Run: IC3-C_180411A 04/11/18 17:17
Chloride		1790	mg/L	10	104	80	120			
Sulfate		10100	mg/L	42	102	80	120			
Lab ID: C18030456-001AMSD	2	Sample Matrix Spike Duplicate								Run: IC3-C_180411A 04/11/18 17:35
Chloride		1790	mg/L	10	103	80	120	0.5	20	
Sulfate		9980	mg/L	42	100	80	120	0.8	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/17/18

**Project:** SW Alluvium

**Work Order:** C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E353.2										Analytical Run: FIA201-C_180409A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									
Nitrogen, Nitrate+Nitrite as N										04/09/18 10:55
		0.991	mg/L	0.010	99	90	110			
<b>Method:</b> E353.2										Batch: R234018
<b>Lab ID:</b> MBLK	Method Blank									
Nitrogen, Nitrate+Nitrite as N										Run: FIA201-C_180409A
		ND	mg/L	0.006						04/09/18 10:57
<b>Lab ID:</b> LFB	Laboratory Fortified Blank									
Nitrogen, Nitrate+Nitrite as N										Run: FIA201-C_180409A
		1.06	mg/L	0.010	107	90	110			04/09/18 10:58
<b>Lab ID:</b> C18040251-001EMS	Sample Matrix Spike									
Nitrogen, Nitrate+Nitrite as N										Run: FIA201-C_180409A
		146	mg/L	1.0	109	90	110			04/09/18 11:48
<b>Lab ID:</b> C18040251-001EMSD	Sample Matrix Spike Duplicate									
Nitrogen, Nitrate+Nitrite as N										Run: FIA201-C_180409A
		146	mg/L	1.0	109	90	110	0.0	10	04/09/18 11:49

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 04/16/18

**Work Order:** C18040251

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7					Analytical Run: ICP203-B_180411A				
<b>Lab ID:</b> ICV	Continuing Calibration Verification Standard								04/11/18 09:45
Calcium	24.4	mg/L	1.0	97	95	105			
Magnesium	25.0	mg/L	1.0	100	95	105			
Potassium	25.3	mg/L	1.0	101	95	105			
Sodium	25.4	mg/L	1.0	102	95	105			
<b>Method:</b> E200.7					Batch: R297981				
<b>Lab ID:</b> MB-6500DIS180411A	Method Blank								Run: ICP203-B_180411A 04/11/18 09:53
Calcium	ND	mg/L	0.07						
Magnesium	ND	mg/L	0.02						
Potassium	ND	mg/L	0.1						
Sodium	ND	mg/L	0.1						
<b>Lab ID:</b> LFB-6500DIS180411A	Laboratory Fortified Blank								Run: ICP203-B_180411A 04/11/18 10:01
Calcium	49.0	mg/L	1.0	98	85	115			
Magnesium	48.1	mg/L	1.0	96	85	115			
Potassium	48.3	mg/L	1.0	97	85	115			
Sodium	48.4	mg/L	1.0	97	85	115			
<b>Lab ID:</b> C18040251-002BMS2	Sample Matrix Spike								Run: ICP203-B_180411A 04/11/18 16:40
Calcium	1020	mg/L	1.0	96	70	130			
Magnesium	464	mg/L	1.0	90	70	130			
Potassium	232	mg/L	1.0	90	70	130			
Sodium	447	mg/L	1.0	93	70	130			
<b>Lab ID:</b> C18040251-002BMSD2	Sample Matrix Spike Duplicate								Run: ICP203-B_180411A 04/11/18 16:44
Calcium	1010	mg/L	1.0	89	70	130	1.7	20	
Magnesium	466	mg/L	1.0	91	70	130	0.6	20	
Potassium	235	mg/L	1.0	91	70	130	1.4	20	
Sodium	450	mg/L	1.0	95	70	130	0.7	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/16/18

Project: SW Alluvium

Work Order: C18040251

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7							Analytical Run: ICP204-B_180412A		
Lab ID: ICV	Continuing Calibration Verification Standard								04/12/18 11:39
Potassium	25.4	mg/L	1.0	102	95	105			
Method: E200.7							Batch: R298118		
Lab ID: MB-7400DIS180412A	Method Blank								04/12/18 11:47
Potassium	ND	mg/L	0.1						
Lab ID: LFB-7400DIS180412A	Laboratory Fortified Blank								04/12/18 11:54
Potassium	49.7	mg/L	1.0	99	85	115			
Lab ID: B18040761-002BMS2	Sample Matrix Spike								04/12/18 15:18
Potassium	570	mg/L	1.5	113	70	130			
Lab ID: B18040761-002BMSD2	Sample Matrix Spike Duplicate								04/12/18 15:21
Potassium	509	mg/L	1.5	101	70	130	11	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/16/18

Project: SW Alluvium

Work Order: C18040251

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
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Method: E200.8

Analytical Run: ICPMS207-B\_180411A

Lab ID: QCS

Initial Calibration Verification Standard

04/11/18 21:51

Aluminum	0.261	mg/L	0.10	105	90	110			
Beryllium	0.0252	mg/L	0.0010	101	90	110			
Cadmium	0.0253	mg/L	0.0010	101	90	110			
Cobalt	0.0497	mg/L	0.010	99	90	110			
Lead	0.0495	mg/L	0.010	99	90	110			
Manganese	0.254	mg/L	0.010	101	90	110			
Molybdenum	0.0472	mg/L	0.0050	95	90	110			
Nickel	0.0504	mg/L	0.010	101	90	110			
Uranium	0.0196	mg/L	0.0010	98	90	110			
Vanadium	0.0494	mg/L	0.10	99	90	110			

Method: E200.8

Batch: 120245

Lab ID: MB-120245

Method Blank

Run: ICPMS207-B\_180411A

04/12/18 00:54

Aluminum	ND	mg/L	0.001						
Beryllium	ND	mg/L	0.0001						
Cadmium	ND	mg/L	0.00003						
Cobalt	ND	mg/L	0.00004						
Lead	ND	mg/L	0.00008						
Manganese	0.001	mg/L	0.0001						
Molybdenum	ND	mg/L	0.00006						
Nickel	ND	mg/L	0.0008						
Uranium	ND	mg/L	0.00005						
Vanadium	ND	mg/L	0.0006						

Lab ID: LCS-120245

Laboratory Control Sample

Run: ICPMS207-B\_180411A

04/12/18 01:03

Aluminum	2.48	mg/L	0.010	99	85	115			
Beryllium	0.238	mg/L	0.0010	95	85	115			
Cadmium	0.244	mg/L	0.0010	98	85	115			
Cobalt	0.439	mg/L	0.0010	88	85	115			
Lead	0.505	mg/L	0.0010	101	85	115			
Manganese	2.49	mg/L	0.0010	100	85	115			
Molybdenum	0.482	mg/L	0.0050	96	85	115			
Nickel	0.474	mg/L	0.0010	95	85	115			
Uranium	0.492	mg/L	0.0010	98	85	115			
Vanadium	0.474	mg/L	0.010	95	85	115			

Lab ID: B18040706-001CMS3

Sample Matrix Spike

Run: ICPMS207-B\_180411A

04/12/18 01:08

Aluminum	2.60	mg/L	0.030	101	70	130			
Beryllium	0.239	mg/L	0.0010	96	70	130			
Cadmium	0.238	mg/L	0.0010	95	70	130			
Cobalt	0.440	mg/L	0.0050	88	70	130			
Lead	0.507	mg/L	0.0010	101	70	130			
Manganese	2.57	mg/L	0.0010	100	70	130			

### Qualifiers:

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/16/18

Project: SW Alluvium

Work Order: C18040251

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>									Batch: 120245
<b>Lab ID: B18040706-001CMS3</b>	<b>Sample Matrix Spike</b>		<b>Run: ICPMS207-B_180411A</b>				<b>04/12/18 01:08</b>		
Molybdenum	0.480	mg/L	0.0010	95	70	130			
Nickel	0.473	mg/L	0.0050	94	70	130			
Uranium	0.501	mg/L	0.00030	100	70	130			
Vanadium	0.494	mg/L	0.010	96	70	130			
<b>Lab ID: B18040706-001CMSD3</b>	<b>Sample Matrix Spike Duplicate</b>		<b>Run: ICPMS207-B_180411A</b>				<b>04/12/18 01:11</b>		
Aluminum	2.60	mg/L	0.030	102	70	130	0.4	20	
Beryllium	0.242	mg/L	0.0010	97	70	130	0.9	20	
Cadmium	0.241	mg/L	0.0010	96	70	130	1.3	20	
Cobalt	0.445	mg/L	0.0050	89	70	130	1.0	20	
Lead	0.507	mg/L	0.0010	101	70	130	0.1	20	
Manganese	2.60	mg/L	0.0010	102	70	130	1.2	20	
Molybdenum	0.482	mg/L	0.0010	96	70	130	0.5	20	
Nickel	0.470	mg/L	0.0050	93	70	130	0.5	20	
Uranium	0.504	mg/L	0.00030	101	70	130	0.7	20	
Vanadium	0.495	mg/L	0.010	96	70	130	0.1	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 04/20/18

Work Order: C18040251

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 C	tical Run: SELENIUM PSA MILLENIUM_180419A								
Lab ID: ICV-41131	Initial Calibration Verification Standard								04/19/18 13:03
Selenium-IV	0.0192	mg/L	0.0010	96	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								04/19/18 13:32
Selenium-IV	0.0189	mg/L	0.0010	94	90	110			
Method: A3114 C									Batch: 41131
Lab ID: MB-41131	Method Blank					Run: SELENIUM PSA MILLENIUM_		04/19/18 13:07	
Selenium-IV	ND	mg/L	0.0006						
Lab ID: LCS-41131	Laboratory Control Sample					Run: SELENIUM PSA MILLENIUM_		04/19/18 13:09	
Selenium-IV	0.0190	mg/L	0.0010	95	90	110			
Lab ID: LFB-41131	Laboratory Fortified Blank					Run: SELENIUM PSA MILLENIUM_		04/19/18 13:10	
Selenium-IV	0.0197	mg/L	0.0010	98	85	115			
Lab ID: C18040251-002DMS	Sample Matrix Spike					Run: SELENIUM PSA MILLENIUM_		04/19/18 13:39	
Selenium-IV	0.0199	mg/L	0.0010	100	70	130			
Lab ID: C18040251-002DMSD	Sample Matrix Spike Duplicate					Run: SELENIUM PSA MILLENIUM_		04/19/18 13:40	
Selenium-IV	0.0197	mg/L	0.0010	98	70	130	1.4	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 04/20/18

**Work Order:** C18040251

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E1632AM					Analytical Run: ARSENIC SPECIATION_180412A				
<b>Lab ID:</b> AS-ICV 25ppb-4/12/2018	Initial Calibration Verification Standard								04/12/18 14:48
Arsenic-III	24.8	ug/L	5.0	99	87.6	114			
<b>Lab ID:</b> AS-50.0-4/12/2018	Continuing Calibration Verification Standard								04/12/18 15:00
Arsenic-III	50.0	ug/L	5.0	100	85	115			
<b>Method:</b> E1632AM					Batch: R133862				
<b>Lab ID:</b> AS-LFB 50ppb-4/12/2018	Laboratory Fortified Blank								04/12/18 15:24
Arsenic-III	50.6	ug/L	5.0	101	78	121			
<b>Lab ID:</b> ICB	Method Blank								04/12/18 15:36
Arsenic-III	ND	ug/L	0.2						
<b>Lab ID:</b> H18040120-001D MS	Sample Matrix Spike								04/12/18 18:48
Arsenic-III	51.5	ug/L	5.0	103	78	121			
<b>Lab ID:</b> H18040120-001D MSD	Sample Matrix Spike Duplicate								04/12/18 19:00
Arsenic-III	57.8	ug/L	5.0	116	78	121	11	20	

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/19/18

Project: SW Alluvium

Work Order: C18040251

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>							Analytical Run: R298328		
<b>Lab ID: CCV041618</b>	Continuing Calibration Verification Standard							04/16/18 09:28	
Bromodichloromethane	4.87	ug/L	0.50	97	70	130			
Bromoform	4.68	ug/L	0.50	94	70	130			
Chlorodibromomethane	4.83	ug/L	0.50	97	70	130			
Chloroform	4.79	ug/L	0.50	96	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	96	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	96	80	123			
<b>Lab ID: CCVa041618</b>	Continuing Calibration Verification Standard							04/16/18 21:26	
Bromodichloromethane	5.41	ug/L	0.50	108	70	130			
Bromoform	5.41	ug/L	0.50	108	70	130			
Chlorodibromomethane	5.35	ug/L	0.50	107	70	130			
Chloroform	5.11	ug/L	0.50	102	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	108	71	139			
Surr: p-Bromofluorobenzene			0.50	98	80	127			
Surr: Toluene-d8			0.50	94	80	123			
<b>Method: E624</b>							Batch: R298328		
<b>Lab ID: LCS041618</b>	Laboratory Control Sample			Run: 5971A.I_180416A			04/16/18 10:35		
Bromodichloromethane	4.98	ug/L	0.50	100	74	128			
Bromoform	4.68	ug/L	0.50	94	66	128			
Chlorodibromomethane	5.02	ug/L	0.50	100	74	125			
Chloroform	4.74	ug/L	0.50	95	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	95	71	139			
Surr: p-Bromofluorobenzene			0.50	93	80	127			
Surr: Toluene-d8			0.50	94	80	123			
<b>Lab ID: BLK041618</b>	Method Blank			Run: 5971A.I_180416A			04/16/18 11:34		
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	93	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	95	80	123			
<b>Lab ID: B18040751-003GMS</b>	Sample Matrix Spike			Run: 5971A.I_180416A			04/16/18 19:58		
Bromodichloromethane	10.3	ug/L	1.0	103	74	128			
Bromoform	9.67	ug/L	1.0	97	66	128			
Chlorodibromomethane	9.90	ug/L	1.0	99	74	125			
Chloroform	21.6	ug/L	1.0	95	68	124			
Surr: 1,2-Dichloroethane-d4			1.0	100	71	139			
Surr: p-Bromofluorobenzene			1.0	97	80	127			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 04/19/18

**Work Order:** C18040251

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>									Batch: R298328
<b>Lab ID: B18040751-003GMS</b>	Sample Matrix Spike					Run: 5971A.I_180416A			04/16/18 19:58
Surr: Toluene-d8			1.0	96	80	123			
<b>Lab ID: B18040751-003GMSD</b>	Sample Matrix Spike Duplicate					Run: 5971A.I_180416A			04/16/18 20:27
Bromodichloromethane	10.6	ug/L	1.0	106	74	128	2.8	20	
Bromoform	9.80	ug/L	1.0	98	66	128	1.4	20	
Chlorodibromomethane	10.4	ug/L	1.0	104	74	125	4.9	20	
Chloroform	23.1	ug/L	1.0	110	68	124	6.8	20	
Surr: 1,2-Dichloroethane-d4			1.0	105	71	139			
Surr: p-Bromofluorobenzene			1.0	97	80	127			
Surr: Toluene-d8			1.0	94	80	123			
<b>Lab ID: LCSa041618</b>	Laboratory Control Sample					Run: 5971A.I_180416A			04/16/18 21:55
Bromodichloromethane	5.40	ug/L	0.50	108	74	128			
Bromoform	5.13	ug/L	0.50	103	66	128			
Chlorodibromomethane	5.23	ug/L	0.50	105	74	125			
Chloroform	4.88	ug/L	0.50	98	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	102	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	92	80	123			
<b>Lab ID: BLKa041618</b>	Method Blank					Run: 5971A.I_180416A			04/16/18 22:54
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	97	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	93	80	123			
<b>Lab ID: B18040751-001GMS</b>	Sample Matrix Spike					Run: 5971A.I_180416A			04/16/18 23:23
Bromodichloromethane	53.7	ug/L	5.0	107	74	128			
Bromoform	50.2	ug/L	5.0	100	66	128			
Chlorodibromomethane	52.3	ug/L	5.0	105	74	125			
Chloroform	95.0	ug/L	5.0	97	68	124			
Surr: 1,2-Dichloroethane-d4			5.0	100	71	139			
Surr: p-Bromofluorobenzene			5.0	99	80	127			
Surr: Toluene-d8			5.0	97	80	123			
<b>Lab ID: B18040751-001GMSD</b>	Sample Matrix Spike Duplicate					Run: 5971A.I_180416A			04/16/18 23:53
Bromodichloromethane	55.2	ug/L	5.0	110	74	128	2.8	20	
Bromoform	53.9	ug/L	5.0	108	66	128	7.2	20	
Chlorodibromomethane	54.9	ug/L	5.0	110	74	125	4.8	20	
Chloroform	99.8	ug/L	5.0	107	68	124	4.9	20	
Surr: 1,2-Dichloroethane-d4			5.0	103	71	139			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 04/19/18

**Work Order:** C18040251

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624							Batch: R298328		
Lab ID: B18040751-001GMSD	Sample Matrix Spike Duplicate				Run: 5971A.I_180416A			04/16/18 23:53	
Surr: p-Bromofluorobenzene			5.0	98	80	127			
Surr: Toluene-d8			5.0	94	80	123			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/03/18

**Project:** SW Alluvium

**Work Order:** C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-1079
<b>Lab ID: MB-GA-1079</b>	3	Method Blank					Run: G542M_180411A			04/16/18 11:29
Gross Alpha minus Rn & U		0.5	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.4	pCi/L							
Gross Alpha minus Rn & U MDC		0.6	pCi/L							
<b>Lab ID: LCS-GA-1079</b>		Laboratory Control Sample					Run: G542M_180411A			04/16/18 11:29
Gross Alpha minus Rn & U		33	pCi/L		96	80	120			
<b>Lab ID: C18040259-003CMS</b>		Sample Matrix Spike					Run: G542M_180411A			04/16/18 13:02
Gross Alpha minus Rn & U		64	pCi/L		95	70	130			
<b>Lab ID: C18040259-003CMSD</b>		Sample Matrix Spike Duplicate					Run: G542M_180411A			04/16/18 13:02
Gross Alpha minus Rn & U		66	pCi/L		98	70	130	2.9	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/03/18

**Project:** SW Alluvium

**Work Order:** C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E903.0										Batch: RA226-8902
<b>Lab ID:</b> LCS-RA226-8902	Laboratory Control Sample			Run: G542M_180410A			04/23/18 10:49			
Radium 226		8.8	pCi/L	87		80	120			
<b>Lab ID:</b> MB-RA226-8902	3	Method Blank			Run: G542M_180410A			04/23/18 10:49		
Radium 226		0.2	pCi/L							U
Radium 226 precision ( $\pm$ )		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
<b>Lab ID:</b> C18040249-003FMS	Sample Matrix Spike			Run: G542M_180410A			04/23/18 10:49			
Radium 226		18	pCi/L	83		70	130			
<b>Lab ID:</b> C18040249-003FMSD	Sample Matrix Spike Duplicate			Run: G542M_180410A			04/23/18 10:49			
Radium 226		16	pCi/L	73		70	130	12	20	

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/03/18

**Project:** SW Alluvium

**Work Order:** C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E908.0</b> Batch: RA-TH-ISO-2705										
<b>Lab ID:</b> LCS-RA-TH-ISO-2705	Laboratory Control Sample									
Thorium 230	11	pCi/L		93	80	120				04/19/18 11:42
<b>Lab ID:</b> C18040224-002CMS	Sample Matrix Spike									
Thorium 230	25	pCi/L		110	70	130				04/19/18 11:42
<b>Lab ID:</b> C18040224-002CMSD	Sample Matrix Spike Duplicate									
Thorium 230	27	pCi/L		123	70	130		11	20	04/19/18 11:42
<b>Lab ID:</b> MB-RA-TH-ISO-2705	3	Method Blank								
Thorium 230		0.3	pCi/L							04/19/18 11:42
Thorium 230 precision (±)		0.2	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
<b>Method: E908.0</b> Batch: RA-TH-ISO-2706										
<b>Lab ID:</b> LCS-RA-TH-ISO-2706	Laboratory Control Sample									
Thorium 230	12	pCi/L		103	80	120				04/26/18 12:39
<b>Lab ID:</b> C18040259-002CMS	Sample Matrix Spike									
Thorium 230	24	pCi/L		102	70	130				04/26/18 12:39
<b>Lab ID:</b> C18040259-002CMSD	Sample Matrix Spike Duplicate									
Thorium 230	25	pCi/L		109	70	130		6.3	20	04/26/18 12:39
<b>Lab ID:</b> MB-RA-TH-ISO-2706	3	Method Blank								
Thorium 230		0.010	pCi/L							U
Thorium 230 precision (±)		0.10	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

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MDC - Minimum detectable concentration

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U - Not detected at minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/03/18

**Project:** SW Alluvium

**Work Order:** C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E909.0										Batch: PB-210-0925
<b>Lab ID:</b> LCS-PB-210-0925	Laboratory Control Sample			Run: PACKARD 3100TR_180409A			04/11/18 13:58			
Lead 210	21	pCi/L		98	80	120				
<b>Lab ID:</b> MB-PB-210-0925	3	Method Blank		Run: PACKARD 3100TR_180409A			04/11/18 15:10			
Lead 210	0.2	pCi/L								U
Lead 210 precision (±)	0.6	pCi/L								
Lead 210 MDC	1	pCi/L								
<b>Lab ID:</b> C18040249-001FMS	Sample Matrix Spike			Run: PACKARD 3100TR_180409A			04/12/18 01:57			
Lead 210	47	pCi/L		109	70	130				
<b>Lab ID:</b> C18040249-001FMSD	Sample Matrix Spike Duplicate			Run: PACKARD 3100TR_180409A			04/12/18 03:05			
Lead 210	50	pCi/L		117	70	130	7.3	20		

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/03/18

Project: SW Alluvium

Work Order: C18040251

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	RA-05								Batch: RA228-5758	
Lab ID:	LCS-228-RA226-8902	Laboratory Control Sample				Run: TENNELEC-3_180410B			04/18/18 11:30	
Radium 228		8.6	pCi/L		87	80	120			
Lab ID:	MB-RA226-8902	3	Method Blank			Run: TENNELEC-3_180410B			04/18/18 11:30	
Radium 228		0.5	pCi/L							U
Radium 228 precision (±)		0.8	pCi/L							
Radium 228 MDC		1	pCi/L							
Lab ID:	C18040259-001CMS	Sample Matrix Spike				Run: TENNELEC-3_180410B			04/18/18 11:30	
Radium 228		19	pCi/L		91	70	130			
Lab ID:	C18040259-001CMSD	Sample Matrix Spike Duplicate				Run: TENNELEC-3_180410B			04/18/18 11:30	
Radium 228		21	pCi/L		102	70	130	11	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## ANALYTICAL SUMMARY REPORT

May 02, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18040249      Quote ID: C5148 - Quarterly Long List  
Project Name: Zone 1

Energy Laboratories, Inc. Casper WY received the following 11 samples for United Nuclear Corporation on 4/6/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18040249-001	614	04/03/18 12:50	04/06/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18040249-002	515-A	04/03/18 14:03	04/06/18	Aqueous	Same As Above
C18040249-003	604	04/03/18 15:07	04/06/18	Aqueous	Same As Above
C18040249-004	EPA-7	04/03/18 16:04	04/06/18	Aqueous	Same As Above
C18040249-005	EPA-5	04/03/18 16:47	04/06/18	Aqueous	Same As Above
C18040249-006	EPA-4	04/04/18 08:26	04/06/18	Aqueous	Same As Above
C18040249-007	EPA-2	04/04/18 09:34	04/06/18	Aqueous	Same As Above
C18040249-008	EPA-2 Duplicate	04/04/18 10:05	04/06/18	Aqueous	Same As Above
C18040249-009	TWQ-142	04/04/18 10:46	04/06/18	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C18040249-010	Rinsate	04/04/18 11:30 04/06/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved 624-Purgeable Organics 624-Purgeable Organics
C18040249-011	Field Blank	04/04/18 11:40 04/06/18	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.05.02 14:00:25 -06:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone 1  
**Work Order:** C18040249

**Report Date:** 05/02/18

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/25/18

Project: Zone 1

Work Order: C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Analytical Run: MANTECH_180408B										
Method: A2320 B										
Lab ID: ICV		Initial Calibration Verification Standard								04/08/18 16:33
pH		6.94	s.u.	0.010	101	98	102			
Batch: R234002										
Method: A2320 B										
Lab ID: MBLK		Method Blank								04/08/18 23:43
Alkalinity, Total as CaCO <sub>3</sub>		2	mg/L	0.8						
Run: MANTECH_180408B										
Lab ID: LCS		Laboratory Control Sample								04/08/18 23:51
Alkalinity, Total as CaCO <sub>3</sub>		250	mg/L	5.0	99	90	110			
Run: MANTECH_180408B										
Lab ID: C18040225-004ADUP		Sample Duplicate								04/09/18 00:09
Alkalinity, Total as CaCO <sub>3</sub>		306	mg/L	5.0				0.1	10	
Run: MANTECH_180408B										
Lab ID: C18040249-008ADUP		Sample Duplicate								04/09/18 01:39
Alkalinity, Total as CaCO <sub>3</sub>		232	mg/L	5.0				0.1	10	
Run: MANTECH_180408B										
Analytical Run: MANTECH_180420A										
Method: A2320 B										
Lab ID: ICV		Initial Calibration Verification Standard								04/20/18 16:12
pH		6.88	s.u.	0.010	100	98	102			
Batch: R234505										
Method: A2320 B										
Lab ID: MBLK		Method Blank								04/20/18 16:17
Alkalinity, Total as CaCO <sub>3</sub>		3	mg/L	0.8						
Run: MANTECH_180420A										
Lab ID: LCS		Laboratory Control Sample								04/20/18 16:27
Alkalinity, Total as CaCO <sub>3</sub>		244	mg/L	5.0	96	90	110			
Run: MANTECH_180420A										
Lab ID: C18040249-006ADUP		Sample Duplicate								04/20/18 16:42
Alkalinity, Total as CaCO <sub>3</sub>		128	mg/L	5.0				0.2	10	
Run: MANTECH_180420A										

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/25/18

Project: Zone 1

Work Order: C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C								Batch: TDS180409A		
Lab ID: MB-25_180409A	Method Blank					Run: BAL-16_180409A		04/09/18 14:23		
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-26_180409A	Laboratory Control Sample					Run: BAL-16_180409A		04/09/18 14:23		
Solids, Total Dissolved TDS @ 180 C		1110	mg/L	11	100	90	110			
Lab ID: C18040225-005A DUP	Sample Duplicate					Run: BAL-16_180409A		04/09/18 14:24		
Solids, Total Dissolved TDS @ 180 C		2220	mg/L	20				0.6	5	
Lab ID: C18040249-006A DUP	Sample Duplicate					Run: BAL-16_180409A		04/09/18 14:26		
Solids, Total Dissolved TDS @ 180 C		4700	mg/L	40				0.3	5	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/25/18

**Project:** Zone 1

**Work Order:** C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A4500-H B										
Analytical Run: PHSC_101-C_180409A										
<b>Lab ID:</b> 6.86	Initial Calibration Verification Standard									
pH		6.90	s.u.	0.010	101	98	102			04/09/18 08:30
<b>Method:</b> A4500-H B										
Batch: R234006										
<b>Lab ID:</b> C18040249-002ADUP	Sample Duplicate									
pH		6.36	s.u.	0.010				0.2	1.5	Run: PHSC_101-C_180409A 04/09/18 11:46

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/25/18

Project: Zone 1

Work Order: C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: A4500-NH3 G								Analytical Run: FIA201-C_180411A			
Lab ID: ICV	Initial Calibration Verification Standard										04/11/18 13:39
Nitrogen, Ammonia as N		0.988	mg/L	0.050	99	90	110				
Method: A4500-NH3 G								Batch: R234128			
Lab ID: MBLK	Method Blank										04/11/18 13:38
Nitrogen, Ammonia as N		ND	mg/L	0.009	Run: FIA201-C_180411A						
Lab ID: LFB	Laboratory Fortified Blank										04/11/18 13:40
Nitrogen, Ammonia as N		0.933	mg/L	0.050	94	90	110				
Lab ID: C18040172-004EMS	Sample Matrix Spike										04/11/18 13:46
Nitrogen, Ammonia as N		6.92	mg/L	0.25	95	90	110				
Lab ID: C18040172-004EMSD	Sample Matrix Spike Duplicate										04/11/18 13:47
Nitrogen, Ammonia as N		6.67	mg/L	0.25	90	90	110	3.7	10		

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/25/18

**Project:** Zone 1

**Work Order:** C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E300.0</b> Analytical Run: IC2-C_180409A										
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard 04/09/18 17:28								
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		40.9	mg/L	1.0	102	90	110			
<b>Method: E300.0</b> Batch: R234047										
<b>Lab ID: ICB</b>	2	Method Blank Run: IC2-C_180409A 04/09/18 17:47								
Chloride		ND	mg/L	0.03						
Sulfate		ND	mg/L	0.04						
<b>Lab ID: LFB</b>	2	Laboratory Fortified Blank Run: IC2-C_180409A 04/09/18 18:05								
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
<b>Lab ID: C18040249-003AMS</b>	2	Sample Matrix Spike Run: IC2-C_180409A 04/09/18 23:18								
Chloride		316	mg/L	2.1	106	80	120			
Sulfate		5620	mg/L	8.3		80	120			A
<b>Lab ID: C18040249-003AMSD</b>	2	Sample Matrix Spike Duplicate Run: IC2-C_180409A 04/09/18 23:37								
Chloride		321	mg/L	2.1	108	80	120	1.3	20	
Sulfate		5660	mg/L	8.3		80	120	0.7	20	A
<b>Method: E300.0</b> Analytical Run: IC3-C_180420A										
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard 04/20/18 17:31								
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.5	mg/L	1.0	101	90	110			
<b>Method: E300.0</b> Batch: R234551										
<b>Lab ID: ICB</b>	2	Method Blank Run: IC3-C_180420A 04/20/18 17:51								
Chloride		ND	mg/L	0.09						
Sulfate		0.1	mg/L	0.10						
<b>Lab ID: LFB</b>	2	Laboratory Fortified Blank Run: IC3-C_180420A 04/20/18 18:11								
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.8	mg/L	1.0	102	90	110			
<b>Lab ID: C18040249-006AMS</b>	2	Sample Matrix Spike Run: IC3-C_180420A 04/20/18 19:11								
Chloride		239	mg/L	2.1	102	80	120			
Sulfate		3840	mg/L	8.3	102	80	120			
<b>Lab ID: C18040249-006AMSD</b>	2	Sample Matrix Spike Duplicate Run: IC3-C_180420A 04/20/18 19:31								
Chloride		243	mg/L	2.1	103	80	120	1.5	20	
Sulfate		3850	mg/L	8.3	103	80	120	0.2	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/25/18

Project: Zone 1

Work Order: C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2										Analytical Run: FIA201-C_180409A
Lab ID: ICV		Initial Calibration Verification Standard								04/09/18 10:55
Nitrogen, Nitrate+Nitrite as N		0.991	mg/L	0.010	99	90	110			
Method: E353.2										Batch: R234018
Lab ID: MBLK		Method Blank					Run: FIA201-C_180409A			04/09/18 10:57
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						
Lab ID: LFB		Laboratory Fortified Blank					Run: FIA201-C_180409A			04/09/18 10:58
Nitrogen, Nitrate+Nitrite as N		1.06	mg/L	0.010	107	90	110			
Lab ID: C18040170-001DMS		Sample Matrix Spike					Run: FIA201-C_180409A			04/09/18 11:01
Nitrogen, Nitrate+Nitrite as N		16.6	mg/L	0.050	100	90	110			
Lab ID: C18040170-001DMSD		Sample Matrix Spike Duplicate					Run: FIA201-C_180409A			04/09/18 11:03
Nitrogen, Nitrate+Nitrite as N		16.5	mg/L	0.050	97	90	110	0.9	10	
Lab ID: C18040249-005EMS		Sample Matrix Spike					Run: FIA201-C_180409A			04/09/18 11:18
Nitrogen, Nitrate+Nitrite as N		22.8	mg/L	0.10	106	90	110			
Lab ID: C18040249-005EMSD		Sample Matrix Spike Duplicate					Run: FIA201-C_180409A			04/09/18 11:19
Nitrogen, Nitrate+Nitrite as N		22.5	mg/L	0.10	103	90	110	1.3	10	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/19/18

Project: Zone 1

Work Order: C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> Analytical Run: ICP203-B_180411A										
<b>Lab ID: ICV</b>	4	Continuing Calibration Verification Standard								04/11/18 09:45
Calcium		24.4	mg/L	1.0	97	95	105			
Magnesium		25.0	mg/L	1.0	100	95	105			
Potassium		25.3	mg/L	1.0	101	95	105			
Sodium		25.4	mg/L	1.0	102	95	105			
<b>Method: E200.7</b> Batch: R297981										
<b>Lab ID: MB-6500DIS180411A</b>	4	Method Blank								04/11/18 09:53
Calcium		ND	mg/L	0.07						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.1						
Sodium		ND	mg/L	0.1						
<b>Lab ID: LFB-6500DIS180411A</b>	4	Laboratory Fortified Blank								04/11/18 10:01
Calcium		49.0	mg/L	1.0	98	85	115			
Magnesium		48.1	mg/L	1.0	96	85	115			
Potassium		48.3	mg/L	1.0	97	85	115			
Sodium		48.4	mg/L	1.0	97	85	115			
<b>Lab ID: C18040249-006BMS2</b>	4	Sample Matrix Spike								04/11/18 15:37
Calcium		730	mg/L	1.0	91	70	130			
Magnesium		606	mg/L	1.0	93	70	130			
Potassium		237	mg/L	1.0	92	70	130			
Sodium		413	mg/L	1.0	96	70	130			
<b>Lab ID: C18040249-006BMSD</b>	4	Sample Matrix Spike Duplicate								04/11/18 15:41
Calcium		736	mg/L	1.0	93	70	130	0.8	20	
Magnesium		607	mg/L	1.0	94	70	130	0.2	20	
Potassium		239	mg/L	1.0	92	70	130	0.9	20	
Sodium		416	mg/L	1.0	97	70	130	0.7	20	
<b>Lab ID: B18040758-002BMS2</b>	4	Sample Matrix Spike								04/11/18 16:40
Calcium		1020	mg/L	1.0	96	70	130			
Magnesium		464	mg/L	1.0	90	70	130			
Potassium		232	mg/L	1.0	90	70	130			
Sodium		447	mg/L	1.0	93	70	130			
<b>Lab ID: B18040758-002BMSD</b>	4	Sample Matrix Spike Duplicate								04/11/18 16:44
Calcium		1010	mg/L	1.0	89	70	130	1.7	20	
Magnesium		466	mg/L	1.0	91	70	130	0.6	20	
Potassium		235	mg/L	1.0	91	70	130	1.4	20	
Sodium		450	mg/L	1.0	95	70	130	0.7	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 04/19/18

Work Order: C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	E200.7							Analytical Run: ICP204-B_180423A		
Lab ID:	ICV	4	Continuing Calibration Verification Standard						04/23/18 13:40	
Calcium		24.7	mg/L	1.0	99	95	105			
Magnesium		24.5	mg/L	1.0	98	95	105			
Potassium		24.5	mg/L	1.0	98	95	105			
Sodium		24.5	mg/L	1.0	98	95	105			
Method:	E200.7							Batch: R298745		
Lab ID:	MB-7400DIS180423A	4	Method Blank			Run: ICP204-B_180423A			04/23/18 13:47	
Calcium		ND	mg/L	0.07						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.1						
Sodium		0.2	mg/L	0.1						
Lab ID:	LFB-7400DIS180423A	4	Laboratory Fortified Blank			Run: ICP204-B_180423A			04/23/18 13:55	
Calcium		48.7	mg/L	1.0	97	85	115			
Magnesium		48.5	mg/L	1.0	97	85	115			
Potassium		50.1	mg/L	1.0	100	85	115			
Sodium		49.8	mg/L	1.0	99	85	115			
Lab ID:	B18041574-001BMS2	4	Sample Matrix Spike			Run: ICP204-B_180423A			04/23/18 15:06	
Calcium		101	mg/L	1.0	98	70	130			
Magnesium		98.4	mg/L	1.0	98	70	130			
Potassium		103	mg/L	1.0	101	70	130			
Sodium		281	mg/L	1.0	96	70	130			
Lab ID:	B18041574-001BMSD	4	Sample Matrix Spike Duplicate			Run: ICP204-B_180423A			04/23/18 15:09	
Calcium		101	mg/L	1.0	97	70	130	0.5	20	
Magnesium		98.0	mg/L	1.0	97	70	130	0.5	20	
Potassium		103	mg/L	1.0	101	70	130	0.0	20	
Sodium		279	mg/L	1.0	94	70	130	0.6	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/19/18

Project: Zone 1

Work Order: C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8 Analytical Run: ICPMS207-B_180411A										
Lab ID: QCS	10 Initial Calibration Verification Standard								04/11/18 21:51	
Aluminum		0.261	mg/L	0.10	105	90	110			
Beryllium		0.0252	mg/L	0.0010	101	90	110			
Cadmium		0.0253	mg/L	0.0010	101	90	110			
Cobalt		0.0497	mg/L	0.010	99	90	110			
Lead		0.0495	mg/L	0.010	99	90	110			
Manganese		0.254	mg/L	0.010	101	90	110			
Molybdenum		0.0472	mg/L	0.0050	95	90	110			
Nickel		0.0504	mg/L	0.010	101	90	110			
Uranium		0.0196	mg/L	0.0010	98	90	110			
Vanadium		0.0494	mg/L	0.10	99	90	110			
Method: E200.8 Batch: 120244										
Lab ID: MB-120244	10 Method Blank								Run: ICPMS207-B_180411A 04/11/18 23:22	
Aluminum		ND	mg/L	0.001						
Beryllium		ND	mg/L	0.0001						
Cadmium		ND	mg/L	0.00003						
Cobalt		ND	mg/L	0.00004						
Lead		ND	mg/L	0.00008						
Manganese		ND	mg/L	0.0001						
Molybdenum		ND	mg/L	0.00006						
Nickel		ND	mg/L	0.0008						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.0006						
Lab ID: LCS-120244	10 Laboratory Control Sample								Run: ICPMS207-B_180411A 04/11/18 23:25	
Aluminum		2.59	mg/L	0.010	103	85	115			
Beryllium		0.248	mg/L	0.0010	99	85	115			
Cadmium		0.253	mg/L	0.0010	101	85	115			
Cobalt		0.454	mg/L	0.0010	91	85	115			
Lead		0.521	mg/L	0.0010	104	85	115			
Manganese		2.63	mg/L	0.0010	105	85	115			
Molybdenum		0.503	mg/L	0.0050	101	85	115			
Nickel		0.499	mg/L	0.0010	100	85	115			
Uranium		0.507	mg/L	0.0010	101	85	115			
Vanadium		0.502	mg/L	0.010	100	85	115			
Lab ID: B18040731-001CMS3	10 Sample Matrix Spike								Run: ICPMS207-B_180411A 04/11/18 23:31	
Aluminum		3.80	mg/L	0.030	118	70	130			
Beryllium		0.243	mg/L	0.0010	97	70	130			
Cadmium		0.248	mg/L	0.0010	99	70	130			
Cobalt		0.464	mg/L	0.0050	88	70	130			
Lead		0.512	mg/L	0.0010	102	70	130			
Manganese		2.60	mg/L	0.0010	103	70	130			
Molybdenum		0.487	mg/L	0.0010	97	70	130			
Nickel		0.490	mg/L	0.0050	98	70	130			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/19/18

Project: Zone 1

Work Order: C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 120244
Lab ID: B18040731-001CMS3	10	Sample Matrix Spike				Run: ICPMS207-B_180411A				04/11/18 23:31
Uranium		0.501	mg/L	0.00030	100	70	130			
Vanadium		0.492	mg/L	0.010	98	70	130			
Lab ID: B18040731-001CMSD	10	Sample Matrix Spike Duplicate				Run: ICPMS207-B_180411A				04/11/18 23:33
Aluminum		3.78	mg/L	0.030	118	70	130	0.4	20	
Beryllium		0.244	mg/L	0.0010	98	70	130	0.3	20	
Cadmium		0.250	mg/L	0.0010	100	70	130	0.7	20	
Cobalt		0.467	mg/L	0.0050	89	70	130	0.8	20	
Lead		0.514	mg/L	0.0010	103	70	130	0.4	20	
Manganese		2.59	mg/L	0.0010	103	70	130	0.6	20	
Molybdenum		0.491	mg/L	0.0010	98	70	130	0.8	20	
Nickel		0.487	mg/L	0.0050	97	70	130	0.8	20	
Uranium		0.506	mg/L	0.00030	101	70	130	1.1	20	
Vanadium		0.489	mg/L	0.010	98	70	130	0.6	20	
Lab ID: C18040249-011CMS3	10	Sample Matrix Spike				Run: ICPMS207-B_180411A				04/12/18 00:45
Aluminum		2.53	mg/L	0.030	101	70	130			
Beryllium		0.244	mg/L	0.0010	97	70	130			
Cadmium		0.242	mg/L	0.0010	97	70	130			
Cobalt		0.441	mg/L	0.0050	88	70	130			
Lead		0.507	mg/L	0.0010	101	70	130			
Manganese		2.54	mg/L	0.0010	102	70	130			
Molybdenum		0.478	mg/L	0.0010	96	70	130			
Nickel		0.482	mg/L	0.0050	96	70	130			
Uranium		0.492	mg/L	0.00030	99	70	130			
Vanadium		0.482	mg/L	0.010	96	70	130			
Lab ID: C18040249-011CMSD	10	Sample Matrix Spike Duplicate				Run: ICPMS207-B_180411A				04/12/18 00:48
Aluminum		2.56	mg/L	0.030	102	70	130	1.0	20	
Beryllium		0.246	mg/L	0.0010	99	70	130	1.2	20	
Cadmium		0.250	mg/L	0.0010	100	70	130	3.5	20	
Cobalt		0.445	mg/L	0.0050	89	70	130	0.9	20	
Lead		0.513	mg/L	0.0010	103	70	130	1.2	20	
Manganese		2.55	mg/L	0.0010	102	70	130	0.2	20	
Molybdenum		0.492	mg/L	0.0010	98	70	130	2.9	20	
Nickel		0.484	mg/L	0.0050	97	70	130	0.5	20	
Uranium		0.498	mg/L	0.00030	100	70	130	1.2	20	
Vanadium		0.482	mg/L	0.010	96	70	130	0.1	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Report Date: 04/20/18

Project: Zone 1

Work Order: C18040249

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 C					tical Run: SELENIUM PSA MILLENIUM_180419A				
Lab ID: ICV-41131	Initial Calibration Verification Standard								04/19/18 13:03
Selenium-IV	0.0192	mg/L	0.0010	96	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								04/19/18 13:04
Selenium-IV	0.0195	mg/L	0.0010	98	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								04/19/18 13:32
Selenium-IV	0.0189	mg/L	0.0010	94	90	110			
Method: A3114 C					Batch: 41131				
Lab ID: MB-41131	Method Blank								04/19/18 13:07
Selenium-IV	ND	mg/L	0.0006						
Lab ID: LCS-41131	Laboratory Control Sample								04/19/18 13:09
Selenium-IV	0.0190	mg/L	0.0010	95	90	110			
Lab ID: LFB-41131	Laboratory Fortified Blank								04/19/18 13:10
Selenium-IV	0.0197	mg/L	0.0010	98	85	115			
Lab ID: C18040249-001DMS	Sample Matrix Spike								04/19/18 13:14
Selenium-IV	0.0211	mg/L	0.0010	97	70	130			
Lab ID: C18040249-001DMSD	Sample Matrix Spike Duplicate								04/19/18 13:15
Selenium-IV	0.0220	mg/L	0.0010	102	70	130	4.0	20	
Lab ID: H18040214-002DMS	Sample Matrix Spike								04/19/18 13:39
Selenium-IV	0.0199	mg/L	0.0010	100	70	130			
Lab ID: H18040214-002DMSD	Sample Matrix Spike Duplicate								04/19/18 13:40
Selenium-IV	0.0197	mg/L	0.0010	98	70	130	1.4	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 04/20/18

Work Order: C18040249

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1632AM					Analytical Run: ARSENIC SPECIATION_180412A				
Lab ID: AS-ICV 25ppb-4/12/2018	Initial Calibration Verification Standard								04/12/18 14:48
Arsenic-III	24.8	ug/L	5.0	99	87.6	114			
Lab ID: AS-50.0-4/12/2018	Continuing Calibration Verification Standard								04/12/18 21:00
Arsenic-III	50.0	ug/L	5.0	100	85	115			
Lab ID: AS-50.0-4/12/2018	Continuing Calibration Verification Standard								04/12/18 23:49
Arsenic-III	50.6	ug/L	5.0	101	85	115			
Method: E1632AM					Batch: R133862				
Lab ID: AS-LFB 50ppb-4/12/2018	Laboratory Fortified Blank				Run: ARSENIC SPECIATION_1804		04/12/18 15:24		
Arsenic-III	50.6	ug/L	5.0	101	78	121			
Lab ID: ICB	Method Blank				Run: ARSENIC SPECIATION_1804		04/12/18 15:36		
Arsenic-III	ND	ug/L	0.2						
Lab ID: H18040120-011D MS	Sample Matrix Spike				Run: ARSENIC SPECIATION_1804		04/12/18 21:37		
Arsenic-III	49.6	ug/L	5.0	99	78	121			
Lab ID: H18040120-011D MSD	Sample Matrix Spike Duplicate				Run: ARSENIC SPECIATION_1804		04/12/18 21:49		
Arsenic-III	50.8	ug/L	5.0	102	78	121	2.4	20	
Lab ID: C18040249-010D MS	Sample Matrix Spike				Run: ARSENIC SPECIATION_1804		04/13/18 00:25		
Arsenic-III	47.7	ug/L	5.0	95	78	121			
Lab ID: C18040249-010D MSD	Sample Matrix Spike Duplicate				Run: ARSENIC SPECIATION_1804		04/13/18 00:37		
Arsenic-III	53.6	ug/L	5.0	107	78	121	12	20	

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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/19/18

**Project:** Zone 1

**Work Order:** C18040249

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>							Analytical Run: R298302		
<b>Lab ID: CCV041318</b>	Continuing Calibration Verification Standard						04/13/18 09:40		
Bromodichloromethane	4.67	ug/L	0.50	93	70	130			
Bromoform	4.27	ug/L	0.50	85	70	130			
Chlorodibromomethane	4.74	ug/L	0.50	95	70	130			
Chloroform	4.55	ug/L	0.50	91	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	97	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	94	80	123			
<b>Method: E624</b>							Batch: R298302		
<b>Lab ID: LCS041318</b>	Laboratory Control Sample						Run: 5971A.I_180413C		
Bromodichloromethane	5.02	ug/L	0.50	100	74	128			04/13/18 10:19
Bromoform	4.57	ug/L	0.50	91	66	128			
Chlorodibromomethane	5.02	ug/L	0.50	100	74	125			
Chloroform	5.01	ug/L	0.50	100	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	97	71	139			
Surr: p-Bromofluorobenzene			0.50	95	80	127			
Surr: Toluene-d8			0.50	96	80	123			
<b>Lab ID: BLK041318</b>	Method Blank						Run: 5971A.I_180413C		
Bromodichloromethane	ND	ug/L	0.50						04/13/18 11:18
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	96	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	95	80	123			
<b>Lab ID: C18040249-001GMS</b>	Sample Matrix Spike						Run: 5971A.I_180413C		
Bromodichloromethane	10.2	ug/L	1.0	102	74	128			04/13/18 20:41
Bromoform	9.67	ug/L	1.0	97	66	128			
Chlorodibromomethane	10.3	ug/L	1.0	103	74	125			
Surr: 1,2-Dichloroethane-d4			1.0	104	71	139			
Surr: p-Bromofluorobenzene			1.0	97	80	127			
Surr: Toluene-d8			1.0	94	80	123			
<b>Lab ID: C18040249-001GMSD</b>	Sample Matrix Spike Duplicate						Run: 5971A.I_180413C		
Bromodichloromethane	10.1	ug/L	1.0	101	74	128	0.4	20	04/13/18 21:10
Bromoform	9.44	ug/L	1.0	94	66	128	2.4	20	
Chlorodibromomethane	9.95	ug/L	1.0	99	74	125	3.7	20	
Surr: 1,2-Dichloroethane-d4			1.0	106	71	139			
Surr: p-Bromofluorobenzene			1.0	95	80	127			
Surr: Toluene-d8			1.0	95	80	123			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 04/19/18

Work Order: C18040249

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>							Analytical Run: R298328		
<b>Lab ID: CCV041618</b>	Continuing Calibration Verification Standard							04/16/18 09:28	
Bromodichloromethane	4.87	ug/L	0.50	97	70	130			
Bromoform	4.68	ug/L	0.50	94	70	130			
Chlorodibromomethane	4.83	ug/L	0.50	97	70	130			
Chloroform	4.79	ug/L	0.50	96	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	96	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	96	80	123			
<b>Method: E624</b>							Batch: R298328		
<b>Lab ID: LCS041618</b>	Laboratory Control Sample							Run: 5971A.I_180416A	
Bromodichloromethane	4.98	ug/L	0.50	100	74	128		04/16/18 10:35	
Bromoform	4.68	ug/L	0.50	94	66	128			
Chlorodibromomethane	5.02	ug/L	0.50	100	74	125			
Chloroform	4.74	ug/L	0.50	95	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	95	71	139			
Surr: p-Bromofluorobenzene			0.50	93	80	127			
Surr: Toluene-d8			0.50	94	80	123			
<b>Lab ID: BLK041618</b>	Method Blank							Run: 5971A.I_180416A	
Bromodichloromethane	ND	ug/L	0.50					04/16/18 11:34	
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	93	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	95	80	123			
<b>Lab ID: C18040249-003GMS</b>	Sample Matrix Spike							Run: 5971A.I_180416A	
Bromodichloromethane	10.3	ug/L	1.0	103	74	128		04/16/18 19:58	
Bromoform	9.67	ug/L	1.0	97	66	128			
Chlorodibromomethane	9.90	ug/L	1.0	99	74	125			
Chloroform	21.6	ug/L	1.0	95	68	124			
Surr: 1,2-Dichloroethane-d4			1.0	100	71	139			
Surr: p-Bromofluorobenzene			1.0	97	80	127			
Surr: Toluene-d8			1.0	96	80	123			
<b>Lab ID: C18040249-003GMSD</b>	Sample Matrix Spike Duplicate							Run: 5971A.I_180416A	
Bromodichloromethane	10.6	ug/L	1.0	106	74	128	2.8	20	
Bromoform	9.80	ug/L	1.0	98	66	128	1.4	20	
Chlorodibromomethane	10.4	ug/L	1.0	104	74	125	4.9	20	
Chloroform	23.1	ug/L	1.0	110	68	124	6.8	20	
Surr: 1,2-Dichloroethane-d4			1.0	105	71	139			
Surr: p-Bromofluorobenzene			1.0	97	80	127			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 04/19/18

Work Order: C18040249

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b> Batch: R298328									
<b>Lab ID: C18040249-003GMSD</b>	Sample Matrix Spike Duplicate					Run: 5971A.I_180416A			04/16/18 20:27
Surr: Toluene-d8			1.0	94	80	123			
<b>Lab ID: LCSa041618</b>	Laboratory Control Sample					Run: 5971A.I_180416A			04/16/18 21:55
Bromodichloromethane	5.40	ug/L	0.50	108	74	128			
Bromoform	5.13	ug/L	0.50	103	66	128			
Chlorodibromomethane	5.23	ug/L	0.50	105	74	125			
Chloroform	4.88	ug/L	0.50	98	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	102	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	92	80	123			
<b>Lab ID: BLKa041618</b>	Method Blank					Run: 5971A.I_180416A			04/16/18 22:54
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	97	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	93	80	123			
<b>Lab ID: C18040249-001GMS</b>	Sample Matrix Spike					Run: 5971A.I_180416A			04/16/18 23:23
Bromodichloromethane	53.7	ug/L	5.0	107	74	128			
Bromoform	50.2	ug/L	5.0	100	66	128			
Chlorodibromomethane	52.3	ug/L	5.0	105	74	125			
Chloroform	95.0	ug/L	5.0	97	68	124			
Surr: 1,2-Dichloroethane-d4			5.0	100	71	139			
Surr: p-Bromofluorobenzene			5.0	99	80	127			
Surr: Toluene-d8			5.0	97	80	123			
<b>Lab ID: C18040249-001GMSD</b>	Sample Matrix Spike Duplicate					Run: 5971A.I_180416A			04/16/18 23:53
Bromodichloromethane	55.2	ug/L	5.0	110	74	128	2.8	20	
Bromoform	53.9	ug/L	5.0	108	66	128	7.2	20	
Chlorodibromomethane	54.9	ug/L	5.0	110	74	125	4.8	20	
Chloroform	99.8	ug/L	5.0	107	68	124	4.9	20	
Surr: 1,2-Dichloroethane-d4			5.0	103	71	139			
Surr: p-Bromofluorobenzene			5.0	98	80	127			
Surr: Toluene-d8			5.0	94	80	123			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/24/18

**Project:** Zone 1

**Work Order:** C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-1079
<b>Lab ID: MB-GA-1079</b>	3	Method Blank					Run: G542M_180411A			04/16/18 11:29
Gross Alpha minus Rn & U		0.5	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.4	pCi/L							
Gross Alpha minus Rn & U MDC		0.6	pCi/L							
<b>Lab ID: LCS-GA-1079</b>		Laboratory Control Sample					Run: G542M_180411A			04/16/18 11:29
Gross Alpha minus Rn & U	33		pCi/L	96		80	120			
<b>Lab ID: C18040259-003CMS</b>		Sample Matrix Spike					Run: G542M_180411A			04/16/18 13:02
Gross Alpha minus Rn & U	64		pCi/L	95		70	130			
<b>Lab ID: C18040259-003CMSD</b>		Sample Matrix Spike Duplicate					Run: G542M_180411A			04/16/18 13:02
Gross Alpha minus Rn & U	66		pCi/L	98		70	130	2.9	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/24/18

**Project:** Zone 1

**Work Order:** C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E903.0										Batch: RA226-8902
<b>Lab ID:</b> LCS-RA226-8902	Laboratory Control Sample			Run: G542M_180410A			04/23/18 10:49			
Radium 226		8.8	pCi/L	87		80	120			
<b>Lab ID:</b> MB-RA226-8902	3	Method Blank			Run: G542M_180410A			04/23/18 10:49		
Radium 226		0.2	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
<b>Lab ID:</b> C18040249-003FMS	Sample Matrix Spike			Run: G542M_180410A			04/23/18 10:49			
Radium 226		18	pCi/L	83		70	130			
<b>Lab ID:</b> C18040249-003FMSD	Sample Matrix Spike Duplicate			Run: G542M_180410A			04/23/18 10:49			
Radium 226		16	pCi/L	73		70	130	12	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/24/18

**Project:** Zone 1

**Work Order:** C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E908.0										Batch: RA-TH-ISO-2705
<b>Lab ID:</b> LCS-RA-TH-ISO-2705	Laboratory Control Sample									
Thorium 230	11	pCi/L		93		80	120			Run: EGG-ORTEC_2_180412B 04/19/18 11:42
<b>Lab ID:</b> C18040224-002CMS	Sample Matrix Spike									
Thorium 230	25	pCi/L		110		70	130			Run: EGG-ORTEC_2_180412B 04/19/18 11:42
<b>Lab ID:</b> C18040224-002CMSD	Sample Matrix Spike Duplicate									
Thorium 230	27	pCi/L		123		70	130	11	20	Run: EGG-ORTEC_2_180412B 04/19/18 11:42
<b>Lab ID:</b> MB-RA-TH-ISO-2705	3	Method Blank								
Thorium 230		0.3	pCi/L							Run: EGG-ORTEC_2_180412B 04/19/18 11:42
Thorium 230 precision ( $\pm$ )		0.2	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/24/18

Project: Zone 1

Work Order: C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0										Batch: PB-210-0925
Lab ID: LCS-PB-210-0925	Laboratory Control Sample			Run: PACKARD 3100TR_180409A			04/11/18 13:58			
Lead 210		21	pCi/L	98		80	120			
Lab ID: MB-PB-210-0925	3	Method Blank			Run: PACKARD 3100TR_180409A			04/11/18 15:10		
Lead 210		0.2	pCi/L							U
Lead 210 precision (±)		0.6	pCi/L							
Lead 210 MDC		1	pCi/L							
Lab ID: C18040249-001FMS	Sample Matrix Spike			Run: PACKARD 3100TR_180409A			04/12/18 01:57			
Lead 210		47	pCi/L	109		70	130			
Lab ID: C18040249-001FMSD	Sample Matrix Spike Duplicate			Run: PACKARD 3100TR_180409A			04/12/18 03:05			
Lead 210		50	pCi/L	117		70	130	7.3	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/24/18

**Project:** Zone 1

**Work Order:** C18040249

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> RA-05										Batch: RA228-5758
<b>Lab ID:</b> LCS-228-RA226-8902	Laboratory Control Sample			Run: TENNELEC-3_180410B						
Radium 228		8.6	pCi/L	87	80	120				04/18/18 11:30
<b>Lab ID:</b> MB-RA226-8902	3	Method Blank		Run: TENNELEC-3_180410B						
Radium 228		0.5	pCi/L							04/18/18 11:30
Radium 228 precision (±)		0.8	pCi/L							U
Radium 228 MDC		1	pCi/L							
<b>Lab ID:</b> C18040259-001CMS	Sample Matrix Spike			Run: TENNELEC-3_180410B						
Radium 228		19	pCi/L	91	70	130				04/18/18 11:30
<b>Lab ID:</b> C18040259-001CMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_180410B						
Radium 228		21	pCi/L	102	70	130	11	20		04/18/18 11:30

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## ANALYTICAL SUMMARY REPORT

May 15, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18040463      Quote ID: C5148 - Quarterly Long List  
Project Name: Zone 3

Energy Laboratories, Inc. Casper WY received the following 7 samples for United Nuclear Corporation on 4/12/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18040463-001	613	04/09/18 08:21	04/12/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Acidity, Total as CaCO3 Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18040463-002	517	04/09/18 09:08	04/12/18	Aqueous	Same As Above
C18040463-003	708	04/09/18 10:14	04/12/18	Aqueous	Same As Above
C18040463-004	711	04/09/18 11:43	04/12/18	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C18040463-005	EPA-13	04/09/18 12:57 04/12/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18040463-006	420	04/09/18 14:15 04/12/18	Aqueous	Same As Above
C18040463-007	EPA-14	04/09/18 15:50 04/12/18	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.05.15 14:08:27 -06:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone 3  
**Work Order:** C18040463

**Report Date:** 05/15/18

## **CASE NARRATIVE**

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Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/01/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2310 B										Analytical Run: ACIDITY_180417A
Lab ID: ICV		Initial Calibration Verification Standard								04/17/18 15:40
pH		6.82	s.u.	0.010	99	98	102			
Method: A2310 B										Batch: ACID180416_A
Lab ID: MBLK		Method Blank								04/17/18 15:41
Acidity, Total as CaCO3		0.5	mg/L							
Lab ID: LCS		Laboratory Control Sample								04/17/18 15:45
Acidity, Total as CaCO3		745	mg/L		99	90	110			
Lab ID: C18040463-001A DUP		Sample Duplicate								04/17/18 15:45
Acidity, Total as CaCO3		3080	mg/L					0.6	10	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/01/18

**Project:** Zone-3

**Work Order:** C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	A2320 B							Analytical Run: MANTECH_180413B		
Lab ID:	ICV	Initial Calibration Verification Standard							04/13/18 14:54	
pH		6.95	s.u.	0.010	101	98	102			
Method:	A2320 B							Batch: R234234		
Lab ID:	MBLK	Method Blank				Run: MANTECH_180413B			04/13/18 18:43	
Alkalinity, Total as CaCO3		2	mg/L	0.8						
Lab ID:	LCS	Laboratory Control Sample				Run: MANTECH_180413B			04/13/18 18:52	
Alkalinity, Total as CaCO3		244	mg/L	5.0	97	90	110			
Lab ID:	C18040463-003ADUP	Sample Duplicate				Run: MANTECH_180413B			04/13/18 20:19	
Bicarbonate as HCO3		ND	mg/L	5.0					10	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/01/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C								Batch: TDS180413A		
Lab ID: MB-1_180413A		Method Blank					Run: BAL-16_180413A		04/13/18 13:02	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-2_180413A		Laboratory Control Sample					Run: BAL-16_180413A		04/13/18 13:02	
Solids, Total Dissolved TDS @ 180 C		1110	mg/L	11	100	90	110			
Lab ID: C18040463-005A DUP		Sample Duplicate					Run: BAL-16_180413A		04/13/18 13:08	
Solids, Total Dissolved TDS @ 180 C		7590	mg/L	100				1.4	5	
Method: A2540 C								Batch: TDS180414A		
Lab ID: MB-1_180414A		Method Blank					Run: BAL-16_180414A		04/14/18 17:34	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-2_180414A		Laboratory Control Sample					Run: BAL-16_180414A		04/14/18 17:34	
Solids, Total Dissolved TDS @ 180 C		1050	mg/L	11	94	90	110			
Lab ID: C18040523-005A DUP		Sample Duplicate					Run: BAL-16_180414A		04/14/18 17:44	
Solids, Total Dissolved TDS @ 180 C		5480	mg/L	40				0.0	5	

### Qualifiers:

RL - Analyte reporting limit.

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/01/18

**Project:** Zone-3

**Work Order:** C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	A4500-H B							Analytical Run: PHSC_101-C_180413A		
Lab ID:	6.86	Initial Calibration Verification Standard							04/13/18 09:31	
pH		6.86	s.u.	0.010	100	98	102			
Method:	A4500-H B							Batch: R234191		
Lab ID:	C18040463-003ADUP	Sample Duplicate				Run: PHSC_101-C_180413A			04/13/18 11:34	
pH		3.11	s.u.	0.010				0.0	1.5	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/01/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G								Analytical Run: FIA201-C_180416A		
Lab ID: ICV		Initial Calibration Verification Standard							04/16/18 13:56	
Nitrogen, Ammonia as N		1.01	mg/L	0.050	101	90	110			
Method: A4500-NH3 G										Batch: R234286
Lab ID: MBLK		Method Blank				Run: FIA201-C_180416A			04/16/18 13:55	
Nitrogen, Ammonia as N		ND	mg/L	0.009						
Lab ID: LFB		Laboratory Fortified Blank				Run: FIA201-C_180416A			04/16/18 13:57	
Nitrogen, Ammonia as N		1.02	mg/L	0.050	103	90	110			
Lab ID: C18040463-005EMS		Sample Matrix Spike				Run: FIA201-C_180416A			04/16/18 14:33	
Nitrogen, Ammonia as N		1.04	mg/L	0.050	104	90	110			
Lab ID: C18040463-005EMSD		Sample Matrix Spike Duplicate				Run: FIA201-C_180416A			04/16/18 14:34	
Nitrogen, Ammonia as N		1.02	mg/L	0.050	102	90	110	2.0	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/01/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0								Analytical Run: IC3-C_180413A		
Lab ID: ICV	2	Initial Calibration Verification Standard							04/13/18 15:44	
Chloride		10.2	mg/L	1.0	102	90	110			
Sulfate		40.8	mg/L	1.0	102	90	110			
Method: E300.0								Batch: R234257		
Lab ID: ICB	2	Method Blank							Run: IC3-C_180413A	
Chloride		ND	mg/L	0.09					04/13/18 16:02	
Sulfate		0.1	mg/L	0.10						
Lab ID: LFB	2	Laboratory Fortified Blank							Run: IC3-C_180413A	
Chloride		10.2	mg/L	1.0	102	90	110		04/13/18 16:20	
Sulfate		41.1	mg/L	1.0	102	90	110			
Lab ID: C18040460-001AMS	2	Sample Matrix Spike							Run: IC3-C_180413A	
Chloride		145	mg/L	1.0	104	80	120		04/14/18 01:44	
Sulfate		2350	mg/L	4.2		80	120		A	
Lab ID: C18040460-001AMSD	2	Sample Matrix Spike Duplicate							Run: IC3-C_180413A	
Chloride		146	mg/L	1.0	105	80	120	0.6	20	
Sulfate		2370	mg/L	4.2		80	120	0.5	20	A

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/01/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2 Analytical Run: FIA201-C_180413B										
Lab ID: ICV	Initial Calibration Verification Standard 04/13/18 16:02									
Nitrogen, Nitrate+Nitrite as N		0.949	mg/L	0.010	95	90	110			
Method: E353.2 Batch: R234233										
Lab ID: MBLK	Method Blank Run: FIA201-C_180413B 04/13/18 16:03									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						
Lab ID: LFB	Laboratory Fortified Blank Run: FIA201-C_180413B 04/13/18 16:04									
Nitrogen, Nitrate+Nitrite as N		0.989	mg/L	0.010	100	90	110			
Lab ID: C18040444-001HMS	Sample Matrix Spike Run: FIA201-C_180413B 04/13/18 16:41									
Nitrogen, Nitrate+Nitrite as N		1.03	mg/L	0.010	99	90	110			
Lab ID: C18040444-001HMSD	Sample Matrix Spike Duplicate Run: FIA201-C_180413B 04/13/18 16:43									
Nitrogen, Nitrate+Nitrite as N		1.06	mg/L	0.010	102	90	110	2.9	10	
Method: E353.2 Analytical Run: FIA201-C_180417A										
Lab ID: ICV	Initial Calibration Verification Standard 04/17/18 14:02									
Nitrogen, Nitrate+Nitrite as N		0.984	mg/L	0.010	98	90	110			
Method: E353.2 Batch: R234361										
Lab ID: MBLK	Method Blank Run: FIA201-C_180417A 04/17/18 14:03									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						
Lab ID: LFB	Laboratory Fortified Blank Run: FIA201-C_180417A 04/17/18 14:04									
Nitrogen, Nitrate+Nitrite as N		0.964	mg/L	0.010	97	90	110			
Lab ID: C18040463-004EMS	Sample Matrix Spike Run: FIA201-C_180417A 04/17/18 14:08									
Nitrogen, Nitrate+Nitrite as N		0.629	mg/L	0.010	63	90	110			S
Lab ID: C18040463-004EMSD	Sample Matrix Spike Duplicate Run: FIA201-C_180417A 04/17/18 14:09									
Nitrogen, Nitrate+Nitrite as N		0.637	mg/L	0.010	64	90	110	1.3	10	S

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 05/01/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP203-B_180416A		
Lab ID: ICV	3	Continuing Calibration Verification Standard							04/16/18 11:23	
Magnesium		24.8	mg/L	1.0	99	95	105			
Potassium		24.2	mg/L	1.0	97	95	105			
Sodium		24.4	mg/L	1.0	97	95	105			
Method: E200.7								Batch: R298290		
Lab ID: MB-6500DIS180416A	3	Method Blank				Run: ICP203-B_180416A			04/16/18 11:31	
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.1						
Sodium		ND	mg/L	0.1						
Lab ID: LFB-6500DIS180416A	3	Laboratory Fortified Blank				Run: ICP203-B_180416A			04/16/18 11:39	
Magnesium		47.9	mg/L	1.0	96	85	115			
Potassium		46.5	mg/L	1.0	93	85	115			
Sodium		47.6	mg/L	1.0	95	85	115			
Lab ID: C18040463-004BMS2	3	Sample Matrix Spike				Run: ICP203-B_180416A			04/17/18 03:39	
Magnesium		730	mg/L	1.0	93	70	130			
Potassium		253	mg/L	1.0	97	70	130			
Sodium		371	mg/L	1.0	102	70	130			
Lab ID: C18040463-004BMSD	3	Sample Matrix Spike Duplicate				Run: ICP203-B_180416A			04/17/18 03:43	
Magnesium		754	mg/L	1.0	102	70	130	3.2	20	
Potassium		263	mg/L	1.0	101	70	130	4.0	20	
Sodium		386	mg/L	1.0	108	70	130	3.9	20	

### Qualifiers:

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone-3

Report Date: 05/01/18

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Analytical Run: ICP203-B_180418A
Lab ID: ICV		Continuing Calibration Verification Standard								04/18/18 12:14
Calcium		25.7	mg/L	1.0	103	95	105			
Method: E200.7										Batch: R298465
Lab ID: MB-6500DIS180418A		Method Blank					Run: ICP203-B_180418A			04/18/18 12:22
Calcium		ND	mg/L	0.07						
Lab ID: LFB-6500DIS180418A		Laboratory Fortified Blank					Run: ICP203-B_180418A			04/18/18 12:29
Calcium		49.7	mg/L	1.0	99	85	115			
Lab ID: B18041086-007BMS2		Sample Matrix Spike					Run: ICP203-B_180418A			04/19/18 04:16
Calcium		100	mg/L	1.0	99	70	130			
Lab ID: B18041086-007BMSD		Sample Matrix Spike Duplicate					Run: ICP203-B_180418A			04/19/18 04:19
Calcium		101	mg/L	1.0	100	70	130	1.1	20	
Lab ID: B18041160-001BMS2		Sample Matrix Spike					Run: ICP203-B_180418A			04/19/18 09:40
Calcium		428	mg/L	1.0	102	70	130			
Lab ID: B18041160-001BMSD		Sample Matrix Spike Duplicate					Run: ICP203-B_180418A			04/19/18 09:53
Calcium		463	mg/L	1.0	116	70	130	7.9	20	
Lab ID: B18041168-003BMS2		Sample Matrix Spike					Run: ICP203-B_180418A			04/19/18 11:16
Calcium		632	mg/L	1.0	102	70	130			
Lab ID: B18041168-003BMSD		Sample Matrix Spike Duplicate					Run: ICP203-B_180418A			04/19/18 11:20
Calcium		637	mg/L	1.0	104	70	130	0.8	20	
Lab ID: B18041168-003BMS2		Sample Matrix Spike					Run: ICP203-B_180418A			04/19/18 11:16
Calcium		632	mg/L	1.0	102	70	130			
Lab ID: B18041168-003BMSD		Sample Matrix Spike Duplicate					Run: ICP203-B_180418A			04/19/18 11:20
Calcium		637	mg/L	1.0	104	70	130	0.8	20	

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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/01/18

**Project:** Zone-3

**Work Order:** C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7										Analytical Run: ICP204-B_180423A
<b>Lab ID:</b> ICV	Continuing Calibration Verification Standard									04/23/18 13:40
Aluminum		2.46	mg/L	0.10	99	95	105			
<b>Method:</b> E200.7										Batch: 120383
<b>Lab ID:</b> MB-120383	Method Blank									Run: ICP204-B_180423A
Aluminum		ND	mg/L	0.05						04/23/18 19:51
<b>Lab ID:</b> LCS-120383	Laboratory Control Sample									Run: ICP204-B_180423A
Aluminum		2.55	mg/L	0.10	102	85	115			04/23/18 19:55
<b>Lab ID:</b> C18040463-001CMS3	Sample Matrix Spike									Run: ICP204-B_180423A
Aluminum		507	mg/L	0.28		70	130			04/23/18 20:10 A
<b>Lab ID:</b> C18040463-001CMSD	Sample Matrix Spike Duplicate									Run: ICP204-B_180423A
Aluminum		517	mg/L	0.28		70	130	1.9	20	04/23/18 20:21 A

### Qualifiers:

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 05/01/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8		Analytical Run: ICPMS207-B_180417B								
Lab ID: QCS	10	Initial Calibration Verification Standard							04/18/18 02:43	
Aluminum		0.248	mg/L	0.10	99	90	110			
Beryllium		0.0253	mg/L	0.0010	101	90	110			
Cadmium		0.0253	mg/L	0.0010	101	90	110			
Cobalt		0.0512	mg/L	0.010	102	90	110			
Lead		0.0497	mg/L	0.010	99	90	110			
Manganese		0.254	mg/L	0.010	102	90	110			
Molybdenum		0.0479	mg/L	0.0050	96	90	110			
Nickel		0.0511	mg/L	0.010	102	90	110			
Uranium		0.0207	mg/L	0.0010	103	90	110			
Vanadium		0.0500	mg/L	0.10	100	90	110			
Method: E200.8		Batch: 120383								
Lab ID: MB-120383	10	Method Blank							Run: ICPMS207-B_180417B 04/18/18 02:52	
Aluminum		0.002	mg/L	0.001						
Beryllium		ND	mg/L	0.0001						
Cadmium		ND	mg/L	0.00003						
Cobalt		ND	mg/L	0.00004						
Lead		ND	mg/L	0.00008						
Manganese		0.0001	mg/L	0.0001						
Molybdenum		ND	mg/L	0.00006						
Nickel		ND	mg/L	0.0008						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.0006						
Lab ID: LCS-120383	10	Laboratory Control Sample							Run: ICPMS207-B_180417B 04/18/18 03:13	
Aluminum		2.34	mg/L	0.010	93	85	115			
Beryllium		0.235	mg/L	0.0010	94	85	115			
Cadmium		0.222	mg/L	0.0010	89	85	115			
Cobalt		0.474	mg/L	0.0010	95	85	115			
Lead		0.491	mg/L	0.0010	98	85	115			
Manganese		2.44	mg/L	0.0010	98	85	115			
Molybdenum		0.472	mg/L	0.0050	94	85	115			
Nickel		0.490	mg/L	0.0010	98	85	115			
Uranium		0.497	mg/L	0.0010	99	85	115			
Vanadium		0.501	mg/L	0.010	100	85	115			
Lab ID: C18040463-001CMS3	10	Sample Matrix Spike							Run: ICPMS207-B_180417B 04/18/18 03:27	
Aluminum		461	mg/L	0.030		70	130			A
Beryllium		0.351	mg/L	0.0010	84	70	130			
Cadmium		0.291	mg/L	0.0010	99	70	130			
Cobalt		2.19	mg/L	0.0050	82	70	130			
Lead		0.505	mg/L	0.0010	100	70	130			
Manganese		46.7	mg/L	0.0010		70	130			A
Molybdenum		0.484	mg/L	0.0010	95	70	130			
Nickel		2.27	mg/L	0.0050	89	70	130			

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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/01/18

**Project:** Zone-3

**Work Order:** C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: 120383
<b>Lab ID:</b> C18040463-001CMS3	10	Sample Matrix Spike				Run: ICPMS207-B_180417B			04/18/18 03:27	
Uranium		1.14	mg/L	0.00030	98	70	130			
Vanadium		1.57	mg/L	0.010	92	70	130			
<b>Lab ID:</b> C18040463-001CMSD										Batch: 120383
	10	Sample Matrix Spike Duplicate				Run: ICPMS207-B_180417B			04/18/18 03:29	
Aluminum		453	mg/L	0.030		70	130	1.8	20	A
Beryllium		0.346	mg/L	0.0010	83	70	130	1.3	20	
Cadmium		0.287	mg/L	0.0010	98	70	130	1.3	20	
Cobalt		2.18	mg/L	0.0050	80	70	130	0.3	20	
Lead		0.498	mg/L	0.0010	98	70	130	1.5	20	
Manganese		46.8	mg/L	0.0010		70	130	0.1	20	A
Molybdenum		0.475	mg/L	0.0010	93	70	130	1.8	20	
Nickel		2.27	mg/L	0.0050	89	70	130	0.0	20	
Uranium		1.13	mg/L	0.00030	96	70	130	1.0	20	
Vanadium		1.57	mg/L	0.010	92	70	130	0.2	20	
<b>Method:</b> E200.8										Analytical Run: ICPMS207-B_180418B
<b>Lab ID:</b> QCS	10	Initial Calibration Verification Standard							04/18/18 15:20	
Aluminum		0.248	mg/L	0.10	99	90	110			
Beryllium		0.0255	mg/L	0.0010	102	90	110			
Cadmium		0.0250	mg/L	0.0010	100	90	110			
Cobalt		0.0510	mg/L	0.010	102	90	110			
Lead		0.0500	mg/L	0.010	100	90	110			
Manganese		0.256	mg/L	0.010	102	90	110			
Molybdenum		0.0478	mg/L	0.0050	96	90	110			
Nickel		0.0516	mg/L	0.010	103	90	110			
Uranium		0.0205	mg/L	0.0010	103	90	110			
Vanadium		0.0504	mg/L	0.10	101	90	110			
<b>Method:</b> E200.8										Batch: 120383
<b>Lab ID:</b> MB-120383	10	Method Blank				Run: ICPMS207-B_180418B			04/18/18 19:18	
Aluminum		0.002	mg/L	0.001						
Beryllium		ND	mg/L	0.0001						
Cadmium		ND	mg/L	0.00003						
Cobalt		ND	mg/L	0.00004						
Lead		ND	mg/L	0.00008						
Manganese		0.0002	mg/L	0.0001						
Molybdenum		ND	mg/L	0.00006						
Nickel		ND	mg/L	0.0008						
Uranium		ND	mg/L	0.00005						
Vanadium		ND	mg/L	0.0006						

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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Project: Zone-3

Report Date: 05/02/18

Work Order: C18040463

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 C					tical Run: SELENIUM PSA MILLENIUM_180419A				
Lab ID: ICV-41131	Initial Calibration Verification Standard								04/19/18 13:03
Selenium-IV	0.0192	mg/L	0.0010	96	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								04/19/18 13:32
Selenium-IV	0.0189	mg/L	0.0010	94	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								04/19/18 14:02
Selenium-IV	0.0185	mg/L	0.0010	92	90	110			
Method: A3114 C					Batch: 41218				
Lab ID: MB-41218	Method Blank								04/19/18 13:44
Selenium-IV	ND	mg/L	0.0006						
Lab ID: LCS-41218	Laboratory Control Sample								04/19/18 13:45
Selenium-IV	0.0194	mg/L	0.0010	97	90	110			
Lab ID: LFB-41218	Laboratory Fortified Blank								04/19/18 13:47
Selenium-IV	0.0198	mg/L	0.0010	99	85	115			
Lab ID: C18040463-003DMS	Sample Matrix Spike								04/19/18 13:53
Selenium-IV	0.0198	mg/L	0.0010	99	70	130			
Lab ID: C18040463-003DMSD	Sample Matrix Spike Duplicate								04/19/18 13:55
Selenium-IV	0.0193	mg/L	0.0010	96	70	130	3.0	20	
Lab ID: H18040273-004DMS	Sample Matrix Spike								04/19/18 14:12
Selenium-IV	0.0215	mg/L	0.0010	100	70	130			
Lab ID: H18040273-004DMSD	Sample Matrix Spike Duplicate								04/19/18 14:14
Selenium-IV	0.0215	mg/L	0.0010	100	70	130	0.3	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/02/18

**Project:** Zone-3

**Work Order:** C18040463

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E1632AM</b>			Analytical Run: ARSENIC SPECIATION_180420A						
<b>Lab ID: AS-ICV 25ppb-4/20/2018</b>	Initial Calibration Verification Standard								04/20/18 12:57
Arsenic-III	25.5	ug/L	5.0	102	87.6	114			
<b>Lab ID: AS-50.0-4/20/2018</b>	Continuing Calibration Verification Standard								04/20/18 13:09
Arsenic-III	53.6	ug/L	5.0	107	85	115			
<b>Lab ID: AS-50.0-4/20/2018</b>	Continuing Calibration Verification Standard								04/20/18 15:33
Arsenic-III	50.8	ug/L	5.0	102	85	115			
<b>Method: E1632AM</b>			Batch: R134079						
<b>Lab ID: AS-LFB 50ppb-4/20/2018</b>	Laboratory Fortified Blank								04/20/18 13:33
Arsenic-III	52.8	ug/L	5.0	106	78	121			
<b>Lab ID: ICB</b>	Method Blank								04/20/18 13:45
Arsenic-III	ND	ug/L	0.2						
<b>Lab ID: H18040262-001A MS</b>	Sample Matrix Spike								04/20/18 14:21
Arsenic-III	52.7	ug/L	5.0	105	78	121			
<b>Lab ID: H18040262-001A MSD</b>	Sample Matrix Spike Duplicate								04/20/18 14:33
Arsenic-III	50.1	ug/L	5.0	100	78	121	5.0	20	
<b>Lab ID: C18040463-005D MS</b>	Sample Matrix Spike								04/20/18 16:09
Arsenic-III	60.2	ug/L	5.0	97	78	121			
<b>Lab ID: C18040463-005D MSD</b>	Sample Matrix Spike Duplicate								04/20/18 16:21
Arsenic-III	63.7	ug/L	5.0	104	78	121	5.7	20	

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone-3

Report Date: 05/01/18

Work Order: C18040463

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>							Analytical Run: R298328		
<b>Lab ID: CCVa041618</b>	Continuing Calibration Verification Standard							04/16/18 21:26	
Bromodichloromethane	5.41	ug/L	0.50	108	70	130			
Bromoform	5.41	ug/L	0.50	108	70	130			
Chlorodibromomethane	5.35	ug/L	0.50	107	70	130			
Chloroform	5.11	ug/L	0.50	102	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	108	71	139			
Surr: p-Bromofluorobenzene			0.50	98	80	127			
Surr: Toluene-d8			0.50	94	80	123			
<b>Method: E624</b>							Batch: R298328		
<b>Lab ID: LCSa041618</b>	Laboratory Control Sample							Run: 5971A.I_180416A	
								04/16/18 21:55	
Bromodichloromethane	5.40	ug/L	0.50	108	74	128			
Bromoform	5.13	ug/L	0.50	103	66	128			
Chlorodibromomethane	5.23	ug/L	0.50	105	74	125			
Chloroform	4.88	ug/L	0.50	98	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	102	71	139			
Surr: p-Bromofluorobenzene			0.50	96	80	127			
Surr: Toluene-d8			0.50	92	80	123			
<b>Lab ID: BLKa041618</b>	Method Blank							Run: 5971A.I_180416A	
								04/16/18 22:54	
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	97	71	139			
Surr: p-Bromofluorobenzene			0.50	94	80	127			
Surr: Toluene-d8			0.50	93	80	123			
<b>Lab ID: B18040751-001GMS</b>	Sample Matrix Spike							Run: 5971A.I_180416A	
								04/16/18 23:23	
Bromodichloromethane	53.7	ug/L	5.0	107	74	128			
Bromoform	50.2	ug/L	5.0	100	66	128			
Chlorodibromomethane	52.3	ug/L	5.0	105	74	125			
Chloroform	95.0	ug/L	5.0	97	68	124			
Surr: 1,2-Dichloroethane-d4			5.0	100	71	139			
Surr: p-Bromofluorobenzene			5.0	99	80	127			
Surr: Toluene-d8			5.0	97	80	123			
<b>Lab ID: B18040751-001GMSD</b>	Sample Matrix Spike Duplicate							Run: 5971A.I_180416A	
								04/16/18 23:53	
Bromodichloromethane	55.2	ug/L	5.0	110	74	128	2.8	20	
Bromoform	53.9	ug/L	5.0	108	66	128	7.2	20	
Chlorodibromomethane	54.9	ug/L	5.0	110	74	125	4.8	20	
Chloroform	99.8	ug/L	5.0	107	68	124	4.9	20	
Surr: 1,2-Dichloroethane-d4			5.0	103	71	139			
Surr: p-Bromofluorobenzene			5.0	98	80	127			
Surr: Toluene-d8			5.0	94	80	123			

### Qualifiers:

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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/01/18

**Project:** Zone-3

**Work Order:** C18040463

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
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**Method:** E624

Analytical Run: R298438

**Lab ID:** CCV041718

Continuing Calibration Verification Standard

04/17/18 10:08

Bromodichloromethane	4.71	ug/L	0.50	94	70	130			
Bromoform	4.47	ug/L	0.50	89	70	130			
Chlorodibromomethane	4.90	ug/L	0.50	98	70	130			
Chloroform	4.76	ug/L	0.50	95	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	98	71	139			
Surr: p-Bromofluorobenzene			0.50	92	80	127			
Surr: Toluene-d8			0.50	96	80	123			

**Method:** E624

Batch: R298438

**Lab ID:** LCS041718

Laboratory Control Sample

Run: 5971A.I\_180417C

04/17/18 10:46

Bromodichloromethane	5.01	ug/L	0.50	100	74	128			
Bromoform	4.74	ug/L	0.50	95	66	128			
Chlorodibromomethane	5.15	ug/L	0.50	103	74	125			
Chloroform	4.89	ug/L	0.50	98	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	96	71	139			
Surr: p-Bromofluorobenzene			0.50	98	80	127			
Surr: Toluene-d8			0.50	96	80	123			

**Lab ID:** BLK041718

Method Blank

Run: 5971A.I\_180417C

04/17/18 12:44

Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	93	71	139			
Surr: p-Bromofluorobenzene			0.50	98	80	127			
Surr: Toluene-d8			0.50	97	80	123			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone-3

Report Date: 05/01/18

Work Order: C18040463

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624							Analytical Run: R298472		
Lab ID: CCV041818	Continuing Calibration Verification Standard							04/18/18 09:17	
Bromodichloromethane	4.57	ug/L	0.50	91	70	130			
Bromoform	4.36	ug/L	0.50	87	70	130			
Chlorodibromomethane	4.59	ug/L	0.50	92	70	130			
Chloroform	4.52	ug/L	0.50	90	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	93	71	139			
Surr: p-Bromofluorobenzene			0.50	93	80	127			
Surr: Toluene-d8			0.50	95	80	123			
Method: E624							Batch: R298472		
Lab ID: LCS041818	Laboratory Control Sample						Run: 5971A.I_180418A		04/18/18 09:56
Bromodichloromethane	4.33	ug/L	0.50	87	74	128			
Bromoform	3.65	ug/L	0.50	73	66	128			
Chlorodibromomethane	3.91	ug/L	0.50	78	74	125			
Chloroform	4.45	ug/L	0.50	89	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	80	71	139			
Surr: p-Bromofluorobenzene			0.50	98	80	127			
Surr: Toluene-d8			0.50	101	80	123			
Lab ID: BLK041818	Method Blank						Run: 5971A.I_180418A		04/18/18 10:55
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	98	71	139			
Surr: p-Bromofluorobenzene			0.50	97	80	127			
Surr: Toluene-d8			0.50	98	80	123			
Lab ID: C18040463-001GMS	Sample Matrix Spike						Run: 5971A.I_180418A		04/18/18 18:46
Bromodichloromethane	48.4	ug/L	5.0	97	74	128			
Bromoform	47.2	ug/L	5.0	94	66	128			
Chlorodibromomethane	48.9	ug/L	5.0	98	74	125			
Chloroform	104	ug/L	5.0	97	68	124			
Surr: 1,2-Dichloroethane-d4			5.0	101	71	139			
Surr: p-Bromofluorobenzene			5.0	97	80	127			
Surr: Toluene-d8			5.0	95	80	123			
Lab ID: C18040463-001GMSD	Sample Matrix Spike Duplicate						Run: 5971A.I_180418A		04/18/18 19:16
Bromodichloromethane	49.3	ug/L	5.0	99	74	128	1.9	20	
Bromoform	47.4	ug/L	5.0	95	66	128	0.4	20	
Chlorodibromomethane	49.0	ug/L	5.0	98	74	125	0.1	20	
Chloroform	105	ug/L	5.0	99	68	124	1.0	20	
Surr: 1,2-Dichloroethane-d4			5.0	100	71	139			
Surr: p-Bromofluorobenzene			5.0	99	80	127			
Surr: Toluene-d8			5.0	97	80	123			

### Qualifiers:

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/14/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-1080
<b>Lab ID: MB-GA-1080</b>	3	Method Blank					Run: G542M_180418A			04/23/18 15:33
Gross Alpha minus Rn & U		0.2	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.4	pCi/L							
Gross Alpha minus Rn & U MDC		0.5	pCi/L							
<b>Lab ID: LCS-GA-1080</b>		Laboratory Control Sample					Run: G542M_180418A			04/23/18 15:33
Gross Alpha minus Rn & U		31	pCi/L	93		80	120			
<b>Lab ID: C18040403-002CMS</b>		Sample Matrix Spike					Run: G542M_180418A			04/23/18 15:33
Gross Alpha minus Rn & U		36	pCi/L	99		70	130			
<b>Lab ID: C18040403-002CMSD</b>		Sample Matrix Spike Duplicate					Run: G542M_180418A			04/23/18 15:33
Gross Alpha minus Rn & U		33	pCi/L	89		70	130	9.2	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/14/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: RA226-8906
Lab ID: LCS-RA226-8906	Laboratory Control Sample			Run: G542M_180416A			04/24/18 10:39			
Radium 226	7.2	pCi/L		71	80	120				S
- LCS response is outside of the acceptance range for this analysis. The MB, MS, and MSD are acceptable.										
Lab ID: MB-RA226-8906	3	Method Blank			Run: G542M_180416A			04/24/18 10:39		
Radium 226		0.1	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
Lab ID: C18040467-001CMS	Sample Matrix Spike			Run: G542M_180416A			04/24/18 10:39			
Radium 226	17	pCi/L		78	70	130				
Lab ID: C18040467-001CMSD	Sample Matrix Spike Duplicate			Run: G542M_180416A			04/24/18 10:39			
Radium 226	21	pCi/L		94	70	130	17		20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/14/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E908.0</b> Batch: RA-TH-ISO-2708										
<b>Lab ID: LCS-RA-TH-ISO-2708</b>	Laboratory Control Sample									
Thorium 230	12	pCi/L		103	80	120				05/09/18 12:08
<b>Lab ID: C18040467-001CMS</b>	Sample Matrix Spike									
Thorium 230	24	pCi/L		106	70	130				05/09/18 12:08
<b>Lab ID: C18040467-001CMSD</b>	Sample Matrix Spike Duplicate									
Thorium 230	22	pCi/L		100	70	130	6.0	20		05/09/18 12:08
<b>Lab ID: MB-RA-TH-ISO-2708</b>	3	Method Blank								
Thorium 230		0.07	pCi/L							U
Thorium 230 precision ( $\pm$ )		0.10	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
<b>Method: E908.0</b> Batch: RA-TH-ISO-2711										
<b>Lab ID: LCS-RA-TH-ISO-2711</b>	Laboratory Control Sample									
Thorium 230	5.9	pCi/L		103	80	120				05/11/18 13:08
<b>Lab ID: C18040522-005FMS</b>	Sample Matrix Spike									
Thorium 230	26	pCi/L		127	70	130				05/11/18 13:08
<b>Lab ID: C18040522-005FMSD</b>	Sample Matrix Spike Duplicate									
Thorium 230	21	pCi/L		103	70	130	21	20	R	05/11/18 13:08
- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than the limit of 2.0.										
<b>Lab ID: MB-RA-TH-ISO-2711</b>	3	Method Blank								
Thorium 230		0.04	pCi/L							U
Thorium 230 precision ( $\pm$ )		0.1	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone-3

Report Date: 05/14/18

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0										Batch: PB-210-0926
Lab ID: LCS-PB-210-0926		Laboratory Control Sample					Run: TRICARB LSC_180413A			04/20/18 16:17
Lead 210		22	pCi/L		102	80	120			
Lab ID: MB-PB-210-0926	3	Method Blank					Run: TRICARB LSC_180413A			04/20/18 17:28
Lead 210		-0.05	pCi/L							U
Lead 210 precision (±)		0.7	pCi/L							
Lead 210 MDC		1	pCi/L							
Lab ID: C18040403-001CMS		Sample Matrix Spike					Run: TRICARB LSC_180413A			04/21/18 03:47
Lead 210		37	pCi/L		87	70	130			
Lab ID: C18040403-001CMSD		Sample Matrix Spike Duplicate					Run: TRICARB LSC_180413A			04/21/18 05:06
Lead 210		39	pCi/L		93	70	130	6.8	20	

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/14/18

Project: Zone-3

Work Order: C18040463

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05										Batch: RA228-5760
Lab ID: LCS-228-RA226-8906	Laboratory Control Sample			Run: TENNELEC-3_180416A			04/19/18 10:48			
Radium 228		8.3	pCi/L	88		80	120			
Lab ID: MB-RA226-8906	3	Method Blank			Run: TENNELEC-3_180416A			04/19/18 10:48		
Radium 228		0.2	pCi/L							U
Radium 228 precision (±)		0.8	pCi/L							
Radium 228 MDC		1	pCi/L							
Lab ID: C18040467-005CMS	Sample Matrix Spike			Run: TENNELEC-3_180416A			04/19/18 10:49			
Radium 228		21	pCi/L	86		70	130			
Lab ID: C18040467-005CMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_180416A			04/19/18 10:49			
Radium 228		20	pCi/L	83		70	130	2.0	20	

### Qualifiers:

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ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## ANALYTICAL SUMMARY REPORT

May 18, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18040522      Quote ID: C5148 - Quarterly Long List  
Project Name: Zone 3

Energy Laboratories, Inc. Casper WY received the following 7 samples for United Nuclear Corporation on 4/13/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18040522-001	717	04/10/18 09:50	04/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Acidity, Total as CaCO3 Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C18040522-002	717 Duplicate	04/10/18 10:40	04/13/18	Aqueous	Same As Above
C18040522-003	MW-7	04/10/18 12:17	04/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics



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## ANALYTICAL SUMMARY REPORT

C18040522-004	NW-3	04/10/18 15:40 04/13/18	Aqueous	Same As Above
C18040522-005	719	04/10/18 16:10 04/13/18	Aqueous	Same As Above
C18040522-006	Rinsate	04/10/18 17:30 04/13/18	Aqueous	Same As Above
C18040522-007	Field Blank	04/10/18 17:40 04/13/18	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 CVAA Selenium Prep Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved 624-Purgeable Organics 624-Purgeable Organics

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.05.18 10:02:31 -06:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone 3  
**Work Order:** C18040522

**Report Date:** 05/18/18

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

**Note:**

Regarding the As-III data for Sample ID 717 (C18040522-001), the sample was re-analyzed with a final result of ND at a reporting limit 0.001 mg/L, although out of holding time.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/07/18

**Project:** Zone 3

**Work Order:** C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2310 B Analytical Run: ACIDITY_180417A										
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									
pH		6.82	s.u.	0.010	99	98	102			04/17/18 15:40
<b>Method:</b> A2310 B Batch: ACID180416_A										
<b>Lab ID:</b> MBLK	Method Blank									
Acidity, Total as CaCO <sub>3</sub>		0.5	mg/L							Run: ACIDITY_180417A 04/17/18 15:41
<b>Lab ID:</b> LCS	Laboratory Control Sample									
Acidity, Total as CaCO <sub>3</sub>		745	mg/L		99	90	110			Run: ACIDITY_180417A 04/17/18 15:45
<b>Lab ID:</b> C18040463-001A DUP	Sample Duplicate									
Acidity, Total as CaCO <sub>3</sub>		3080	mg/L					0.6	10	Run: ACIDITY_180417A 04/17/18 15:45

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/07/18

Project: Zone 3

Work Order: C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Analytical Run: MANTECH_180414A
Lab ID: ICV		Initial Calibration Verification Standard								04/14/18 17:01
pH		6.95	s.u.	0.010	101	98	102			
Method: A2320 B										Batch: R234243
Lab ID: MBLK		Method Blank								04/14/18 20:41
Alkalinity, Total as CaCO <sub>3</sub>	2		mg/L	0.8						Run: MANTECH_180414A
Lab ID: LCS		Laboratory Control Sample								04/14/18 20:49
Alkalinity, Total as CaCO <sub>3</sub>	257		mg/L	5.0	102	90	110			Run: MANTECH_180414A
Lab ID: C18040520-003ADUP		Sample Duplicate								04/14/18 21:05
Alkalinity, Total as CaCO <sub>3</sub>	132		mg/L	5.0				0.0	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/07/18

**Project:** Zone 3

**Work Order:** C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2540 C</b>										Batch: TDS180414A
<b>Lab ID: MB-1_180414A</b>		Method Blank					Run: BAL-16_180414A			04/14/18 17:34
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
<b>Lab ID: LCS-2_180414A</b>		Laboratory Control Sample					Run: BAL-16_180414A			04/14/18 17:34
Solids, Total Dissolved TDS @ 180 C		1050	mg/L	11	94	90	110			
<b>Lab ID: C18040483-003A DUP</b>		Sample Duplicate					Run: BAL-16_180414A			04/14/18 17:37
Solids, Total Dissolved TDS @ 180 C		1590	mg/L	20				0.7	5	
<b>Lab ID: MB-25_180414A</b>		Method Blank					Run: BAL-16_180414A			04/14/18 17:42
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
<b>Lab ID: LCS-26_180414A</b>		Laboratory Control Sample					Run: BAL-16_180414A			04/14/18 17:42
Solids, Total Dissolved TDS @ 180 C		1090	mg/L	11	99	90	110			
<b>Lab ID: C18040522-002A DUP</b>		Sample Duplicate					Run: BAL-16_180414A			04/14/18 17:42
Solids, Total Dissolved TDS @ 180 C		7530	mg/L	100				0.8	5	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/07/18

Project: Zone 3

Work Order: C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_180414A
Lab ID: 6.86		Initial Calibration Verification Standard								04/14/18 15:03
pH		6.86	s.u.	0.010	100	98	102			
Method: A4500-H B										Batch: R234238
Lab ID: C18040520-003ADUP		Sample Duplicate					Run: PHSC_101-C_180414A			04/14/18 16:47
pH		7.22	s.u.	0.010				0.1	1.5	
Lab ID: C18040522-007ADUP		Sample Duplicate					Run: PHSC_101-C_180414A			04/14/18 17:18
pH		6.29	s.u.	0.010				2.6	1.5	R

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/07/18

Project: Zone 3

Work Order: C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G										Analytical Run: FIA201-C_180416A
Lab ID: ICV	Initial Calibration Verification Standard									04/16/18 13:56
Nitrogen, Ammonia as N		1.01	mg/L	0.050	101	90	110			
Method: A4500-NH3 G										Batch: R234286
Lab ID: MBLK	Method Blank									Run: FIA201-C_180416A
Nitrogen, Ammonia as N		ND	mg/L	0.009						04/16/18 13:55
Lab ID: LFB	Laboratory Fortified Blank									Run: FIA201-C_180416A
Nitrogen, Ammonia as N		1.02	mg/L	0.050	103	90	110			04/16/18 13:57
Lab ID: C18040463-005EMS	Sample Matrix Spike									Run: FIA201-C_180416A
Nitrogen, Ammonia as N		1.04	mg/L	0.050	104	90	110			04/16/18 14:33
Lab ID: C18040463-005EMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_180416A
Nitrogen, Ammonia as N		1.02	mg/L	0.050	102	90	110	2.0	10	04/16/18 14:34
Lab ID: C18040522-006EMS	Sample Matrix Spike									Run: FIA201-C_180416A
Nitrogen, Ammonia as N		0.980	mg/L	0.050	98	90	110			04/16/18 14:50
Lab ID: C18040522-006EMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_180416A
Nitrogen, Ammonia as N		0.962	mg/L	0.050	96	90	110	1.9	10	04/16/18 14:51

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/07/18

Project: Zone 3

Work Order: C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0 Analytical Run: IC3-C_180416A										
Lab ID: ICV	2	Initial Calibration Verification Standard								04/16/18 13:07
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.2	mg/L	1.0	103	90	110			
Method: E300.0 Batch: R234337										
Lab ID: ICB	2	Method Blank								04/16/18 13:25
Chloride		ND	mg/L	0.09						
Sulfate		0.1	mg/L	0.10						
Run: IC3-C_180416A										
Lab ID: LFB	2	Laboratory Fortified Blank								04/16/18 13:43
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.5	mg/L	1.0	103	90	110			
Run: IC3-C_180416A										
Lab ID: C18040520-004AMS	2	Sample Matrix Spike								04/16/18 23:07
Chloride		31.1	mg/L	1.0	106	80	120			
Sulfate		357	mg/L	1.0	99	80	120			
Run: IC3-C_180416A										
Lab ID: C18040520-004AMSD	2	Sample Matrix Spike Duplicate								04/16/18 23:25
Chloride		31.6	mg/L	1.0	108	80	120	1.5	20	
Sulfate		361	mg/L	1.0	103	80	120	0.9	20	
Method: E300.0 Analytical Run: IC3-C_180502A										
Lab ID: ICV	2	Initial Calibration Verification Standard								05/02/18 12:26
Chloride		9.94	mg/L	1.0	99	90	110			
Sulfate		38.7	mg/L	1.0	97	90	110			
Method: E300.0 Batch: R234883										
Lab ID: ICB	2	Method Blank								05/02/18 12:46
Chloride		ND	mg/L	0.09						
Sulfate		0.1	mg/L	0.10						
Run: IC3-C_180502A										
Lab ID: LFB	2	Laboratory Fortified Blank								05/02/18 13:05
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		39.5	mg/L	1.0	98	90	110			
Run: IC3-C_180502A										
Lab ID: C18040522-001AMS	2	Sample Matrix Spike								05/02/18 14:03
Chloride		264	mg/L	2.1	103	80	120			
Sulfate		5800	mg/L	8.3		80	120			A
Run: IC3-C_180502A										
Lab ID: C18040522-001AMSD	2	Sample Matrix Spike Duplicate								05/02/18 14:22
Chloride		261	mg/L	2.1	102	80	120	1.1	20	
Sulfate		5760	mg/L	8.3		80	120	0.6	20	A

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 05/07/18

**Project:** Zone 3

**Work Order:** C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E353.2										Analytical Run: FIA201-C_180417A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									04/17/18 14:02
Nitrogen, Nitrate+Nitrite as N		0.984	mg/L	0.010	98	90	110			
<b>Method:</b> E353.2										Batch: R234361
<b>Lab ID:</b> MBLK	Method Blank									Run: FIA201-C_180417A 04/17/18 14:03
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.006						
<b>Lab ID:</b> LFB	Laboratory Fortified Blank									Run: FIA201-C_180417A 04/17/18 14:04
Nitrogen, Nitrate+Nitrite as N		0.964	mg/L	0.010	97	90	110			
<b>Lab ID:</b> C18040520-003DMS	Sample Matrix Spike									Run: FIA201-C_180417A 04/17/18 15:01
Nitrogen, Nitrate+Nitrite as N		1.13	mg/L	0.010	105	90	110			
<b>Lab ID:</b> C18040520-003DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_180417A 04/17/18 15:02
Nitrogen, Nitrate+Nitrite as N		1.10	mg/L	0.010	102	90	110	2.7	10	
<b>Lab ID:</b> C18040522-007EMS	Sample Matrix Spike									Run: FIA201-C_180417A 04/17/18 15:17
Nitrogen, Nitrate+Nitrite as N		0.981	mg/L	0.010	98	90	110			
<b>Lab ID:</b> C18040522-007EMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_180417A 04/17/18 15:18
Nitrogen, Nitrate+Nitrite as N		1.03	mg/L	0.010	103	90	110	4.9	10	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/29/18

Project: Zone 3

Work Order: C18040522

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7					Analytical Run: ICP203-B_180419A				
Lab ID: ICV	Continuing Calibration Verification Standard								04/19/18 15:24
Calcium	25.9	mg/L	1.0	103	95	105			
Magnesium	25.2	mg/L	1.0	101	95	105			
Potassium	25.9	mg/L	1.0	104	95	105			
Sodium	25.3	mg/L	1.0	101	95	105			
Method: E200.7					Batch: R298569				
Lab ID: MB-6500DIS180418A	Method Blank								Run: ICP203-B_180419A 04/19/18 15:31
Calcium	0.10	mg/L	0.07						
Magnesium	ND	mg/L	0.02						
Potassium	ND	mg/L	0.1						
Sodium	ND	mg/L	0.1						
Lab ID: LFB-6500DIS180418A	Laboratory Fortified Blank								Run: ICP203-B_180419A 04/19/18 15:39
Calcium	48.4	mg/L	1.0	97	85	115			
Magnesium	48.0	mg/L	1.0	96	85	115			
Potassium	49.5	mg/L	1.0	99	85	115			
Sodium	48.5	mg/L	1.0	97	85	115			
Lab ID: B18041213-001BMS2	Sample Matrix Spike								Run: ICP203-B_180419A 04/19/18 20:44
Calcium	134	mg/L	1.0	95	70	130			
Magnesium	138	mg/L	1.0	96	70	130			
Potassium	119	mg/L	1.0	97	70	130			
Sodium	312	mg/L	1.0	91	70	130			
Lab ID: B18041213-001BMSD2	Sample Matrix Spike Duplicate								Run: ICP203-B_180419A 04/19/18 20:48
Calcium	132	mg/L	1.0	92	70	130	2.0	20	
Magnesium	139	mg/L	1.0	97	70	130	0.7	20	
Potassium	119	mg/L	1.0	97	70	130	0.0	20	
Sodium	316	mg/L	1.0	94	70	130	1.0	20	
Lab ID: C18040522-005BMS2	Sample Matrix Spike								Run: ICP203-B_180419A 04/19/18 22:06
Calcium	965	mg/L	1.0	99	70	130			
Magnesium	1160	mg/L	1.0	92	70	130			
Potassium	523	mg/L	1.5	102	70	130			
Sodium	642	mg/L	2.0	99	70	130			
Lab ID: C18040522-005BMSD2	Sample Matrix Spike Duplicate								Run: ICP203-B_180419A 04/19/18 22:10
Calcium	966	mg/L	1.0	99	70	130	0.1	20	
Magnesium	1150	mg/L	1.0	90	70	130	0.7	20	
Potassium	503	mg/L	1.5	98	70	130	3.8	20	
Sodium	632	mg/L	2.0	98	70	130	1.5	20	
Lab ID: B18040791-003BMS2	Sample Matrix Spike								Run: ICP203-B_180419A 04/20/18 03:35
Calcium	67.9	mg/L	1.0	94	70	130			

### Qualifiers:

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/29/18

Project: Zone 3

Work Order: C18040522

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7							Batch: R298569		
Lab ID: B18040791-003BMS2	Sample Matrix Spike		Run: ICP203-B_180419A				04/20/18 03:35		
Magnesium	63.0	mg/L	1.0	102	70	130			
Potassium	62.1	mg/L	1.0	108	70	130			
Sodium	85.1	mg/L	1.0	103	70	130			
Lab ID: B18040791-003BMSD2	Sample Matrix Spike Duplicate		Run: ICP203-B_180419A				04/20/18 03:47		
Calcium	69.5	mg/L	1.0	97	70	130	2.2	20	
Magnesium	62.8	mg/L	1.0	101	70	130	0.3	20	
Potassium	60.9	mg/L	1.0	106	70	130	1.9	20	
Sodium	84.3	mg/L	1.0	101	70	130	0.9	20	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/29/18

Project: Zone 3

Work Order: C18040522

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
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Method: E200.8

Analytical Run: ICPMS207-B\_180418B

Lab ID: QCS

Initial Calibration Verification Standard

04/18/18 23:09

Aluminum	0.249	mg/L	0.10	100	90	110			
Beryllium	0.0256	mg/L	0.0010	102	90	110			
Cadmium	0.0251	mg/L	0.0010	100	90	110			
Cobalt	0.0515	mg/L	0.010	103	90	110			
Lead	0.0498	mg/L	0.010	100	90	110			
Manganese	0.252	mg/L	0.010	101	90	110			
Molybdenum	0.0479	mg/L	0.0050	96	90	110			
Nickel	0.0508	mg/L	0.010	102	90	110			
Uranium	0.0204	mg/L	0.0010	102	90	110			
Vanadium	0.0496	mg/L	0.10	99	90	110			

Method: E200.8

Batch: 120485

Lab ID: MB-120485

Method Blank

Run: ICPMS207-B\_180418B

04/18/18 23:17

Aluminum	ND	mg/L	0.001						
Beryllium	ND	mg/L	0.0001						
Cadmium	ND	mg/L	0.00003						
Cobalt	ND	mg/L	0.00004						
Lead	ND	mg/L	0.00008						
Manganese	ND	mg/L	0.0001						
Molybdenum	ND	mg/L	0.00006						
Nickel	ND	mg/L	0.0008						
Uranium	ND	mg/L	0.00005						
Vanadium	ND	mg/L	0.0006						

Lab ID: LCS-120485

Laboratory Control Sample

Run: ICPMS207-B\_180418B

04/18/18 23:20

Aluminum	2.39	mg/L	0.010	95	85	115			
Beryllium	0.247	mg/L	0.0010	99	85	115			
Cadmium	0.220	mg/L	0.0010	88	85	115			
Cobalt	0.482	mg/L	0.0010	96	85	115			
Lead	0.489	mg/L	0.0010	98	85	115			
Manganese	2.50	mg/L	0.0010	100	85	115			
Molybdenum	0.469	mg/L	0.0050	94	85	115			
Nickel	0.495	mg/L	0.0010	99	85	115			
Uranium	0.486	mg/L	0.0010	97	85	115			
Vanadium	0.510	mg/L	0.010	102	85	115			

Lab ID: C18040522-001CMS3

Sample Matrix Spike

Run: ICPMS207-B\_180418B

04/18/18 23:34

Aluminum	288	mg/L	0.030		70	130			A
Beryllium	0.426	mg/L	0.0010	91	70	130			
Cadmium	0.263	mg/L	0.0010	97	70	130			
Cobalt	1.65	mg/L	0.0050	93	70	130			
Lead	0.520	mg/L	0.0010	97	70	130			
Manganese	22.1	mg/L	0.0010		70	130			A

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Report Date: 04/29/18

Project: Zone 3

Work Order: C18040522

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>							Batch: 120485		
<b>Lab ID: C18040522-001CMS3</b>	<b>Sample Matrix Spike</b>		<b>Run: ICPMS207-B_180418B</b>				<b>04/18/18 23:34</b>		
Molybdenum	0.459	mg/L	0.0010	91	70	130			
Nickel	1.78	mg/L	0.0050	93	70	130			
Uranium	1.15	mg/L	0.00030	98	70	130			
Vanadium	0.476	mg/L	0.010	95	70	130			
<b>Lab ID: C18040522-001CMSD3</b>	<b>Sample Matrix Spike Duplicate</b>		<b>Run: ICPMS207-B_180418B</b>				<b>04/18/18 23:37</b>		
Aluminum	291	mg/L	0.030		70	130	0.8	20	A
Beryllium	0.428	mg/L	0.0010	92	70	130	0.7	20	
Cadmium	0.264	mg/L	0.0010	97	70	130	0.5	20	
Cobalt	1.65	mg/L	0.0050	93	70	130	0.1	20	
Lead	0.520	mg/L	0.0010	97	70	130	0.0	20	
Manganese	22.1	mg/L	0.0010		70	130	0.2	20	A
Molybdenum	0.460	mg/L	0.0010	92	70	130	0.3	20	
Nickel	1.78	mg/L	0.0050	94	70	130	0.3	20	
Uranium	1.16	mg/L	0.00030	98	70	130	0.2	20	
Vanadium	0.479	mg/L	0.010	96	70	130	0.5	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 04/26/18

Work Order: C18040522

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 C					tical Run: SELENIUM PSA MILLENIUM_180419A				
Lab ID: ICV-41131	Initial Calibration Verification Standard								04/19/18 13:03
Selenium-IV	0.0192	mg/L	0.0010	96	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								04/19/18 14:02
Selenium-IV	0.0185	mg/L	0.0010	92	90	110			
Method: A3114 C					Batch: 41218				
Lab ID: MB-41218	Method Blank								04/19/18 13:44
Selenium-IV	ND	mg/L	0.0006						
Lab ID: LCS-41218	Laboratory Control Sample								04/19/18 13:45
Selenium-IV	0.0194	mg/L	0.0010	97	90	110			
Lab ID: LFB-41218	Laboratory Fortified Blank								04/19/18 13:47
Selenium-IV	0.0198	mg/L	0.0010	99	85	115			
Lab ID: C18040522-004DMS	Sample Matrix Spike								04/19/18 14:12
Selenium-IV	0.0215	mg/L	0.0010	100	70	130			
Lab ID: C18040522-004DMSD	Sample Matrix Spike Duplicate								04/19/18 14:14
Selenium-IV	0.0215	mg/L	0.0010	100	70	130	0.3	20	

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## QA/QC Summary Report

Prepared by Helena, MT Branch

Client: United Nuclear Corporation

Report Date: 04/26/18

Project: Zone 3

Work Order: C18040522

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E1632AM</b>			Analytical Run: ARSENIC SPECIATION_180420A						
<b>Lab ID: AS-ICV 25ppb-4/20/2018</b>	Initial Calibration Verification Standard		04/20/18 12:57						
Arsenic-III	25.5	ug/L	5.0	102	87.6	114			
<b>Lab ID: AS-50.0-4/20/2018</b>	Continuing Calibration Verification Standard		04/20/18 15:33						
Arsenic-III	50.8	ug/L	5.0	102	85	115			
<b>Method: E1632AM</b>			Batch: R134079						
<b>Lab ID: AS-LFB 50ppb-4/20/2018</b>	Laboratory Fortified Blank		Run: ARSENIC SPECIATION_1804 04/20/18 13:33						
Arsenic-III	52.8	ug/L	5.0	106	78	121			
<b>Lab ID: ICB</b>	Method Blank		Run: ARSENIC SPECIATION_1804 04/20/18 13:45						
Arsenic-III	ND	ug/L	0.2						
<b>Lab ID: H18040272-005D MS</b>	Sample Matrix Spike		Run: ARSENIC SPECIATION_1804 04/20/18 16:09						
Arsenic-III	60.2	ug/L	5.0	97	78	121			
<b>Lab ID: H18040272-005D MSD</b>	Sample Matrix Spike Duplicate		Run: ARSENIC SPECIATION_1804 04/20/18 16:21						
Arsenic-III	63.7	ug/L	5.0	104	78	121	5.7	20	
<b>Method: E1632AM</b>			Analytical Run: ARSENIC SPECIATION_180425A						
<b>Lab ID: AS-ICV 25ppb-4/25/2018</b>	Initial Calibration Verification Standard		04/25/18 11:36						
Arsenic-III	25.8	ug/L	5.0	103	87.6	114			
<b>Lab ID: AS-50.0-4/25/2018</b>	Continuing Calibration Verification Standard		04/25/18 11:48						
Arsenic-III	51.1	ug/L	5.0	102	85	115			
<b>Method: E1632AM</b>			Batch: R134224						
<b>Lab ID: AS-LFB 50ppb-4/25/2018</b>	Laboratory Fortified Blank		Run: ARSENIC SPECIATION_1804 04/25/18 12:12						
Arsenic-III	50.4	ug/L	5.0	101	78	121			
<b>Lab ID: ICB</b>	Method Blank		Run: ARSENIC SPECIATION_1804 04/25/18 12:24						
Arsenic-III	ND	ug/L	0.2						
<b>Lab ID: C18040522-004D MS</b>	Sample Matrix Spike		Run: ARSENIC SPECIATION_1804 04/25/18 12:48						
Arsenic-III	1050	ug/L	20		78	121			A
<b>Lab ID: C18040522-004D MSD</b>	Sample Matrix Spike Duplicate		Run: ARSENIC SPECIATION_1804 04/25/18 13:00						
Arsenic-III	1020	ug/L	20		78	121	3.0	20	A

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## QA/QC Summary Report

Prepared by Billings, MT Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 05/01/18

Work Order: C18040522

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b> Analytical Run: R298658									
<b>Lab ID: CCV041918</b>	Continuing Calibration Verification Standard								04/19/18 09:14
Bromodichloromethane	5.04	ug/L	0.50	101	70	130			
Bromoform	5.30	ug/L	0.50	106	70	130			
Chlorodibromomethane	5.26	ug/L	0.50	105	70	130			
Chloroform	4.95	ug/L	0.50	99	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	101	71	139			
Surr: p-Bromofluorobenzene			0.50	106	80	127			
Surr: Toluene-d8			0.50	103	80	123			
<b>Method: E624</b> Batch: R298658									
<b>Lab ID: LCS041918</b>	Laboratory Control Sample								04/19/18 10:12
Bromodichloromethane	5.27	ug/L	0.50	105	74	128			
Bromoform	5.29	ug/L	0.50	106	66	128			
Chlorodibromomethane	5.45	ug/L	0.50	109	74	125			
Chloroform	4.97	ug/L	0.50	99	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	102	71	139			
Surr: p-Bromofluorobenzene			0.50	104	80	127			
Surr: Toluene-d8			0.50	103	80	123			
<b>Lab ID: MBLK041918</b>	Method Blank								04/19/18 11:40
Bromodichloromethane	ND	ug/L	0.50						
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	103	71	139			
Surr: p-Bromofluorobenzene			0.50	104	80	127			
Surr: Toluene-d8			0.50	103	80	123			
<b>Lab ID: C18040522-001GMS</b>	Sample Matrix Spike								04/19/18 13:15
Bromodichloromethane	5.00	ug/L	0.50	100	74	128			
Bromoform	4.91	ug/L	0.50	98	66	128			
Chlorodibromomethane	5.20	ug/L	0.50	104	74	125			
Chloroform	5.44	ug/L	0.50	97	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	104	71	139			
Surr: p-Bromofluorobenzene			0.50	106	80	127			
Surr: Toluene-d8			0.50	104	80	123			
<b>Lab ID: C18040522-001GMSD</b>	Sample Matrix Spike Duplicate								04/19/18 13:44
Bromodichloromethane	5.34	ug/L	0.50	107	74	128	6.6	20	
Bromoform	5.06	ug/L	0.50	101	66	128	3.0	20	
Chlorodibromomethane	5.31	ug/L	0.50	106	74	125	2.1	20	
Chloroform	5.76	ug/L	0.50	104	68	124	5.8	20	
Surr: 1,2-Dichloroethane-d4			0.50	106	71	139			
Surr: p-Bromofluorobenzene			0.50	107	80	127			
Surr: Toluene-d8			0.50	104	80	123			

### Qualifiers:

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Billings, MT Branch

**Client:** United Nuclear Corporation

**Project:** Zone 3

**Report Date:** 05/01/18

**Work Order:** C18040522

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>							Analytical Run: R298659		
<b>Lab ID: CCV042018a</b>	Continuing Calibration Verification Standard							04/20/18 00:26	
Bromodichloromethane	5.16	ug/L	0.50	103	70	130			
Bromoform	5.10	ug/L	0.50	102	70	130			
Chlorodibromomethane	5.24	ug/L	0.50	105	70	130			
Chloroform	5.30	ug/L	0.50	106	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	111	71	139			
Surr: p-Bromofluorobenzene			0.50	104	80	127			
Surr: Toluene-d8			0.50	102	80	123			
<b>Method: E624</b>							Batch: R298659		
<b>Lab ID: LCS042018a</b>	Laboratory Control Sample							Run: CS5972A.I_180419D	
Bromodichloromethane	5.54	ug/L	0.50	111	74	128		04/20/18 01:24	
Bromoform	5.20	ug/L	0.50	104	66	128			
Chlorodibromomethane	5.40	ug/L	0.50	108	74	125			
Chloroform	5.54	ug/L	0.50	111	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	114	71	139			
Surr: p-Bromofluorobenzene			0.50	103	80	127			
Surr: Toluene-d8			0.50	102	80	123			
<b>Lab ID: MBLK042018a</b>	Method Blank							Run: CS5972A.I_180419D	
Bromodichloromethane	ND	ug/L	0.50					04/20/18 02:52	
Bromoform	ND	ug/L	0.50						
Chlorodibromomethane	ND	ug/L	0.50						
Chloroform	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	106	71	139			
Surr: p-Bromofluorobenzene			0.50	108	80	127			
Surr: Toluene-d8			0.50	101	80	123			
<b>Lab ID: B18041550-004DMS</b>	Sample Matrix Spike							Run: CS5972A.I_180419D	
Bromodichloromethane	5.16	ug/L	0.50	103	74	128		04/20/18 08:13	
Bromoform	5.31	ug/L	0.50	106	66	128			
Chlorodibromomethane	5.48	ug/L	0.50	110	74	125			
Chloroform	4.85	ug/L	0.50	97	68	124			
Surr: 1,2-Dichloroethane-d4			0.50	101	71	139			
Surr: p-Bromofluorobenzene			0.50	110	80	127			
Surr: Toluene-d8			0.50	104	80	123			
<b>Lab ID: B18041550-004DMSD</b>	Sample Matrix Spike Duplicate							Run: CS5972A.I_180419D	
Bromodichloromethane	5.36	ug/L	0.50	107	74	128	3.9	20	04/20/18 09:11
Bromoform	5.21	ug/L	0.50	104	66	128	1.8	20	
Chlorodibromomethane	5.50	ug/L	0.50	110	74	125	0.4	20	
Chloroform	5.07	ug/L	0.50	101	68	124	4.4	20	
Surr: 1,2-Dichloroethane-d4			0.50	100	71	139			
Surr: p-Bromofluorobenzene			0.50	113	80	127			
Surr: Toluene-d8			0.50	106	80	123			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/14/18

Project: Zone 3

Work Order: C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-1081
<b>Lab ID: MB-GA-1081</b>	3	Method Blank					Run: G5000W_180423A			04/26/18 12:44
Gross Alpha minus Rn & U		0.6	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.5	pCi/L							
Gross Alpha minus Rn & U MDC		0.6	pCi/L							
<b>Lab ID: LCS-GA-1081</b>		Laboratory Control Sample					Run: G5000W_180423A			04/26/18 12:44
Gross Alpha minus Rn & U		35	pCi/L	99		80	120			
<b>Lab ID: C18040522-002FMS</b>		Sample Matrix Spike					Run: G5000W_180423A			04/26/18 12:44
Gross Alpha minus Rn & U		60	pCi/L	57		70	130			S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD recoveries are acceptable, this batch passes.										
<b>Lab ID: C18040522-002FMSD</b>		Sample Matrix Spike Duplicate					Run: G5000W_180423A			04/26/18 12:44
Gross Alpha minus Rn & U		69	pCi/L	83		70	130	14		20

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/14/18

Project: Zone 3

Work Order: C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0								Batch: RA226-8914		
Lab ID: LCS-RA226-8914	Laboratory Control Sample			Run: TENNELEC-3_180426D			05/07/18 11:02			
Radium 226		8.3	pCi/L	81	80	120				
Lab ID: MB-RA226-8914	3	Method Blank			Run: TENNELEC-3_180426D			05/07/18 11:02		
Radium 226		0.2	pCi/L							
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.1	pCi/L							
Lab ID: C18040520-004CMS	Sample Matrix Spike			Run: TENNELEC-3_180426D			05/07/18 11:02			
Radium 226		18	pCi/L	83	70	130				
Lab ID: C18040520-004CMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_180426D			05/07/18 11:02			
Radium 226		20	pCi/L	90	70	130	8.4	20		

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/14/18

Project: Zone 3

Work Order: C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0								Batch: RA-TH-ISO-2710		
Lab ID: LCS-RA-TH-ISO-2710	Laboratory Control Sample			Run: EGG-ORTEC_180426B			05/09/18 16:32			
Thorium 230	10	pCi/L		88	80	120				
Lab ID: C18040726-001CMS	Sample Matrix Spike			Run: EGG-ORTEC_180426B			05/09/18 16:32			
Thorium 230	25	pCi/L		110	70	130				
Lab ID: C18040726-001CMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_180426B			05/09/18 16:32			
Thorium 230	24	pCi/L		107	70	130	2.7	20		
Lab ID: MB-RA-TH-ISO-2710	3	Method Blank		Run: EGG-ORTEC_180426B			05/09/18 16:32			
Thorium 230		0.06	pCi/L	U						
Thorium 230 precision (±)		0.09	pCi/L							
Thorium 230 MDC		0.1	pCi/L							
Method: E908.0								Batch: RA-TH-ISO-2711		
Lab ID: LCS-RA-TH-ISO-2711	Laboratory Control Sample			Run: EGG-ORTEC_180507A			05/11/18 13:08			
Thorium 230	5.9	pCi/L		103	80	120				
Lab ID: C18040522-005FMS	Sample Matrix Spike			Run: EGG-ORTEC_180507A			05/11/18 13:08			
Thorium 230	26	pCi/L		127	70	130				
Lab ID: C18040522-005FMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_180507A			05/11/18 13:08			
Thorium 230	21	pCi/L		103	70	130	21	20	R	
- Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than the limit of 2.0.										
Lab ID: MB-RA-TH-ISO-2711	3	Method Blank		Run: EGG-ORTEC_180507A			05/11/18 13:08			
Thorium 230		0.04	pCi/L	U						
Thorium 230 precision (±)		0.1	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 05/14/18

Project: Zone 3

Work Order: C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0										Batch: PB-210-0928
Lab ID: LCS-PB-210-0928	Laboratory Control Sample									Run: PACKARD 3100TR_180418A 04/23/18 15:51
Lead 210		22	pCi/L		103	80	120			
Lab ID: MB-PB-210-0928	3	Method Blank								Run: PACKARD 3100TR_180418A 04/23/18 17:01
Lead 210		0.2	pCi/L							U
Lead 210 precision (±)		0.7	pCi/L							
Lead 210 MDC		1	pCi/L							
Lab ID: C18040520-002CMS	Sample Matrix Spike									Run: PACKARD 3100TR_180418A 04/24/18 03:28
Lead 210		47	pCi/L		111	70	130			
Lab ID: C18040520-002CMSD	Sample Matrix Spike Duplicate									Run: PACKARD 3100TR_180418A 04/24/18 04:34
Lead 210		44	pCi/L		103	70	130	7.0	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 3

**Report Date:** 05/14/18

**Work Order:** C18040522

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05									Batch: RA228-5766	
Lab ID: LCS-228-RA226-8909	Laboratory Control Sample			Run: TENNELEC-3_180426B				05/02/18 12:02		
Radium 228		9.3	pCi/L		88	80	120			
Lab ID: MB-RA226-8909	3	Method Blank			Run: TENNELEC-3_180426B				05/02/18 12:02	
Radium 228		1	pCi/L							U
Radium 228 precision (±)		1.0	pCi/L							
Radium 228 MDC		2	pCi/L							
Lab ID: C18040520-005CMS	Sample Matrix Spike			Run: TENNELEC-3_180426B				05/02/18 12:02		
Radium 228		21	pCi/L		86	70	130			
Lab ID: C18040520-005CMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_180426B				05/02/18 12:02		
Radium 228		23	pCi/L		97	70	130	8.6	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## ANALYTICAL SUMMARY REPORT

April 24, 2018

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C18040523

Project Name: Zone 3

Energy Laboratories, Inc. Casper WY received the following 6 samples for United Nuclear Corporation on 4/13/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C18040523-001	NBL-2	04/10/18 11:42	04/13/18	Aqueous	Alkalinity Anions by Ion Chromatography pH Solids, Total Dissolved
C18040523-002	NW-1	04/11/18 08:50	04/13/18	Aqueous	Same As Above
C18040523-003	NW-4	04/11/18 09:20	04/13/18	Aqueous	Same As Above
C18040523-004	NW-2	04/11/18 09:50	04/13/18	Aqueous	Same As Above
C18040523-005	NW-5	04/11/18 10:10	04/13/18	Aqueous	Acidity, Total as CaCO <sub>3</sub> Alkalinity Anions by Ion Chromatography pH Solids, Total Dissolved
C18040523-006	RW-A	04/11/18 10:35	04/13/18	Aqueous	Alkalinity Anions by Ion Chromatography pH Solids, Total Dissolved

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2018.04.24 11:29:02 -06:00



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 3

**Report Date:** 04/18/18

**Work Order:** C18040523

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2310 B										Analytical Run: ACIDITY_180417A
<b>Lab ID:</b> ICV Initial Calibration Verification Standard										
pH		6.82	s.u.	0.010	99	98	102			04/17/18 15:40
<b>Method:</b> A2310 B										Batch: ACID180416_A
<b>Lab ID:</b> MBLK Method Blank										
Acidity, Total as CaCO <sub>3</sub>		0.5	mg/L					Run: ACIDITY_180417A		04/17/18 15:41
<b>Lab ID:</b> LCS Laboratory Control Sample										
Acidity, Total as CaCO <sub>3</sub>		745	mg/L		99	90	110	Run: ACIDITY_180417A		04/17/18 15:45
<b>Lab ID:</b> C18040463-001A DUP Sample Duplicate										
Acidity, Total as CaCO <sub>3</sub>		3080	mg/L					Run: ACIDITY_180417A	0.6	10 04/17/18 15:45

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/18/18

Project: Zone 3

Work Order: C18040523

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Analytical Run: MANTECH_180414A
Lab ID: ICV		Initial Calibration Verification Standard								
pH		6.95	s.u.	0.010	101	98	102			04/14/18 17:01
Method: A2320 B										Batch: R234243
Lab ID: MBLK		Method Blank								
Bicarbonate as HCO <sub>3</sub>		2	mg/L	1						Run: MANTECH_180414A 04/14/18 17:05
Lab ID: LCS		Laboratory Control Sample								
Alkalinity, Total as CaCO <sub>3</sub>		259	mg/L	5.0	103	90	110			Run: MANTECH_180414A 04/14/18 17:14
Lab ID: C18040523-001ADUP		Sample Duplicate								
Bicarbonate as HCO <sub>3</sub>		321	mg/L	5.0				0.2	10	Run: MANTECH_180414A 04/14/18 22:13

### Qualifiers:

RL - Analyte reporting limit.

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/18/18

**Project:** Zone 3

**Work Order:** C18040523

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2540 C</b>										Batch: TDS180414A
<b>Lab ID: MB-1_180414A</b>		Method Blank					Run: BAL-16_180414A			04/14/18 17:34
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
<b>Lab ID: LCS-2_180414A</b>										Run: BAL-16_180414A
Solids, Total Dissolved TDS @ 180 C		Laboratory Control Sample								04/14/18 17:34
		1050	mg/L	11	94	90	110			
<b>Lab ID: C18040523-005A DUP</b>										Run: BAL-16_180414A
Solids, Total Dissolved TDS @ 180 C		Sample Duplicate								04/14/18 17:44
		5480	mg/L	40				0.0	5	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 04/18/18

**Project:** Zone 3

**Work Order:** C18040523

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A4500-H B										
Analytical Run: PHSC_101-C_180414A										
<b>Lab ID:</b> 6.86	Initial Calibration Verification Standard									
pH		6.86	s.u.	0.010	100	98	102			04/14/18 15:03
<b>Lab ID:</b> pH 6.86	Initial Calibration Verification Standard									
pH		6.87	s.u.	0.010	100	98	102			04/14/18 17:57
<b>Method:</b> A4500-H B										
Batch: R234238										
<b>Lab ID:</b> C18040483-002ADUP	Sample Duplicate									
pH		7.43	s.u.	0.010				0.1	1.5	04/14/18 16:06
<b>Lab ID:</b> C18040520-003ADUP	Sample Duplicate									
pH		7.22	s.u.	0.010				0.1	1.5	04/14/18 16:47

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 04/18/18

Project: Zone 3

Work Order: C18040523

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC3-C_180416A
Lab ID: ICV		Initial Calibration Verification Standard								
Chloride		10.4	mg/L	1.0	104	90	110			04/16/18 13:07
Method: E300.0										Batch: R234337
Lab ID: ICB		Method Blank								
Chloride		ND	mg/L	0.09						Run: IC3-C_180416A 04/16/18 13:25
Lab ID: LFB		Laboratory Fortified Blank								
Chloride		10.4	mg/L	1.0	104	90	110			Run: IC3-C_180416A 04/16/18 13:43
Lab ID: C18040523-001AMS		Sample Matrix Spike								
Chloride		149	mg/L	1.0	105	80	120			Run: IC3-C_180416A 04/17/18 03:21
Lab ID: C18040523-001AMSD		Sample Matrix Spike Duplicate								
Chloride		148	mg/L	1.0	104	80	120	0.5	20	Run: IC3-C_180416A 04/17/18 03:40

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.