

SEMI-ANNUAL GROUND WATER
AND ENVIRONMENTAL
MONITORING REPORT

SECOND HALF OF 2017
(JULY THRU DECEMBER)

QUARTERLY SAMPLING
SEMI-ANNUAL GROUND WATER MONITORING REPORT
JULY TO DECEMBER OF 2017
FIELD DATA SHEET OF
THIRD AND FOURTH QUARTER

CONTROLS

SW ALLUVIUM

ZONE – 1

ZONE – 3

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

MONTH: July QUARTER: Third YEAR: 2017

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	7-10 0837	84.05	6949.50	6865.45	6,530	6.41	15.3
624	7-10 1700	54.92	6898.70	6843.78	5,480	6.55	16.6
627	7-11 1110	61.78	6892.40	6830.62	4,130	6.88	20.3
632	7-10 1300	49.13	6903.60	6854.47	6,650	6.46	17.7
801	7-10 1340	56.47	6904.30	6847.83	6,520	6.58	18.4
802	7-10 1215	52.59	6907.10	6854.51	6,570	6.48	17.1
803	7-10 1010	67.15	6922.60	6855.45	6,230	6.52	18.3
808	7-10 1120	54.39	6910.70	6856.31	6,500	6.44	17.7
GW-1	7-10 1430	66.12	6916.50	6850.38	6,200	6.61	18.1
GW-2			6912.90				
GW-3			6910.00				
EPA-23	7-10 0930	60.62	6926.50	6865.88	4,440	6.72	16.5
EPA-25	7-11 1000	57.78	6903.40	6845.62	4,420	6.73	17.1
EPA-28	7-10 1525	66.91	6917.90	6850.99	4,650	6.83	17.7
EPA-28 DUP (QA/QC)	7-10 1610	67.40	6917.90	6850.50	4,700	6.83	17.6
SBL-1	7-11 0847	51.31	6896.30	6844.99	6,890	6.50	16.5
805	7-20 1021	59.07	6915.60	6856.53			
807	7-20 1017	63.57	6923.40	6859.83			

COMMENTS: Well GW-2 and GW-3 are not sampled due to hazardous conditions (close to edge of pipeline arroya) and GW-3 has very low water volume. Well 632 water level dropped 4.87' during sample with purge rate of 247 ml./min.

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

MONTH: July QUARTER: Third YEAR: 2017

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	7-11 1400	107.30	7008.80	6901.50	8,830	6.02	23.5
604	7-11 1510	106.33	7006.00	6899.67	6,120	5.51	16.0
614	7-11 1240	106.12	7012.00	6905.88	7,480	6.40	20.1
TWQ-142	7-12 1110	202.75	6983.40	6780.65	1,839	7.73	16.6
EPA-2	7-12 0940	175.49	7019.50	6844.01	3,040	6.80	15.1
EPA-2 DUP (QA/QC)	7-12 1030	176.31	7019.50	6843.19	3,170	6.79	15.9
EPA-4	7-12 0840	209.27	7069.80	6860.53	4,120	6.75	14.8
EPA-5	7-11 1650	127.93	7011.50	6883.57	4,120	6.31	16.0
EPA-7	7-11 1605	117.68	7011.70	6894.02	6,900	6.16	15.0
Rinsate (QA/QC)	7-12 1156				3	6.54	26.8
Field Blank (QA/QC)	7-12 1210				3	6.44	32.5
TWQ-143	7-20 1258	209.27	6989.60	6780.33			
EPA-8	7-12 0927	217.31	7076.40	6859.09			
505-A	7-20 1101	122.76	6963.10	6840.34			
502-A	7-20 1121	196.84	7025.30	6828.46			
501-A	7-20 1126	213.31	7048.00	6834.69			
504-A	7-20 1222	201.48	7001.40	6799.92			
412	7-20 1216	186.61	6979.40	6792.79			

COMMENTS: Well 515-A water level dropped 6.29' during sample with purge rate of 127 ml./min.

GROUND WATER FIELD MONITORING

WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: July QUARTER: Third YEAR: 2017
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	7-20 1220	Dry @ 171	7001.80				
517	7-17 0923	106.85	6971.29	6864.44	5,330	2.99	16.3
EPA-14	7-18 0838	125.86	6963.88	6838.02	3,780	5.40	15.7
420	7-17 1545	156.95	6982.60	6825.65	3,410	6.46	18.5
711	7-17 1245	184.65	7042.75	6858.10	4,450	4.15	17.2
613	7-17 0832	79.98	6961.30	6881.32	8,440	3.21	15.5
708	7-17 1111	158.81	7011.73	6852.92	5,250	3.83	17.9
Rinsate (QA/QC)	7-18 1730				2	6.01	30.5
Field Blank (QA/QC)	7-18 1735				2	6.16	22.4
NBL-1	7-20 1235	Mud @ 197.52	6991.96				
EPA-9	7-12 0924	170.73	7076.60	6905.87			
EPA-13	7-17 1418	169.41	7031.66	6862.25	6,180	5.92	18.3
702	7-20 1047	83.83	6974.20	6890.37			
710	7-20 1141	166.57	7016.36	6849.79			
712	7-20 1147	177.54	7022.16	6844.62			
713	7-20 1152	168.73	7024.19	6855.46			
714	7-20 1104	106.07	6962.54	6856.47			
701	7-20 1056	84.96	6961.30	6876.34			
706	7-20 1111	116.90	6972.12	6855.22			
707	7-20 1133	163.03	7005.20	6842.17			
717	7-18 1422	136.00	6972.07	6836.07	6,060	3.19	16.7
717 DUPL (QA/QC)	7-18 1602	137.24	7042.75	6905.51	6,110	3.21	16.6
719	7-18 1010	170.74	7001.48	6830.74	5,180	5.71	24.0
402	7-20 1201	136.32	6968.20	6831.88			
446	7-20 1319	159.94	6998.30	6838.36			
424**	7-20 1207	143.33	6972.62	6829.29			

COMMENTS: Well 517 water level dropped 4.22' during sample with purge rate of 98 ml./min. and required a 6.4 hr. recharge to resume/collect full volume.



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

MONTH: October QUARTER: Fourth YEAR: 2017

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	10-2 0847	84.08	6949.50	6865.42	6,500	6.41	14.2
624	10-2 1730	55.17	6898.70	6843.53	5,520	6.57	13.6
627	10-3 1107	61.93	6892.40	6830.47	4,280	6.86	18.4
632	10-2 1331	49.38	6903.60	6854.22	6,440	6.49	15.1
801	10-2 1415	56.79	6904.30	6847.51	6,280	6.61	15.4
802	10-2 1247	52.85	6907.10	6854.25	6,470	6.52	15.4
803	10-2 1034	67.34	6922.60	6855.26	5,550	6.55	16.6
808	10-2 1158	54.48	6910.70	6856.22	5,940	6.52	15.4
GW-1	10-2 1503	66.43	6916.50	6850.07	6,190	6.67	15.3
GW-2			6912.90				
GW-3			6910.00				
EPA-23	10-2 0938	60.62	6926.50	6865.88	4,470	6.68	14.5
EPA-25	10-3 1002	58.10	6903.40	6845.30	4,570	6.72	16.3
EPA-28	10-2 1600	67.22	6917.90	6850.68	4,620	6.88	15.6
EPA-28 DUP (QA/QC)	10-2 1642	67.68	6917.90	6850.22	4,620	6.86	15.1
SBL-1	10-3 0853	51.27	6896.30	6845.03	7,460	6.61	14.9
805	10-12 0920	59.32	6915.60	6846.28			
807	10-12 0913	63.83	6923.40	6859.57			

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 4.95' during sample.

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

MONTH: October QUARTER: Fourth YEAR: 2017

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	10-3 1351	107.33	7008.80	6901.47	9,150	5.98	20.6
604	10-3 1507	106.40	7006.00	6899.60	6,150	5.38	17.4
614	10-3 1234	106.87	7012.00	6905.13	7,480	6.38	19.0
TWQ-142	10-4 1130	202.86	6983.40	6780.54	1,922	7.89	16.0
EPA-2	10-4 0948	175.57	7019.50	6843.93	3,220	6.95	15.3
EPA-2 DUP (QA/QC)	10-4 1045	176.27	7019.50	6843.23	3,370	6.93	15.2
EPA-4	10-4 0831	209.32	7069.80	6860.48	4,300	6.78	15.1
EPA-5	10-3 1642	127.98	7011.50	6883.52	4,240	6.29	16.7
EPA-7	10-3 1601	117.66	7011.70	6894.04	6,860	6.09	16.7
Rinsate (QA/QC)	10-4 1214				5	6.78	22.8
Field Blank (QA/QC)	10-4 1220				6	6.29	23.7
TWQ-143	10-12 1134	209.19	6989.60	6780.41			
EPA-8	10-4 0923	217.29	7076.40	6859.11			
505-A	10-12 0951	122.76	6963.10	6840.34			
502-A	10-12 1009	196.79	7025.30	6828.51			
501-A	10-12 1013	213.22	7048.00	6834.78			
504-A	10-12 1048	201.38	7001.40	6800.02			
412	10-12 1114	186.53	6979.40	6792.87			

COMMENTS: Well 515-A water level dropped 6.43' during sample.

GROUND WATER FIELD MONITORING

WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: October QUARTER: Fourth YEAR: 2017
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	10-12 1047	Dry @ 171.0	7001.80				
517	10-9 0925	106.69	6971.29	6864.60	5,310	3.37	12.8
EPA-14	10-9 1630	125.83	6963.88	6838.05	3,910	5.34	13.3
420	10-9 1355	157.13	6982.60	6825.47	3,500	6.40	15.9
711	10-9 1147	184.48	7042.75	6858.27	4,580	3.89	13.7
613	10-9 0835	79.97	6961.30	6881.33	8,560	2.90	12.8
708	10-9 1030	158.77	7011.73	6852.96	5,450	3.78	13.6
Rinsate (QA/QC)	10-10 1600				5	7.96	23.4
Field Blank (QA/QC)	10-10 1615				8	6.38	22.2
NBL-1	10-12 1124	Mud @ 197.50	6991.96				
EPA-9	10-9 0921	170.78	7076.60	6905.82			
EPA-13	10-9 1248	169.50	7031.66	6862.16	6,240	5.81	14.8
702	10-12 0928	83.84	6974.20	6890.36			
710	10-12 1024	166.59	7016.36	6849.77			
712	10-12 1026	177.59	7022.16	6844.57			
713	10-12 1029	168.76	7024.19	6855.43			
714	10-12 0955	106.24	6962.54	6856.30			
701	10-12 0947	84.99	6961.30	6876.31			
706	10-12 1004	116.94	6972.12	6855.18			
707	10-12 1019	163.06	7005.20	6842.14			
717	10-9 1500	136.08	6972.07	6835.99	6,230	3.09	13.5
717 DUPL (QA/QC)	10-9 1546	137.30	7042.75	6905.45	6,050	3.07	14.0
719	10-10 0827	170.93	7001.48	6830.55	5,220	5.27	11.7
402	10-12 1107	136.40	6968.20	6831.80			
446	10-12 1147	159.57	6998.30	6838.73			
424**	10-12 1059	143.36	6972.62	6829.26			

COMMENTS: Sample collected for well 517 after pump repair (screen, upper and lower check ball were cleaned and re-installed).

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

MONTH: October QUARTER: Fourth YEAR: 2017

SUPPLEMENTAL 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)
PB-2	10-11 1108	mud @ 189.85	6989.70				
PB-3	10-11 1100	mud @ 193.73	6990.23				
NBL-2	10-10 1230	172.96	6975.61	6802.65	3,370	6.44	17.1
RW-A	10-10 1632	176.42	6983.23	6806.81	5,120	5.68	15.5
RW-11	10-10 1700	170.75	6983.73	6812.98	4,620	6.49	15.1
PB-4	10-11 1105	193.24	6990.18	6796.94			
MW-6	10-11 1054	199.95	6990.94	6790.99			
MW-7	10-10 1405	198.59	6988.82	6790.23	3,880	6.80	17.6
MW-2	10-12 1036	161.30	6996.94	6835.64			
MW-3	10-12 1117	172.74	6986.38	6813.64			
NW-1	10-11 1006	199.88	6997.15	6797.27	3,700	7.05	14.8
703	10-12 0941	91.43	6978.92	6887.49			
709	10-12 1021	161.37	7003.54	6842.17			
715	10-12 0958	118.16	6963.90	6845.74			
716	10-12 1001	127.30	6964.94	6837.64			
718	10-12 1053	164.30	6995.06	6830.76			
IW-A	10-11 1110	201.15	6992.77	6791.62			
RW-16	10-12 1038	151.62	6979.73	6828.11			
RW-17	10-12 1033	174.86	7012.78	6837.92			
NW-2	10-11 1040	199.53	6989.76	6790.23	4,470	6.14	18.4
NW-3	10-10 1532	192.92	6985.57	6792.65	4,080	7.23	17.0
NW-4	10-11 1028	196.88	6990.13	6793.25	4,040	6.71	13.3
NW-5	10-11 1052	192.89	6985.85	6792.96	4,860	5.48	19.6
Z3M-1	10-12 0935	67.91	6996.30	6928.39			
Z3M-2	10-12 0933	77.78	7009.30	6931.52			

COMMENTS: In order to collect sample and water level on 10-10, extraction wells RW-A was shut off @ 1258/restarted @ 1725, RW-11 was shut off @ 1305/restarted @ 1720. On 10-11 NW-2 was shut off @ 0929/restarted @ 1110 and NW-5 was shut off @ 0933/restarted @ 1105.

NBL-1, NBL-2, RW-A & PB WELL GROUND WATER MONITORING

WATER ELEVATIONS, pH, CONDUCTIVITY, TITRATION AND TEMPERATURE

MONTH: July, August & September

QUARTER: Third

YEAR: 2017

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 ₃ mg/l	Chl mg/l
NBL-1	7-20 1235	Mud @ 197.52	6991.96						
NBL-2	7-18 1654	172.38	6975.61	6803.23	3,410	6.55	17.0	276	41
PB-2	7-19 1442	Mud @ 189.90	6989.70						
PB-3	7-19 1435	Mud @ 193.75	6990.23						
PB-4	7-19 1440	193.25	6990.18	6796.93					
RW-A	7-19 1118	175.75	6983.23	6807.48	4,930	5.42	23.3	42	29
NBL-1			6991.96						
NBL-2	8-30 0940	172.60	6975.61	6803.01	3,480	7.47	22.9	324	41
PB-2	8-30 1115	mud @ 189.90	6989.70						
PB-3	8-30 1052	mud @ 193.75	6990.23						
PB-4	8-30 1106	193.25	6990.18	6796.93					
RW-A	8-30 1130	175.95	6983.23	6807.29	4,950	5.76	18.9	53	29
NBL-1			6991.96						
NBL-2	9-26 1027	172.70	6975.61	6802.91	3,100	6.63	15.0	311	42
PB-2	9-26 1055	Mud @ 189.90	6989.70						
PB-3	9-26 1110	Mud @ 193.75	6990.23						
PB-4	9-26 1100	193.25	6990.18	6796.93					
RW-A	9-26 1302	176.36	6983.23	6806.87	4,950	5.79	16.8	61	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: July, August & September QUARTER: Third YEAR: 2017

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	7-19 1015	199.49	6997.15	6797.66	3,660	7.10	18.3	445	15
NW-2	7-19 1055	199.13	6989.76	6790.63	4,460	6.03	25.8	134	31
NW-3	7-18 1415	192.60	6985.57	6792.97	4,040	6.96	14.6	396	35
NW-4	7-19 1036	196.68	6990.13	6793.45	4,000	6.80	15.4	39	21
NW-5	7-19 1138	192.59	6985.85	6793.26	4,900	5.40	22.7	34	30
MW-6	7-19 1446	199.90	6990.94	6791.04					
MW-7	7-18 1236	198.24	6988.82	6790.58	3,770	6.37	20.8	215	34
NW-1	8-30 0935	199.60	6997.15	6797.55	3,580	7.17	15.5	408	15
NW-2	8-30 1100	199.03	6989.76	6790.73	4,380	6.04	23.6	139	30
NW-3	8-30 1020	192.76	6985.57	6792.81	3,940	7.22	17.1	405	35
NW-4	8-30 1001	196.52	6990.13	6793.61	3,920	6.47	15.1	36	22
NW-5	8-30 1040	192.77	6985.85	6793.08	4,750	5.54	19.0	16	31
MW-6	8-30 1109	199.91	6990.94	6791.03					
MW-7	8-30 1022	198.36	6988.82	6790.46	3,800	7.93	19.6	219	33
NW-1	9-26 1025	199.70	6997.15	6797.45	3,550	7.24	16.7	390	16
NW-2	9-26 1055	199.19	6989.76	6790.57	4,360	6.14	20.4	149	29
NW-3	9-26 1110	192.82	6985.57	6792.75	3,960	7.23	15.6	396	34
NW-4	9-26 1038	196.72	6990.13	6793.41	3,950	6.70	13.7	40	22
NW-5	9-26 1200	192.77	6985.85	6793.08	4,730	5.70	18.9	36	30
MW-6	9-26 1114	199.94	6990.94	6791.00					
MW-7	9-26 0950	198.50	6988.82	6790.32	3,750	7.48	15.7	222	34
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: October, November & December

QUARTER: Fourth

YEAR: 2017

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	10-10 1230	172.96	6975.61	6802.65	3,370	6.44	17.1	305	43
PB-2	10-11 1108	Mud @ 189.85	6989.70						
PB-3	10-11 1100	Mud @ 193.73	6990.23						
PB-4	10-11 1105	193.24	6990.18	6796.94					
RW-A	10-10 1632	176.42	6983.23	6806.81	5,120	5.68	15.5	57	30
NBL-1			6991.96						
NBL-2	11-28 1256	172.90	6975.61	6802.71	3,320	6.58	13.0	297	42
PB-2	11-28 1228	Mud @ 189.85	6989.70						
PB-3	11-28 1215	Mud @ 193.73	6990.23						
PB-4	11-28 1224	193.30	6990.18	6796.88					
RW-A	11-28 1250	177.26	6983.23	6805.97	5,020	5.79	19.5	48	30
NBL-1			6991.96						
NBL-2	12-20 1142	172.95	6975.61	6802.66	3,430	6.83	11.7	297	41
PB-2	12-20 1214	Mud @ 189.85	6989.70						
PB-3	12-20 1226	Mud @ 193.73	6990.23						
PB-4	12-20 1215	193.32	6990.18	6796.86					
RW-A	12-20 1300	177.08	6983.23	6806.15	5,060	5.87	17.0	49	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: _____

MW & NW WELL GROUND WATER MONITORING

WATER ELEVATIONS, pH, CONDUCTIVITY, TITRATION AND TEMPERATURE

MONTH: October, November & December

QUARTER: Fourth

YEAR: 2017

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	10-11 1006	199.88	6997.15	6797.27	3,700	7.05	14.8	396	16
NW-2	10-11 1040	199.53	6989.76	6790.23	4,470	6.14	18.4	141	29
NW-3	10-10 1532	192.92	6985.57	6792.65	4,080	7.23	17.0	432	35
NW-4	10-11 1028	196.88	6990.13	6793.25	4,040	6.71	13.3	43	23
NW-5	10-11 1052	192.89	6985.85	6792.96	4,860	5.48	19.6	30	31
MW-6	10-11 1054	199.95	6990.94	6790.99					
MW-7	10-10 1405	198.59	6988.82	6790.23	3,880	6.80	17.6	243	34
NW-1	11-28 1115	199.76	6997.15	6797.39	3,620	7.17	13.2	389	16
NW-2	11-28 1156	199.32	6989.76	6790.44	4,390	6.09	17.2	150	30
NW-3	11-28 1235	193.03	6985.57	6792.54	3,930	7.10	12.8	433	35
NW-4	11-28 1135	196.63	6990.13	6793.50	3,930	6.51	12.8	51	22
NW-5	11-28 1217	193.04	6985.85	6792.81	4,760	5.33	18.7	24	32
MW-6	11-28 1236	199.96	6990.94	6790.98					
MW-7	11-28 1047	198.67	6988.82	6790.15	3,870	7.65	15.0	226	35
NW-1	12-20 1040	199.96	6997.15	6797.19	3,540	6.71	6.5	390	15
NW-2	12-20 1130	199.01	6989.76	6790.75					
NW-3	12-20 1145	192.99	6985.57	6792.58	4,000	7.40	11.7	447	36
NW-4	12-20 1100	196.78	6990.13	6793.35	3,950	6.66	12.3	48	22
NW-5	12-20 1245	193.15	6985.85	6792.70	4,820	5.25	21.0	18	32
MW-6	12-20 1228	199.98	6990.94	6790.96					
MW-7	12-20 1103	198.52	6988.82	6790.30	3,950	7.69	12.0	226	36
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: No Sample for well NW-2 on 12-20-17 due to pump failure.

QUARTERLY SAMPLING
SEMI-ANNUAL GROUND WATER MONITORING REPORT

JULY TO DECEMBER OF 2017

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: C17070424-001
Client Sample ID: 509-D

Report Date: 09/05/17
Collection Date: 07/10/17 08:37
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	2490	mg/L		5		A2320 B	07/14/17 11:46 / mvr
Chloride	344	mg/L	D	2		E300.0	07/20/17 17:57 / jcg
Sulfate	2340	mg/L	D	8		E300.0	07/20/17 17:57 / jcg
Calcium	866	mg/L		1		E200.7	07/20/17 01:33 / eli-b
Magnesium	408	mg/L		1		E200.7	07/20/17 01:33 / eli-b
Potassium	13	mg/L		1		E200.7	07/20/17 21:32 / eli-b
Sodium	402	mg/L	D	2		E200.7	07/20/17 01:33 / eli-b
PHYSICAL PROPERTIES							
pH	6.57	s.u.	H	0.01		A4500-H B	07/14/17 09:35 / mvr
Solids, Total Dissolved TDS @ 180 C	5820	mg/L	D	100		A2540 C	07/14/17 15:16 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	8.25	mg/L	D	0.05		E353.2	07/19/17 15:41 / ljl
Nitrogen, Ammonia as N	1.04	mg/L		0.05		A4500-NH ₃ G	07/23/17 10:58 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 03:12 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 00:55 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 03:12 / eli-b
Cobalt	0.01	mg/L		0.01		E200.8	07/25/17 03:12 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/25/17 03:12 / eli-b
Manganese	3.93	mg/L		0.01		E200.8	07/25/17 03:12 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/25/17 03:12 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 03:12 / eli-b
Uranium	0.240	mg/L		0.0003		E200.8	07/25/17 03:12 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/25/17 03:12 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 17:52 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 12:37 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5700	mg/L				A1030 E	07/26/17 16:03 / tjp
A/C Balance	-2.82	%				A1030 E	07/26/17 16:03 / tjp
Anions	100	meq/L				A1030 E	07/26/17 16:03 / tjp
Cations	94.6	meq/L				A1030 E	07/26/17 16:03 / tjp
TDS Ratio	1.03	unitless				A1030 E	07/26/17 16:03 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.7	pCi/L	U			E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	08/09/17 14:58 / cng

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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-001
Client Sample ID: 509-D

Report Date: 09/05/17
Collection Date: 07/10/17 08:37
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.6	pCi/L	U		E909.0		08/18/17 23:01 / plj
Lead 210 precision (±)	0.8	pCi/L			E909.0		08/18/17 23:01 / plj
Lead 210 MDC	1.4	pCi/L			E909.0		08/18/17 23:01 / plj
Radium 226	0.3	pCi/L			E903.0		08/21/17 10:04 / dmf
Radium 226 precision (±)	0.2	pCi/L			E903.0		08/21/17 10:04 / dmf
Radium 226 MDC	0.2	pCi/L			E903.0		08/21/17 10:04 / dmf
Radium 228	1.2	pCi/L	U		RA-05		08/15/17 11:17 / plj
Radium 228 precision (±)	1.0	pCi/L			RA-05		08/15/17 11:17 / plj
Radium 228 MDC	1.7	pCi/L			RA-05		08/15/17 11:17 / plj
Thorium 230	-0.006	pCi/L	U		E908.0		08/03/17 15:05 / dmf
Thorium 230 precision (±)	0.05	pCi/L			E908.0		08/03/17 15:05 / dmf
Thorium 230 MDC	0.1	pCi/L			E908.0		08/03/17 15:05 / dmf
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		07/20/17 13:34 / eli-b
Bromoform	ND	ug/L		0.50	E624		07/20/17 13:34 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		07/20/17 13:34 / eli-b
Chloroform	ND	ug/L		0.50	E624		07/20/17 13:34 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139	E624		07/20/17 13:34 / eli-b
Surr: p-Bromofluorobenzene	127	%REC		80-127	E624		07/20/17 13:34 / eli-b
Surr: Toluene-d8	102	%REC		80-123	E624		07/20/17 13:34 / 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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-001
Client Sample ID: 509-D

Report Date: 11/09/17
Collection Date: 10/02/17 08:47
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	2500	mg/L		5		A2320 B	10/06/17 22:09 / mvr
Chloride	339	mg/L	D	2		E300.0	10/09/17 22:23 / jcg
Sulfate	2100	mg/L	D	8		E300.0	10/09/17 22:23 / jcg
Calcium	877	mg/L		1		E200.7	10/11/17 23:02 / eli-b
Magnesium	417	mg/L		1		E200.7	10/11/17 23:02 / eli-b
Potassium	13	mg/L		1		E200.7	10/11/17 23:02 / eli-b
Sodium	413	mg/L	D	2		E200.7	10/11/17 23:02 / eli-b
PHYSICAL PROPERTIES							
pH	6.60	s.u.	H	0.01		A4500-H B	10/06/17 11:32 / mvr
Solids, Total Dissolved TDS @ 180 C	5690	mg/L	DH	100		A2540 C	10/09/17 13:07 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	8.70	mg/L	D	0.05		E353.2	10/09/17 13:46 / ljl
Nitrogen, Ammonia as N	0.20	mg/L		0.05		A4500-NH ₃ G	10/08/17 12:22 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.7	10/10/17 21:56 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/16/17 17:16 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 17:16 / eli-b
Cobalt	0.01	mg/L		0.01		E200.8	10/16/17 17:16 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 17:16 / eli-b
Manganese	4.36	mg/L		0.01		E200.7	10/10/17 21:56 / eli-b
Molybdenum	ND	mg/L		0.1		E200.7	10/10/17 21:56 / eli-b
Nickel	ND	mg/L		0.05		E200.7	10/10/17 21:56 / eli-b
Uranium	0.264	mg/L		0.0003		E200.8	10/16/17 17:16 / eli-b
Vanadium	ND	mg/L		0.1		E200.7	10/10/17 21:56 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 16:27 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/10/17 13:16 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5400	mg/L				A1030 E	10/19/17 10:28 / tla
A/C Balance	0.86	%				A1030 E	10/19/17 10:28 / tla
Anions	94.7	meq/L				A1030 E	10/19/17 10:28 / tla
Cations	96.4	meq/L				A1030 E	10/19/17 10:28 / tla
TDS Ratio	1.05	unitless				A1030 E	10/19/17 10:28 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.3	pCi/L	U			E900.1	11/01/17 14:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	11/01/17 14:40 / dmf
Gross Alpha minus Rn & U MDC	0.7	pCi/L				E900.1	11/01/17 14:40 / dmf

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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-001
Client Sample ID: 509-D

Report Date: 11/09/17
Collection Date: 10/02/17 08:47
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	-0.5	pCi/L	U		E909.0		10/07/17 01:36 / meh
Lead 210 precision (±)	0.8	pCi/L			E909.0		10/07/17 01:36 / meh
Lead 210 MDC	1.4	pCi/L			E909.0		10/07/17 01:36 / meh
Radium 226	0.3	pCi/L			E903.0		10/24/17 10:20 / arh
Radium 226 precision (±)	0.1	pCi/L			E903.0		10/24/17 10:20 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/24/17 10:20 / arh
Radium 228	1.5	pCi/L			RA-05		10/18/17 20:54 / tlf
Radium 228 precision (±)	0.8	pCi/L			RA-05		10/18/17 20:54 / tlf
Radium 228 MDC	1.3	pCi/L			RA-05		10/18/17 20:54 / tlf
Thorium 230	0.05	pCi/L	U		E908.0		10/25/17 11:21 / cnh
Thorium 230 precision (±)	0.1	pCi/L			E908.0		10/25/17 11:21 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		10/25/17 11:21 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/14/17 07:01 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/14/17 07:01 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/14/17 07:01 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/14/17 07:01 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139	E624		10/14/17 07:01 / eli-b
Surr: p-Bromofluorobenzene	105	%REC		80-127	E624		10/14/17 07:01 / eli-b
Surr: Toluene-d8	102	%REC		80-123	E624		10/14/17 07:01 / 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:		509-D	509-D	509-D	509-D
Collection Date:		10/2/2017	7/10/2017	4/3/2017	1/9/2017
Receive Date:		10/3/2017	7/13/2017	4/6/2017	1/12/2017
Report Date:		11/9/2017	9/5/2017	5/5/2017	2/23/2017
Analyte	Units	C17100193-001	C17070424-001	C17040178-001	C17010292-001
Bicarbonate as HCO ₃	mg/L	2500	2490	2520	2440
Chloride	mg/L	339	344	339	341
Sulfate	mg/L	2100	2340	2420	2520
Calcium	mg/L	877	866	884	846
Magnesium	mg/L	417	408	383	437
Potassium	mg/L	13	13	13	14
Sodium	mg/L	413	402	407	425
pH	s.u.	6.60	6.57	6.76	6.33
Solids, Total Dissolved TDS @ 180 C	mg/L	5690	5820	5650	5960
Nitrogen, Ammonia as N	mg/L	0.20	1.04	0.16	1.10
Nitrogen, Nitrate+Nitrite as N	mg/L	8.70	8.25	7.0	9.1
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.01	0.01	ND(0.01)	0.02
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	4.36	3.93	4.50	3.90
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.264	0.240	0.237	0.241
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	0.86	-2.82	-4.17	-2.98
Anions	meq/L	94.7	100	102	103
Cations	meq/L	96.4	94.6	93.7	97.1
Solids, Total Dissolved - Calculated	mg/L	5400	5700	5700	5900
TDS Ratio	unitless	1.05	1.03	0.98	1.02
Gross Alpha minus Rn & U	pCi/L	0.3	0.7	1.2	1.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.7	1.2	1.1
Gross Alpha minus Rn & U MDC	pCi/L	0.7	1.0	1.6	1.3
Lead 210	pCi/L	-0.5	0.6	-0.4	0.2
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.4	1.4	1.3	1.3
Radium 226	pCi/L	0.3	0.3	0.42	0.29
Radium 226 precision (±)	pCi/L	0.1	0.2	0.14	0.15
Radium 226 MDC	pCi/L	0.2	0.2	0.12	0.20
Radium 228	pCi/L	1.5	1.2	2.3	2.4
Radium 228 precision (±)	pCi/L	0.8	1.0	0.88	0.90
Radium 228 MDC	pCi/L	1.3	1.7	1.3	1.2
Thorium 230	pCi/L	0.05	-0.006	-0.02	0.06
Thorium 230 precision (±)	pCi/L	0.1	0.05	0.07	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: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-011
Client Sample ID: 624

Report Date: 09/05/17
Collection Date: 07/10/17 17:00
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1630	mg/L		5		A2320 B	07/14/17 13:47 / mvr
Chloride	210	mg/L	D	2		E300.0	07/20/17 22:01 / jcg
Sulfate	2130	mg/L	D	8		E300.0	07/20/17 22:01 / jcg
Calcium	728	mg/L		1		E200.7	07/24/17 18:16 / eli-b
Magnesium	443	mg/L		1		E200.7	07/24/17 18:16 / eli-b
Potassium	6	mg/L		1		E200.7	07/24/17 18:16 / eli-b
Sodium	326	mg/L	D	3		E200.7	07/24/17 18:16 / eli-b
PHYSICAL PROPERTIES							
pH	6.60	s.u.	H	0.01		A4500-H B	07/14/17 10:07 / mvr
Solids, Total Dissolved TDS @ 180 C	5210	mg/L	D	40		A2540 C	07/14/17 15:21 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	71.0	mg/L	D	0.5		E353.2	07/19/17 17:21 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:15 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 03:55 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 01:30 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 03:55 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/25/17 03:55 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/25/17 03:55 / eli-b
Manganese	0.13	mg/L		0.01		E200.8	07/25/17 03:55 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/25/17 03:55 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 03:55 / eli-b
Uranium	0.0397	mg/L		0.0003		E200.8	07/25/17 03:55 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/25/17 03:55 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 20:40 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 13:03 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5000	mg/L				A1030 E	07/26/17 16:06 / tjp
A/C Balance	2.89	%				A1030 E	07/26/17 16:06 / tjp
Anions	82.2	meq/L				A1030 E	07/26/17 16:06 / tjp
Cations	87.1	meq/L				A1030 E	07/26/17 16:06 / tjp
TDS Ratio	1.04	unitless				A1030 E	07/26/17 16:06 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.4	pCi/L	U			E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U Precision (±)	0.3	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 16:32 / cng

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-011
Client Sample ID: 624

Report Date: 09/05/17
Collection Date: 07/10/17 17:00
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.8	pCi/L	U			E909.0	08/20/17 03:49 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	08/20/17 03:49 / plj
Lead 210 MDC	1.4	pCi/L				E909.0	08/20/17 03:49 / plj
Radium 226	0.4	pCi/L				E903.0	08/21/17 11:37 / dmf
Radium 226 precision (±)	0.2	pCi/L				E903.0	08/21/17 11:37 / dmf
Radium 226 MDC	0.2	pCi/L				E903.0	08/21/17 11:37 / dmf
Radium 228	-0.3	pCi/L	U			RA-05	08/15/17 12:50 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/15/17 12:50 / plj
Radium 228 MDC	1.8	pCi/L				RA-05	08/15/17 12:50 / plj
Thorium 230	0.03	pCi/L	U			E908.0	08/07/17 11:37 / cng
Thorium 230 precision (±)	0.06	pCi/L				E908.0	08/07/17 11:37 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/07/17 11:37 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/21/17 11:38 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/21/17 11:38 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/21/17 11:38 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/21/17 11:38 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	93.0	%REC		71-139		E624	07/21/17 11:38 / eli-b
Surr: p-Bromofluorobenzene	142	%REC	S	80-127		E624	07/21/17 11:38 / eli-b
Surr: Toluene-d8	104	%REC		80-123		E624	07/21/17 11:38 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-011
Client Sample ID: 624

Report Date: 11/09/17
Collection Date: 10/02/17 17:30
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1670	mg/L		5		A2320 B	10/07/17 00:07 / mvr
Chloride	212	mg/L	D	2		E300.0	10/10/17 02:20 / jcg
Sulfate	2100	mg/L	D	8		E300.0	10/10/17 02:20 / jcg
Calcium	689	mg/L		1		E200.7	10/11/17 23:55 / eli-b
Magnesium	434	mg/L		1		E200.7	10/11/17 23:55 / eli-b
Potassium	6	mg/L		1		E200.7	10/11/17 23:55 / eli-b
Sodium	306	mg/L	D	2		E200.7	10/11/17 23:55 / eli-b
PHYSICAL PROPERTIES							
pH	6.63	s.u.	H	0.01		A4500-H B	10/06/17 12:07 / mvr
Solids, Total Dissolved TDS @ 180 C	5170	mg/L	D	40		A2540 C	10/09/17 13:20 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	71.5	mg/L	D	0.5		E353.2	10/09/17 14:03 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/08/17 12:39 / ljl
METALS, TOTAL							
Aluminum	0.2	mg/L		0.1		E200.8	10/16/17 18:00 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/16/17 18:00 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 18:00 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 18:00 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 18:00 / eli-b
Manganese	0.14	mg/L		0.01		E200.8	10/16/17 18:00 / eli-b
Molybdenum	ND	mg/L		0.1		E200.7	10/13/17 18:09 / eli-b
Nickel	ND	mg/L		0.05		E200.7	10/13/17 18:09 / eli-b
Uranium	0.0420	mg/L		0.0003		E200.8	10/16/17 18:00 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 18:00 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 19:16 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/10/17 13:38 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4900	mg/L				A1030 E	10/19/17 10:30 / tla
A/C Balance	0.78	%				A1030 E	10/19/17 10:30 / tla
Anions	82.3	meq/L				A1030 E	10/19/17 10:30 / tla
Cations	83.6	meq/L				A1030 E	10/19/17 10:30 / tla
TDS Ratio	1.06	unitless				A1030 E	10/19/17 10:30 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.2	pCi/L	U			E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U MDC	0.7	pCi/L				E900.1	11/01/17 17:46 / dmf

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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-011
Client Sample ID: 624

Report Date: 11/09/17
Collection Date: 10/02/17 17:30
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.05	pCi/L	U			E909.0	10/08/17 08:14 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/08/17 08:14 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	10/08/17 08:14 / meh
Radium 226	0.2	pCi/L				E903.0	10/24/17 11:56 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/24/17 11:56 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 11:56 / arh
Radium 228	1.1	pCi/L	U			RA-05	10/18/17 22:33 / tlf
Radium 228 precision (±)	0.8	pCi/L				RA-05	10/18/17 22:33 / tlf
Radium 228 MDC	1.7	pCi/L				RA-05	10/18/17 22:33 / tlf
Thorium 230	0.05	pCi/L	U			E908.0	10/27/17 10:48 / cnh
Thorium 230 precision (±)	0.08	pCi/L				E908.0	10/27/17 10:48 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	10/27/17 10:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/15/17 02:08 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/15/17 02:08 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/15/17 02:08 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/15/17 02:08 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	10/15/17 02:08 / eli-b
Surr: p-Bromofluorobenzene	102	%REC		80-127		E624	10/15/17 02:08 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	10/15/17 02:08 / 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

United Nuclear Corporation					
SW Alluvium					
Well ID:		624	624	624	624
Collection Date:		10/2/2017	7/10/2017	4/3/2017	1/10/2017
Receive Date:		10/3/2017	7/13/2017	4/6/2017	1/13/2017
Report Date:		11/9/2017	9/5/2017	5/5/2017	2/13/2017
Analyte	Units	C17100193-011	C17070424-011	C17040178-011	C17010331-001
Bicarbonate as HCO ₃	mg/L	1670	1630	1640	1650
Chloride	mg/L	212	210	211	218
Sulfate	mg/L	2100	2130	2240	2310
Calcium	mg/L	689	728	646	640
Magnesium	mg/L	434	443	382	427
Potassium	mg/L	6	6	6	6
Sodium	mg/L	306	326	281	309
pH	s.u.	6.63	6.60	6.60	6.70
Solids, Total Dissolved TDS @ 180 C	mg/L	5170	5210	5180	5280
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	71.5	71.0	78	80
Aluminum	mg/L	0.2	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.14	0.13	0.12	0.12
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0420	0.0397	0.0363	0.0367
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(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	%	0.78	2.89	-5.55	-3.49
Anions	meq/L	82.3	82.2	85.0	86.5
Cations	meq/L	83.6	87.1	76.1	80.7
Solids, Total Dissolved - Calculated	mg/L	4900	5000	4900	5100
TDS Ratio	unitless	1.06	1.04	1.05	1.04
Gross Alpha minus Rn & U	pCi/L	0.2	0.4	0.8	0.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.3	1.0	0.9
Gross Alpha minus Rn & U MDC	pCi/L	0.7	0.5	1.5	1.3
Lead 210	pCi/L	0.05	0.8	-0.5	0.3
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.4	1.4	1.3	1.3
Radium 226	pCi/L	0.2	0.4	0.23	0.27
Radium 226 precision (±)	pCi/L	0.1	0.2	0.12	0.12
Radium 226 MDC	pCi/L	0.2	0.2	0.13	0.16
Radium 228	pCi/L	1.1	-0.3	0.86	0.88
Radium 228 precision (±)	pCi/L	0.8	1.1	1.0	0.80
Radium 228 MDC	pCi/L	1.7	1.8	1.6	1.3
Thorium 230	pCi/L	0.05	0.03	0.02	0.02
Thorium 230 precision (±)	pCi/L	0.08	0.06	0.1	0.07
Thorium 230 MDC	pCi/L	0.1	0.1	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: C17070469-003
Client Sample ID: 627

Report Date: 08/24/17
Collection Date: 07/11/17 11:10
DateReceived: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	588	mg/L		5		A2320 B	07/17/17 20:35 / mvr
Chloride	33	mg/L	D	2		E300.0	07/21/17 03:32 / jcg
Sulfate	2170	mg/L	D	8		E300.0	07/21/17 03:32 / jcg
Calcium	488	mg/L		1		E200.7	07/20/17 01:23 / eli-b
Magnesium	211	mg/L		1		E200.7	07/20/17 01:23 / eli-b
Potassium	6	mg/L		1		E200.7	07/20/17 21:28 / eli-b
Sodium	346	mg/L		1		E200.7	07/20/17 01:23 / eli-b
PHYSICAL PROPERTIES							
pH	6.96	s.u.	H	0.01		A4500-H B	07/17/17 14:58 / mvr
Solids, Total Dissolved TDS @ 180 C	4180	mg/L	D	40		A2540 C	07/17/17 17:07 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	81.0	mg/L	D	0.5		E353.2	07/21/17 16:45 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	07/23/17 11:21 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 01:14 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 22:05 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/21/17 03:57 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/21/17 03:57 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/25/17 01:14 / eli-b
Manganese	0.05	mg/L		0.01		E200.8	07/21/17 03:57 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/21/17 03:57 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 01:14 / eli-b
Uranium	0.0196	mg/L		0.0003		E200.8	07/21/17 03:57 / eli-b
Vanadium	ND	mg/L		0.1		E200.7	07/21/17 12:01 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 17:40 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 12:35 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	3900	mg/L				A1030 E	08/02/17 09:27 / tia
A/C Balance	-3.95	%				A1030 E	08/02/17 09:27 / tia
Anions	61.6	meq/L				A1030 E	08/02/17 09:27 / tia
Cations	56.9	meq/L				A1030 E	08/02/17 09:27 / tia
TDS Ratio	1.07	unitless				A1030 E	08/02/17 09:27 / tia
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.5	pCi/L				E900.1	08/07/17 18:47 / cng
Gross Alpha minus Rn & U Precision (±)	0.3	pCi/L				E900.1	08/07/17 18:47 / cng
Gross Alpha minus Rn & U MDC	0.4	pCi/L				E900.1	08/07/17 18:47 / cng

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070469-003
Client Sample ID: 627

Report Date: 08/24/17
Collection Date: 07/11/17 11:10
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.8	pCi/L	U			E909.0	08/21/17 01:36 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	08/21/17 01:36 / plj
Lead 210 MDC	1.4	pCi/L				E909.0	08/21/17 01:36 / plj
Radium 226	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 228	-0.6	pCi/L	U			RA-05	08/09/17 14:43 / trs
Radium 228 precision (±)	1.0	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 MDC	1.8	pCi/L				RA-05	08/09/17 14:43 / trs
Thorium 230	0.07	pCi/L	U			E908.0	08/10/17 09:35 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/10/17 09:35 / cng
Thorium 230 MDC	0.3	pCi/L				E908.0	08/10/17 09:35 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/21/17 14:42 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/21/17 14:42 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/21/17 14:42 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/21/17 14:42 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	07/21/17 14:42 / eli-b
Surr: p-Bromofluorobenzene	126	%REC		80-127		E624	07/21/17 14:42 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	07/21/17 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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100294-003
Client Sample ID: 627

Report Date: 11/10/17
Collection Date: 10/03/17 11:07
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	600	mg/L		5		A2320 B	10/11/17 00:04 / mvr
Chloride	31	mg/L	D	2		E300.0	10/11/17 09:22 / jcg
Sulfate	2170	mg/L	D	8		E300.0	10/11/17 09:22 / jcg
Calcium	523	mg/L		1		E200.7	10/12/17 06:04 / eli-b
Magnesium	226	mg/L		1		E200.7	10/12/17 06:04 / eli-b
Potassium	5	mg/L		1		E200.7	10/12/17 06:04 / eli-b
Sodium	364	mg/L		1		E200.7	10/12/17 06:04 / eli-b
PHYSICAL PROPERTIES							
pH	7.02	s.u.	H	0.01		A4500-H B	10/09/17 13:34 / mvr
Solids, Total Dissolved TDS @ 180 C	4080	mg/L	D	40		A2540 C	10/09/17 14:24 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	79.0	mg/L	D	0.5		E353.2	10/09/17 15:13 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/08/17 13:18 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.7	10/13/17 23:18 / eli-b
Beryllium	ND	mg/L		0.001		E200.7	10/13/17 23:18 / eli-b
Cadmium	ND	mg/L		0.005		E200.7	10/13/17 23:18 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 22:27 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/20/17 02:53 / eli-b
Manganese	0.15	mg/L		0.01		E200.7	10/13/17 23:18 / eli-b
Molybdenum	ND	mg/L		0.1		E200.7	10/13/17 23:18 / eli-b
Nickel	ND	mg/L		0.05		E200.7	10/13/17 23:18 / eli-b
Uranium	0.0210	mg/L		0.0003		E200.8	10/21/17 01:32 / eli-b
Vanadium	ND	mg/L		0.1		E200.7	10/13/17 23:18 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 19:52 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/12/17 17:57 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4000	mg/L				A1030 E	10/31/17 18:42 / tla
A/C Balance	-0.90	%				A1030 E	10/31/17 18:42 / tla
Anions	61.8	meq/L				A1030 E	10/31/17 18:42 / tla
Cations	60.7	meq/L				A1030 E	10/31/17 18:42 / tla
TDS Ratio	1.02	unitless				A1030 E	10/31/17 18:42 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.7	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/01/17 15:40 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100294-003
Client Sample ID: 627

Report Date: 11/10/17
Collection Date: 10/03/17 11:07
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.0	pCi/L	U		E909.0		10/31/17 02:04 / meh
Lead 210 precision (±)	0.9	pCi/L			E909.0		10/31/17 02:04 / meh
Lead 210 MDC	1.3	pCi/L			E909.0		10/31/17 02:04 / meh
Radium 226	0.2	pCi/L			E903.0		10/24/17 11:22 / arh
Radium 226 precision (±)	0.1	pCi/L			E903.0		10/24/17 11:22 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/24/17 11:22 / arh
Radium 228	1	pCi/L	U		RA-05		10/20/17 00:48 / tlf
Radium 228 precision (±)	0.9	pCi/L			RA-05		10/20/17 00:48 / tlf
Radium 228 MDC	1.4	pCi/L			RA-05		10/20/17 00:48 / tlf
Thorium 230	0.05	pCi/L	U		E908.0		10/27/17 10:48 / cnh
Thorium 230 precision (±)	0.07	pCi/L			E908.0		10/27/17 10:48 / cnh
Thorium 230 MDC	0.1	pCi/L			E908.0		10/27/17 10:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/15/17 01:09 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/15/17 01:09 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/15/17 01:09 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/15/17 01:09 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139	E624		10/15/17 01:09 / eli-b
Surr: p-Bromofluorobenzene	102	%REC		80-127	E624		10/15/17 01:09 / eli-b
Surr: Toluene-d8	102	%REC		80-123	E624		10/15/17 01:09 / 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:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/24/2017	5/10/2017	2/13/2017
Analyte	Units	C17100294-003	C17070469-003	C17040230-003	C17010331-003
Bicarbonate as HCO ₃	mg/L	600	588	588	591
Chloride	mg/L	31	33	36	35
Sulfate	mg/L	2170	2170	2390	2330
Calcium	mg/L	523	488	529	555
Magnesium	mg/L	226	211	229	230
Potassium	mg/L	5	6	6	6
Sodium	mg/L	364	346	375	376
pH	s.u.	7.02	6.96	6.94	6.96
Solids, Total Dissolved TDS @ 180 C	mg/L	4080	4180	4120	4170
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	79.0	81.0	84	86
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.15	0.05	0.09	0.12
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0210	0.0196	0.0194	0.0182
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	-0.90	-3.95	-3.83	-1.41
Anions	meq/L	61.8	61.6	66.6	65.0
Cations	meq/L	60.7	56.9	61.7	63.1
Solids, Total Dissolved - Calculated	mg/L	4000	3900	4300	4200
TDS Ratio	unitless	1.02	1.07	0.97	0.99
Gross Alpha minus Rn & U	pCi/L	0.7	0.5	1.1	1.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.3	1.2	0.8
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.4	1.5	1.3
Lead 210	pCi/L	1.0	0.8	0.4	0.4
Lead 210 precision (±)	pCi/L	0.9	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.3	1.4	1.4	1.3
Radium 226	pCi/L	0.2	0.2	0.21	0.18
Radium 226 precision (±)	pCi/L	0.1	0.1	0.11	0.12
Radium 226 MDC	pCi/L	0.2	0.2	0.13	0.16
Radium 228	pCi/L	1	-0.6	0.87	0.63
Radium 228 precision (±)	pCi/L	0.9	1.0	0.97	0.97
Radium 228 MDC	pCi/L	1.4	1.8	1.6	1.6
Thorium 230	pCi/L	0.05	0.07	0.04	0.01
Thorium 230 precision (±)	pCi/L	0.07	0.1	0.08	0.1
Thorium 230 MDC	pCi/L	0.1	0.3	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: C17070424-006
Client Sample ID: 632

Report Date: 09/05/17
Collection Date: 07/10/17 13:00
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1740	mg/L		5		A2320 B	07/14/17 12:58 / mvr
Chloride	222	mg/L	D	5		E300.0	07/20/17 20:34 / jcg
Sulfate	3150	mg/L	D	20		E300.0	07/20/17 20:34 / jcg
Calcium	556	mg/L		1		E200.7	07/24/17 17:56 / eli-b
Magnesium	808	mg/L		1		E200.7	07/24/17 17:56 / eli-b
Potassium	9	mg/L		1		E200.7	07/20/17 21:56 / eli-b
Sodium	402	mg/L	D	3		E200.7	07/24/17 17:56 / eli-b
PHYSICAL PROPERTIES							
pH	6.57	s.u.	H	0.01		A4500-H B	07/14/17 09:53 / mvr
Solids, Total Dissolved TDS @ 180 C	6710	mg/L	D	100		A2540 C	07/14/17 15:18 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	46.0	mg/L	D	0.2		E353.2	07/19/17 17:15 / ljl
Nitrogen, Ammonia as N	0.09	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:07 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 03:39 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 01:17 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 03:39 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/25/17 03:39 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/25/17 03:39 / eli-b
Manganese	1.56	mg/L		0.01		E200.8	07/25/17 03:39 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/25/17 03:39 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 03:39 / eli-b
Uranium	0.0652	mg/L		0.0003		E200.8	07/25/17 03:39 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/25/17 03:39 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 19:40 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 12:49 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6200	mg/L				A1030 E	07/26/17 16:05 / tjp
A/C Balance	3.95	%				A1030 E	07/26/17 16:05 / tjp
Anions	103	meq/L				A1030 E	07/26/17 16:05 / tjp
Cations	112	meq/L				A1030 E	07/26/17 16:05 / tjp
TDS Ratio	1.08	unitless				A1030 E	07/26/17 16:05 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.1	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U Precision (±)	1.4	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	08/09/17 14:58 / cng

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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-006
Client Sample ID: 632

Report Date: 09/05/17
Collection Date: 07/10/17 13:00
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.3	pCi/L	U		E909.0		08/19/17 13:32 / plj
Lead 210 precision (±)	0.9	pCi/L			E909.0		08/19/17 13:32 / plj
Lead 210 MDC	1.4	pCi/L			E909.0		08/19/17 13:32 / plj
Radium 226	0.9	pCi/L			E903.0		08/21/17 10:04 / dmf
Radium 226 precision (±)	0.2	pCi/L			E903.0		08/21/17 10:04 / dmf
Radium 226 MDC	0.2	pCi/L			E903.0		08/21/17 10:04 / dmf
Radium 228	2.5	pCi/L			RA-05		08/15/17 11:17 / plj
Radium 228 precision (±)	1.2	pCi/L			RA-05		08/15/17 11:17 / plj
Radium 228 MDC	1.5	pCi/L			RA-05		08/15/17 11:17 / plj
Thorium 230	0.04	pCi/L	U		E908.0		08/07/17 11:37 / cng
Thorium 230 precision (±)	0.08	pCi/L			E908.0		08/07/17 11:37 / cng
Thorium 230 MDC	0.2	pCi/L			E908.0		08/07/17 11:37 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		07/20/17 16:09 / eli-b
Bromoform	ND	ug/L		0.50	E624		07/20/17 16:09 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		07/20/17 16:09 / eli-b
Chloroform	0.64	ug/L		0.50	E624		07/20/17 16:09 / eli-b
Trihalomethanes, Total	0.64	ug/L		0.50	E624		08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139	E624		07/20/17 16:09 / eli-b
Surr: p-Bromofluorobenzene	127	%REC		80-127	E624		07/20/17 16:09 / eli-b
Surr: Toluene-d8	102	%REC		80-123	E624		07/20/17 16:09 / 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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-006
Client Sample ID: 632

Report Date: 11/09/17
Collection Date: 10/02/17 13:31
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1820	mg/L		5		A2320 B	10/06/17 23:17 / mvr
Chloride	243	mg/L	D	2		E300.0	10/10/17 00:21 / jcg
Sulfate	3220	mg/L	D	8		E300.0	10/10/17 00:21 / jcg
Calcium	547	mg/L		1		E200.7	10/11/17 23:37 / eli-b
Magnesium	789	mg/L		1		E200.7	10/11/17 23:37 / eli-b
Potassium	10	mg/L		1		E200.7	10/11/17 23:37 / eli-b
Sodium	378	mg/L	D	2		E200.7	10/11/17 23:37 / eli-b
PHYSICAL PROPERTIES							
pH	6.60	s.u.	H	0.01		A4500-H B	10/06/17 11:47 / mvr
Solids, Total Dissolved TDS @ 180 C	6510	mg/L	D	100		A2540 C	10/09/17 13:15 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	43.0	mg/L	D	0.5		E353.2	10/09/17 13:52 / ljl
Nitrogen, Ammonia as N	0.10	mg/L		0.05		A4500-NH ₃ G	10/08/17 12:33 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/16/17 17:47 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/16/17 17:47 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 17:47 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 17:47 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 17:47 / eli-b
Manganese	2.40	mg/L		0.01		E200.8	10/16/17 17:47 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 17:47 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 17:47 / eli-b
Uranium	0.0759	mg/L		0.0003		E200.8	10/16/17 17:47 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 17:47 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 17:27 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/10/17 13:27 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6300	mg/L				A1030 E	10/19/17 10:29 / tla
A/C Balance	1.02	%				A1030 E	10/19/17 10:29 / tla
Anions	107	meq/L				A1030 E	10/19/17 10:29 / tla
Cations	109	meq/L				A1030 E	10/19/17 10:29 / tla
TDS Ratio	1.04	unitless				A1030 E	10/19/17 10:29 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.3	pCi/L				E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U MDC	0.7	pCi/L				E900.1	11/01/17 17:46 / dmf

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: C17100193-006
Client Sample ID: 632

Report Date: 11/09/17
Collection Date: 10/02/17 13:31
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.6	pCi/L				E909.0	10/07/17 18:07 / meh
Lead 210 precision (±)	1.0	pCi/L				E909.0	10/07/17 18:07 / meh
Lead 210 MDC	1.5	pCi/L				E909.0	10/07/17 18:07 / meh
Radium 226	0.5	pCi/L				E903.0	10/24/17 10:20 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	10/24/17 10:20 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 10:20 / arh
Radium 228	1.6	pCi/L				RA-05	10/18/17 22:33 / tlf
Radium 228 precision (±)	1	pCi/L				RA-05	10/18/17 22:33 / tlf
Radium 228 MDC	1.4	pCi/L				RA-05	10/18/17 22:33 / tlf
Thorium 230	0.09	pCi/L	U			E908.0	10/27/17 10:48 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/27/17 10:48 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	10/27/17 10:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/17 09:28 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/17 09:28 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/17 09:28 / eli-b
Chloroform	0.66	ug/L		0.50		E624	10/14/17 09:28 / eli-b
Trihalomethanes, Total	0.66	ug/L		0.50		E624	11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	10/14/17 09:28 / eli-b
Surr: p-Bromofluorobenzene	105	%REC		80-127		E624	10/14/17 09:28 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	10/14/17 09:28 / 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

United Nuclear Corporation					
SW Alluvium					
Well ID:		632	632	632	632
Collection Date:		10/2/2017	7/10/2017	4/3/2017	1/9/2017
Receive Date:		10/3/2017	7/13/2017	4/6/2017	1/12/2017
Report Date:		11/9/2017	9/5/2017	5/5/2017	2/23/2017
Analyte	Units	C17100193-006	C17070424-006	C17040178-006	C17010292-006
Bicarbonate as HCO ₃	mg/L	1820	1740	1780	1810
Chloride	mg/L	243	222	248	237
Sulfate	mg/L	3220	3150	3580	3470
Calcium	mg/L	547	556	545	541
Magnesium	mg/L	789	808	737	792
Potassium	mg/L	10	9	10	10
Sodium	mg/L	378	402	387	387
pH	s.u.	6.60	6.57	6.58	6.58
Solids, Total Dissolved TDS @ 180 C	mg/L	6510	6710	6680	6660
Nitrogen, Ammonia as N	mg/L	0.10	0.09	0.09	0.13
Nitrogen, Nitrate+Nitrite as N	mg/L	43.0	46.0	49	52
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.002
Manganese	mg/L	2.40	1.56	1.77	2.69
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0759	0.0652	0.0719	0.0681
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	1.02	3.95	-4.22	-1.22
Anions	meq/L	107	103	114	112
Cations	meq/L	109	112	105	109
Solids, Total Dissolved - Calculated	mg/L	6300	6200	6600	6600
TDS Ratio	unitless	1.04	1.08	1.01	1.02
Gross Alpha minus Rn & U	pCi/L	1.3	1.1	2.8	1.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.6	1.4	1.4	0.6
Gross Alpha minus Rn & U MDC	pCi/L	0.7	1.0	1.6	1.3
Lead 210	pCi/L	1.6	1.3	0.7	-0.6
Lead 210 precision (±)	pCi/L	1.0	0.9	0.8	0.7
Lead 210 MDC	pCi/L	1.5	1.4	1.4	1.3
Radium 226	pCi/L	0.5	0.9	0.81	0.58
Radium 226 precision (±)	pCi/L	0.2	0.2	0.19	0.19
Radium 226 MDC	pCi/L	0.2	0.2	0.13	0.21
Radium 228	pCi/L	1.6	2.5	1.4	2.2
Radium 228 precision (±)	pCi/L	1	1.2	0.89	0.94
Radium 228 MDC	pCi/L	1.4	1.5	1.3	1.3
Thorium 230	pCi/L	0.09	0.04	0.1	0.06
Thorium 230 precision (±)	pCi/L	0.1	0.08	0.1	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	0.66	0.64	0.80	0.58

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-007
Client Sample ID: 801

Report Date: 09/05/17
Collection Date: 07/10/17 13:40
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1560	mg/L		5		A2320 B	07/14/17 13:09 / mvr
Chloride	204	mg/L	D	5		E300.0	07/20/17 20:51 / jcg
Sulfate	3210	mg/L	D	20		E300.0	07/20/17 20:51 / jcg
Calcium	583	mg/L		1		E200.7	07/24/17 18:00 / eli-b
Magnesium	769	mg/L		1		E200.7	07/24/17 18:00 / eli-b
Potassium	12	mg/L		1		E200.7	07/20/17 22:10 / eli-b
Sodium	372	mg/L	D	3		E200.7	07/24/17 18:00 / eli-b
PHYSICAL PROPERTIES							
pH	6.67	s.u.	H	0.01		A4500-H B	07/14/17 09:55 / mvr
Solids, Total Dissolved TDS @ 180 C	6520	mg/L	D	100		A2540 C	07/14/17 15:19 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	50.5	mg/L	D	0.2		E353.2	07/19/17 17:16 / ljl
Nitrogen, Ammonia as N	3.9	mg/L	D	0.2		A4500-NH ₃ G	07/23/17 11:08 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 03:42 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 01:20 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 03:42 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/25/17 03:42 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/25/17 03:42 / eli-b
Manganese	6.73	mg/L		0.01		E200.8	07/25/17 03:42 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/25/17 03:42 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 03:42 / eli-b
Uranium	0.0371	mg/L		0.0003		E200.8	07/25/17 03:42 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/25/17 03:42 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 19:52 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 12:51 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6200	mg/L				A1030 E	07/26/17 16:05 / tjp
A/C Balance	3.30	%				A1030 E	07/26/17 16:05 / tjp
Anions	102	meq/L				A1030 E	07/26/17 16:05 / tjp
Cations	109	meq/L				A1030 E	07/26/17 16:05 / tjp
TDS Ratio	1.05	unitless				A1030 E	07/26/17 16:05 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	-0.2	pCi/L	U			E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U Precision (±)	0.3	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 14:58 / cng

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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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-007
Client Sample ID: 801

Report Date: 09/05/17
Collection Date: 07/10/17 13:40
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.8	pCi/L	U			E909.0	08/19/17 16:15 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	08/19/17 16:15 / plj
Lead 210 MDC	1.4	pCi/L				E909.0	08/19/17 16:15 / plj
Radium 226	0.6	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 precision (±)	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 MDC	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 228	1.1	pCi/L	U			RA-05	08/15/17 11:17 / plj
Radium 228 precision (±)	1	pCi/L				RA-05	08/15/17 11:17 / plj
Radium 228 MDC	1.5	pCi/L				RA-05	08/15/17 11:17 / plj
Thorium 230	-0.02	pCi/L	U			E908.0	08/07/17 11:37 / cng
Thorium 230 precision (±)	0.06	pCi/L				E908.0	08/07/17 11:37 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/07/17 11:37 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/20/17 16:39 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/20/17 16:39 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/20/17 16:39 / eli-b
Chloroform	0.53	ug/L		0.50		E624	07/20/17 16:39 / eli-b
Trihalomethanes, Total	0.53	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	07/20/17 16:39 / eli-b
Surr: p-Bromofluorobenzene	124	%REC		80-127		E624	07/20/17 16:39 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	07/20/17 16:39 / 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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-007
Client Sample ID: 801

Report Date: 11/09/17
Collection Date: 10/02/17 14:15
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1600	mg/L		5		A2320 B	10/06/17 23:28 / mvr
Chloride	200	mg/L	D	5		E300.0	10/10/17 01:12 / jcg
Sulfate	3250	mg/L	D	20		E300.0	10/10/17 01:12 / jcg
Calcium	570	mg/L		1		E200.7	10/11/17 23:41 / eli-b
Magnesium	782	mg/L		1		E200.7	10/11/17 23:41 / eli-b
Potassium	12	mg/L		1		E200.7	10/11/17 23:41 / eli-b
Sodium	368	mg/L	D	2		E200.7	10/11/17 23:41 / eli-b
PHYSICAL PROPERTIES							
pH	6.72	s.u.	H	0.01		A4500-H B	10/06/17 11:50 / mvr
Solids, Total Dissolved TDS @ 180 C	6520	mg/L	D	100		A2540 C	10/09/17 13:15 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	58.5	mg/L	D	0.5		E353.2	10/09/17 13:56 / lji
Nitrogen, Ammonia as N	4.4	mg/L	D	0.2		A4500-NH ₃ G	10/08/17 12:34 / lji
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/16/17 17:50 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/16/17 17:50 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 17:50 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 17:50 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 17:50 / eli-b
Manganese	6.27	mg/L		0.01		E200.8	10/16/17 17:50 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 17:50 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 17:50 / eli-b
Uranium	0.0407	mg/L		0.0003		E200.8	10/16/17 17:50 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 17:50 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 17:39 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/10/17 13:28 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6200	mg/L				A1030 E	10/19/17 10:29 / tia
A/C Balance	2.84	%				A1030 E	10/19/17 10:29 / tia
Anions	103	meq/L				A1030 E	10/19/17 10:29 / tia
Cations	109	meq/L				A1030 E	10/19/17 10:29 / tia
TDS Ratio	1.05	unitless				A1030 E	10/19/17 10:29 / tia
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.2	pCi/L	U			E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U MDC	0.7	pCi/L				E900.1	11/01/17 17:46 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-007
Client Sample ID: 801

Report Date: 11/09/17
Collection Date: 10/02/17 14:15
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.1	pCi/L	U		E909.0		10/07/17 20:43 / meh
Lead 210 precision (±)	0.9	pCi/L			E909.0		10/07/17 20:43 / meh
Lead 210 MDC	1.4	pCi/L			E909.0		10/07/17 20:43 / meh
Radium 226	0.2	pCi/L			E903.0		10/24/17 11:55 / arh
Radium 226 precision (±)	0.1	pCi/L			E903.0		10/24/17 11:55 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/24/17 11:55 / arh
Radium 228	0.8	pCi/L	U		RA-05		10/18/17 22:33 / tlf
Radium 228 precision (±)	0.9	pCi/L			RA-05		10/18/17 22:33 / tlf
Radium 228 MDC	1.4	pCi/L			RA-05		10/18/17 22:33 / tlf
Thorium 230	-0.008	pCi/L	U		E908.0		10/27/17 10:48 / cnh
Thorium 230 precision (±)	0.04	pCi/L			E908.0		10/27/17 10:48 / cnh
Thorium 230 MDC	0.1	pCi/L			E908.0		10/27/17 10:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/14/17 09:57 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/14/17 09:57 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/14/17 09:57 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/14/17 09:57 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	103	%REC		71-139	E624		10/14/17 09:57 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127	E624		10/14/17 09:57 / eli-b
Surr: Toluene-d8	103	%REC		80-123	E624		10/14/17 09:57 / 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:		801	801	801	801
Collection Date:		10/2/2017	7/10/2017	4/3/2017	1/9/2017
Receive Date:		10/3/2017	7/13/2017	4/6/2017	1/12/2017
Report Date:		11/9/2017	9/5/2017	5/5/2017	2/23/2017
Analyte	Units	C17100193-007	C17070424-007	C17040178-007	C17010292-007
Bicarbonate as HCO ₃	mg/L	1600	1560	1580	1580
Chloride	mg/L	200	204	227	226
Sulfate	mg/L	3250	3210	3730	3720
Calcium	mg/L	570	583	576	527
Magnesium	mg/L	782	769	719	750
Potassium	mg/L	12	12	13	12
Sodium	mg/L	368	372	362	347
pH	s.u.	6.72	6.67	6.69	6.67
Solids, Total Dissolved TDS @ 180 C	mg/L	6520	6520	6590	6570
Nitrogen, Ammonia as N	mg/L	4.4	3.9	3.9	3.6
Nitrogen, Nitrate+Nitrite as N	mg/L	58.5	50.5	56	57
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	0.001	ND(0.001)
Manganese	mg/L	6.27	6.73	5.82	5.79
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0407	0.0371	0.0346	0.0359
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	2.84	3.30	-4.47	-4.58
Anions	meq/L	103	102	114	114
Cations	meq/L	109	109	104	104
Solids, Total Dissolved - Calculated	mg/L	6200	6200	6700	6600
TDS Ratio	unitless	1.05	1.05	0.99	0.99
Gross Alpha minus Rn & U	pCi/L	0.2	-0.2	0.6	0.06
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.3	0.9	0.7
Gross Alpha minus Rn & U MDC	pCi/L	0.7	0.5	1.5	1.3
Lead 210	pCi/L	1.1	0.8	-0.6	-0.06
Lead 210 precision (±)	pCi/L	0.9	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.4	1.4	1.3	1.3
Radium 226	pCi/L	0.2	0.6	0.41	0.32
Radium 226 precision (±)	pCi/L	0.1	0.2	0.15	0.16
Radium 226 MDC	pCi/L	0.2	0.2	0.13	0.21
Radium 228	pCi/L	0.8	1.1	2.2	0.63
Radium 228 precision (±)	pCi/L	0.9	1	1.1	0.95
Radium 228 MDC	pCi/L	1.4	1.5	1.3	1.5
Thorium 230	pCi/L	-0.008	-0.02	0.07	0.05
Thorium 230 precision (±)	pCi/L	0.04	0.06	0.1	0.1
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	ND(0.50)	0.53	0.64	0.68

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-005
Client Sample ID: 802

Report Date: 09/05/17
Collection Date: 07/10/17 12:15
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	2080	mg/L		5		A2320 B	07/14/17 12:46 / mvr
Chloride	188	mg/L	D	2		E300.0	07/20/17 20:16 / jcg
Sulfate	2900	mg/L	D	8		E300.0	07/20/17 20:16 / jcg
Calcium	664	mg/L		1		E200.7	07/24/17 17:33 / eli-b
Magnesium	754	mg/L		1		E200.7	07/24/17 17:33 / eli-b
Potassium	5	mg/L		1		E200.7	07/20/17 21:53 / eli-b
Sodium	330	mg/L	D	3		E200.7	07/24/17 17:33 / eli-b
PHYSICAL PROPERTIES							
pH	6.60	s.u.	H	0.01		A4500-H B	07/14/17 09:50 / mvr
Solids, Total Dissolved TDS @ 180 C	6500	mg/L	D	100		A2540 C	07/14/17 15:17 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	75.5	mg/L	D	0.5		E353.2	07/19/17 17:11 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:05 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 03:35 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 01:14 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 03:35 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/25/17 03:35 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/25/17 03:35 / eli-b
Manganese	1.18	mg/L		0.01		E200.8	07/25/17 03:35 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/25/17 03:35 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 03:35 / eli-b
Uranium	0.122	mg/L		0.0003		E200.8	07/25/17 03:35 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/25/17 03:35 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 19:28 / eli-h
METALS - SPECIATED							
Selenium-IV	0.001	mg/L		0.001		A3114 B	07/21/17 12:48 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6200	mg/L				A1030 E	07/26/17 16:04 / tjp
A/C Balance	1.94	%				A1030 E	07/26/17 16:04 / tjp
Anions	105	meq/L				A1030 E	07/26/17 16:04 / tjp
Cations	110	meq/L				A1030 E	07/26/17 16:04 / tjp
TDS Ratio	1.04	unitless				A1030 E	07/26/17 16:04 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.4	pCi/L	U			E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	08/09/17 14:58 / cng

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-005
Client Sample ID: 802

Report Date: 09/05/17
Collection Date: 07/10/17 12:15
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.3	pCi/L	U			E909.0	08/19/17 10:35 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	08/19/17 10:35 / plj
Lead 210 MDC	1.4	pCi/L				E909.0	08/19/17 10:35 / plj
Radium 226	0.3	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 precision (±)	0.1	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 MDC	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 228	1.1	pCi/L	U			RA-05	08/15/17 11:17 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/15/17 11:17 / plj
Radium 228 MDC	1.5	pCi/L				RA-05	08/15/17 11:17 / plj
Thorium 230	0.0007	pCi/L	U			E908.0	08/07/17 11:37 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	08/07/17 11:37 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/07/17 11:37 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/20/17 15:38 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/20/17 15:38 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/20/17 15:38 / eli-b
Chloroform	2.4	ug/L		0.50		E624	07/20/17 15:38 / eli-b
Trihalomethanes, Total	2.4	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	07/20/17 15:38 / eli-b
Surr: p-Bromofluorobenzene	126	%REC		80-127		E624	07/20/17 15:38 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	07/20/17 15:38 / 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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-005
Client Sample ID: 802

Report Date: 11/09/17
Collection Date: 10/02/17 12:47
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	2140	mg/L		5		A2320 B	10/06/17 23:06 / mvr
Chloride	173	mg/L	D	5		E300.0	10/09/17 23:31 / jcg
Sulfate	2880	mg/L	D	20		E300.0	10/09/17 23:31 / jcg
Calcium	638	mg/L		1		E200.7	10/11/17 23:34 / eli-b
Magnesium	740	mg/L		1		E200.7	10/11/17 23:34 / eli-b
Potassium	6	mg/L		1		E200.7	10/11/17 23:34 / eli-b
Sodium	332	mg/L	D	2		E200.7	10/11/17 23:34 / eli-b
PHYSICAL PROPERTIES							
pH	6.62	s.u.	H	0.01		A4500-H B	10/06/17 11:44 / mvr
Solids, Total Dissolved TDS @ 180 C	6450	mg/L	DH	100		A2540 C	10/09/17 13:08 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	73.5	mg/L	D	0.5		E353.2	10/09/17 13:51 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/08/17 12:29 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/16/17 17:37 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/16/17 17:37 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 17:37 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 17:37 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 17:37 / eli-b
Manganese	1.31	mg/L		0.01		E200.8	10/16/17 17:37 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 17:37 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 17:37 / eli-b
Uranium	0.149	mg/L		0.0003		E200.8	10/16/17 17:37 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 17:37 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 17:15 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/10/17 13:25 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6100	mg/L				A1030 E	10/19/17 10:29 / tla
A/C Balance	1.22	%				A1030 E	10/19/17 10:29 / tla
Anions	105	meq/L				A1030 E	10/19/17 10:29 / tla
Cations	107	meq/L				A1030 E	10/19/17 10:29 / tla
TDS Ratio	1.05	unitless				A1030 E	10/19/17 10:29 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.4	pCi/L	U			E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U MDC	0.7	pCi/L				E900.1	11/01/17 17:46 / dmf

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: C17100193-005
Client Sample ID: 802

Report Date: 11/09/17
Collection Date: 10/02/17 12:47
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.6	pCi/L	U		E909.0		10/07/17 15:18 / meh
Lead 210 precision (±)	0.9	pCi/L			E909.0		10/07/17 15:18 / meh
Lead 210 MDC	1.4	pCi/L			E909.0		10/07/17 15:18 / meh
Radium 226	0.2	pCi/L			E903.0		10/24/17 10:20 / arh
Radium 226 precision (±)	0.1	pCi/L			E903.0		10/24/17 10:20 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/24/17 10:20 / arh
Radium 228	2.8	pCi/L			RA-05		10/18/17 20:54 / tlf
Radium 228 precision (±)	1.1	pCi/L			RA-05		10/18/17 20:54 / tlf
Radium 228 MDC	1.1	pCi/L			RA-05		10/18/17 20:54 / tlf
Thorium 230	0.07	pCi/L	U		E908.0		10/27/17 10:48 / cnh
Thorium 230 precision (±)	0.09	pCi/L			E908.0		10/27/17 10:48 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		10/27/17 10:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/14/17 08:59 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/14/17 08:59 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/14/17 08:59 / eli-b
Chloroform	2.1	ug/L		0.50	E624		10/14/17 08:59 / eli-b
Trihalomethanes, Total	2.1	ug/L		0.50	E624		11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139	E624		10/14/17 08:59 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127	E624		10/14/17 08:59 / eli-b
Surr: Toluene-d8	100	%REC		80-123	E624		10/14/17 08:59 / 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

United Nuclear Corporation					
SW Alluvium					
Well ID:		802	802	802	802
Collection Date:		10/2/2017	7/10/2017	4/3/2017	1/9/2017
Receive Date:		10/3/2017	7/13/2017	4/6/2017	1/12/2017
Report Date:		11/9/2017	9/5/2017	5/5/2017	2/23/2017
Analyte	Units	C17100193-005	C17070424-005	C17040178-005	C17010292-005
Bicarbonate as HCO ₃	mg/L	2140	2080	2120	2100
Chloride	mg/L	173	188	198	188
Sulfate	mg/L	2880	2900	3220	3110
Calcium	mg/L	638	664	673	648
Magnesium	mg/L	740	754	737	778
Potassium	mg/L	6	5	6	5
Sodium	mg/L	332	330	336	339
pH	s.u.	6.62	6.60	6.60	6.58
Solids, Total Dissolved TDS @ 180 C	mg/L	6450	6500	6470	6530
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	73.5	75.5	79	86
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	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	1.18	1.25	1.16
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.149	0.122	0.135	0.135
Vanadium	mg/L	ND(0.1)	ND(0.1)	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)	0.001	ND(0.001)	ND(0.001)
A/C Balance	%	1.22	1.94	-1.89	0.49
Anions	meq/L	105	105	113	110
Cations	meq/L	107	110	109	111
Solids, Total Dissolved - Calculated	mg/L	6100	6200	6600	6500
TDS Ratio	unitless	1.05	1.04	0.98	1.01
Gross Alpha minus Rn & U	pCi/L	0.4	0.4	1.3	0.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.6	0.7	0.8
Gross Alpha minus Rn & U MDC	pCi/L	0.7	1.0	1.5	1.3
Lead 210	pCi/L	0.6	0.3	-0.4	0.3
Lead 210 precision (±)	pCi/L	0.9	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.4	1.4	1.3	1.3
Radium 226	pCi/L	0.2	0.3	0.31	0.28
Radium 226 precision (±)	pCi/L	0.1	0.1	0.12	0.15
Radium 226 MDC	pCi/L	0.2	0.2	0.12	0.21
Radium 228	pCi/L	2.8	1.1	2.6	0.50
Radium 228 precision (±)	pCi/L	1.1	1.1	0.97	0.93
Radium 228 MDC	pCi/L	1.1	1.5	1.3	1.5
Thorium 230	pCi/L	0.07	0.0007	0.07	0.05
Thorium 230 precision (±)	pCi/L	0.09	0.07	0.09	0.09
Thorium 230 MDC	pCi/L	0.2	0.2	0.1	0.2
Trihalomethanes, Total	ug/L	2.1	2.4	3.4	3.4

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-003
Client Sample ID: 803

Report Date: 09/05/17
Collection Date: 07/10/17 10:10
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1770	mg/L		5		A2320 B	07/14/17 12:21 / mvr
Chloride	162	mg/L	D	2		E300.0	07/20/17 18:32 / jcg
Sulfate	3100	mg/L	D	8		E300.0	07/20/17 18:32 / jcg
Calcium	597	mg/L		1		E200.7	07/20/17 01:40 / eli-b
Magnesium	680	mg/L		1		E200.7	07/20/17 01:40 / eli-b
Potassium	13	mg/L		1		E200.7	07/20/17 21:46 / eli-b
Sodium	273	mg/L	D	2		E200.7	07/20/17 01:40 / eli-b
PHYSICAL PROPERTIES							
pH	6.60	s.u.	H	0.01		A4500-H B	07/14/17 09:41 / mvr
Solids, Total Dissolved TDS @ 180 C	6510	mg/L	D	100		A2540 C	07/14/17 15:16 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	32.8	mg/L	D	0.2		E353.2	07/19/17 15:44 / ljl
Nitrogen, Ammonia as N	1.72	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:03 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 03:28 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 01:09 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 03:28 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/25/17 03:28 / eli-b
Lead	0.003	mg/L		0.001		E200.8	07/25/17 03:28 / eli-b
Manganese	2.69	mg/L		0.01		E200.8	07/25/17 03:28 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/25/17 03:28 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 03:28 / eli-b
Uranium	0.0778	mg/L		0.0003		E200.8	07/25/17 03:28 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/25/17 03:28 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 18:40 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 12:44 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5900	mg/L				A1030 E	07/26/17 16:04 / tjp
A/C Balance	-1.16	%				A1030 E	07/26/17 16:04 / tjp
Anions	100	meq/L				A1030 E	07/26/17 16:04 / tjp
Cations	98.1	meq/L				A1030 E	07/26/17 16:04 / tjp
TDS Ratio	1.11	unitless				A1030 E	07/26/17 16:04 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.6	pCi/L	U			E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U MDC	1	pCi/L				E900.1	08/09/17 14:58 / cng

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: C17070424-003
Client Sample ID: 803

Report Date: 09/05/17
Collection Date: 07/10/17 10:10
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.08	pCi/L	U		E909.0		08/19/17 04:35 / plj
Lead 210 precision (±)	0.8	pCi/L			E909.0		08/19/17 04:35 / plj
Lead 210 MDC	1.3	pCi/L			E909.0		08/19/17 04:35 / plj
Radium 226	0.4	pCi/L			E903.0		08/21/17 10:04 / dmf
Radium 226 precision (±)	0.2	pCi/L			E903.0		08/21/17 10:04 / dmf
Radium 226 MDC	0.2	pCi/L			E903.0		08/21/17 10:04 / dmf
Radium 228	1.6	pCi/L			RA-05		08/15/17 11:17 / plj
Radium 228 precision (±)	1	pCi/L			RA-05		08/15/17 11:17 / plj
Radium 228 MDC	1.6	pCi/L			RA-05		08/15/17 11:17 / plj
Thorium 230	0.07	pCi/L	U		E908.0		08/03/17 15:05 / dmf
Thorium 230 precision (±)	0.1	pCi/L			E908.0		08/03/17 15:05 / dmf
Thorium 230 MDC	0.2	pCi/L			E908.0		08/03/17 15:05 / dmf
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		07/20/17 14:36 / eli-b
Bromoform	ND	ug/L		0.50	E624		07/20/17 14:36 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		07/20/17 14:36 / eli-b
Chloroform	ND	ug/L		0.50	E624		07/20/17 14:36 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139	E624		07/20/17 14:36 / eli-b
Surr: p-Bromofluorobenzene	129	%REC	S	80-127	E624		07/20/17 14:36 / eli-b
Surr: Toluene-d8	104	%REC		80-123	E624		07/20/17 14:36 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-003
Client Sample ID: 803

Report Date: 11/09/17
Collection Date: 10/02/17 10:34
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1590	mg/L		5		A2320 B	10/06/17 22:30 / mvr
Chloride	142	mg/L	D	2		E300.0	10/09/17 22:57 / jcg
Sulfate	2840	mg/L	D	8		E300.0	10/09/17 22:57 / jcg
Calcium	614	mg/L		1		E200.7	10/11/17 23:09 / eli-b
Magnesium	661	mg/L		1		E200.7	10/11/17 23:09 / eli-b
Potassium	11	mg/L		1		E200.7	10/11/17 23:09 / eli-b
Sodium	249	mg/L	D	2		E200.7	10/11/17 23:09 / eli-b
PHYSICAL PROPERTIES							
pH	6.65	s.u.	H	0.01		A4500-H B	10/06/17 11:38 / mvr
Solids, Total Dissolved TDS @ 180 C	5870	mg/L	DH	100		A2540 C	10/09/17 13:08 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	29.5	mg/L	D	0.2		E353.2	10/09/17 13:48 / ljl
Nitrogen, Ammonia as N	0.13	mg/L		0.05		A4500-NH ₃ G	10/08/17 12:24 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/16/17 17:32 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/16/17 17:32 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 17:32 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 17:32 / eli-b
Lead	0.002	mg/L		0.001		E200.8	10/16/17 17:32 / eli-b
Manganese	3.23	mg/L		0.01		E200.8	10/16/17 17:32 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 17:32 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 17:32 / eli-b
Uranium	0.0696	mg/L		0.0003		E200.8	10/16/17 17:32 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 17:32 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 16:51 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/10/17 13:22 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5400	mg/L				A1030 E	10/19/17 10:28 / tla
A/C Balance	2.74	%				A1030 E	10/19/17 10:28 / tla
Anions	91.0	meq/L				A1030 E	10/19/17 10:28 / tla
Cations	96.1	meq/L				A1030 E	10/19/17 10:28 / tla
TDS Ratio	1.09	unitless				A1030 E	10/19/17 10:28 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.8	pCi/L				E900.1	11/01/17 14:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	11/01/17 14:40 / dmf
Gross Alpha minus Rn & U MDC	0.7	pCi/L				E900.1	11/01/17 14:40 / dmf

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.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-003
Client Sample ID: 803

Report Date: 11/09/17
Collection Date: 10/02/17 10:34
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.5	pCi/L				E909.0	10/07/17 09:48 / meh
Lead 210 precision (±)	1.0	pCi/L				E909.0	10/07/17 09:48 / meh
Lead 210 MDC	1.5	pCi/L				E909.0	10/07/17 09:48 / meh
Radium 226	0.03	pCi/L	U			E903.0	10/24/17 10:20 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/24/17 10:20 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 10:20 / arh
Radium 228	0.8	pCi/L	U			RA-05	10/18/17 20:54 / tif
Radium 228 precision (±)	0.7	pCi/L				RA-05	10/18/17 20:54 / tif
Radium 228 MDC	1.2	pCi/L				RA-05	10/18/17 20:54 / tif
Thorium 230	0.002	pCi/L	U			E908.0	10/25/17 11:21 / cnh
Thorium 230 precision (±)	0.09	pCi/L				E908.0	10/25/17 11:21 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	10/25/17 11:21 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/17 08:00 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/17 08:00 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/17 08:00 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/17 08:00 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	10/14/17 08:00 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	10/14/17 08:00 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	10/14/17 08:00 / 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:		803	803	803	803
Collection Date:		10/2/2017	7/10/2017	4/3/2017	1/9/2017
Receive Date:		10/3/2017	7/13/2017	4/6/2017	1/12/2017
Report Date:		11/9/2017	9/5/2017	5/5/2017	2/23/2017
Analyte	Units	C17100193-003	C17070424-003	C17040178-003	C17010292-003
Bicarbonate as HCO ₃	mg/L	1590	1770	1630	1750
Chloride	mg/L	142	162	159	164
Sulfate	mg/L	2840	3100	3320	3340
Calcium	mg/L	614	597	637	609
Magnesium	mg/L	661	680	643	729
Potassium	mg/L	11	13	13	13
Sodium	mg/L	249	273	253	280
pH	s.u.	6.65	6.60	6.63	6.57
Solids, Total Dissolved TDS @ 180 C	mg/L	5870	6510	6020	6370
Nitrogen, Ammonia as N	mg/L	0.13	1.72	0.50	1.10
Nitrogen, Nitrate+Nitrite as N	mg/L	29.5	32.8	31	34
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.002	0.003	0.001	0.001
Manganese	mg/L	3.23	2.69	3.41	2.63
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0696	0.0778	0.0730	0.0752
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	2.74	-1.16	-3.32	-1.03
Anions	meq/L	91.0	100	103	105
Cations	meq/L	96.1	98.1	96.1	103
Solids, Total Dissolved - Calculated	mg/L	5400	5900	6000	6200
TDS Ratio	unitless	1.09	1.11	1.01	1.03
Gross Alpha minus Rn & U	pCi/L	0.8	0.6	0.2	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.6	0.9	0.8
Gross Alpha minus Rn & U MDC	pCi/L	0.7	1	1.5	1.3
Lead 210	pCi/L	1.5	0.08	-0.2	-0.4
Lead 210 precision (±)	pCi/L	1.0	0.8	0.8	0.7
Lead 210 MDC	pCi/L	1.5	1.3	1.3	1.3
Radium 226	pCi/L	0.03	0.4	0.21	0.32
Radium 226 precision (±)	pCi/L	0.1	0.2	0.11	0.15
Radium 226 MDC	pCi/L	0.2	0.2	0.13	0.20
Radium 228	pCi/L	0.8	1.6	2.0	0.92
Radium 228 precision (±)	pCi/L	0.7	1	0.95	0.92
Radium 228 MDC	pCi/L	1.2	1.6	1.3	1.5
Thorium 230	pCi/L	0.002	0.07	0.1	0.05
Thorium 230 precision (±)	pCi/L	0.09	0.1	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)

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-004
Client Sample ID: 808

Report Date: 09/05/17
Collection Date: 07/10/17 11:20
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	2020	mg/L		5		A2320 B	07/14/17 12:33 / mvr
Chloride	192	mg/L	D	2		E300.0	07/20/17 19:24 / jcg
Sulfate	3210	mg/L	D	8		E300.0	07/20/17 19:24 / jcg
Calcium	597	mg/L		1		E200.7	07/20/17 01:43 / eli-b
Magnesium	754	mg/L		1		E200.7	07/20/17 01:43 / eli-b
Potassium	7	mg/L		1		E200.7	07/20/17 21:49 / eli-b
Sodium	311	mg/L	D	2		E200.7	07/20/17 01:43 / eli-b
PHYSICAL PROPERTIES							
pH	6.53	s.u.	H	0.01		A4500-H B	07/14/17 09:44 / mvr
Solids, Total Dissolved TDS @ 180 C	6850	mg/L	D	100		A2540 C	07/14/17 15:16 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	47.8	mg/L	D	0.2		E353.2	07/19/17 15:45 / ljl
Nitrogen, Ammonia as N	0.10	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:04 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 03:32 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 01:12 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 03:32 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/25/17 03:32 / eli-b
Lead	0.002	mg/L		0.001		E200.8	07/25/17 03:32 / eli-b
Manganese	1.66	mg/L		0.01		E200.8	07/25/17 03:32 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/25/17 03:32 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 03:32 / eli-b
Uranium	0.107	mg/L		0.0003		E200.8	07/25/17 03:32 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/25/17 03:32 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 19:16 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 12:46 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6300	mg/L				A1030 E	07/26/17 16:04 / tjp
A/C Balance	-1.52	%				A1030 E	07/26/17 16:04 / tjp
Anions	109	meq/L				A1030 E	07/26/17 16:04 / tjp
Cations	106	meq/L				A1030 E	07/26/17 16:04 / tjp
TDS Ratio	1.09	unitless				A1030 E	07/26/17 16:04 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.6	pCi/L	U			E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U MDC	1	pCi/L				E900.1	08/09/17 14:58 / cng

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-004
Client Sample ID: 808

Report Date: 09/05/17
Collection Date: 07/10/17 11:20
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.1	pCi/L	U			E909.0	08/19/17 07:35 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	08/19/17 07:35 / plj
Lead 210 MDC	1.3	pCi/L				E909.0	08/19/17 07:35 / plj
Radium 226	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 precision (±)	0.1	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 MDC	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 228	-0.6	pCi/L	U			RA-05	08/31/17 14:02 / plj
Radium 228 precision (±)	0.7	pCi/L				RA-05	08/31/17 14:02 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	08/31/17 14:02 / plj
Thorium 230	0.09	pCi/L	U			E908.0	08/03/17 15:05 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/03/17 15:05 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	08/03/17 15:05 / dmf
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/20/17 15:07 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/20/17 15:07 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/20/17 15:07 / eli-b
Chloroform	1.5	ug/L		0.50		E624	07/20/17 15:07 / eli-b
Trihalomethanes, Total	1.5	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	07/20/17 15:07 / eli-b
Surr: p-Bromofluorobenzene	123	%REC		80-127		E624	07/20/17 15:07 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	07/20/17 15:07 / 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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-004
Client Sample ID: 808

Report Date: 11/09/17
Collection Date: 10/02/17 11:58
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1930	mg/L		5		A2320 B	10/06/17 22:53 / mvr
Chloride	172	mg/L	D	2		E300.0	10/09/17 23:14 / jcg
Sulfate	2820	mg/L	D	8		E300.0	10/09/17 23:14 / jcg
Calcium	645	mg/L		1		E200.7	10/11/17 23:30 / eli-b
Magnesium	641	mg/L		1		E200.7	10/11/17 23:30 / eli-b
Potassium	9	mg/L		1		E200.7	10/11/17 23:30 / eli-b
Sodium	337	mg/L	D	2		E200.7	10/11/17 23:30 / eli-b
PHYSICAL PROPERTIES							
pH	6.62	s.u.	H	0.01		A4500-H B	10/06/17 11:41 / mvr
Solids, Total Dissolved TDS @ 180 C	6020	mg/L	DH	100		A2540 C	10/09/17 13:08 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	18.7	mg/L	D	0.2		E353.2	10/09/17 13:50 / ljl
Nitrogen, Ammonia as N	1.21	mg/L		0.05		A4500-NH ₃ G	10/08/17 12:26 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/16/17 17:34 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/16/17 17:34 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 17:34 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 17:34 / eli-b
Lead	0.001	mg/L		0.001		E200.8	10/16/17 17:34 / eli-b
Manganese	2.10	mg/L		0.01		E200.8	10/16/17 17:34 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 17:34 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 17:34 / eli-b
Uranium	0.0841	mg/L		0.0003		E200.8	10/16/17 17:34 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 17:34 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 17:03 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/10/17 13:24 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5600	mg/L				A1030 E	10/19/17 10:29 / tia
A/C Balance	1.80	%				A1030 E	10/19/17 10:29 / tia
Anions	96.4	meq/L				A1030 E	10/19/17 10:29 / tia
Cations	99.9	meq/L				A1030 E	10/19/17 10:29 / tia
TDS Ratio	1.07	unitless				A1030 E	10/19/17 10:29 / tia
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.6	pCi/L	U			E900.1	11/01/17 14:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	11/01/17 14:40 / dmf
Gross Alpha minus Rn & U MDC	0.7	pCi/L				E900.1	11/01/17 14:40 / dmf

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: C17100193-004
Client Sample ID: 808

Report Date: 11/09/17
Collection Date: 10/02/17 11:58
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.3	pCi/L	U			E909.0	10/07/17 12:26 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/07/17 12:26 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	10/07/17 12:26 / meh
Radium 226	0.3	pCi/L				E903.0	10/24/17 10:20 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/24/17 10:20 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 10:20 / arh
Radium 228	0.8	pCi/L	U			RA-05	10/18/17 20:54 / tif
Radium 228 precision (±)	0.7	pCi/L				RA-05	10/18/17 20:54 / tif
Radium 228 MDC	1.1	pCi/L				RA-05	10/18/17 20:54 / tif
Thorium 230	0.07	pCi/L	U			E908.0	10/27/17 10:48 / cnh
Thorium 230 precision (±)	0.09	pCi/L				E908.0	10/27/17 10:48 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	10/27/17 10:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/17 08:29 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/17 08:29 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/17 08:29 / eli-b
Chloroform	0.58	ug/L		0.50		E624	10/14/17 08:29 / eli-b
Trihalomethanes, Total	0.58	ug/L		0.50		E624	11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	10/14/17 08:29 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	10/14/17 08:29 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	10/14/17 08:29 / 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

United Nuclear Corporation					
SW Alluvium					
Well ID:		808	808	808	808
Collection Date:		10/2/2017	7/10/2017	4/3/2017	1/9/2017
Receive Date:		10/3/2017	7/13/2017	4/6/2017	1/12/2017
Report Date:		11/9/2017	9/5/2017	5/5/2017	2/23/2017
Analyte	Units	C17100193-004	C17070424-004	C17040178-004	C17010292-004
Bicarbonate as HCO ₃	mg/L	1930	2020	2060	2050
Chloride	mg/L	172	192	200	188
Sulfate	mg/L	2820	3210	3550	3420
Calcium	mg/L	645	597	628	631
Magnesium	mg/L	641	754	773	811
Potassium	mg/L	9	7	8	7
Sodium	mg/L	337	311	336	346
pH	s.u.	6.62	6.53	6.53	6.56
Solids, Total Dissolved TDS @ 180 C	mg/L	6020	6850	6770	6860
Nitrogen, Ammonia as N	mg/L	1.21	0.10	0.37	0.16
Nitrogen, Nitrate+Nitrite as N	mg/L	18.7	47.8	46	53
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.001	0.002	0.001	0.001
Manganese	mg/L	2.10	1.66	1.64	1.62
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0841	0.107	0.102	0.108
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	1.80	-1.52	-3.08	0.18
Anions	meq/L	96.4	109	117	113
Cations	meq/L	99.9	106	110	113
Solids, Total Dissolved - Calculated	mg/L	5600	6300	6800	6600
TDS Ratio	unitless	1.07	1.09	1.00	1.04
Gross Alpha minus Rn & U	pCi/L	0.6	0.6	0.2	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.6	0.9	0.8
Gross Alpha minus Rn & U MDC	pCi/L	0.7	1	1.6	1.3
Lead 210	pCi/L	0.3	0.1	-0.7	0
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.4	1.3	1.3	1.3
Radium 226	pCi/L	0.3	0.2	0.20	0.26
Radium 226 precision (±)	pCi/L	0.1	0.1	0.11	0.15
Radium 226 MDC	pCi/L	0.2	0.2	0.12	0.20
Radium 228	pCi/L	0.8	-0.6	0.75	0.32
Radium 228 precision (±)	pCi/L	0.7	0.7	0.79	0.90
Radium 228 MDC	pCi/L	1.1	1.3	1.3	1.5
Thorium 230	pCi/L	0.07	0.09	0.07	0.04
Thorium 230 precision (±)	pCi/L	0.09	0.1	0.1	0.07
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.1
Trihalomethanes, Total	ug/L	0.58	1.5	1.8	1.3

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-008
Client Sample ID: GW-1

Report Date: 09/05/17
Collection Date: 07/10/17 14:30
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1770	mg/L		5		A2320 B	07/14/17 13:20 / mvr
Chloride	237	mg/L	D	2		E300.0	07/20/17 21:08 / jcg
Sulfate	2580	mg/L	D	8		E300.0	07/20/17 21:08 / jcg
Calcium	692	mg/L		1		E200.7	07/24/17 18:04 / eli-b
Magnesium	586	mg/L		1		E200.7	07/24/17 18:04 / eli-b
Potassium	7	mg/L		1		E200.7	07/20/17 22:14 / eli-b
Sodium	420	mg/L	D	3		E200.7	07/24/17 18:04 / eli-b
PHYSICAL PROPERTIES							
pH	6.74	s.u.	H	0.01		A4500-H B	07/14/17 09:58 / mvr
Solids, Total Dissolved TDS @ 180 C	6120	mg/L	D	100		A2540 C	07/14/17 15:20 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	80.5	mg/L	D	0.5		E353.2	07/19/17 17:17 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:09 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 03:45 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 01:22 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 03:45 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/25/17 03:45 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/25/17 03:45 / eli-b
Manganese	0.11	mg/L		0.01		E200.8	07/25/17 03:45 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/25/17 03:45 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 03:45 / eli-b
Uranium	0.0926	mg/L		0.0003		E200.8	07/25/17 03:45 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/25/17 03:45 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 20:04 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 12:55 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5800	mg/L				A1030 E	07/26/17 16:05 / tjp
A/C Balance	3.01	%				A1030 E	07/26/17 16:05 / tjp
Anions	95.3	meq/L				A1030 E	07/26/17 16:05 / tjp
Cations	101	meq/L				A1030 E	07/26/17 16:05 / tjp
TDS Ratio	1.06	unitless				A1030 E	07/26/17 16:05 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.5	pCi/L	U			E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	08/09/17 14:58 / cng

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-008
Client Sample ID: GW-1

Report Date: 09/05/17
Collection Date: 07/10/17 14:30
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.6	pCi/L	U			E909.0	08/19/17 19:04 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	08/19/17 19:04 / plj
Lead 210 MDC	1.4	pCi/L				E909.0	08/19/17 19:04 / plj
Radium 226	0.6	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 precision (±)	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 MDC	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 228	1.2	pCi/L	U			RA-05	08/15/17 11:17 / plj
Radium 228 precision (±)	1.2	pCi/L				RA-05	08/15/17 11:17 / plj
Radium 228 MDC	1.6	pCi/L				RA-05	08/15/17 11:17 / plj
Thorium 230	-0.01	pCi/L	U			E908.0	08/07/17 11:37 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	08/07/17 11:37 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/07/17 11:37 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/20/17 17:10 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/20/17 17:10 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/20/17 17:10 / eli-b
Chloroform	0.70	ug/L		0.50		E624	07/20/17 17:10 / eli-b
Trihalomethanes, Total	0.70	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	07/20/17 17:10 / eli-b
Surr: p-Bromofluorobenzene	128	%REC	S	80-127		E624	07/20/17 17:10 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	07/20/17 17:10 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-008
Client Sample ID: GW-1

Report Date: 11/09/17
Collection Date: 10/02/17 15:03
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1800	mg/L		5		A2320 B	10/06/17 23:40 / mvr
Chloride	240	mg/L	D	2		E300.0	10/10/17 01:29 / jcg
Sulfate	2550	mg/L	D	8		E300.0	10/10/17 01:29 / jcg
Calcium	676	mg/L		1		E200.7	10/11/17 23:44 / eli-b
Magnesium	577	mg/L		1		E200.7	10/11/17 23:44 / eli-b
Potassium	9	mg/L		1		E200.7	10/11/17 23:44 / eli-b
Sodium	416	mg/L	D	2		E200.7	10/11/17 23:44 / eli-b
PHYSICAL PROPERTIES							
pH	6.73	s.u.	H	0.01		A4500-H B	10/06/17 11:53 / mvr
Solids, Total Dissolved TDS @ 180 C	5840	mg/L	D	100		A2540 C	10/09/17 13:16 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	77.5	mg/L	D	0.5		E353.2	10/09/17 13:59 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/08/17 12:35 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/16/17 17:53 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/16/17 17:53 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 17:53 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 17:53 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 17:53 / eli-b
Manganese	0.10	mg/L		0.01		E200.8	10/16/17 17:53 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 17:53 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 17:53 / eli-b
Uranium	0.0995	mg/L		0.0003		E200.8	10/16/17 17:53 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 17:53 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 18:15 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/10/17 13:30 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5700	mg/L				A1030 E	10/19/17 10:30 / tla
A/C Balance	2.28	%				A1030 E	10/19/17 10:30 / tla
Anions	95.1	meq/L				A1030 E	10/19/17 10:30 / tla
Cations	99.5	meq/L				A1030 E	10/19/17 10:30 / tla
TDS Ratio	1.02	unitless				A1030 E	10/19/17 10:30 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.8	pCi/L				E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U MDC	0.7	pCi/L				E900.1	11/01/17 17:46 / dmf

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: C17100193-008
Client Sample ID: GW-1

Report Date: 11/09/17
Collection Date: 10/02/17 15:03
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.4	pCi/L	U			E909.0	10/07/17 23:26 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/07/17 23:26 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	10/07/17 23:26 / meh
Radium 226	0.1	pCi/L	U			E903.0	10/24/17 11:55 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/24/17 11:55 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 11:55 / arh
Radium 228	0.2	pCi/L	U			RA-05	10/18/17 22:33 / tif
Radium 228 precision (±)	0.9	pCi/L				RA-05	10/18/17 22:33 / tif
Radium 228 MDC	1.5	pCi/L				RA-05	10/18/17 22:33 / tif
Thorium 230	-0.02	pCi/L	U			E908.0	10/27/17 10:48 / cnh
Thorium 230 precision (±)	0.05	pCi/L				E908.0	10/27/17 10:48 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	10/27/17 10:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/17 12:24 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/17 12:24 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/17 12:24 / eli-b
Chloroform	0.91	ug/L		0.50		E624	10/14/17 12:24 / eli-b
Trihalomethanes, Total	0.91	ug/L		0.50		E624	11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	10/14/17 12:24 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/14/17 12:24 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	10/14/17 12:24 / 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:		10/2/2017	7/10/2017	4/3/2017	1/9/2017
Receive Date:		10/3/2017	7/13/2017	4/6/2017	1/12/2017
Report Date:		11/9/2017	9/5/2017	5/5/2017	2/23/2017
Analyte	Units	C17100193-008	C17070424-008	C17040178-008	C17010292-008
Bicarbonate as HCO ₃	mg/L	1800	1770	1820	1780
Chloride	mg/L	240	237	252	230
Sulfate	mg/L	2550	2580	2910	2640
Calcium	mg/L	676	692	700	476
Magnesium	mg/L	577	586	551	555
Potassium	mg/L	9	7	10	8
Sodium	mg/L	416	420	413	416
pH	s.u.	6.73	6.74	6.73	6.76
Solids, Total Dissolved TDS @ 180 C	mg/L	5840	6120	6090	5980
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	77.5	80.5	88	92
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.10	0.11	0.13	0.12
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0995	0.0926	0.0981	0.0924
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	2.28	3.01	-2.59	-4.82
Anions	meq/L	95.1	95.3	104	96.6
Cations	meq/L	99.5	101	98.5	87.8
Solids, Total Dissolved - Calculated	mg/L	5700	5800	6100	5600
TDS Ratio	unitless	1.02	1.06	0.99	1.07
Gross Alpha minus Rn & U	pCi/L	0.8	0.5	1.0	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.6	1	0.8
Gross Alpha minus Rn & U MDC	pCi/L	0.7	1.0	1.5	1.3
Lead 210	pCi/L	0.4	0.6	-0.4	-0.2
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.4	1.4	1.3	1.3
Radium 226	pCi/L	0.1	0.6	0.29	0.03
Radium 226 precision (±)	pCi/L	0.1	0.2	0.13	0.12
Radium 226 MDC	pCi/L	0.2	0.2	0.13	0.20
Radium 228	pCi/L	0.2	1.2	1.2	0.27
Radium 228 precision (±)	pCi/L	0.9	1.2	0.95	1.3
Radium 228 MDC	pCi/L	1.5	1.6	1.3	2.2
Thorium 230	pCi/L	-0.02	-0.01	0.01	0.2
Thorium 230 precision (±)	pCi/L	0.05	0.07	0.08	0.1
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	0.91	0.70	1.2	1.0

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: SW Alluvium
Lab ID: C17070424-002
Client Sample ID: EPA-23

Report Date: 09/05/17
Collection Date: 07/10/17 09:30
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1320	mg/L		5		A2320 B	07/14/17 12:10 / mvr
Chloride	115	mg/L	D	2		E300.0	07/20/17 18:14 / jcg
Sulfate	2240	mg/L	D	8		E300.0	07/20/17 18:14 / jcg
Calcium	650	mg/L		1		E200.7	07/20/17 21:35 / eli-b
Magnesium	379	mg/L		1		E200.7	07/20/17 21:35 / eli-b
Potassium	10	mg/L		1		E200.7	07/20/17 21:35 / eli-b
Sodium	143	mg/L	D	2		E200.7	07/20/17 21:35 / eli-b
PHYSICAL PROPERTIES							
pH	6.69	s.u.	H	0.01		A4500-H B	07/14/17 09:38 / mvr
Solids, Total Dissolved TDS @ 180 C	4590	mg/L	D	40		A2540 C	07/14/17 15:16 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	07/19/17 15:43 / ljl
Nitrogen, Ammonia as N	0.51	mg/L		0.05		A4500-NH3 G	07/23/17 11:02 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 03:15 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 01:06 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 03:15 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/25/17 03:15 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/25/17 03:15 / eli-b
Manganese	6.85	mg/L		0.01		E200.8	07/25/17 03:15 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/25/17 03:15 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 03:15 / eli-b
Uranium	0.0321	mg/L		0.0003		E200.8	07/25/17 03:15 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/25/17 03:15 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 18:04 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 12:39 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4200	mg/L				A1030 E	07/27/17 17:50 / tla
A/C Balance	-1.01	%				A1030 E	07/27/17 17:50 / tla
Anions	71.6	meq/L				A1030 E	07/27/17 17:50 / tla
Cations	70.1	meq/L				A1030 E	07/27/17 17:50 / tla
TDS Ratio	1.09	unitless				A1030 E	07/27/17 17:50 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.5	pCi/L	U			E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	08/09/17 14:58 / cng

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: C17070424-002
Client Sample ID: EPA-23

Report Date: 09/05/17
Collection Date: 07/10/17 09:30
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.4	pCi/L				E909.0	08/19/17 01:53 / plj
Lead 210 precision (±)	1	pCi/L				E909.0	08/19/17 01:53 / plj
Lead 210 MDC	1.4	pCi/L				E909.0	08/19/17 01:53 / plj
Radium 226	0.5	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 precision (±)	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 MDC	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 228	0.9	pCi/L	U			RA-05	08/15/17 11:17 / plj
Radium 228 precision (±)	1.0	pCi/L				RA-05	08/15/17 11:17 / plj
Radium 228 MDC	1.6	pCi/L				RA-05	08/15/17 11:17 / plj
Thorium 230	-0.01	pCi/L	U			E908.0	08/03/17 15:06 / dmf
Thorium 230 precision (±)	0.06	pCi/L				E908.0	08/03/17 15:06 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	08/03/17 15:06 / dmf
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/20/17 14:05 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/20/17 14:05 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/20/17 14:05 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/20/17 14:05 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	95.0	%REC		71-139		E624	07/20/17 14:05 / eli-b
Surr: p-Bromofluorobenzene	132	%REC	S	80-127		E624	07/20/17 14:05 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	07/20/17 14:05 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-002
Client Sample ID: EPA-23

Report Date: 11/09/17
Collection Date: 10/02/17 09:38
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1360	mg/L		5		A2320 B	10/06/17 22:20 / mvr
Chloride	117	mg/L	D	2		E300.0	10/09/17 22:40 / jcg
Sulfate	2210	mg/L	D	8		E300.0	10/09/17 22:40 / jcg
Calcium	649	mg/L		1		E200.7	10/11/17 23:06 / eli-b
Magnesium	391	mg/L		1		E200.7	10/11/17 23:06 / eli-b
Potassium	10	mg/L		1		E200.7	10/11/17 23:06 / eli-b
Sodium	151	mg/L		1		E200.7	10/11/17 23:06 / eli-b
PHYSICAL PROPERTIES							
pH	6.70	s.u.	H	0.01		A4500-H B	10/06/17 11:35 / mvr
Solids, Total Dissolved TDS @ 180 C	4490	mg/L	DH	40		A2540 C	10/09/17 13:08 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	10/09/17 13:47 / ljl
Nitrogen, Ammonia as N	0.46	mg/L		0.05		A4500-NH ₃ G	10/08/17 12:23 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.7	10/10/17 22:14 / eli-b
Beryllium	ND	mg/L		0.001		E200.7	10/10/17 22:14 / eli-b
Cadmium	ND	mg/L		0.005		E200.7	10/10/17 22:14 / eli-b
Cobalt	0.01	mg/L		0.01		E200.8	10/16/17 17:29 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 17:29 / eli-b
Manganese	6.81	mg/L		0.01		E200.7	10/10/17 22:14 / eli-b
Molybdenum	ND	mg/L		0.1		E200.7	10/10/17 22:14 / eli-b
Nickel	ND	mg/L		0.05		E200.7	10/10/17 22:14 / eli-b
Uranium	0.0351	mg/L		0.0003		E200.8	10/16/17 17:29 / eli-b
Vanadium	ND	mg/L		0.1		E200.7	10/10/17 22:14 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 16:39 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/10/17 13:20 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4200	mg/L				A1030 E	10/19/17 10:28 / tla
A/C Balance	-0.18	%				A1030 E	10/19/17 10:28 / tla
Anions	71.7	meq/L				A1030 E	10/19/17 10:28 / tla
Cations	71.4	meq/L				A1030 E	10/19/17 10:28 / tla
TDS Ratio	1.07	unitless				A1030 E	10/19/17 10:28 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1	pCi/L				E900.1	11/01/17 14:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	11/01/17 14:40 / dmf
Gross Alpha minus Rn & U MDC	0.7	pCi/L				E900.1	11/01/17 14:40 / dmf

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: C17100193-002
Client Sample ID: EPA-23

Report Date: 11/09/17
Collection Date: 10/02/17 09:38
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.8	pCi/L	U		E909.0		10/07/17 07:03 / meh
Lead 210 precision (±)	0.9	pCi/L			E909.0		10/07/17 07:03 / meh
Lead 210 MDC	1.4	pCi/L			E909.0		10/07/17 07:03 / meh
Radium 226	0.3	pCi/L			E903.0		10/24/17 10:20 / arh
Radium 226 precision (±)	0.1	pCi/L			E903.0		10/24/17 10:20 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/24/17 10:20 / arh
Radium 228	1.2	pCi/L	U		RA-05		10/18/17 20:54 / tif
Radium 228 precision (±)	0.8	pCi/L			RA-05		10/18/17 20:54 / tif
Radium 228 MDC	1.3	pCi/L			RA-05		10/18/17 20:54 / tif
Thorium 230	0.1	pCi/L	U		E908.0		10/26/17 13:48 / cnh
Thorium 230 precision (±)	0.2	pCi/L			E908.0		10/26/17 13:48 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		10/26/17 13:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/14/17 07:31 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/14/17 07:31 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/14/17 07:31 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/14/17 07:31 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139	E624		10/14/17 07:31 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127	E624		10/14/17 07:31 / eli-b
Surr: Toluene-d8	101	%REC		80-123	E624		10/14/17 07:31 / 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-23	EPA-23	EPA-23	EPA-23
Collection Date:		10/2/2017	7/10/2017	4/3/2017	1/9/2017
Receive Date:		10/3/2017	7/13/2017	4/6/2017	1/12/2017
Report Date:		11/9/2017	9/5/2017	5/5/2017	2/23/2017
Analyte	Units	C17100193-002	C17070424-002	C17040178-002	C17010292-002
Bicarbonate as HCO ₃	mg/L	1360	1320	1300	1340
Chloride	mg/L	117	115	123	118
Sulfate	mg/L	2210	2240	2500	2450
Calcium	mg/L	649	650	661	647
Magnesium	mg/L	391	379	376	395
Potassium	mg/L	10	10	11	11
Sodium	mg/L	151	143	150	155
pH	s.u.	6.70	6.69	6.68	6.69
Solids, Total Dissolved TDS @ 180 C	mg/L	4490	4590	4550	4610
Nitrogen, Ammonia as N	mg/L	0.46	0.51	0.54	0.60
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.01)	ND(0.01)	0.03	0.1
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.01	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	6.81	6.85	6.37	5.75
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0351	0.0321	0.0387	0.0293
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.002
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-0.18	-1.01	-4.00	-2.94
Anions	meq/L	71.7	71.6	76.7	76.2
Cations	meq/L	71.4	70.1	70.8	71.9
Solids, Total Dissolved - Calculated	mg/L	4200	4200	4500	4400
TDS Ratio	unitless	1.07	1.09	1.02	1.04
Gross Alpha minus Rn & U	pCi/L	1	0.5	0.2	1.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.6	1	0.9
Gross Alpha minus Rn & U MDC	pCi/L	0.7	1.0	1.6	1.3
Lead 210	pCi/L	0.8	1.4	0.4	0.06
Lead 210 precision (±)	pCi/L	0.9	1	0.8	0.8
Lead 210 MDC	pCi/L	1.4	1.4	1.4	1.3
Radium 226	pCi/L	0.3	0.5	0.43	0.55
Radium 226 precision (±)	pCi/L	0.1	0.2	0.15	0.18
Radium 226 MDC	pCi/L	0.2	0.2	0.12	0.20
Radium 228	pCi/L	1.2	0.9	0.84	0.44
Radium 228 precision (±)	pCi/L	0.8	1.0	0.79	0.77
Radium 228 MDC	pCi/L	1.3	1.6	1.2	1.3
Thorium 230	pCi/L	0.1	-0.01	0.02	0.06
Thorium 230 precision (±)	pCi/L	0.2	0.06	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)

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070469-002
Client Sample ID: EPA-25

Report Date: 08/24/17
Collection Date: 07/11/17 10:00
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1370	mg/L		5		A2320 B	07/17/17 20:27 / mvr
Chloride	138	mg/L	D	2		E300.0	07/21/17 02:40 / jcg
Sulfate	1800	mg/L	D	8		E300.0	07/21/17 02:40 / jcg
Calcium	777	mg/L		1		E200.7	07/20/17 01:19 / eli-b
Magnesium	247	mg/L		1		E200.7	07/20/17 01:19 / eli-b
Potassium	9	mg/L		1		E200.7	07/20/17 21:25 / eli-b
Sodium	213	mg/L	D	2		E200.7	07/20/17 01:19 / eli-b
PHYSICAL PROPERTIES							
pH	6.85	s.u.	H	0.01		A4500-H B	07/17/17 14:55 / mvr
Solids, Total Dissolved TDS @ 180 C	4270	mg/L	D	40		A2540 C	07/17/17 17:07 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	65.5	mg/L	D	0.5		E353.2	07/21/17 16:44 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:20 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 01:01 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 22:03 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/21/17 03:47 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/21/17 03:47 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/21/17 03:47 / eli-b
Manganese	0.45	mg/L		0.01		E200.8	07/21/17 03:47 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/21/17 03:47 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 01:01 / eli-b
Uranium	0.116	mg/L		0.0003		E200.8	07/21/17 03:47 / eli-b
Vanadium	ND	mg/L		0.1		E200.7	07/21/17 11:58 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 17:28 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 12:34 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4200	mg/L				A1030 E	08/02/17 09:27 / tla
A/C Balance	-0.08	%				A1030 E	08/02/17 09:27 / tla
Anions	68.7	meq/L				A1030 E	08/02/17 09:27 / tla
Cations	68.6	meq/L				A1030 E	08/02/17 09:27 / tla
TDS Ratio	1.03	unitless				A1030 E	08/02/17 09:27 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.2	pCi/L	U			E900.1	08/07/17 18:47 / cng
Gross Alpha minus Rn & U Precision (±)	0.3	pCi/L				E900.1	08/07/17 18:47 / cng
Gross Alpha minus Rn & U MDC	0.4	pCi/L				E900.1	08/07/17 18:47 / cng

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: C17070469-002
Client Sample ID: EPA-25

Report Date: 08/24/17
Collection Date: 07/11/17 10:00
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.2	pCi/L	U			E909.0	08/20/17 22:37 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	08/20/17 22:37 / plj
Lead 210 MDC	1.4	pCi/L				E909.0	08/20/17 22:37 / plj
Radium 226	0.1	pCi/L	U			E903.0	08/14/17 14:12 / trs
Radium 226 precision (±)	0.1	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 228	0.8	pCi/L	U			RA-05	08/09/17 13:06 / trs
Radium 228 precision (±)	1.0	pCi/L				RA-05	08/09/17 13:06 / trs
Radium 228 MDC	1.6	pCi/L				RA-05	08/09/17 13:06 / trs
Thorium 230	0.08	pCi/L	U			E908.0	08/10/17 09:35 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/10/17 09:35 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/10/17 09:35 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/21/17 14:11 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/21/17 14:11 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/21/17 14:11 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/21/17 14:11 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	90.0	%REC		71-139		E624	07/21/17 14:11 / eli-b
Surr: p-Bromofluorobenzene	135	%REC	S	80-127		E624	07/21/17 14:11 / eli-b
Surr: Toluene-d8	104	%REC		80-123		E624	07/21/17 14:11 / 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.
S - Spike recovery outside of advisory limits.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100294-002
Client Sample ID: EPA-25

Report Date: 11/10/17
Collection Date: 10/03/17 10:02
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	1440	mg/L		5		A2320 B	10/10/17 23:56 / mvr
Chloride	145	mg/L	D	2		E300.0	10/11/17 09:05 / jcg
Sulfate	1790	mg/L	D	8		E300.0	10/11/17 09:05 / jcg
Calcium	795	mg/L		1		E200.7	10/12/17 06:00 / eli-b
Magnesium	242	mg/L		1		E200.7	10/12/17 06:00 / eli-b
Potassium	7	mg/L		1		E200.7	10/12/17 06:00 / eli-b
Sodium	219	mg/L	D	2		E200.7	10/12/17 06:00 / eli-b
PHYSICAL PROPERTIES							
pH	6.85	s.u.	H	0.01		A4500-H B	10/09/17 13:31 / mvr
Solids, Total Dissolved TDS @ 180 C	4440	mg/L	D	40		A2540 C	10/09/17 14:23 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	61.0	mg/L	D	0.5		E353.2	10/09/17 15:12 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/08/17 13:17 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.7	10/13/17 23:14 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/21/17 01:30 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 22:24 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 22:24 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/20/17 02:51 / eli-b
Manganese	0.44	mg/L		0.01		E200.7	10/13/17 23:14 / eli-b
Molybdenum	ND	mg/L		0.1		E200.7	10/13/17 23:14 / eli-b
Nickel	ND	mg/L		0.05		E200.7	10/13/17 23:14 / eli-b
Uranium	0.130	mg/L		0.0003		E200.8	10/21/17 01:30 / eli-b
Vanadium	ND	mg/L		0.1		E200.7	10/13/17 23:14 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 19:40 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/12/17 17:55 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4200	mg/L				A1030 E	10/31/17 18:41 / tla
A/C Balance	-0.26	%				A1030 E	10/31/17 18:41 / tla
Anions	69.6	meq/L				A1030 E	10/31/17 18:41 / tla
Cations	69.3	meq/L				A1030 E	10/31/17 18:41 / tla
TDS Ratio	1.05	unitless				A1030 E	10/31/17 18:41 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.6	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/01/17 15:40 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100294-002
Client Sample ID: EPA-25

Report Date: 11/10/17
Collection Date: 10/03/17 10:02
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	-0.1	pCi/L	U			E909.0	10/30/17 23:03 / meh
Lead 210 precision (±)	0.7	pCi/L				E909.0	10/30/17 23:03 / meh
Lead 210 MDC	1.2	pCi/L				E909.0	10/30/17 23:03 / meh
Radium 226	0.06	pCi/L	U			E903.0	10/24/17 11:22 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/24/17 11:22 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 11:22 / arh
Radium 228	0.5	pCi/L	U			RA-05	10/29/17 16:58 / trs
Radium 228 precision (±)	0.9	pCi/L				RA-05	10/29/17 16:58 / trs
Radium 228 MDC	1.4	pCi/L				RA-05	10/29/17 16:58 / trs
Thorium 230	0.005	pCi/L	U			E908.0	10/27/17 10:48 / cnh
Thorium 230 precision (±)	0.06	pCi/L				E908.0	10/27/17 10:48 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	10/27/17 10:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/15/17 03:07 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/15/17 03:07 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/15/17 03:07 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/15/17 03:07 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	10/15/17 03:07 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	10/15/17 03:07 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	10/15/17 03:07 / 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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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

United Nuclear Corporation					
SW Alluvium					
Well ID:		EPA-25	EPA-25	EPA-25	EPA-25
Collection Date:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/24/2017	5/10/2017	2/13/2017
Analyte	Units	C17100294-002	C17070469-002	C17040230-002	C17010331-004
Bicarbonate as HCO ₃	mg/L	1440	1370	1360	1370
Chloride	mg/L	145	138	150	136
Sulfate	mg/L	1790	1800	2000	1900
Calcium	mg/L	795	777	761	820
Magnesium	mg/L	242	247	238	243
Potassium	mg/L	7	9	8	8
Sodium	mg/L	219	213	211	211
pH	s.u.	6.85	6.85	6.84	6.86
Solids, Total Dissolved TDS @ 180 C	mg/L	4440	4270	4360	4370
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	61.0	65.5	35	72
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.44	0.45	0.70	0.54
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.130	0.116	0.122	0.113
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	-0.26	-0.08	-4.18	-0.27
Anions	meq/L	69.6	68.7	72.8	70.7
Cations	meq/L	69.3	68.6	67.0	70.3
Solids, Total Dissolved - Calculated	mg/L	4200	4200	4400	4300
TDS Ratio	unitless	1.05	1.03	1.00	1.01
Gross Alpha minus Rn & U	pCi/L	0.6	0.2	0.8	1.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.3	1	1.0
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.4	1.5	1.3
Lead 210	pCi/L	-0.1	0.2	-0.08	-0.5
Lead 210 precision (±)	pCi/L	0.7	0.8	0.8	0.7
Lead 210 MDC	pCi/L	1.2	1.4	1.3	1.3
Radium 226	pCi/L	0.06	0.1	0.15	0.16
Radium 226 precision (±)	pCi/L	0.1	0.1	0.11	0.12
Radium 226 MDC	pCi/L	0.2	0.2	0.14	0.16
Radium 228	pCi/L	0.5	0.8	0.14	1.4
Radium 228 precision (±)	pCi/L	0.9	1.0	1.0	0.91
Radium 228 MDC	pCi/L	1.4	1.6	1.7	1.5
Thorium 230	pCi/L	0.005	0.08	0.08	0.05
Thorium 230 precision (±)	pCi/L	0.06	0.1	0.09	0.1
Thorium 230 MDC	pCi/L	0.1	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: C17070424-009
Client Sample ID: EPA-28

Report Date: 09/05/17
Collection Date: 07/10/17 15:25
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	412	mg/L		5		A2320 B	07/14/17 13:28 / mvr
Chloride	98	mg/L	D	2		E300.0	07/20/17 21:26 / jcg
Sulfate	2930	mg/L	D	8		E300.0	07/20/17 21:26 / jcg
Calcium	491	mg/L		1		E200.7	07/24/17 18:08 / eli-b
Magnesium	463	mg/L		1		E200.7	07/24/17 18:08 / eli-b
Potassium	10	mg/L		1		E200.7	07/20/17 22:18 / eli-b
Sodium	252	mg/L	D	2		E200.7	07/24/17 18:08 / eli-b
PHYSICAL PROPERTIES							
pH	6.89	s.u.	H	0.01		A4500-H B	07/14/17 10:01 / mvr
Solids, Total Dissolved TDS @ 180 C	4920	mg/L	D	40		A2540 C	07/14/17 15:21 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	7.10	mg/L	D	0.05		E353.2	07/19/17 17:18 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:10 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/25/17 03:49 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 01:25 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 03:49 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/25/17 03:49 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/25/17 03:49 / eli-b
Manganese	0.51	mg/L		0.01		E200.8	07/25/17 03:49 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/25/17 03:49 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/25/17 03:49 / eli-b
Uranium	0.0183	mg/L		0.0003		E200.8	07/25/17 03:49 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/25/17 03:49 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 20:16 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 13:00 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4500	mg/L				A1030 E	07/26/17 16:06 / tjp
A/C Balance	1.95	%				A1030 E	07/26/17 16:06 / tjp
Anions	71.0	meq/L				A1030 E	07/26/17 16:06 / tjp
Cations	73.9	meq/L				A1030 E	07/26/17 16:06 / tjp
TDS Ratio	1.10	unitless				A1030 E	07/26/17 16:06 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.6	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	08/09/17 14:58 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 14:58 / cng

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070424-009
Client Sample ID: EPA-28

Report Date: 09/05/17
Collection Date: 07/10/17 15:25
Date Received: 07/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	-0.02	pCi/L	U			E909.0	08/19/17 21:57 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	08/19/17 21:57 / plj
Lead 210 MDC	1.3	pCi/L				E909.0	08/19/17 21:57 / plj
Radium 226	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 precision (±)	0.1	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 226 MDC	0.2	pCi/L				E903.0	08/21/17 10:04 / dmf
Radium 228	1.4	pCi/L	U			RA-05	08/15/17 12:50 / plj
Radium 228 precision (±)	1.2	pCi/L				RA-05	08/15/17 12:50 / plj
Radium 228 MDC	1.8	pCi/L				RA-05	08/15/17 12:50 / plj
Thorium 230	0.1	pCi/L	U			E908.0	08/07/17 11:37 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/07/17 11:37 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/07/17 11:37 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/20/17 17:42 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/20/17 17:42 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/20/17 17:42 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/20/17 17:42 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	07/20/17 17:42 / eli-b
Surr: p-Bromofluorobenzene	128	%REC	S	80-127		E624	07/20/17 17:42 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	07/20/17 17:42 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-009
Client Sample ID: EPA-28

Report Date: 11/09/17
Collection Date: 10/02/17 16:00
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	432	mg/L		5		A2320 B	10/06/17 23:48 / mvr
Chloride	98	mg/L	D	2		E300.0	10/10/17 01:46 / jcg
Sulfate	2900	mg/L	D	8		E300.0	10/10/17 01:46 / jcg
Calcium	491	mg/L		1		E200.7	10/11/17 23:48 / eli-b
Magnesium	469	mg/L		1		E200.7	10/11/17 23:48 / eli-b
Potassium	10	mg/L		1		E200.7	10/11/17 23:48 / eli-b
Sodium	252	mg/L		1		E200.7	10/11/17 23:48 / eli-b
PHYSICAL PROPERTIES							
pH	6.93	s.u.	H	0.01		A4500-H B	10/06/17 12:01 / mvr
Solids, Total Dissolved TDS @ 180 C	4830	mg/L	D	40		A2540 C	10/09/17 13:17 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	7.05	mg/L	D	0.05		E353.2	10/09/17 14:00 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/08/17 12:37 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/16/17 17:55 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/16/17 17:55 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 17:55 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 17:55 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 17:55 / eli-b
Manganese	0.46	mg/L		0.01		E200.8	10/16/17 17:55 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 17:55 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 17:55 / eli-b
Uranium	0.0211	mg/L		0.0003		E200.8	10/16/17 17:55 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 17:55 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 18:52 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/10/17 13:32 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4500	mg/L				A1030 E	10/19/17 10:30 / tla
A/C Balance	2.51	%				A1030 E	10/19/17 10:30 / tla
Anions	70.7	meq/L				A1030 E	10/19/17 10:30 / tla
Cations	74.4	meq/L				A1030 E	10/19/17 10:30 / tla
TDS Ratio	1.08	unitless				A1030 E	10/19/17 10:30 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1	pCi/L				E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	11/01/17 17:46 / dmf
Gross Alpha minus Rn & U MDC	0.7	pCi/L				E900.1	11/01/17 17:46 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100193-009
Client Sample ID: EPA-28

Report Date: 11/09/17
Collection Date: 10/02/17 16:00
Date Received: 10/05/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.4	pCi/L	U			E909.0	10/08/17 02:17 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/08/17 02:17 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	10/08/17 02:17 / meh
Radium 226	0.3	pCi/L				E903.0	10/24/17 11:55 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/24/17 11:55 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 11:55 / arh
Radium 228	0.3	pCi/L	U			RA-05	10/18/17 22:33 / tlf
Radium 228 precision (±)	0.9	pCi/L				RA-05	10/18/17 22:33 / tlf
Radium 228 MDC	1.5	pCi/L				RA-05	10/18/17 22:33 / tlf
Thorium 230	0.02	pCi/L	U			E908.0	10/27/17 10:48 / cnh
Thorium 230 precision (±)	0.06	pCi/L				E908.0	10/27/17 10:48 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	10/27/17 10:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/17 12:54 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/17 12:54 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/17 12:54 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/17 12:54 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	10/14/17 12:54 / eli-b
Surr: p-Bromofluorobenzene	101	%REC		80-127		E624	10/14/17 12:54 / eli-b
Surr: Toluene-d8	98.0	%REC		80-123		E624	10/14/17 12:54 / 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



United Nuclear Corporation					
SW Alluvium					
Well ID:		EPA-28	EPA-28	EPA-28	EPA-28
Collection Date:		10/2/2017	7/10/2017	4/3/2017	1/9/2017
Receive Date:		10/3/2017	7/13/2017	4/6/2017	1/12/2017
Report Date:		11/9/2017	9/5/2017	5/5/2017	2/23/2017
Analyte	Units	C17100193-009	C17070424-009	C17040178-009	C17010292-009
Bicarbonate as HCO ₃	mg/L	432	412	419	410
Chloride	mg/L	98	98	100	102
Sulfate	mg/L	2900	2930	3170	3180
Calcium	mg/L	491	491	479	469
Magnesium	mg/L	469	463	429	473
Potassium	mg/L	10	10	11	11
Sodium	mg/L	252	252	240	256
pH	s.u.	6.93	6.89	6.94	6.95
Solids, Total Dissolved TDS @ 180 C	mg/L	4830	4920	4860	4900
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	7.05	7.10	7.8	8.1
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.46	0.51	0.52	0.51
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0211	0.0183	0.0179	0.0179
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	2.51	1.95	-4.28	-1.71
Anions	meq/L	70.7	71.0	76.2	76.3
Cations	meq/L	74.4	73.9	69.9	73.8
Solids, Total Dissolved - Calculated	mg/L	4500	4500	4700	4700
TDS Ratio	unitless	1.08	1.10	1.04	1.03
Gross Alpha minus Rn & U	pCi/L	1	0.6	1.2	1.8
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.4	0.9	1.0
Gross Alpha minus Rn & U MDC	pCi/L	0.7	0.5	1.6	1.3
Lead 210	pCi/L	0.4	-0.02	-0.6	0.4
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.4	1.3	1.3	1.3
Radium 226	pCi/L	0.3	0.2	0.30	0.43
Radium 226 precision (±)	pCi/L	0.1	0.1	0.13	0.17
Radium 226 MDC	pCi/L	0.2	0.2	0.12	0.20
Radium 228	pCi/L	0.3	1.4	1.3	0.31
Radium 228 precision (±)	pCi/L	0.9	1.2	0.87	1.3
Radium 228 MDC	pCi/L	1.5	1.8	1.3	2.1
Thorium 230	pCi/L	0.02	0.1	0.06	0.3
Thorium 230 precision (±)	pCi/L	0.06	0.1	0.1	0.2
Thorium 230 MDC	pCi/L	0.1	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: SW Alluvium
Lab ID: C17070469-001
Client Sample ID: SBL-1

Report Date: 08/24/17
Collection Date: 07/11/17 08:47
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	461	mg/L		5		A2320 B	07/17/17 20:17 / mvr
Chloride	76	mg/L	D	5		E300.0	07/21/17 02:22 / jcg
Sulfate	5690	mg/L	D	20		E300.0	07/21/17 02:22 / jcg
Calcium	483	mg/L		1		E200.7	07/20/17 01:15 / eli-b
Magnesium	1190	mg/L		1		E200.7	07/20/17 01:15 / eli-b
Potassium	14	mg/L		1		E200.7	07/20/17 21:21 / eli-b
Sodium	284	mg/L	D	2		E200.7	07/20/17 01:15 / eli-b
PHYSICAL PROPERTIES							
pH	6.81	s.u.	H	0.01		A4500-H B	07/17/17 14:50 / mvr
Solids, Total Dissolved TDS @ 180 C	8860	mg/L	D	100		A2540 C	07/17/17 17:07 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	36.8	mg/L	D	0.2		E353.2	07/21/17 16:43 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:18 / ljl
METALS, TOTAL							
Aluminum	0.5	mg/L		0.1		E200.7	07/21/17 11:54 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 22:00 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/21/17 03:44 / eli-b
Cobalt	0.03	mg/L		0.01		E200.8	07/21/17 03:44 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/21/17 03:44 / eli-b
Manganese	4.13	mg/L		0.01		E200.8	07/21/17 03:44 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/21/17 03:44 / eli-b
Nickel	0.10	mg/L		0.05		E200.8	07/21/17 03:44 / eli-b
Uranium	0.0101	mg/L		0.0003		E200.8	07/21/17 03:44 / eli-b
Vanadium	ND	mg/L		0.1		E200.7	07/21/17 11:54 / eli-b
METALS - SPECIATED							
Arsenic-III	0.001	mg/L		0.001		E1632AM	07/28/17 17:16 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 12:29 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	8100	mg/L				A1030 E	08/02/17 09:27 / tla
A/C Balance	1.49	%				A1030 E	08/02/17 09:27 / tla
Anions	131	meq/L				A1030 E	08/02/17 09:27 / tla
Cations	135	meq/L				A1030 E	08/02/17 09:27 / tla
TDS Ratio	1.09	unitless				A1030 E	08/02/17 09:27 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.7	pCi/L				E900.1	08/07/17 18:47 / cng
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	08/07/17 18:47 / cng
Gross Alpha minus Rn & U MDC	0.4	pCi/L				E900.1	08/07/17 18:47 / cng

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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17070469-001
Client Sample ID: SBL-1

Report Date: 08/24/17
Collection Date: 07/11/17 08:47
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.3	pCi/L	U		E909.0		08/20/17 19:41 / plj
Lead 210 precision (±)	0.8	pCi/L			E909.0		08/20/17 19:41 / plj
Lead 210 MDC	1.4	pCi/L			E909.0		08/20/17 19:41 / plj
Radium 226	0.5	pCi/L			E903.0		08/14/17 14:12 / trs
Radium 226 precision (±)	0.2	pCi/L			E903.0		08/14/17 14:12 / trs
Radium 226 MDC	0.2	pCi/L			E903.0		08/14/17 14:12 / trs
Radium 228	2.3	pCi/L			RA-05		08/09/17 13:06 / trs
Radium 228 precision (±)	1.1	pCi/L			RA-05		08/09/17 13:06 / trs
Radium 228 MDC	1.6	pCi/L			RA-05		08/09/17 13:06 / trs
Thorium 230	0.001	pCi/L	U		E908.0		08/10/17 09:35 / cng
Thorium 230 precision (±)	0.1	pCi/L			E908.0		08/10/17 09:35 / cng
Thorium 230 MDC	0.3	pCi/L			E908.0		08/10/17 09:35 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		07/21/17 13:41 / eli-b
Bromoform	ND	ug/L		0.50	E624		07/21/17 13:41 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		07/21/17 13:41 / eli-b
Chloroform	ND	ug/L		0.50	E624		07/21/17 13:41 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139	E624		07/21/17 13:41 / eli-b
Surr: p-Bromofluorobenzene	136	%REC	S	80-127	E624		07/21/17 13:41 / eli-b
Surr: Toluene-d8	102	%REC		80-123	E624		07/21/17 13:41 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100294-001
Client Sample ID: SBL-1

Report Date: 11/10/17
Collection Date: 10/03/17 08:53
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	452	mg/L		5		A2320 B	10/10/17 23:45 / mvr
Chloride	73	mg/L	D	5		E300.0	10/11/17 08:14 / jcg
Sulfate	5520	mg/L	D	20		E300.0	10/11/17 08:14 / jcg
Calcium	477	mg/L		1		E200.7	10/12/17 05:57 / eli-b
Magnesium	1220	mg/L		1		E200.7	10/12/17 05:57 / eli-b
Potassium	13	mg/L		1		E200.7	10/12/17 05:57 / eli-b
Sodium	280	mg/L	D	2		E200.7	10/12/17 05:57 / eli-b
PHYSICAL PROPERTIES							
pH	6.80	s.u.	H	0.01		A4500-H B	10/09/17 13:28 / mvr
Solids, Total Dissolved TDS @ 180 C	8870	mg/L	D	100		A2540 C	10/09/17 14:22 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	35.3	mg/L	D	0.5		E353.2	10/09/17 15:11 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/08/17 13:15 / ljl
METALS, TOTAL							
Aluminum	0.4	mg/L		0.1		E200.7	10/13/17 22:56 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/21/17 01:48 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 22:03 / eli-b
Cobalt	0.03	mg/L		0.01		E200.8	10/16/17 22:03 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/20/17 02:35 / eli-b
Manganese	4.02	mg/L		0.01		E200.7	10/13/17 22:56 / eli-b
Molybdenum	ND	mg/L		0.1		E200.7	10/13/17 22:56 / eli-b
Nickel	0.12	mg/L		0.05		E200.7	10/13/17 22:56 / eli-b
Uranium	0.0102	mg/L		0.0003		E200.8	10/21/17 01:48 / eli-b
Vanadium	ND	mg/L		0.1		E200.7	10/13/17 22:56 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 19:28 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/12/17 17:50 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	8000	mg/L				A1030 E	10/31/17 18:41 / tla
A/C Balance	3.71	%				A1030 E	10/31/17 18:41 / tla
Anions	127	meq/L				A1030 E	10/31/17 18:41 / tla
Cations	136	meq/L				A1030 E	10/31/17 18:41 / tla
TDS Ratio	1.12	unitless				A1030 E	10/31/17 18:41 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.1	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/01/17 15:40 / dmf

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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: SW Alluvium
Lab ID: C17100294-001
Client Sample ID: SBL-1

Report Date: 11/10/17
Collection Date: 10/03/17 08:53
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	-0.2	pCi/L	U		E909.0		10/30/17 18:10 / meh
Lead 210 precision (±)	0.7	pCi/L			E909.0		10/30/17 18:10 / meh
Lead 210 MDC	1.3	pCi/L			E909.0		10/30/17 18:10 / meh
Radium 226	0.4	pCi/L			E903.0		10/24/17 11:22 / arh
Radium 226 precision (±)	0.2	pCi/L			E903.0		10/24/17 11:22 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/24/17 11:22 / arh
Radium 228	2.6	pCi/L			RA-05		10/20/17 00:48 / tif
Radium 228 precision (±)	0.9	pCi/L			RA-05		10/20/17 00:48 / tif
Radium 228 MDC	1.4	pCi/L			RA-05		10/20/17 00:48 / tif
Thorium 230	0.04	pCi/L	U		E908.0		10/30/17 09:40 / cnh
Thorium 230 precision (±)	0.08	pCi/L			E908.0		10/30/17 09:40 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		10/30/17 09:40 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/15/17 02:37 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/15/17 02:37 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/15/17 02:37 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/15/17 02:37 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/02/17 19:39 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139	E624		10/15/17 02:37 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127	E624		10/15/17 02:37 / eli-b
Surr: Toluene-d8	101	%REC		80-123	E624		10/15/17 02:37 / 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					
SW Alluvium					
Well ID:		SBL-1	SBL-1	SBL-1	SBL-1
Collection Date:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/24/2017	5/10/2017	2/13/2017
Analyte	Units	C17100294-001	C17070469-001	C17040230-001	C17010331-002
Bicarbonate as HCO ₃	mg/L	452	461	461	461
Sulfate	mg/L	5520	5690	6460	6170
Chloride	mg/L	73	76	85	82
Calcium	mg/L	477	483	474	500
Potassium	mg/L	13	14	14	14
Magnesium	mg/L	1220	1190	1220	1220
Sodium	mg/L	280	284	286	281
Solids, Total Dissolved TDS @ 180 C	mg/L	8870	8860	9200	9170
pH	s.u.	6.80	6.81	6.79	6.81
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Aluminum	mg/L	0.4	0.5	0.3	0.3
Nitrogen, Nitrate+Nitrite as N	mg/L	35.3	36.8	38	39
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cobalt	mg/L	0.03	0.03	0.03	0.03
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	4.02	4.13	3.96	3.81
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.12	0.10	0.09	0.09
Uranium	mg/L	0.0102	0.0101	0.0093	0.0091
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	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	%	3.71	1.49	-3.56	-1.07
Anions	meq/L	127	131	147	141
Cations	meq/L	136	135	137	138
Solids, Total Dissolved - Calculated	mg/L	8000	8100	9000	8600
TDS Ratio	unitless	1.12	1.09	1.03	1.06
Gross Alpha minus Rn & U	pCi/L	1.1	0.7	3.2	2.5
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.4	1.6	1.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.4	1.4	1.2
Lead 210	pCi/L	-0.2	0.3	0.3	-0.5
Lead 210 MDC	pCi/L	1.3	1.4	1.4	1.3
Lead 210 precision (±)	pCi/L	0.7	0.8	0.8	0.7
Radium 226	pCi/L	0.4	0.5	0.69	0.44
Radium 226 MDC	pCi/L	0.2	0.2	0.16	0.20
Radium 226 precision (±)	pCi/L	0.2	0.2	0.20	0.18
Radium 228	pCi/L	2.6	2.3	1.4	1.3
Radium 228 MDC	pCi/L	1.4	1.6	1.7	1.7
Radium 228 precision (±)	pCi/L	0.9	1.1	0.80	0.80
Thorium 230	pCi/L	0.04	0.001	0.04	0.05
Thorium 230 MDC	pCi/L	0.2	0.3	0.2	0.2
Thorium 230 precision (±)	pCi/L	0.08	0.1	0.1	0.1
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

QUARTERLY SAMPLING
SEMI-ANNUAL GROUND WATER MONITORING REPORT

JULY TO DECEMBER OF 2017

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: C17070470-002
Client Sample ID: 515-A

Report Date: 08/16/17
Collection Date: 07/11/17 14:00
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	829	mg/L		5		A2320 B	07/18/17 12:48 / mvr
Chloride	371	mg/L	D	5		E300.0	07/21/17 04:42 / jcg
Sulfate	6040	mg/L	D	20		E300.0	07/21/17 04:42 / jcg
Calcium	433	mg/L		1		E200.7	07/19/17 23:51 / eli-b
Magnesium	1260	mg/L		1		E200.7	07/19/17 23:51 / eli-b
Potassium	18	mg/L		1		E200.7	07/20/17 21:04 / eli-b
Sodium	567	mg/L	D	2		E200.7	07/19/17 23:51 / eli-b
PHYSICAL PROPERTIES							
pH	6.21	s.u.	H	0.01		A4500-H B	07/18/17 12:09 / mvr
Solids, Total Dissolved TDS @ 180 C	10500	mg/L	D	100		A2540 C	07/18/17 13:33 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	40.0	mg/L	D	0.5		E353.2	07/21/17 16:52 / ljl
Nitrogen, Ammonia as N	21	mg/L	D	1		A4500-NH ₃ G	07/23/17 11:23 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/21/17 05:55 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/21/17 05:55 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/21/17 05:55 / eli-b
Cobalt	0.02	mg/L		0.01		E200.8	07/21/17 05:55 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/21/17 05:55 / eli-b
Manganese	8.46	mg/L		0.01		E200.8	07/21/17 05:55 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/21/17 05:55 / eli-b
Nickel	0.11	mg/L		0.05		E200.8	07/21/17 05:55 / eli-b
Uranium	0.0084	mg/L		0.0003		E200.8	07/21/17 05:55 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/21/17 05:55 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	0.001	mg/L		0.001		E1632AM	07/28/17 21:28 / eli-h
Selenium-IV	0.003	mg/L		0.001		A3114 B	07/21/17 13:14 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	9300	mg/L				A1030 E	08/11/17 14:03 / tjp
A/C Balance	-0.17	%				A1030 E	08/11/17 14:03 / tjp
Anions	153	meq/L				A1030 E	08/11/17 14:03 / tjp
Cations	152	meq/L				A1030 E	08/11/17 14:03 / tjp
TDS Ratio	1.13	unitless				A1030 E	08/11/17 14:03 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	2.7	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U Precision (±)	0.8	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 16:32 / cng
Lead 210	1.6	pCi/L	U			E909.0	08/11/17 23:43 / dmf
Lead 210 precision (±)	1.2	pCi/L				E909.0	08/11/17 23:43 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17070470-002
Client Sample ID: 515-A

Report Date: 08/16/17
Collection Date: 07/11/17 14:00
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 MDC	1.8	pCi/L				E909.0	08/11/17 23:43 / dmf
Radium 226	1.5	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 precision (±)	0.4	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 228	2.7	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 precision (±)	1.2	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 MDC	1.9	pCi/L				RA-05	08/09/17 14:43 / trs
Thorium 230	0.2	pCi/L	U			E908.0	08/10/17 09:35 / cng
Thorium 230 precision (±)	0.2	pCi/L				E908.0	08/10/17 09:35 / cng
Thorium 230 MDC	0.3	pCi/L				E908.0	08/10/17 09:35 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/21/17 15:43 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/21/17 15:43 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/21/17 15:43 / eli-b
Chloroform	340	ug/L		50		E624	07/24/17 20:47 / eli-b
Trihalomethanes, Total	340	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	92.0	%REC		71-139		E624	07/21/17 15:43 / eli-b
Surr: p-Bromofluorobenzene	128	%REC	S	80-127		E624	07/21/17 15:43 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	07/21/17 15:43 / 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.
S - Spike recovery outside of advisory limits.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-002
Client Sample ID: 515-A

Report Date: 11/10/17
Collection Date: 10/03/17 13:51
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	862	mg/L		5		A2320 B	10/11/17 00:21 / mvr
Chloride	364	mg/L	D	5		E300.0	10/11/17 09:55 / jcg
Sulfate	5800	mg/L	D	20		E300.0	10/11/17 09:55 / jcg
Calcium	455	mg/L	D	3		E200.7	10/12/17 19:31 / eli-b
Magnesium	1320	mg/L		1		E200.7	10/12/17 19:31 / eli-b
Potassium	18	mg/L		1		E200.7	10/12/17 19:31 / eli-b
Sodium	603	mg/L	D	6		E200.7	10/12/17 19:31 / eli-b
PHYSICAL PROPERTIES							
pH	6.14	s.u.	H	0.01		A4500-H B	10/09/17 13:52 / mvr
Solids, Total Dissolved TDS @ 180 C	10000	mg/L	D	100		A2540 C	10/09/17 14:25 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	35.9	mg/L	D	0.5		E353.2	10/09/17 15:16 / ljl
Nitrogen, Ammonia as N	21	mg/L	D	1		A4500-NH ₃ G	10/08/17 13:25 / ljl
METALS, TOTAL							
Aluminum	0.2	mg/L	D	0.2		E200.7	11/01/17 04:24 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/27/17 08:16 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 20:52 / eli-b
Cobalt	0.02	mg/L		0.01		E200.8	10/16/17 20:52 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 20:52 / eli-b
Manganese	8.04	mg/L		0.01		E200.8	10/16/17 20:52 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 20:52 / eli-b
Nickel	0.11	mg/L		0.05		E200.8	10/16/17 20:52 / eli-b
Uranium	0.0093	mg/L		0.0003		E200.8	10/16/17 20:52 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 20:52 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 20:16 / eli-h
METALS - SPECIATED							
Selenium-IV	0.003	mg/L		0.001		A3114 B	10/12/17 18:00 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	9100	mg/L				A1030 E	11/03/17 17:05 / tjp
A/C Balance	3.92	%				A1030 E	11/03/17 17:05 / tjp
Anions	147	meq/L				A1030 E	11/03/17 17:05 / tjp
Cations	159	meq/L				A1030 E	11/03/17 17:05 / tjp
TDS Ratio	1.09	unitless				A1030 E	11/03/17 17:05 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	2.9	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.9	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/01/17 15:40 / dmf

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.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-002
Client Sample ID: 515-A

Report Date: 11/10/17
Collection Date: 10/03/17 13:51
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.3	pCi/L				E909.0	10/31/17 07:46 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	10/31/17 07:46 / meh
Lead 210 MDC	1.3	pCi/L				E909.0	10/31/17 07:46 / meh
Radium 226	2.0	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 226 precision (±)	0.5	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 228	6.5	pCi/L				RA-05	10/19/17 19:30 / tif
Radium 228 precision (±)	1.6	pCi/L				RA-05	10/19/17 19:30 / tif
Radium 228 MDC	1.7	pCi/L				RA-05	10/19/17 19:30 / tif
Thorium 230	-0.0005	pCi/L	U			E908.0	10/30/17 09:41 / cnh
Thorium 230 precision (±)	0.09	pCi/L				E908.0	10/30/17 09:41 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	10/30/17 09:41 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/17 17:18 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/17 17:18 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/17 17:18 / eli-b
Chloroform	305	ug/L		50		E624	10/16/17 12:48 / eli-b
Trihalomethanes, Total	305	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	10/14/17 17:18 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	10/14/17 17:18 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	10/14/17 17:18 / 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					
Zone1					
Well ID:		515-A	515-A	515-A	515-A
Collection Date:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/16/2017	5/10/2017	2/17/2017
Analyte	Units	C17100295-002	C17070470-002	C17040232-002	C17010332-002
Bicarbonate as HCO ₃	mg/L	862	829	828	829
Chloride	mg/L	364	371	395	386
Sulfate	mg/L	5800	6040	6640	6540
Calcium	mg/L	455	433	452	472
Magnesium	mg/L	1320	1260	1320	1310
Potassium	mg/L	18	18	19	18
Sodium	mg/L	603	567	593	585
pH	s.u.	6.14	6.21	6.22	6.33
Solids, Total Dissolved TDS @ 180 C	mg/L	10000	10500	10000	10400
Nitrogen, Ammonia as N	mg/L	21	21	23	24
Nitrogen, Nitrate+Nitrite as N	mg/L	35.9	40.0	42	43
Aluminum	mg/L	0.2	ND(0.1)	0.1	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.02	0.02	0.02	0.02
Lead	mg/L	ND(0.001)	ND(0.001)	0.003	0.002
Manganese	mg/L	8.04	8.46	7.86	8.89
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.11	0.11	0.10	0.11
Uranium	mg/L	0.0093	0.0084	0.0072	0.0088
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	0.003	0.003	0.002	0.002
A/C Balance	%	3.92	-0.17	-2.24	-1.39
Anions	meq/L	147	153	166	163
Cations	meq/L	159	152	159	159
Solids, Total Dissolved - Calculated	mg/L	9100	9300	10000	9900
TDS Ratio	unitless	1.09	1.13	1.00	1.05
Gross Alpha minus Rn & U	pCi/L	2.9	2.7	3.8	8.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.9	0.8	1.5	2.3
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.3	1.3
Lead 210	pCi/L	1.3	1.6	0.3	0.3
Lead 210 precision (±)	pCi/L	0.9	1.2	0.8	0.7
Lead 210 MDC	pCi/L	1.3	1.8	1.3	1.1
Radium 226	pCi/L	2.0	1.5	1.7	1.5
Radium 226 precision (±)	pCi/L	0.5	0.4	0.42	0.40
Radium 226 MDC	pCi/L	0.2	0.2	0.21	0.22
Radium 228	pCi/L	6.5	2.7	3.0	2.7
Radium 228 precision (±)	pCi/L	1.6	1.2	1.2	1.2
Radium 228 MDC	pCi/L	1.7	1.9	2.0	2.2
Thorium 230	pCi/L	-0.0005	0.2	0.3	0.08
Thorium 230 precision (±)	pCi/L	0.09	0.2	0.1	0.1
Thorium 230 MDC	pCi/L	0.2	0.3	0.2	0.3
Trihalomethanes, Total	ug/L	305	340	131	170

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17070470-003
Client Sample ID: 604

Report Date: 08/16/17
Collection Date: 07/11/17 15:10
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	29	mg/L		5		A2320 B	07/17/17 20:51 / mvr
Chloride	94	mg/L	D	2		E300.0	07/21/17 04:59 / jcg
Sulfate	4430	mg/L	D	8		E300.0	07/21/17 04:59 / jcg
Calcium	480	mg/L		1		E200.7	07/19/17 23:55 / eli-b
Magnesium	863	mg/L		1		E200.7	07/19/17 23:55 / eli-b
Potassium	12	mg/L		1		E200.7	07/20/17 21:07 / eli-b
Sodium	321	mg/L	D	2		E200.7	07/19/17 23:55 / eli-b
PHYSICAL PROPERTIES							
pH	5.62	s.u.	H	0.01		A4500-H B	07/17/17 15:04 / mvr
Solids, Total Dissolved TDS @ 180 C	6930	mg/L	D	100		A2540 C	07/17/17 17:08 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	59.5	mg/L	D	0.5		E353.2	07/21/17 16:53 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:24 / ljl
METALS, TOTAL							
Aluminum	0.6	mg/L		0.1		E200.8	07/26/17 22:18 / eli-b
Beryllium	0.001	mg/L		0.001		E200.8	07/26/17 22:18 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/21/17 06:06 / eli-b
Cobalt	0.10	mg/L		0.01		E200.8	07/21/17 06:06 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/21/17 06:06 / eli-b
Manganese	3.86	mg/L		0.01		E200.8	07/21/17 06:06 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/26/17 22:18 / eli-b
Nickel	0.21	mg/L		0.05		E200.8	07/21/17 06:06 / eli-b
Uranium	0.0007	mg/L		0.0003		E200.8	07/21/17 06:06 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/21/17 06:06 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 22:04 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 13:15 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6500	mg/L				A1030 E	08/11/17 14:04 / tjp
A/C Balance	4.54	%				A1030 E	08/11/17 14:04 / tjp
Anions	99.8	meq/L				A1030 E	08/11/17 14:04 / tjp
Cations	109	meq/L				A1030 E	08/11/17 14:04 / tjp
TDS Ratio	1.07	unitless				A1030 E	08/11/17 14:04 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.0	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 16:32 / cng
Lead 210	0.6	pCi/L	U			E909.0	08/12/17 02:23 / dmf
Lead 210 precision (±)	0.7	pCi/L				E909.0	08/12/17 02:23 / dmf

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: C17070470-003
Client Sample ID: 604

Report Date: 08/16/17
Collection Date: 07/11/17 15:10
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 MDC	1.2	pCi/L				E909.0	08/12/17 02:23 / dmf
Radium 226	1.0	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 precision (±)	0.3	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 228	2.5	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 MDC	1.9	pCi/L				RA-05	08/09/17 14:43 / trs
Thorium 230	0.1	pCi/L	U			E908.0	08/10/17 09:35 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/10/17 09:35 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/10/17 09:35 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/23/17 15:21 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/23/17 15:21 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/23/17 15:21 / eli-b
Chloroform	12	ug/L		0.50		E624	07/23/17 15:21 / eli-b
Trihalomethanes, Total	12	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	07/23/17 15:21 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	07/23/17 15:21 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	07/23/17 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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-003
Client Sample ID: 604

Report Date: 11/10/17
Collection Date: 10/03/17 15:07
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	31	mg/L		5		A2320 B	10/11/17 00:48 / mvr
Chloride	96	mg/L	D	2		E300.0	10/11/17 10:12 / jcg
Sulfate	4380	mg/L	D	8		E300.0	10/11/17 10:12 / jcg
Calcium	445	mg/L		1		E200.7	10/12/17 19:35 / eli-b
Magnesium	803	mg/L		1		E200.7	10/12/17 19:35 / eli-b
Potassium	12	mg/L		1		E200.7	10/12/17 19:35 / eli-b
Sodium	308	mg/L	D	3		E200.7	10/12/17 19:35 / eli-b
PHYSICAL PROPERTIES							
pH	5.43	s.u.	H	0.01		A4500-H B	10/09/17 14:28 / mvr
Solids, Total Dissolved TDS @ 180 C	6850	mg/L	D	100		A2540 C	10/09/17 14:25 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	55.5	mg/L	D	0.5		E353.2	10/09/17 15:19 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	10/08/17 13:27 / ljl
METALS, TOTAL							
Aluminum	1.0	mg/L		0.1		E200.7	11/01/17 04:28 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/27/17 08:19 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 20:55 / eli-b
Cobalt	0.11	mg/L		0.01		E200.8	10/16/17 20:55 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 20:55 / eli-b
Manganese	4.04	mg/L		0.01		E200.8	10/16/17 20:55 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 20:55 / eli-b
Nickel	0.22	mg/L		0.05		E200.8	10/16/17 20:55 / eli-b
Uranium	0.0004	mg/L		0.0003		E200.8	10/16/17 20:55 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 20:55 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 20:28 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/12/17 18:01 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6400	mg/L				A1030 E	11/03/17 17:05 / tjp
A/C Balance	1.65	%				A1030 E	11/03/17 17:05 / tjp
Anions	98.7	meq/L				A1030 E	11/03/17 17:05 / tjp
Cations	102	meq/L				A1030 E	11/03/17 17:05 / tjp
TDS Ratio	1.08	unitless				A1030 E	11/03/17 17:05 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.9	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/01/17 15:40 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-003
Client Sample ID: 604

Report Date: 11/10/17
Collection Date: 10/03/17 15:07
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.6	pCi/L	U			E909.0	10/31/17 10:26 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/31/17 10:26 / meh
Lead 210 MDC	1.3	pCi/L				E909.0	10/31/17 10:26 / meh
Radium 226	1.3	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 226 precision (±)	0.3	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 228	5.8	pCi/L				RA-05	10/19/17 19:30 / tif
Radium 228 precision (±)	1.4	pCi/L				RA-05	10/19/17 19:30 / tif
Radium 228 MDC	1.3	pCi/L				RA-05	10/19/17 19:30 / tif
Thorium 230	0.0009	pCi/L	U			E908.0	10/27/17 10:48 / cnh
Thorium 230 precision (±)	0.08	pCi/L				E908.0	10/27/17 10:48 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	10/27/17 10:48 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/15/17 18:38 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/15/17 18:38 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/15/17 18:38 / eli-b
Chloroform	13	ug/L		0.50		E624	10/15/17 18:38 / eli-b
Trihalomethanes, Total	13	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	10/15/17 18:38 / eli-b
Surr: p-Bromofluorobenzene	102	%REC		80-127		E624	10/15/17 18:38 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	10/15/17 18:38 / 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					
Zone1					
Well ID:		604	604	604	604
Collection Date:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/16/2017	5/10/2017	2/17/2017
Analyte	Units	C17100295-003	C17070470-003	C17040232-001	C17010332-003
Bicarbonate as HCO ₃	mg/L	31	29	29	29
Chloride	mg/L	96	94	96	90
Sulfate	mg/L	4380	4430	4890	4730
Calcium	mg/L	445	480	447	466
Magnesium	mg/L	803	863	811	812
Potassium	mg/L	12	12	12	12
Sodium	mg/L	308	321	310	302
pH	s.u.	5.43	5.62	5.57	5.78
Solids, Total Dissolved TDS @ 180 C	mg/L	6850	6930	6830	7060
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	55.5	59.5	66	65
Aluminum	mg/L	1.0	0.6	0.8	0.7
Beryllium	mg/L	ND(0.001)	0.001	0.001	0.001
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.11	0.10	0.09	0.10
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.001
Manganese	mg/L	4.04	3.86	3.60	4.09
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.22	0.21	0.18	0.20
Uranium	mg/L	0.0004	0.0007	ND(0.0003)	0.0003
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	1.65	4.54	-3.16	-0.96
Anions	meq/L	98.7	99.8	110	106
Cations	meq/L	102	109	103	104
Solids, Total Dissolved - Calculated	mg/L	6400	6500	6900	6700
TDS Ratio	unitless	1.08	1.07	0.99	1.05
Gross Alpha minus Rn & U	pCi/L	1.9	1.0	2.4	6.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.7	0.5	1.2	1.9
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.3	1.3
Lead 210	pCi/L	0.6	0.6	-0.1	0.3
Lead 210 precision (±)	pCi/L	0.8	0.7	0.8	0.7
Lead 210 MDC	pCi/L	1.3	1.2	1.3	1.1
Radium 226	pCi/L	1.3	1.0	0.96	1.1
Radium 226 precision (±)	pCi/L	0.3	0.3	0.21	0.29
Radium 226 MDC	pCi/L	0.2	0.2	0.18	0.17
Radium 228	pCi/L	5.8	2.5	4.3	2.0
Radium 228 precision (±)	pCi/L	1.4	1.1	1.3	1.0
Radium 228 MDC	pCi/L	1.3	1.9	1.8	1.7
Thorium 230	pCi/L	0.0009	0.1	0.01	-0.02
Thorium 230 precision (±)	pCi/L	0.08	0.1	0.1	0.1
Thorium 230 MDC	pCi/L	0.2	0.1	0.2	0.2
Trihalomethanes, Total	ug/L	13	12	4.6	11

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17070470-001
Client Sample ID: 614

Report Date: 08/16/17
Collection Date: 07/11/17 12:40
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	976	mg/L		5		A2320 B	07/17/17 20:44 / mvr
Chloride	285	mg/L	D	5		E300.0	07/21/17 04:24 / jcg
Sulfate	3400	mg/L	D	20		E300.0	07/21/17 04:24 / jcg
Calcium	555	mg/L		1		E200.7	07/19/17 23:47 / eli-b
Magnesium	691	mg/L		1		E200.7	07/19/17 23:47 / eli-b
Potassium	14	mg/L		1		E200.7	07/20/17 20:28 / eli-b
Sodium	453	mg/L	D	2		E200.7	07/19/17 23:47 / eli-b
PHYSICAL PROPERTIES							
pH	6.49	s.u.	H	0.01		A4500-H B	07/17/17 15:01 / mvr
Solids, Total Dissolved TDS @ 180 C	7000	mg/L	D	100		A2540 C	07/17/17 17:08 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	197	mg/L	D	1		E353.2	07/21/17 16:49 / ljl
Nitrogen, Ammonia as N	57	mg/L	D	5		A4500-NH ₃ G	07/23/17 11:22 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/21/17 05:53 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/21/17 05:53 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/21/17 05:53 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/21/17 05:53 / eli-b
Lead	0.004	mg/L		0.001		E200.8	07/21/17 05:53 / eli-b
Manganese	1.07	mg/L		0.01		E200.8	07/21/17 05:53 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/21/17 05:53 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/21/17 05:53 / eli-b
Uranium	0.0393	mg/L		0.0003		E200.8	07/21/17 05:53 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/21/17 05:53 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 20:52 / eli-h
Selenium-IV	0.002	mg/L		0.001		A3114 B	07/21/17 13:12 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6700	mg/L				A1030 E	08/11/17 14:03 / tjp
A/C Balance	0.58	%				A1030 E	08/11/17 14:03 / tjp
Anions	107	meq/L				A1030 E	08/11/17 14:03 / tjp
Cations	109	meq/L				A1030 E	08/11/17 14:03 / tjp
TDS Ratio	1.05	unitless				A1030 E	08/11/17 14:03 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.6	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 16:32 / cng
Lead 210	0.3	pCi/L	U			E909.0	08/11/17 20:48 / dmf
Lead 210 precision (±)	0.7	pCi/L				E909.0	08/11/17 20:48 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17070470-001
Client Sample ID: 614

Report Date: 08/16/17
Collection Date: 07/11/17 12:40
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 MDC	1.2	pCi/L				E909.0	08/11/17 20:48 / dmf
Radium 226	0.7	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 precision (±)	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 228	4.2	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 MDC	1.8	pCi/L				RA-05	08/09/17 14:43 / trs
Thorium 230	0.1	pCi/L	U			E908.0	08/10/17 18:07 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/10/17 18:07 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/10/17 18:07 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/21/17 15:13 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/21/17 15:13 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/21/17 15:13 / eli-b
Chloroform	71	ug/L		5.0		E624	07/24/17 20:15 / eli-b
Trihalomethanes, Total	71	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	07/21/17 15:13 / eli-b
Surr: p-Bromofluorobenzene	131	%REC	S	80-127		E624	07/21/17 15:13 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	07/21/17 15:13 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-001
Client Sample ID: 614

Report Date: 11/10/17
Collection Date: 10/03/17 12:34
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	976	mg/L		5		A2320 B	10/11/17 00:13 / mvr
Chloride	292	mg/L	D	5		E300.0	10/11/17 09:38 / jcg
Sulfate	3360	mg/L	D	20		E300.0	10/11/17 09:38 / jcg
Calcium	555	mg/L		1		E200.7	10/12/17 19:27 / eli-b
Magnesium	680	mg/L		1		E200.7	10/12/17 19:27 / eli-b
Potassium	14	mg/L		1		E200.7	10/12/17 19:27 / eli-b
Sodium	468	mg/L	D	3		E200.7	10/12/17 19:27 / eli-b
PHYSICAL PROPERTIES							
pH	6.57	s.u.	H	0.01		A4500-H B	10/09/17 13:46 / mvr
Solids, Total Dissolved TDS @ 180 C	6930	mg/L	D	100		A2540 C	10/09/17 14:25 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	160	mg/L	D	0.5		E353.2	10/09/17 15:15 / ljl
Nitrogen, Ammonia as N	73	mg/L	D	5		A4500-NH ₃ G	10/08/17 13:22 / ljl
METALS, TOTAL							
Aluminum	0.1	mg/L		0.1		E200.7	11/01/17 04:21 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/27/17 08:07 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 20:50 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 20:50 / eli-b
Lead	0.005	mg/L		0.001		E200.8	10/16/17 20:50 / eli-b
Manganese	0.93	mg/L		0.01		E200.8	10/16/17 20:50 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 20:50 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 20:50 / eli-b
Uranium	0.0464	mg/L		0.0003		E200.8	10/16/17 20:50 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 20:50 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 20:04 / eli-h
METALS - SPECIATED							
Selenium-IV	0.002	mg/L		0.001		A3114 B	10/12/17 17:58 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6600	mg/L				A1030 E	11/03/17 17:04 / tjp
A/C Balance	1.44	%				A1030 E	11/03/17 17:04 / tjp
Anions	106	meq/L				A1030 E	11/03/17 17:04 / tjp
Cations	110	meq/L				A1030 E	11/03/17 17:04 / tjp
TDS Ratio	1.04	unitless				A1030 E	11/03/17 17:04 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.1	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.5	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/01/17 15:40 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-001
Client Sample ID: 614

Report Date: 11/10/17
Collection Date: 10/03/17 12:34
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0	pCi/L	U			E909.0	10/31/17 04:47 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/31/17 04:47 / meh
Lead 210 MDC	1.3	pCi/L				E909.0	10/31/17 04:47 / meh
Radium 226	0.7	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 228	4.4	pCi/L				RA-05	10/19/17 19:30 / tif
Radium 228 precision (±)	1.2	pCi/L				RA-05	10/19/17 19:30 / tif
Radium 228 MDC	1.3	pCi/L				RA-05	10/19/17 19:30 / tif
Thorium 230	0.07	pCi/L	U			E908.0	10/30/17 09:40 / cnh
Thorium 230 precision (±)	0.08	pCi/L				E908.0	10/30/17 09:40 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	10/30/17 09:40 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/17 16:48 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/17 16:48 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/17 16:48 / eli-b
Chloroform	42	ug/L		5.0		E624	10/15/17 17:40 / eli-b
Trihalomethanes, Total	42	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139		E624	10/14/17 16:48 / eli-b
Surr: p-Bromofluorobenzene	105	%REC		80-127		E624	10/14/17 16:48 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	10/14/17 16:48 / 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

United Nuclear Corporation					
Zone1					
Well ID:		614	614	614	614
Collection Date:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/16/2017	5/10/2017	2/17/2017
Analyte	Units	C17100295-001	C17070470-001	C17040232-003	C17010332-001
Bicarbonate as HCO ₃	mg/L	976	976	930	910
Chloride	mg/L	292	285	291	295
Sulfate	mg/L	3360	3400	3530	3690
Calcium	mg/L	555	555	530	581
Magnesium	mg/L	680	691	672	678
Potassium	mg/L	14	14	15	15
Sodium	mg/L	468	453	458	454
pH	s.u.	6.57	6.49	6.81	6.62
Solids, Total Dissolved TDS @ 180 C	mg/L	6930	7000	6970	7110
Nitrogen, Ammonia as N	mg/L	73	57	48	89
Nitrogen, Nitrate+Nitrite as N	mg/L	160	197	202	180
Aluminum	mg/L	0.1	ND(0.1)	ND(0.1)	0.3
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.005	0.004	0.005	0.007
Manganese	mg/L	0.93	1.07	0.93	1.14
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0464	0.0393	0.0362	0.0492
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	ND(0.001)
A/C Balance	%	1.44	0.58	-1.93	-0.92
Anions	meq/L	106	107	110	113
Cations	meq/L	110	109	105	111
Solids, Total Dissolved - Calculated	mg/L	6600	6700	6800	7000
TDS Ratio	unitless	1.04	1.05	1.03	1.02
Gross Alpha minus Rn & U	pCi/L	1.1	0.6	2.9	5.1
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.5	0.4	1.3	1.6
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.3	1.3
Lead 210	pCi/L	0	0.3	0.03	0.3
Lead 210 precision (±)	pCi/L	0.8	0.7	0.8	0.7
Lead 210 MDC	pCi/L	1.3	1.2	1.3	1.1
Radium 226	pCi/L	0.7	0.7	0.56	0.78
Radium 226 precision (±)	pCi/L	0.2	0.2	0.17	0.19
Radium 226 MDC	pCi/L	0.2	0.2	0.18	0.17
Radium 228	pCi/L	4.4	4.2	5.1	3.5
Radium 228 precision (±)	pCi/L	1.2	1.3	1.6	1.1
Radium 228 MDC	pCi/L	1.3	1.8	1.7	1.4
Thorium 230	pCi/L	0.07	0.1	0.09	0.3
Thorium 230 precision (±)	pCi/L	0.08	0.1	0.1	0.1
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	42	71	39	55

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17070470-009
Client Sample ID: TWQ-142

Report Date: 08/16/17
Collection Date: 07/12/17 11:10
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	305	mg/L		5		A2320 B	07/17/17 21:59 / mvr
Chloride	17	mg/L		1		E300.0	07/21/17 06:44 / jcg
Sulfate	676	mg/L	D	2		E300.0	07/21/17 06:44 / jcg
Calcium	63	mg/L		1		E200.7	07/20/17 00:33 / eli-b
Magnesium	32	mg/L		1		E200.7	07/20/17 00:33 / eli-b
Potassium	4	mg/L		1		E200.7	07/20/17 00:33 / eli-b
Sodium	299	mg/L		1		E200.7	07/20/17 00:33 / eli-b
PHYSICAL PROPERTIES							
pH	7.44	s.u.	H	0.01		A4500-H B	07/17/17 15:19 / mvr
Solids, Total Dissolved TDS @ 180 C	1310	mg/L	D	20		A2540 C	07/18/17 13:37 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.54	mg/L		0.01		E353.2	07/21/17 17:01 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:36 / ljl
METALS, TOTAL							
Aluminum	0.2	mg/L		0.1		E200.8	07/26/17 22:42 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/27/17 19:35 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/21/17 06:21 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/21/17 06:21 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/21/17 06:21 / eli-b
Manganese	0.02	mg/L		0.01		E200.8	07/21/17 06:21 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/26/17 22:42 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/21/17 06:21 / eli-b
Uranium	0.0007	mg/L		0.0003		E200.8	07/21/17 06:21 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/21/17 06:21 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 23:16 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 13:34 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	1300	mg/L				A1030 E	08/11/17 14:06 / tjp
A/C Balance	-1.89	%				A1030 E	08/11/17 14:06 / tjp
Anions	19.6	meq/L				A1030 E	08/11/17 14:06 / tjp
Cations	18.9	meq/L				A1030 E	08/11/17 14:06 / tjp
TDS Ratio	1.04	unitless				A1030 E	08/11/17 14:06 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 16:32 / cng
Lead 210	0.5	pCi/L	U			E909.0	08/12/17 20:58 / dmf
Lead 210 precision (±)	0.7	pCi/L				E909.0	08/12/17 20:58 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17070470-009
Client Sample ID: TWQ-142

Report Date: 08/16/17
Collection Date: 07/12/17 11:10
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 MDC	1.2	pCi/L			E909.0		08/12/17 20:58 / dmf
Radium 226	0.7	pCi/L			E903.0		08/14/17 16:17 / trs
Radium 226 precision (±)	0.2	pCi/L			E903.0		08/14/17 16:17 / trs
Radium 226 MDC	0.2	pCi/L			E903.0		08/14/17 16:17 / trs
Radium 228	0.8	pCi/L	U		RA-05		08/09/17 14:43 / trs
Radium 228 precision (±)	1.3	pCi/L			RA-05		08/09/17 14:43 / trs
Radium 228 MDC	2.2	pCi/L			RA-05		08/09/17 14:43 / trs
Thorium 230	-0.003	pCi/L	U		E908.0		08/10/17 09:35 / cng
Thorium 230 precision (±)	0.09	pCi/L			E908.0		08/10/17 09:35 / cng
Thorium 230 MDC	0.2	pCi/L			E908.0		08/10/17 09:35 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		07/21/17 19:18 / eli-b
Bromoform	ND	ug/L		0.50	E624		07/21/17 19:18 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		07/21/17 19:18 / eli-b
Chloroform	ND	ug/L		0.50	E624		07/21/17 19:18 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	138	%REC		71-139	E624		07/21/17 19:18 / eli-b
Surr: p-Bromofluorobenzene	128	%REC	S	80-127	E624		07/21/17 19:18 / eli-b
Surr: Toluene-d8	86.0	%REC		80-123	E624		07/21/17 19:18 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-009
Client Sample ID: TWQ-142

Report Date: 11/10/17
Collection Date: 10/04/17 11:30
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	346	mg/L		5		A2320 B	10/11/17 01:43 / mvr
Chloride	17	mg/L		1		E300.0	10/11/17 17:45 / jcg
Sulfate	667	mg/L	D	2		E300.0	10/11/17 17:45 / jcg
Calcium	66	mg/L		1		E200.7	10/12/17 05:32 / eli-b
Magnesium	34	mg/L		1		E200.7	10/12/17 05:32 / eli-b
Potassium	4	mg/L		1		E200.7	10/12/17 05:32 / eli-b
Sodium	315	mg/L		1		E200.7	10/12/17 05:32 / eli-b
PHYSICAL PROPERTIES							
pH	7.40	s.u.	H	0.01		A4500-H B	10/09/17 14:48 / mvr
Solids, Total Dissolved TDS @ 180 C	1310	mg/L	D	20		A2540 C	10/09/17 14:27 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.49	mg/L		0.01		E353.2	10/09/17 15:29 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/08/17 13:34 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.7	11/01/17 04:50 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/27/17 08:56 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 21:19 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 21:19 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/27/17 08:56 / eli-b
Manganese	0.04	mg/L		0.01		E200.8	10/16/17 21:19 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 21:19 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 21:19 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	10/27/17 08:56 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 21:19 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 22:28 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/12/17 18:17 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	1300	mg/L				A1030 E	11/03/17 17:08 / tjp
A/C Balance	-0.55	%				A1030 E	11/03/17 17:08 / tjp
Anions	20.1	meq/L				A1030 E	11/03/17 17:08 / tjp
Cations	19.8	meq/L				A1030 E	11/03/17 17:08 / tjp
TDS Ratio	1.02	unitless				A1030 E	11/03/17 17:08 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.8	pCi/L				E900.1	11/01/17 17:50 / dmf
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	11/01/17 17:50 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	11/01/17 17:50 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-009
Client Sample ID: TWQ-142

Report Date: 11/10/17
Collection Date: 10/04/17 11:30
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1	pCi/L	U		E909.0		11/01/17 03:08 / meh
Lead 210 precision (±)	0.8	pCi/L			E909.0		11/01/17 03:08 / meh
Lead 210 MDC	1.3	pCi/L			E909.0		11/01/17 03:08 / meh
Radium 226	0.7	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 226 precision (±)	0.2	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 228	2.9	pCi/L			RA-05		10/19/17 19:30 / tlf
Radium 228 precision (±)	1.2	pCi/L			RA-05		10/19/17 19:30 / tlf
Radium 228 MDC	1.7	pCi/L			RA-05		10/19/17 19:30 / tlf
Thorium 230	0.07	pCi/L	U		E908.0		11/06/17 10:28 / cnh
Thorium 230 precision (±)	0.1	pCi/L			E908.0		11/06/17 10:28 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		11/06/17 10:28 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/14/17 20:45 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/14/17 20:45 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/14/17 20:45 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/14/17 20:45 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139	E624		10/14/17 20:45 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127	E624		10/14/17 20:45 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123	E624		10/14/17 20:45 / 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

United Nuclear Corporation					
Zone1					
Well ID:		TMQ-142	TMQ-142	TMQ-142	TMQ-142
Collection Date:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/16/2017	5/10/2017	2/17/2017
Analyte	Units	C17100295-009	C17070470-009	C17040232-009	C17010332-009
Bicarbonate as HCO ₃	mg/L	346	305	314	309
Chloride	mg/L	17	17	17	18
Sulfate	mg/L	667	676	710	741
Calcium	mg/L	66	63	63	72
Magnesium	mg/L	34	32	32	35
Potassium	mg/L	4	4	4	4
Sodium	mg/L	315	299	316	316
pH	s.u.	7.40	7.44	7.44	7.43
Solids, Total Dissolved TDS @ 180 C	mg/L	1310	1310	1310	1350
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	0.49	0.54	0.5	0.5
Aluminum	mg/L	ND(0.1)	0.2	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.04	0.02	0.02	0.03
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	ND(0.0003)	0.0007	ND(0.0003)	ND(0.0003)
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	-0.55	-1.89	-2.09	-1.79
Anions	meq/L	20.1	19.6	20.5	21.0
Cations	meq/L	19.8	18.9	19.6	20.3
Solids, Total Dissolved - Calculated	mg/L	1300	1300	1300	1400
TDS Ratio	unitless	1.02	1.04	1.00	1.00
Gross Alpha minus Rn & U	pCi/L	0.8	1	1.1	1.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.4	0.4	1.2	1.4
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.5	1.3	1.5
Lead 210	pCi/L	1	0.5	0.1	0.1
Lead 210 precision (±)	pCi/L	0.8	0.7	0.8	0.6
Lead 210 MDC	pCi/L	1.3	1.2	1.3	1.1
Radium 226	pCi/L	0.7	0.7	0.57	0.91
Radium 226 precision (±)	pCi/L	0.2	0.2	0.18	0.20
Radium 226 MDC	pCi/L	0.2	0.2	0.19	0.20
Radium 228	pCi/L	2.9	0.8	2.9	0.50
Radium 228 precision (±)	pCi/L	1.2	1.3	1.3	0.91
Radium 228 MDC	pCi/L	1.7	2.2	1.8	1.5
Thorium 230	pCi/L	0.07	-0.003	0.2	0.2
Thorium 230 precision (±)	pCi/L	0.1	0.09	0.2	0.2
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: Zone 1
Lab ID: C17070470-007
Client Sample ID: EPA-2

Report Date: 08/16/17
Collection Date: 07/12/17 09:40
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	287	mg/L		5		A2320 B	07/17/17 21:35 / mvr
Chloride	24	mg/L		1		E300.0	07/21/17 06:09 / jcg
Sulfate	1850	mg/L	D	4		E300.0	07/21/17 06:09 / jcg
Calcium	380	mg/L		1		E200.7	07/20/17 00:26 / eli-b
Magnesium	177	mg/L		1		E200.7	07/20/17 00:26 / eli-b
Potassium	7	mg/L		1		E200.7	07/20/17 00:26 / eli-b
Sodium	191	mg/L		1		E200.7	07/20/17 00:26 / eli-b
PHYSICAL PROPERTIES							
pH	7.00	s.u.	H	0.01		A4500-H B	07/17/17 15:13 / mvr
Solids, Total Dissolved TDS @ 180 C	3060	mg/L	D	40		A2540 C	07/17/17 17:09 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.07	mg/L		0.01		E353.2	07/21/17 16:58 / ljl
Nitrogen, Ammonia as N	0.08	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:32 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/26/17 22:37 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/27/17 19:30 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/21/17 06:16 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/21/17 06:16 / eli-b
Lead	0.004	mg/L		0.001		E200.8	07/21/17 06:16 / eli-b
Manganese	1.76	mg/L		0.01		E200.8	07/21/17 06:16 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/26/17 22:37 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/21/17 06:16 / eli-b
Uranium	0.0018	mg/L		0.0003		E200.8	07/21/17 06:16 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/21/17 06:16 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 22:52 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 13:28 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	2800	mg/L				A1030 E	08/11/17 14:05 / tjp
A/C Balance	-2.19	%				A1030 E	08/11/17 14:05 / tjp
Anions	43.9	meq/L				A1030 E	08/11/17 14:05 / tjp
Cations	42.0	meq/L				A1030 E	08/11/17 14:05 / tjp
TDS Ratio	1.10	unitless				A1030 E	08/11/17 14:05 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.4	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 16:32 / cng
Lead 210	1.6	pCi/L				E909.0	08/12/17 15:36 / dmf
Lead 210 precision (±)	0.9	pCi/L				E909.0	08/12/17 15:36 / dmf

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: C17070470-007
Client Sample ID: EPA-2

Report Date: 08/16/17
Collection Date: 07/12/17 09:40
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 MDC	1.3	pCi/L				E909.0	08/12/17 15:36 / dmf
Radium 226	1.1	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 precision (±)	0.3	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 228	3.1	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 MDC	1.8	pCi/L				RA-05	08/09/17 14:43 / trs
Thorium 230	-0.008	pCi/L	U			E908.0	08/10/17 09:35 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	08/10/17 09:35 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/10/17 09:35 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/21/17 18:16 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/21/17 18:16 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/21/17 18:16 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/21/17 18:16 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	07/21/17 18:16 / eli-b
Surr: p-Bromofluorobenzene	132	%REC	S	80-127		E624	07/21/17 18:16 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	07/21/17 18:16 / 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.
S - Spike recovery outside of advisory limits.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-007
Client Sample ID: EPA-2

Report Date: 11/10/17
Collection Date: 10/04/17 09:48
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	290	mg/L		5		A2320 B	10/11/17 01:26 / mvr
Chloride	24	mg/L		1		E300.0	10/11/17 11:20 / jcg
Sulfate	1890	mg/L	D	4		E300.0	10/11/17 11:20 / jcg
Calcium	406	mg/L		1		E200.7	10/12/17 05:25 / eli-b
Magnesium	194	mg/L		1		E200.7	10/12/17 05:25 / eli-b
Potassium	7	mg/L		1		E200.7	10/12/17 05:25 / eli-b
Sodium	207	mg/L		1		E200.7	10/12/17 05:25 / eli-b
PHYSICAL PROPERTIES							
pH	6.93	s.u.	H	0.01		A4500-H B	10/09/17 14:42 / mvr
Solids, Total Dissolved TDS @ 180 C	3200	mg/L	D	20		A2540 C	10/09/17 14:26 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.10	mg/L		0.01		E353.2	10/09/17 15:26 / ljl
Nitrogen, Ammonia as N	0.27	mg/L		0.05		A4500-NH3 G	10/08/17 13:31 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.7	11/01/17 04:42 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/27/17 08:53 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 21:14 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 21:14 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/27/17 08:53 / eli-b
Manganese	1.83	mg/L		0.01		E200.8	10/16/17 21:14 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 21:14 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 21:14 / eli-b
Uranium	0.0013	mg/L		0.0003		E200.8	10/27/17 08:53 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 21:14 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 22:04 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/12/17 18:08 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	2900	mg/L				A1030 E	11/03/17 17:07 / tjp
A/C Balance	0.56	%				A1030 E	11/03/17 17:07 / tjp
Anions	44.9	meq/L				A1030 E	11/03/17 17:07 / tjp
Cations	45.4	meq/L				A1030 E	11/03/17 17:07 / tjp
TDS Ratio	1.10	unitless				A1030 E	11/03/17 17:07 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.8	pCi/L				E900.1	11/01/17 17:50 / dmf
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	11/01/17 17:50 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	11/01/17 17:50 / dmf

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: C17100295-007
Client Sample ID: EPA-2

Report Date: 11/10/17
Collection Date: 10/04/17 09:48
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.1	pCi/L	U		E909.0		10/31/17 21:46 / meh
Lead 210 precision (±)	0.9	pCi/L			E909.0		10/31/17 21:46 / meh
Lead 210 MDC	1.3	pCi/L			E909.0		10/31/17 21:46 / meh
Radium 226	1.5	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 226 precision (±)	0.4	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 228	5.6	pCi/L			RA-05		10/19/17 19:30 / tif
Radium 228 precision (±)	1.5	pCi/L			RA-05		10/19/17 19:30 / tif
Radium 228 MDC	1.4	pCi/L			RA-05		10/19/17 19:30 / tif
Thorium 230	0.1	pCi/L	U		E908.0		11/06/17 10:28 / cnh
Thorium 230 precision (±)	0.1	pCi/L			E908.0		11/06/17 10:28 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		11/06/17 10:28 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/14/17 19:45 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/14/17 19:45 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/14/17 19:45 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/14/17 19:45 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139	E624		10/14/17 19:45 / eli-b
Surr: p-Bromofluorobenzene	102	%REC		80-127	E624		10/14/17 19:45 / eli-b
Surr: Toluene-d8	101	%REC		80-123	E624		10/14/17 19:45 / 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					
Zone1					
Well ID:		EPA-2	EPA-2	EPA-2	EPA-2
Collection Date:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/16/2017	5/10/2017	2/17/2017
Analyte	Units	C17100295-007	C17070470-007	C17040232-007	C17010332-007
Bicarbonate as HCO ₃	mg/L	290	287	310	293
Chloride	mg/L	24	24	26	25
Sulfate	mg/L	1890	1850	2000	2000
Calcium	mg/L	406	380	396	432
Magnesium	mg/L	194	177	187	190
Potassium	mg/L	7	7	7	7
Sodium	mg/L	207	191	206	206
pH	s.u.	6.93	7.00	6.91	6.96
Solids, Total Dissolved TDS @ 180 C	mg/L	3200	3060	2990	3110
Nitrogen, Ammonia as N	mg/L	0.27	0.08	0.25	0.23
Nitrogen, Nitrate+Nitrite as N	mg/L	0.10	0.07	0.1	0.1
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	0.004	0.002	ND(0.001)
Manganese	mg/L	1.83	1.76	1.54	1.74
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0013	0.0018	0.0016	0.0017
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	0.56	-2.19	-3.43	-0.94
Anions	meq/L	44.9	43.9	47.5	47.2
Cations	meq/L	45.4	42.0	44.3	46.3
Solids, Total Dissolved - Calculated	mg/L	2900	2800	3000	3000
TDS Ratio	unitless	1.10	1.10	1.00	1.03
Gross Alpha minus Rn & U	pCi/L	1.8	1.4	3.2	2.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.7	0.6	1.4	1.3
Gross Alpha minus Rn & U MDC	pCi/L	0.5	0.5	1.3	1.5
Lead 210	pCi/L	1.1	1.6	1.6	0.4
Lead 210 precision (±)	pCi/L	0.9	0.9	1	0.6
Lead 210 MDC	pCi/L	1.3	1.3	1.4	1.0
Radium 226	pCi/L	1.5	1.1	1.4	1.0
Radium 226 precision (±)	pCi/L	0.4	0.3	0.36	0.23
Radium 226 MDC	pCi/L	0.2	0.2	0.19	0.22
Radium 228	pCi/L	5.6	3.1	5.6	3.1
Radium 228 precision (±)	pCi/L	1.5	1.3	1.8	1.1
Radium 228 MDC	pCi/L	1.4	1.8	1.8	1.6
Thorium 230	pCi/L	0.1	-0.008	0.04	0.3
Thorium 230 precision (±)	pCi/L	0.1	0.08	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: Zone 1
Lab ID: C17070470-006
Client Sample ID: EPA-4

Report Date: 08/16/17
Collection Date: 07/12/17 08:40
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	131	mg/L		5		A2320 B	07/17/17 21:07 / mvr
Chloride	36	mg/L	D	2		E300.0	07/21/17 05:51 / jcg
Sulfate	2850	mg/L	D	8		E300.0	07/21/17 05:51 / jcg
Calcium	474	mg/L		1		E200.7	07/20/17 00:23 / eli-b
Magnesium	377	mg/L		1		E200.7	07/20/17 00:23 / eli-b
Potassium	8	mg/L		1		E200.7	07/20/17 00:23 / eli-b
Sodium	169	mg/L		1		E200.7	07/20/17 00:23 / eli-b
PHYSICAL PROPERTIES							
pH	7.45	s.u.	H	0.01		A4500-H B	07/17/17 15:10 / mvr
Solids, Total Dissolved TDS @ 180 C	4310	mg/L	D	40		A2540 C	07/17/17 17:09 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.21	mg/L		0.01		E353.2	07/21/17 16:57 / ljl
Nitrogen, Ammonia as N	0.39	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:28 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/26/17 22:34 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	08/10/17 10:14 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/25/17 23:25 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/26/17 22:34 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/26/17 22:34 / eli-b
Manganese	2.88	mg/L		0.01		E200.8	07/31/17 18:31 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/26/17 22:34 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/26/17 22:34 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	07/25/17 23:25 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/31/17 18:31 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 22:40 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 13:20 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4000	mg/L				A1030 E	08/11/17 14:05 / tjp
A/C Balance	-0.27	%				A1030 E	08/11/17 14:05 / tjp
Anions	62.6	meq/L				A1030 E	08/11/17 14:05 / tjp
Cations	62.2	meq/L				A1030 E	08/11/17 14:05 / tjp
TDS Ratio	1.08	unitless				A1030 E	08/11/17 14:05 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.7	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 16:32 / cng
Lead 210	0.5	pCi/L	U			E909.0	08/12/17 10:58 / dmf
Lead 210 precision (±)	0.8	pCi/L				E909.0	08/12/17 10:58 / dmf

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: C17070470-006
Client Sample ID: EPA-4

Report Date: 08/16/17
Collection Date: 07/12/17 08:40
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 MDC	1.3	pCi/L				E909.0	08/12/17 10:58 / dmf
Radium 226	0.8	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 precision (±)	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 228	1.8	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 MDC	1.7	pCi/L				RA-05	08/09/17 14:43 / trs
Thorium 230	0.03	pCi/L	U			E908.0	08/10/17 09:35 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/10/17 09:35 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/10/17 09:35 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/21/17 17:45 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/21/17 17:45 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/21/17 17:45 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/21/17 17:45 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	07/21/17 17:45 / eli-b
Surr: p-Bromofluorobenzene	127	%REC		80-127		E624	07/21/17 17:45 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	07/21/17 17:45 / 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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-006
Client Sample ID: EPA-4

Report Date: 11/10/17
Collection Date: 10/04/17 08:31
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	167	mg/L		5		A2320 B	10/11/17 01:18 / mvr
Chloride	34	mg/L	D	2		E300.0	10/11/17 11:03 / jcg
Sulfate	2860	mg/L	D	8		E300.0	10/11/17 11:03 / jcg
Calcium	484	mg/L		1		E200.7	10/12/17 05:21 / eli-b
Magnesium	379	mg/L		1		E200.7	10/12/17 05:21 / eli-b
Potassium	9	mg/L		1		E200.7	10/12/17 05:21 / eli-b
Sodium	181	mg/L		1		E200.7	10/12/17 05:21 / eli-b
PHYSICAL PROPERTIES							
pH	6.78	s.u.	H	0.01		A4500-H B	10/09/17 14:39 / mvr
Solids, Total Dissolved TDS @ 180 C	4470	mg/L	D	40		A2540 C	10/09/17 14:26 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.59	mg/L		0.01		E353.2	10/09/17 15:25 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/08/17 13:30 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.7	11/01/17 04:39 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/27/17 08:29 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 21:11 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/16/17 21:11 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/27/17 08:29 / eli-b
Manganese	3.42	mg/L		0.01		E200.8	10/16/17 21:11 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 21:11 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 21:11 / eli-b
Uranium	ND	mg/L		0.0003		E200.8	10/27/17 08:29 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 21:11 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 21:52 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/12/17 18:06 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4000	mg/L				A1030 E	11/03/17 17:07 / tjp
A/C Balance	0.10	%				A1030 E	11/03/17 17:07 / tjp
Anions	63.3	meq/L				A1030 E	11/03/17 17:07 / tjp
Cations	63.4	meq/L				A1030 E	11/03/17 17:07 / tjp
TDS Ratio	1.10	unitless				A1030 E	11/03/17 17:07 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.5	pCi/L				E900.1	11/01/17 17:50 / dmf
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	11/01/17 17:50 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/01/17 17:50 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-006
Client Sample ID: EPA-4

Report Date: 11/10/17
Collection Date: 10/04/17 08:31
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.8	pCi/L	U		E909.0		10/31/17 19:00 / meh
Lead 210 precision (±)	0.8	pCi/L			E909.0		10/31/17 19:00 / meh
Lead 210 MDC	1.3	pCi/L			E909.0		10/31/17 19:00 / meh
Radium 226	0.9	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 226 precision (±)	0.2	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 228	4.4	pCi/L			RA-05		10/19/17 19:30 / tif
Radium 228 precision (±)	1.3	pCi/L			RA-05		10/19/17 19:30 / tif
Radium 228 MDC	1.4	pCi/L			RA-05		10/19/17 19:30 / tif
Thorium 230	-0.03	pCi/L	U		E908.0		11/06/17 10:28 / cnh
Thorium 230 precision (±)	0.08	pCi/L			E908.0		11/06/17 10:28 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		11/06/17 10:28 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/14/17 19:15 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/14/17 19:15 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/14/17 19:15 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/14/17 19:15 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139	E624		10/14/17 19:15 / eli-b
Surr: p-Bromofluorobenzene	102	%REC		80-127	E624		10/14/17 19:15 / eli-b
Surr: Toluene-d8	102	%REC		80-123	E624		10/14/17 19:15 / 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



United Nuclear Corporation					
Zone1					
Well ID:		EPA-4	EPA-4	EPA-4	EPA-4
Collection Date:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/16/2017	5/10/2017	2/17/2017
Analyte	Units	C17100295-006	C17070470-006	C17040232-006	C17010332-006
Bicarbonate as HCO ₃	mg/L	167	131	162	171
Chloride	mg/L	34	36	39	39
Sulfate	mg/L	2860	2850	3210	3130
Calcium	mg/L	484	474	516	514
Magnesium	mg/L	379	377	396	385
Potassium	mg/L	9	8	9	9
Sodium	mg/L	181	169	186	180
pH	s.u.	6.78	7.45	6.89	6.86
Solids, Total Dissolved TDS @ 180 C	mg/L	4470	4310	4450	4440
Nitrogen, Ammonia as N	mg/L	ND(0.05)	0.39	0.28	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	0.59	0.21	0.5	0.9
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.42	2.88	3.29	3.07
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	ND(0.0003)	ND(0.0003)	ND(0.0003)	0.0003
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	0.10	-0.27	-2.91	-2.83
Anions	meq/L	63.3	62.6	70.7	69.2
Cations	meq/L	63.4	62.2	66.7	65.4
Solids, Total Dissolved - Calculated	mg/L	4000	4000	4500	4400
TDS Ratio	unitless	1.10	1.08	1.00	1.02
Gross Alpha minus Rn & U	pCi/L	1.5	1.7	2.0	7.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.6	0.6	1.5	2.0
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.3	1.3
Lead 210	pCi/L	0.8	0.5	0.6	0.4
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.7
Lead 210 MDC	pCi/L	1.3	1.3	1.3	1.1
Radium 226	pCi/L	0.9	0.8	1.1	0.95
Radium 226 precision (±)	pCi/L	0.2	0.2	0.29	0.19
Radium 226 MDC	pCi/L	0.2	0.2	0.19	0.16
Radium 228	pCi/L	4.4	1.8	3.2	1.8
Radium 228 precision (±)	pCi/L	1.3	1.1	1.3	0.96
Radium 228 MDC	pCi/L	1.4	1.7	1.8	1.6
Thorium 230	pCi/L	-0.03	0.03	0.09	0.2
Thorium 230 precision (±)	pCi/L	0.08	0.1	0.1	0.2
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: Zone 1
Lab ID: C17070470-005
Client Sample ID: EPA-5

Report Date: 08/16/17
Collection Date: 07/11/17 16:50
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	51	mg/L		5		A2320 B	07/18/17 13:05 / mvr
Chloride	36	mg/L	D	2		E300.0	07/21/17 05:34 / jcg
Sulfate	3000	mg/L	D	8		E300.0	07/21/17 05:34 / jcg
Calcium	435	mg/L		1		E200.7	07/20/17 00:19 / eli-b
Magnesium	445	mg/L		1		E200.7	07/20/17 00:19 / eli-b
Potassium	7	mg/L		1		E200.7	07/20/17 00:19 / eli-b
Sodium	89	mg/L		1		E200.7	07/20/17 00:19 / eli-b
PHYSICAL PROPERTIES							
pH	6.23	s.u.	H	0.01		A4500-H B	07/18/17 12:12 / mvr
Solids, Total Dissolved TDS @ 180 C	4770	mg/L	D	40		A2540 C	07/18/17 13:33 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	8.35	mg/L	D	0.05		E353.2	07/21/17 16:56 / ljl
Nitrogen, Ammonia as N	9.4	mg/L	D	0.2		A4500-NH ₃ G	07/23/17 11:57 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/26/17 22:32 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/27/17 19:25 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/21/17 06:11 / eli-b
Cobalt	0.03	mg/L		0.01		E200.8	07/21/17 06:11 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/21/17 06:11 / eli-b
Manganese	0.20	mg/L		0.01		E200.8	07/21/17 06:11 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/26/17 22:32 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/26/17 22:32 / eli-b
Uranium	0.0017	mg/L		0.0003		E200.8	07/21/17 06:11 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/21/17 06:11 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 22:28 / eli-h
Selenium-IV	0.001	mg/L		0.001		A3114 B	07/21/17 13:18 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4100	mg/L				A1030 E	08/11/17 14:04 / tjp
A/C Balance	-1.60	%				A1030 E	08/11/17 14:04 / tjp
Anions	65.1	meq/L				A1030 E	08/11/17 14:04 / tjp
Cations	63.1	meq/L				A1030 E	08/11/17 14:04 / tjp
TDS Ratio	1.17	unitless				A1030 E	08/11/17 14:04 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.8	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 16:32 / cng
Lead 210	0.1	pCi/L	U			E909.0	08/12/17 08:00 / dmf
Lead 210 precision (±)	1.1	pCi/L				E909.0	08/12/17 08:00 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17070470-005
Client Sample ID: EPA-5

Report Date: 08/16/17
Collection Date: 07/11/17 16:50
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 MDC	1.8	pCi/L				E909.0	08/12/17 08:00 / dmf
Radium 226	1.4	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 precision (±)	0.4	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 228	0.8	pCi/L	U			RA-05	08/09/17 14:43 / trs
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 MDC	1.8	pCi/L				RA-05	08/09/17 14:43 / trs
Thorium 230	0.07	pCi/L	U			E908.0	08/10/17 09:35 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/10/17 09:35 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/10/17 09:35 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/21/17 17:15 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/21/17 17:15 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/21/17 17:15 / eli-b
Chloroform	0.59	ug/L		0.50		E624	07/21/17 17:15 / eli-b
Trihalomethanes, Total	0.59	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	07/21/17 17:15 / eli-b
Surr: p-Bromofluorobenzene	130	%REC	S	80-127		E624	07/21/17 17:15 / eli-b
Surr: Toluene-d8	95.0	%REC		80-123		E624	07/21/17 17:15 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-005
Client Sample ID: EPA-5

Report Date: 11/10/17
Collection Date: 10/03/17 16:42
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	48	mg/L		5		A2320 B	10/11/17 01:10 / mvr
Chloride	36	mg/L	D	2		E300.0	10/11/17 10:46 / jcg
Sulfate	3010	mg/L	D	8		E300.0	10/11/17 10:46 / jcg
Calcium	457	mg/L		1		E200.7	10/12/17 05:17 / eli-b
Magnesium	465	mg/L		1		E200.7	10/12/17 05:17 / eli-b
Potassium	7	mg/L		1		E200.7	10/12/17 05:17 / eli-b
Sodium	105	mg/L		1		E200.7	10/12/17 05:17 / eli-b
PHYSICAL PROPERTIES							
pH	6.01	s.u.	H	0.01		A4500-H B	10/09/17 14:36 / mvr
Solids, Total Dissolved TDS @ 180 C	4620	mg/L	D	40		A2540 C	10/09/17 14:26 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	8.05	mg/L	D	0.05		E353.2	10/09/17 15:24 / ljl
Nitrogen, Ammonia as N	8.8	mg/L	D	0.5		A4500-NH ₃ G	10/08/17 13:29 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.7	11/01/17 04:35 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/27/17 08:26 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 21:00 / eli-b
Cobalt	0.03	mg/L		0.01		E200.8	10/16/17 21:00 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/27/17 08:26 / eli-b
Manganese	0.17	mg/L		0.01		E200.8	10/16/17 21:00 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 21:00 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/16/17 21:00 / eli-b
Uranium	0.0019	mg/L		0.0003		E200.8	10/16/17 21:00 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 21:00 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 21:40 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/12/17 18:05 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4200	mg/L				A1030 E	11/03/17 17:06 / tjp
A/C Balance	0.93	%				A1030 E	11/03/17 17:06 / tjp
Anions	65.3	meq/L				A1030 E	11/03/17 17:06 / tjp
Cations	66.5	meq/L				A1030 E	11/03/17 17:06 / tjp
TDS Ratio	1.11	unitless				A1030 E	11/03/17 17:06 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	2.1	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/01/17 15:40 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-005
Client Sample ID: EPA-5

Report Date: 11/10/17
Collection Date: 10/03/17 16:42
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.5	pCi/L	U			E909.0	10/31/17 16:10 / meh
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/31/17 16:10 / meh
Lead 210 MDC	1.3	pCi/L				E909.0	10/31/17 16:10 / meh
Radium 226	1.2	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 226 precision (±)	0.3	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/24/17 13:01 / arh
Radium 228	4.8	pCi/L				RA-05	10/19/17 19:30 / tlf
Radium 228 precision (±)	1.3	pCi/L				RA-05	10/19/17 19:30 / tlf
Radium 228 MDC	1.4	pCi/L				RA-05	10/19/17 19:30 / tlf
Thorium 230	0.0007	pCi/L	U			E908.0	11/06/17 10:28 / cnh
Thorium 230 precision (±)	0.06	pCi/L				E908.0	11/06/17 10:28 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	11/06/17 10:28 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/15/17 19:37 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/15/17 19:37 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/15/17 19:37 / eli-b
Chloroform	0.54	ug/L		0.50		E624	10/15/17 19:37 / eli-b
Trihalomethanes, Total	0.54	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	10/15/17 19:37 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	10/15/17 19:37 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	10/15/17 19:37 / 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



United Nuclear Corporation					
Zone1					
Well ID:		EPA-5	EPA-5	EPA-5	EPA-5
Collection Date:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/16/2017	5/10/2017	2/17/2017
Analyte	Units	C17100295-005	C17070470-005	C17040232-005	C17010332-005
Bicarbonate as HCO ₃	mg/L	48	51	74	79
Calcium	mg/L	457	435	454	486
Chloride	mg/L	36	36	42	40
Magnesium	mg/L	465	445	472	473
Potassium	mg/L	7	7	7	7
Sodium	mg/L	105	89	104	103
Sulfate	mg/L	3010	3000	3370	3270
pH	s.u.	6.01	6.23	6.19	6.26
Solids, Total Dissolved TDS @ 180 C	mg/L	4620	4770	4630	4650
Nitrogen, Ammonia as N	mg/L	8.8	9.4	1.00	0.9
Nitrogen, Nitrate+Nitrite as N	mg/L	8.05	8.35	9.8	8.9
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.03	0.03	0.03	0.03
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.001
Manganese	mg/L	0.17	0.20	0.21	0.27
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0019	0.0017	0.0007	0.0010
Vanadium	mg/L	ND(0.1)	ND(0.1)	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)	0.001	ND(0.001)	ND(0.001)
A/C Balance	%	0.93	-1.60	-4.92	-2.29
Anions	meq/L	65.3	65.1	73.1	71.0
Cations	meq/L	66.5	63.1	66.3	67.9
Solids, Total Dissolved - Calculated	mg/L	4200	4100	4500	4500
TDS Ratio	unitless	1.11	1.17	1.02	1.04
Gross Alpha minus Rn & U	pCi/L	2.1	1.8	2.6	5.0
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.7	0.6	1.3	1.6
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.3	1.3
Lead 210	pCi/L	0.5	0.1	0.3	1.3
Lead 210 precision (±)	pCi/L	0.8	1.1	0.8	0.8
Lead 210 MDC	pCi/L	1.3	1.8	1.3	1.1
Radium 226	pCi/L	1.2	1.4	1.3	1.4
Radium 226 precision (±)	pCi/L	0.3	0.4	0.34	0.33
Radium 226 MDC	pCi/L	0.2	0.2	0.20	0.16
Radium 228	pCi/L	4.8	0.8	4.3	1.8
Radium 228 precision (±)	pCi/L	1.3	1.1	1.4	0.99
Radium 228 MDC	pCi/L	1.4	1.8	1.9	1.6
Thorium 230	pCi/L	0.0007	0.07	0.06	0.3
Thorium 230 precision (±)	pCi/L	0.06	0.1	0.1	0.2
Thorium 230 MDC	pCi/L	0.1	0.1	0.2	0.2
Trihalomethanes, Total	ug/L	0.54	0.59	ND(0.50)	0.53

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17070470-004
Client Sample ID: EPA-7

Report Date: 08/16/17
Collection Date: 07/11/17 16:05
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	628	mg/L		5		A2320 B	07/17/17 20:59 / mvr
Chloride	492	mg/L	D	5		E300.0	07/21/17 05:17 / jcg
Sulfate	4040	mg/L	D	20		E300.0	07/21/17 05:17 / jcg
Calcium	495	mg/L		1		E200.7	07/20/17 00:05 / eli-b
Magnesium	865	mg/L		1		E200.7	07/20/17 00:05 / eli-b
Potassium	10	mg/L		1		E200.7	07/20/17 00:05 / eli-b
Sodium	373	mg/L	D	2		E200.7	07/20/17 00:05 / eli-b
PHYSICAL PROPERTIES							
pH	6.40	s.u.	H	0.01		A4500-H B	07/17/17 15:07 / mvr
Solids, Total Dissolved TDS @ 180 C	7320	mg/L	D	100		A2540 C	07/17/17 17:09 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	122	mg/L	D	0.5		E353.2	07/21/17 16:55 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	07/23/17 11:26 / ljl
METALS, TOTAL							
Aluminum	0.2	mg/L		0.1		E200.8	07/26/17 22:21 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/26/17 22:21 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/21/17 06:08 / eli-b
Cobalt	0.07	mg/L		0.01		E200.8	07/21/17 06:08 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/21/17 06:08 / eli-b
Manganese	1.80	mg/L		0.01		E200.8	07/21/17 06:08 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/26/17 22:21 / eli-b
Nickel	0.10	mg/L		0.05		E200.8	07/21/17 06:08 / eli-b
Uranium	0.0021	mg/L		0.0003		E200.8	07/21/17 06:08 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/21/17 06:08 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/28/17 22:16 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/21/17 13:17 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	7100	mg/L				A1030 E	08/11/17 14:04 / tjp
A/C Balance	-2.00	%				A1030 E	08/11/17 14:04 / tjp
Anions	117	meq/L				A1030 E	08/11/17 14:04 / tjp
Cations	112	meq/L				A1030 E	08/11/17 14:04 / tjp
TDS Ratio	1.03	unitless				A1030 E	08/11/17 14:04 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	0.6	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U Precision (±)	0.4	pCi/L				E900.1	08/09/17 16:32 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/09/17 16:32 / cng
Lead 210	0.9	pCi/L	U			E909.0	08/12/17 05:12 / dmf
Lead 210 precision (±)	1.1	pCi/L				E909.0	08/12/17 05:12 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17070470-004
Client Sample ID: EPA-7

Report Date: 08/16/17
Collection Date: 07/11/17 16:05
Date Received: 07/14/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 MDC	1.8	pCi/L				E909.0	08/12/17 05:12 / dmf
Radium 226	0.4	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 precision (±)	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/14/17 14:12 / trs
Radium 228	0.6	pCi/L	U			RA-05	08/09/17 14:43 / trs
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/09/17 14:43 / trs
Radium 228 MDC	1.8	pCi/L				RA-05	08/09/17 14:43 / trs
Thorium 230	0.04	pCi/L	U			E908.0	08/10/17 09:35 / cng
Thorium 230 precision (±)	0.09	pCi/L				E908.0	08/10/17 09:35 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/10/17 09:35 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/21/17 16:44 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/21/17 16:44 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/21/17 16:44 / eli-b
Chloroform	1.2	ug/L		0.50		E624	07/21/17 16:44 / eli-b
Trihalomethanes, Total	1.2	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	07/21/17 16:44 / eli-b
Surr: p-Bromofluorobenzene	127	%REC		80-127		E624	07/21/17 16:44 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	07/21/17 16:44 / 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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-004
Client Sample ID: EPA-7

Report Date: 11/10/17
Collection Date: 10/03/17 16:01
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	642	mg/L		5		A2320 B	10/11/17 01:03 / mvr
Chloride	233	mg/L	D	5		E300.0	10/11/17 10:29 / jcg
Sulfate	4010	mg/L	D	20		E300.0	10/11/17 10:29 / jcg
Calcium	496	mg/L		1		E200.7	10/12/17 05:14 / eli-b
Magnesium	871	mg/L		1		E200.7	10/12/17 05:14 / eli-b
Potassium	8	mg/L		1		E200.7	10/12/17 05:14 / eli-b
Sodium	380	mg/L	D	2		E200.7	10/12/17 05:14 / eli-b
PHYSICAL PROPERTIES							
pH	6.34	s.u.	H	0.01		A4500-H B	10/09/17 14:34 / mvr
Solids, Total Dissolved TDS @ 180 C	7300	mg/L	D	100		A2540 C	10/09/17 14:25 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	116	mg/L	D	0.5		E353.2	10/09/17 15:23 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	10/08/17 13:28 / ljl
METALS, TOTAL							
Aluminum	0.7	mg/L		0.1		E200.7	11/01/17 04:32 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/27/17 08:22 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/16/17 20:58 / eli-b
Cobalt	0.07	mg/L		0.01		E200.8	10/16/17 20:58 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/16/17 20:58 / eli-b
Manganese	1.80	mg/L		0.01		E200.8	10/16/17 20:58 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/16/17 20:58 / eli-b
Nickel	0.10	mg/L		0.05		E200.8	10/16/17 20:58 / eli-b
Uranium	0.0019	mg/L		0.0003		E200.8	10/16/17 20:58 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/16/17 20:58 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/16/17 21:04 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/12/17 18:03 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6800	mg/L				A1030 E	11/03/17 17:06 / tjp
A/C Balance	2.04	%				A1030 E	11/03/17 17:06 / tjp
Anions	109	meq/L				A1030 E	11/03/17 17:06 / tjp
Cations	113	meq/L				A1030 E	11/03/17 17:06 / tjp
TDS Ratio	1.07	unitless				A1030 E	11/03/17 17:06 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	1.8	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U Precision (±)	0.6	pCi/L				E900.1	11/01/17 15:40 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/01/17 15:40 / dmf

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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 1
Lab ID: C17100295-004
Client Sample ID: EPA-7

Report Date: 11/10/17
Collection Date: 10/03/17 16:01
Date Received: 10/06/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.2	pCi/L	U		E909.0		10/31/17 13:15 / meh
Lead 210 precision (±)	0.8	pCi/L			E909.0		10/31/17 13:15 / meh
Lead 210 MDC	1.3	pCi/L			E909.0		10/31/17 13:15 / meh
Radium 226	0.5	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 226 precision (±)	0.2	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/24/17 13:01 / arh
Radium 228	3.3	pCi/L			RA-05		10/19/17 19:30 / tlf
Radium 228 precision (±)	1.0	pCi/L			RA-05		10/19/17 19:30 / tlf
Radium 228 MDC	1.4	pCi/L			RA-05		10/19/17 19:30 / tlf
Thorium 230	0.2	pCi/L			E908.0		10/30/17 09:41 / cnh
Thorium 230 precision (±)	0.09	pCi/L			E908.0		10/30/17 09:41 / cnh
Thorium 230 MDC	0.1	pCi/L			E908.0		10/30/17 09:41 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/15/17 19:08 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/15/17 19:08 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/15/17 19:08 / eli-b
Chloroform	0.95	ug/L		0.50	E624		10/15/17 19:08 / eli-b
Trihalomethanes, Total	0.95	ug/L		0.50	E624		11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139	E624		10/15/17 19:08 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127	E624		10/15/17 19:08 / eli-b
Surr: Toluene-d8	100	%REC		80-123	E624		10/15/17 19:08 / 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					
Zone1					
Well ID:		EPA-7	EPA-7	EPA-7	EPA-7
Collection Date:		10/3/2017	7/11/2017	4/4/2017	1/10/2017
Receive Date:		10/6/2017	7/14/2017	4/7/2017	1/13/2017
Report Date:		11/10/2017	8/16/2017	5/10/2017	2/17/2017
Analyte	Units	C17100295-004	C17070470-004	C17040232-004	C17010332-004
Bicarbonate as HCO ₃	mg/L	642	628	645	654
Chloride	mg/L	233	492	257	247
Sulfate	mg/L	4010	4040	4520	4350
Calcium	mg/L	496	495	504	522
Magnesium	mg/L	871	865	898	869
Potassium	mg/L	8	10	9	9
Sodium	mg/L	380	373	390	379
pH	s.u.	6.34	6.40	6.37	6.46
Solids, Total Dissolved TDS @ 180 C	mg/L	7300	7320	7420	7540
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	116	122	132	137
Aluminum	mg/L	0.7	0.2	0.2	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.07	0.07	0.05	0.05
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	1.80	1.80	1.44	1.47
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.10	0.10	0.07	0.07
Uranium	mg/L	0.0019	0.0021	0.0015	0.0018
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	2.04	-2.00	-2.17	-1.19
Anions	meq/L	109	117	121	117
Cations	meq/L	113	112	116	114
Solids, Total Dissolved - Calculated	mg/L	6800	7100	7500	7200
TDS Ratio	unitless	1.07	1.03	0.99	1.04
Gross Alpha minus Rn & U	pCi/L	1.8	0.6	1.4	5.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.6	0.4	1.2	1.7
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.3	1.3
Lead 210	pCi/L	0.2	0.9	-0.3	-0.2
Lead 210 precision (±)	pCi/L	0.8	1.1	0.7	0.6
Lead 210 MDC	pCi/L	1.3	1.8	1.2	1.1
Radium 226	pCi/L	0.5	0.4	0.52	0.62
Radium 226 precision (±)	pCi/L	0.2	0.2	0.15	0.17
Radium 226 MDC	pCi/L	0.2	0.2	0.18	0.17
Radium 228	pCi/L	3.3	0.6	1.2	2.2
Radium 228 precision (±)	pCi/L	1.0	1.1	1.0	1.0
Radium 228 MDC	pCi/L	1.4	1.8	1.8	1.7
Thorium 230	pCi/L	0.2	0.04	0.2	0.02
Thorium 230 precision (±)	pCi/L	0.09	0.09	0.1	0.09
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.2
Trihalomethanes, Total	ug/L	0.95	1.2	1.3	1.5

QUARTERLY SAMPLING
SEMI-ANNUAL GROUND WATER MONITORING REPORT
JULY TO DECEMBER OF 2017

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**

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070656-002
Client Sample ID: 517

Report Date: 08/30/17
Collection Date: 07/17/17 09:32
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	535	mg/L	H	5		A2310 B	08/03/17 14:24 / jcg
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	07/21/17 16:13 / mvr
Chloride	35	mg/L	D	2		E300.0	08/03/17 17:59 / jcg
Sulfate	4220	mg/L	D	8		E300.0	08/03/17 17:59 / jcg
Calcium	451	mg/L		1		E200.7	08/02/17 13:02 / eli-b
Magnesium	560	mg/L		1		E200.7	08/02/17 13:02 / eli-b
Potassium	13	mg/L		1		E200.7	08/02/17 13:02 / eli-b
Sodium	147	mg/L	D	2		E200.7	08/02/17 13:02 / eli-b
PHYSICAL PROPERTIES							
pH	2.95	s.u.	H	0.01		A4500-H B	07/21/17 10:34 / mvr
Solids, Total Dissolved TDS @ 180 C	5790	mg/L	D	40		A2540 C	07/21/17 12:06 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	07/28/17 16:22 / ljl
Nitrogen, Ammonia as N	8.7	mg/L	D	0.5		A4500-NH ₃ G	07/31/17 13:18 / ljl
METALS, TOTAL							
Aluminum	20.2	mg/L		0.1		E200.8	07/27/17 22:29 / eli-b
Beryllium	0.018	mg/L		0.001		E200.8	07/27/17 03:07 / eli-b
Cadmium	0.007	mg/L		0.005		E200.8	07/27/17 03:07 / eli-b
Cobalt	0.97	mg/L		0.01		E200.8	07/27/17 03:07 / eli-b
Lead	0.012	mg/L		0.001		E200.8	07/27/17 03:07 / eli-b
Manganese	14.4	mg/L		0.01		E200.8	07/27/17 03:07 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/27/17 03:07 / eli-b
Nickel	0.97	mg/L		0.05		E200.8	07/27/17 03:07 / eli-b
Uranium	0.377	mg/L		0.0003		E200.8	07/27/17 03:07 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/27/17 03:07 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/29/17 02:29 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:30 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5400	mg/L				A1030 E	08/04/17 17:24 / tla
A/C Balance	-1.52	%				A1030 E	08/04/17 17:24 / tla
Anions	89.2	meq/L				A1030 E	08/04/17 17:24 / tla
Cations	86.6	meq/L				A1030 E	08/04/17 17:24 / tla
TDS Ratio	1.07	unitless				A1030 E	08/04/17 17:24 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	17.7	pCi/L				E900.1	08/11/17 08:16 / cng
Gross Alpha minus Rn & U Precision (±)	3.6	pCi/L				E900.1	08/11/17 08:16 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/11/17 08:16 / cng
Lead 210	1.9	pCi/L				E909.0	08/13/17 08:06 / dmf

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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070656-002
Client Sample ID: 517

Report Date: 08/30/17
Collection Date: 07/17/17 09:32
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 precision (±)	1	pCi/L				E909.0	08/13/17 08:06 / dmf
Lead 210 MDC	1.3	pCi/L				E909.0	08/13/17 08:06 / dmf
Radium 226	5.5	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 226 precision (±)	1.1	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 228	7.4	pCi/L				RA-05	08/10/17 13:29 / plj
Radium 228 precision (±)	2.0	pCi/L				RA-05	08/10/17 13:29 / plj
Radium 228 MDC	2.0	pCi/L				RA-05	08/10/17 13:29 / plj
Thorium 230	23.4	pCi/L				E908.0	08/15/17 17:07 / cng
Thorium 230 precision (±)	4.4	pCi/L				E908.0	08/15/17 17:07 / cng
Thorium 230 MDC	0.3	pCi/L				E908.0	08/15/17 17:07 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/25/17 12:54 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/25/17 12:54 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/25/17 12:54 / eli-b
Chloroform	3.7	ug/L		0.50		E624	07/25/17 12:54 / eli-b
Trihalomethanes, Total	3.7	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	105	%REC		71-139		E624	07/25/17 12:54 / eli-b
Surr: p-Bromofluorobenzene	125	%REC		80-127		E624	07/25/17 12:54 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	07/25/17 12:54 / 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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-002
Client Sample ID: 517

Report Date: 11/16/17
Collection Date: 10/09/17 09:25
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	530	mg/L		5		A2310 B	10/15/17 20:27 / mvr
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	10/13/17 12:51 / mvr
Chloride	32	mg/L	DH	2		E300.0	11/08/17 20:05 / jcg
Sulfate	4130	mg/L	DH	8		E300.0	11/08/17 20:05 / jcg
Calcium	437	mg/L		1		E200.7	10/19/17 15:39 / eli-b
Magnesium	550	mg/L		1		E200.7	10/19/17 15:39 / eli-b
Potassium	13	mg/L		1		E200.7	10/19/17 15:39 / eli-b
Sodium	140	mg/L	D	3		E200.7	10/19/17 15:39 / eli-b
PHYSICAL PROPERTIES							
pH	2.87	s.u.	H	0.01		A4500-H B	10/13/17 10:57 / mvr
Solids, Total Dissolved TDS @ 180 C	5670	mg/L	D	100		A2540 C	10/15/17 21:14 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.01	mg/L		0.01		E353.2	10/19/17 11:43 / ljl
Nitrogen, Ammonia as N	8.5	mg/L	D	0.5		A4500-NH3 G	10/14/17 12:15 / ljl
METALS, TOTAL							
Aluminum	18.4	mg/L		0.1		E200.7	10/27/17 18:05 / eli-b
Beryllium	0.017	mg/L		0.001		E200.8	10/25/17 07:46 / eli-b
Cadmium	0.006	mg/L		0.005		E200.8	10/25/17 07:46 / eli-b
Cobalt	0.85	mg/L		0.01		E200.8	10/25/17 07:46 / eli-b
Lead	0.011	mg/L		0.001		E200.8	10/25/17 07:46 / eli-b
Manganese	12.8	mg/L		0.01		E200.7	10/27/17 18:05 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/25/17 07:46 / eli-b
Nickel	0.88	mg/L		0.05		E200.8	10/25/17 07:46 / eli-b
Uranium	0.394	mg/L		0.0003		E200.8	10/27/17 03:56 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/25/17 07:46 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/17 16:12 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 12:38 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5300	mg/L				A1030 E	11/15/17 11:03 / tjp
A/C Balance	-1.54	%				A1030 E	11/15/17 11:03 / tjp
Anions	87.3	meq/L				A1030 E	11/15/17 11:03 / tjp
Cations	84.6	meq/L				A1030 E	11/15/17 11:03 / tjp
TDS Ratio	1.06	unitless				A1030 E	11/15/17 11:03 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	11.5	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U Precision (±)	2.5	pCi/L				E900.1	11/07/17 15:27 / dmf

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.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-002
Client Sample ID: 517

Report Date: 11/16/17
Collection Date: 10/09/17 09:25
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 15:27 / dmf
Lead 210	0.2	pCi/L	U			E909.0	10/19/17 19:34 / meh
Lead 210 precision (±)	1.2	pCi/L				E909.0	10/19/17 19:34 / meh
Lead 210 MDC	1.9	pCi/L				E909.0	10/19/17 19:34 / meh
Radium 226	5.8	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 precision (±)	1.2	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 228	7.5	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 precision (±)	1.6	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 MDC	1.1	pCi/L				RA-05	10/25/17 17:40 / trs
Thorium 230	15.2	pCi/L				E908.0	11/06/17 10:22 / cnh
Thorium 230 precision (±)	2.9	pCi/L				E908.0	11/06/17 10:22 / cnh
Thorium 230 MDC	0.7	pCi/L				E908.0	11/06/17 10:22 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/17 14:04 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/17 14:04 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/17 14:04 / eli-b
Chloroform	4.0	ug/L		0.50		E624	10/19/17 14:04 / eli-b
Trihalomethanes, Total	4.0	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	10/19/17 14:04 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	10/19/17 14:04 / eli-b
Surr: Toluene-d8	98.0	%REC		80-123		E624	10/19/17 14:04 / 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

United Nuclear Corporation					
Zone 3					
Well ID:		517	517	517	517
Collection Date:		10/9/2017	7/17/2017	4/10/2017	1/16/2017
Receive Date:		10/12/2017	7/20/2017	4/13/2017	1/20/2017
Report Date:		11/16/2017	8/30/2017	5/12/2017	2/28/2017
Analyte	Units	C17100456-002	C17070656-002	C17040422-002	C17010541-002
Acidity, Total as CaCO ₃	mg/L	530	535	509	589
Bicarbonate as HCO ₃	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	32	35	35	36
Sulfate	mg/L	4130	4220	4310	4680
Calcium	mg/L	437	451	434	437
Magnesium	mg/L	550	560	528	556
Potassium	mg/L	13	13	13	13
Sodium	mg/L	140	147	144	146
pH	s.u.	2.87	2.95	2.99	3.01
Solids, Total Dissolved TDS @ 180 C	mg/L	5670	5790	5870	5970
Nitrogen, Ammonia as N	mg/L	8.5	8.7	7.9	8
Nitrogen, Nitrate+Nitrite as N	mg/L	0.01	ND(0.01)	ND(0.01)	0.1
Aluminum	mg/L	18.4	20.2	16.5	18.3
Beryllium	mg/L	0.017	0.018	0.016	0.017
Cadmium	mg/L	0.006	0.007	0.006	0.006
Cobalt	mg/L	0.85	0.97	0.83	0.77
Lead	mg/L	0.011	0.012	0.013	0.015
Manganese	mg/L	12.8	14.4	12.5	11.5
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.88	0.97	0.90	0.81
Uranium	mg/L	0.394	0.377	0.317	0.351
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	-1.54	-1.52	-4.93	-2.57
Anions	meq/L	87.3	89.2	90.9	99.1
Cations	meq/L	84.6	86.6	82.4	94.1
Solids, Total Dissolved - Calculated	mg/L	5300	5400	5500	5900
TDS Ratio	unitless	1.06	1.07	1.07	1.01
Gross Alpha minus Rn & U	pCi/L	11.5	17.7	27.2	33.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.5	3.6	5.7	7.0
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.2	1.4
Lead 210	pCi/L	0.2	1.9	0.8	1.9
Lead 210 precision (±)	pCi/L	1.2	1	0.8	0.9
Lead 210 MDC	pCi/L	1.9	1.3	1.3	1.2
Radium 226	pCi/L	5.8	5.5	6.9	8.3
Radium 226 precision (±)	pCi/L	1.2	1.1	1.4	1.7
Radium 226 MDC	pCi/L	0.2	0.2	0.18	0.18
Radium 228	pCi/L	7.5	7.4	7.4	6.3
Radium 228 precision (±)	pCi/L	1.6	2.0	1.9	1.6
Radium 228 MDC	pCi/L	1.1	2.0	2.1	1.6
Thorium 230	pCi/L	15.2	23.4	8.1	9.0
Thorium 230 precision (±)	pCi/L	2.9	4.4	1.5	1.7
Thorium 230 MDC	pCi/L	0.7	0.3	0.4	0.4
Trihalomethanes, Total	ug/L	4.0	3.7	5.9	3.9

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070708-001
Client Sample ID: EPA-14

Report Date: 09/20/17
Collection Date: 07/18/17 08:38
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	07/27/17 16:29 / jcg
Chloride	56	mg/L	D	2		E300.0	07/28/17 11:40 / jcg
Sulfate	2990	mg/L	D	8		E300.0	07/28/17 11:40 / jcg
Calcium	486	mg/L		1		E200.7	07/28/17 16:08 / eli-b
Magnesium	365	mg/L		1		E200.7	07/28/17 16:08 / eli-b
Potassium	11	mg/L		1		E200.7	07/27/17 21:49 / eli-b
Sodium	167	mg/L		1		E200.7	07/27/17 21:49 / eli-b
PHYSICAL PROPERTIES							
pH	4.83	s.u.	H	0.01		A4500-H B	07/24/17 12:35 / mvr
Solids, Total Dissolved TDS @ 180 C	4440	mg/L	D	40		A2540 C	07/24/17 12:01 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.07	mg/L		0.01		E353.2	07/28/17 17:19 / ljl
Nitrogen, Ammonia as N	24	mg/L	D	1		A4500-NH3 G	07/31/17 13:24 / ljl
METALS, TOTAL							
Aluminum	26.8	mg/L		0.1		E200.7	08/02/17 14:39 / eli-b
Beryllium	0.032	mg/L		0.001		E200.8	08/01/17 03:36 / eli-b
Cadmium	0.006	mg/L		0.005		E200.8	07/27/17 23:16 / eli-b
Cobalt	0.48	mg/L		0.01		E200.8	07/27/17 23:16 / eli-b
Lead	0.014	mg/L		0.001		E200.8	07/27/17 23:16 / eli-b
Manganese	10.1	mg/L		0.01		E200.8	07/27/17 23:16 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/27/17 23:16 / eli-b
Nickel	0.48	mg/L		0.05		E200.8	07/27/17 23:16 / eli-b
Uranium	0.134	mg/L		0.0003		E200.8	07/27/17 23:16 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/27/17 23:16 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/29/17 00:16 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:08 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4100	mg/L				A1030 E	08/03/17 15:50 / tla
A/C Balance	-0.63	%				A1030 E	08/03/17 15:50 / tla
Anions	64.3	meq/L				A1030 E	08/03/17 15:50 / tla
Cations	63.5	meq/L				A1030 E	08/03/17 15:50 / tla
TDS Ratio	1.08	unitless				A1030 E	08/03/17 15:50 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	7.7	pCi/L				E900.1	08/14/17 16:55 / dmf
Gross Alpha minus Rn & U Precision (±)	1.7	pCi/L				E900.1	08/14/17 16:55 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/14/17 16:55 / dmf

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: C17070708-001
Client Sample ID: EPA-14

Report Date: 09/20/17
Collection Date: 07/18/17 08:38
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	2.2	pCi/L				E909.0	08/25/17 10:40 / meh
Lead 210 precision (±)	1.1	pCi/L				E909.0	08/25/17 10:40 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	08/25/17 10:40 / meh
Radium 226	7.0	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 226 precision (±)	1.4	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 226 MDC	0.2	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 228	12.1	pCi/L				RA-05	08/16/17 15:38 / plj
Radium 228 precision (±)	2.7	pCi/L				RA-05	08/16/17 15:38 / plj
Radium 228 MDC	1.6	pCi/L				RA-05	08/16/17 15:38 / plj
Thorium 230	0.9	pCi/L				E908.0	08/18/17 09:15 / cng
Thorium 230 precision (±)	0.6	pCi/L				E908.0	08/18/17 09:15 / cng
Thorium 230 MDC	0.7	pCi/L				E908.0	08/18/17 09:15 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/17 14:31 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/26/17 14:31 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/17 14:31 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/26/17 14:31 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	07/26/17 14:31 / eli-b
Surr: p-Bromofluorobenzene	128	%REC	S	80-127		E624	07/26/17 14:31 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	07/26/17 14:31 / 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.
S - Spike recovery outside of advisory limits.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-009
Client Sample ID: EPA-14

Report Date: 11/16/17
Collection Date: 10/09/17 16:30
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	5	mg/L	BH	5		A2320 B	11/10/17 14:04 / mvr
Chloride	51	mg/L	DH	2		E300.0	11/08/17 21:14 / jcg
Sulfate	2990	mg/L	DH	8		E300.0	11/08/17 21:14 / jcg
Calcium	479	mg/L		1		E200.7	10/19/17 16:21 / eli-b
Magnesium	333	mg/L		1		E200.7	10/19/17 16:21 / eli-b
Potassium	10	mg/L		1		E200.7	10/19/17 16:21 / eli-b
Sodium	152	mg/L	D	2		E200.7	10/19/17 16:21 / eli-b
PHYSICAL PROPERTIES							
pH	4.97	s.u.	H	0.01		A4500-H B	10/13/17 11:23 / mvr
Solids, Total Dissolved TDS @ 180 C	4340	mg/L	D	40		A2540 C	10/15/17 21:16 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.14	mg/L		0.01		E353.2	10/19/17 11:52 / ljl
Nitrogen, Ammonia as N	22	mg/L	D	2		A4500-NH3 G	10/14/17 12:28 / ljl
METALS, TOTAL							
Aluminum	8.7	mg/L		0.1		E200.7	10/27/17 18:37 / eli-b
Beryllium	0.011	mg/L		0.001		E200.8	10/25/17 08:13 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/25/17 08:13 / eli-b
Cobalt	0.40	mg/L		0.01		E200.8	10/25/17 08:13 / eli-b
Lead	0.005	mg/L		0.001		E200.8	10/25/17 08:13 / eli-b
Manganese	7.47	mg/L		0.01		E200.7	10/27/17 18:37 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/25/17 08:13 / eli-b
Nickel	0.38	mg/L		0.05		E200.8	10/25/17 08:13 / eli-b
Uranium	0.0507	mg/L		0.0003		E200.8	10/27/17 04:14 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/25/17 08:13 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/17 17:48 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 12:49 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4000	mg/L				A1030 E	11/15/17 11:04 / tjp
A/C Balance	-3.43	%				A1030 E	11/15/17 11:04 / tjp
Anions	64.0	meq/L				A1030 E	11/15/17 11:04 / tjp
Cations	59.7	meq/L				A1030 E	11/15/17 11:04 / tjp
TDS Ratio	1.08	unitless				A1030 E	11/15/17 11:04 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	6.3	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U Precision (±)	1.5	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 15:27 / dmf

Report Definitions:
 RL - Analyte reporting limit.
 QCL - Quality control limit.
 MDC - Minimum detectable concentration
 D - RL increased due to sample matrix.
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.
 B - The analyte was detected in the method blank.
 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: C17100456-009
Client Sample ID: EPA-14

Report Date: 11/16/17
Collection Date: 10/09/17 16:30
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	-4	pCi/L	U			E909.0	10/20/17 13:15 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	10/20/17 13:15 / meh
Lead 210 MDC	1.7	pCi/L				E909.0	10/20/17 13:15 / meh
Radium 226	5.8	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 precision (±)	1.2	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 228	12.0	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 precision (±)	2.5	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 MDC	1.1	pCi/L				RA-05	10/25/17 17:40 / trs
Thorium 230	0.3	pCi/L	U			E908.0	11/06/17 16:36 / cnh
Thorium 230 precision (±)	0.5	pCi/L				E908.0	11/06/17 16:36 / cnh
Thorium 230 MDC	0.9	pCi/L				E908.0	11/06/17 16:36 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/17 04:41 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/17 04:41 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/17 04:41 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/17 04:41 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	82.0	%REC		71-139		E624	10/19/17 04:41 / eli-b
Surr: p-Bromofluorobenzene	105	%REC		80-127		E624	10/19/17 04:41 / eli-b
Surr: Toluene-d8	105	%REC		80-123		E624	10/19/17 04:41 / 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:		10/9/2017	7/17/2017	4/10/2017	1/16/2017
Receive Date:		10/12/2017	7/20/2017	4/13/2017	1/20/2017
Report Date:		11/16/2017	8/30/2017	5/12/2017	2/28/2017
Analyte	Units	C17100456-009	C17070708-001	C17040422-006	C17010541-007
Bicarbonate as HCO ₃	mg/L	5	ND(5)	ND(5)	ND(5)
Chloride	mg/L	51	56	53	56
Sulfate	mg/L	2990	2990	2990	3060
Calcium	mg/L	479	486	485	480
Magnesium	mg/L	333	365	333	338
Potassium	mg/L	10	11	11	10
Sodium	mg/L	152	167	157	149
pH	s.u.	4.97	4.83	4.94	4.83
Solids, Total Dissolved TDS @ 180 C	mg/L	4340	4440	4370	4430
Nitrogen, Ammonia as N	mg/L	22	24	22	23
Nitrogen, Nitrate+Nitrite as N	mg/L	0.14	0.07	0.04	0.1
Aluminum	mg/L	8.7	26.8	15.5	14.5
Beryllium	mg/L	0.011	0.032	0.022	0.020
Cadmium	mg/L	ND(0.005)	0.006	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.40	0.48	0.42	0.41
Lead	mg/L	0.005	0.014	0.010	0.009
Manganese	mg/L	7.47	10.1	8.92	8.47
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.38	0.48	0.40	0.46
Uranium	mg/L	0.0507	0.134	0.0973	0.0754
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	-3.43	-0.63	-2.94	-4.76
Anions	meq/L	64.0	64.3	64.0	66.2
Cations	meq/L	59.7	63.5	60.3	60.2
Solids, Total Dissolved - Calculated	mg/L	4000	4100	4000	4100
TDS Ratio	unitless	1.08	1.08	1.08	1.08
Gross Alpha minus Rn & U	pCi/L	6.3	7.7	16.5	13.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.5	1.7	3.7	3.3
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.2	1.4
Lead 210	pCi/L	-4	2.2	1.3	1.4
Lead 210 precision (±)	pCi/L	0.9	1.1	0.9	0.8
Lead 210 MDC	pCi/L	1.7	1.4	1.3	1.1
Radium 226	pCi/L	5.8	7.0	6.3	5.4
Radium 226 precision (±)	pCi/L	1.2	1.4	1.3	1.1
Radium 226 MDC	pCi/L	0.2	0.2	0.17	0.18
Radium 228	pCi/L	12.0	12.1	8.7	6.1
Radium 228 precision (±)	pCi/L	2.5	2.7	2.1	1.4
Radium 228 MDC	pCi/L	1.1	1.6	2.0	1.3
Thorium 230	pCi/L	0.3	0.9	0.8	0.09
Thorium 230 precision (±)	pCi/L	0.5	0.6	0.5	0.08
Thorium 230 MDC	pCi/L	0.9	0.7	0.8	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 3
Lab ID: C17070656-006
Client Sample ID: 420

Report Date: 08/30/17
Collection Date: 07/17/17 15:45
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	320	mg/L		5		A2320 B	07/21/17 16:42 / mvr
Chloride	45	mg/L		1		E300.0	07/26/17 08:36 / jcg
Sulfate	2250	mg/L	D	4		E300.0	07/26/17 08:36 / jcg
Calcium	687	mg/L		1		E200.7	07/25/17 17:29 / eli-b
Magnesium	179	mg/L		1		E200.7	07/25/17 17:29 / eli-b
Potassium	7	mg/L		1		E200.7	07/25/17 17:29 / eli-b
Sodium	148	mg/L	D	2		E200.7	07/25/17 17:29 / eli-b
PHYSICAL PROPERTIES							
pH	7.17	s.u.	H	0.01		A4500-H B	07/21/17 10:45 / mvr
Solids, Total Dissolved TDS @ 180 C	3850	mg/L	D	40		A2540 C	07/24/17 14:42 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.19	mg/L		0.01		E353.2	07/28/17 16:26 / ljl
Nitrogen, Ammonia as N	0.32	mg/L		0.05		A4500-NH ₃ G	07/31/17 13:23 / ljl
METALS, TOTAL							
Aluminum	0.1	mg/L		0.1		E200.8	07/27/17 22:39 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	07/27/17 22:39 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/27/17 03:25 / eli-b
Cobalt	0.03	mg/L		0.01		E200.8	07/27/17 03:25 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/27/17 03:25 / eli-b
Manganese	2.30	mg/L		0.01		E200.8	07/27/17 03:25 / eli-b
Molybdenum	0.4	mg/L		0.1		E200.8	07/27/17 03:25 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/27/17 03:25 / eli-b
Uranium	0.230	mg/L		0.0003		E200.8	07/27/17 03:25 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/27/17 03:25 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	08/03/17 15:34 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:36 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	3500	mg/L				A1030 E	08/01/17 11:05 / tla
A/C Balance	2.09	%				A1030 E	08/01/17 11:05 / tla
Anions	53.4	meq/L				A1030 E	08/01/17 11:05 / tla
Cations	55.7	meq/L				A1030 E	08/01/17 11:05 / tla
TDS Ratio	1.11	unitless				A1030 E	08/01/17 11:05 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	4.1	pCi/L				E900.1	08/14/17 15:00 / dmf
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	08/14/17 15:00 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/14/17 15:00 / dmf
Lead 210	1.4	pCi/L				E909.0	08/13/17 18:24 / dmf
Lead 210 precision (±)	0.9	pCi/L				E909.0	08/13/17 18:24 / dmf

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: C17070656-006
Client Sample ID: 420

Report Date: 08/30/17
Collection Date: 07/17/17 15:45
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 MDC	1.3	pCi/L				E909.0	08/13/17 18:24 / dmf
Radium 226	2.3	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 226 precision (±)	0.5	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 228	2.7	pCi/L				RA-05	08/29/17 10:28 / plj
Radium 228 precision (±)	0.9	pCi/L				RA-05	08/29/17 10:28 / plj
Radium 228 MDC	1.1	pCi/L				RA-05	08/29/17 10:28 / plj
Thorium 230	0.06	pCi/L	U			E908.0	08/15/17 17:07 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/15/17 17:07 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/15/17 17:07 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/25/17 14:58 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/25/17 14:58 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/25/17 14:58 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/25/17 14:58 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	07/25/17 14:58 / eli-b
Surr: p-Bromofluorobenzene	130	%REC	S	80-127		E624	07/25/17 14:58 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	07/25/17 14:58 / 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.
- S - Spike recovery outside of advisory limits.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-006
Client Sample ID: 420

Report Date: 11/16/17
Collection Date: 10/09/17 13:55
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	363	mg/L		5		A2320 B	10/13/17 13:12 / mvr
Chloride	45	mg/L		1		E300.0	10/14/17 01:34 / jcg
Sulfate	2360	mg/L	D	4		E300.0	10/14/17 01:34 / jcg
Calcium	645	mg/L		1		E200.7	10/19/17 16:02 / eli-b
Magnesium	173	mg/L		1		E200.7	10/19/17 16:02 / eli-b
Potassium	7	mg/L		1		E200.7	10/19/17 16:02 / eli-b
Sodium	137	mg/L	D	2		E200.7	10/19/17 16:02 / eli-b
PHYSICAL PROPERTIES							
pH	7.04	s.u.	H	0.01		A4500-H B	10/13/17 11:14 / mvr
Solids, Total Dissolved TDS @ 180 C	3690	mg/L	D	40		A2540 C	10/15/17 21:15 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.03	mg/L		0.01		E353.2	10/19/17 11:48 / ljl
Nitrogen, Ammonia as N	0.89	mg/L		0.05		A4500-NH ₃ G	10/14/17 12:19 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.7	10/27/17 18:26 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/25/17 07:57 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/25/17 07:57 / eli-b
Cobalt	0.04	mg/L		0.01		E200.8	10/25/17 07:57 / eli-b
Lead	0.001	mg/L		0.001		E200.8	10/25/17 07:57 / eli-b
Manganese	3.45	mg/L		0.01		E200.7	10/27/17 18:26 / eli-b
Molybdenum	0.3	mg/L		0.1		E200.8	10/25/17 07:57 / eli-b
Nickel	0.09	mg/L		0.05		E200.8	10/25/17 07:57 / eli-b
Uranium	0.208	mg/L		0.0003		E200.8	10/27/17 04:06 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/25/17 07:57 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/02/17 10:25 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 12:44 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	3600	mg/L				A1030 E	11/03/17 17:13 / tjp
A/C Balance	-3.42	%				A1030 E	11/03/17 17:13 / tjp
Anions	56.3	meq/L				A1030 E	11/03/17 17:13 / tjp
Cations	52.6	meq/L				A1030 E	11/03/17 17:13 / tjp
TDS Ratio	1.04	unitless				A1030 E	11/03/17 17:13 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	3.1	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U Precision (±)	0.9	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 15:27 / dmf

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: C17100456-006
Client Sample ID: 420

Report Date: 11/16/17
Collection Date: 10/09/17 13:55
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	-3	pCi/L	U		E909.0		10/20/17 05:52 / meh
Lead 210 precision (±)	1	pCi/L			E909.0		10/20/17 05:52 / meh
Lead 210 MDC	1.7	pCi/L			E909.0		10/20/17 05:52 / meh
Radium 226	3.9	pCi/L			E903.0		10/30/17 11:30 / arh
Radium 226 precision (±)	0.8	pCi/L			E903.0		10/30/17 11:30 / arh
Radium 226 MDC	0.2	pCi/L			E903.0		10/30/17 11:30 / arh
Radium 228	4.5	pCi/L			RA-05		10/25/17 17:40 / trs
Radium 228 precision (±)	1.2	pCi/L			RA-05		10/25/17 17:40 / trs
Radium 228 MDC	0.9	pCi/L			RA-05		10/25/17 17:40 / trs
Thorium 230	0.1	pCi/L	U		E908.0		11/06/17 10:22 / cnh
Thorium 230 precision (±)	0.1	pCi/L			E908.0		11/06/17 10:22 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		11/06/17 10:22 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/19/17 03:13 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/19/17 03:13 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/19/17 03:13 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/19/17 03:13 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	82.0	%REC		71-139	E624		10/19/17 03:13 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127	E624		10/19/17 03:13 / eli-b
Surr: Toluene-d8	104	%REC		80-123	E624		10/19/17 03:13 / 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.
U - Not detected at minimum detectable concentration



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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

United Nuclear Corporation					
Zone 3					
Well ID:		420	420	420	420
Collection Date:		10/9/2017	7/17/2017	4/10/2017	1/16/2017
Receive Date:		10/12/2017	7/20/2017	4/13/2017	1/20/2017
Report Date:		11/16/2017	8/30/2017	5/12/2017	2/28/2017
Analyte	Units	C17100456-006	C17070656-006	C17040422-005	C17010541-006
Bicarbonate as HCO ₃	mg/L	363	320	346	359
Chloride	mg/L	45	45	46	46
Sulfate	mg/L	2360	2250	2360	2390
Calcium	mg/L	645	687	669	682
Magnesium	mg/L	173	179	169	173
Potassium	mg/L	7	7	8	7
Sodium	mg/L	137	148	147	143
pH	s.u.	7.04	7.17	6.95	6.94
Solids, Total Dissolved TDS @ 180 C	mg/L	3690	3850	3800	3800
Nitrogen, Ammonia as N	mg/L	0.89	0.32	0.32	0.38
Nitrogen, Nitrate+Nitrite as N	mg/L	0.03	0.19	0.1	0.1
Aluminum	mg/L	ND(0.1)	0.1	0.2	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.04	0.03	0.02	0.02
Lead	mg/L	0.001	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.45	2.30	2.32	2.35
Molybdenum	mg/L	0.3	0.4	0.4	0.4
Nickel	mg/L	0.09	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.208	0.230	0.226	0.232
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	-3.42	2.09	-2.06	-2.42
Anions	meq/L	56.3	53.4	56.2	57.4
Cations	meq/L	52.6	55.7	53.9	54.7
Solids, Total Dissolved - Calculated	mg/L	3600	3500	3600	3600
TDS Ratio	unitless	1.04	1.11	1.06	1.05
Gross Alpha minus Rn & U	pCi/L	3.1	4.1	7.1	7.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.9	1.1	2.7	2.1
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	2.4	1.5
Lead 210	pCi/L	-3	1.4	0.6	1.2
Lead 210 precision (±)	pCi/L	1	0.9	0.8	0.8
Lead 210 MDC	pCi/L	1.7	1.3	1.3	1.1
Radium 226	pCi/L	3.9	2.3	3.1	3.8
Radium 226 precision (±)	pCi/L	0.8	0.5	0.67	0.82
Radium 226 MDC	pCi/L	0.2	0.2	0.17	0.18
Radium 228	pCi/L	4.5	2.7	2.1	3.3
Radium 228 precision (±)	pCi/L	1.2	0.9	1.5	1.0
Radium 228 MDC	pCi/L	0.9	1.1	1.9	1.3
Thorium 230	pCi/L	0.1	0.06	0.1	0.1
Thorium 230 precision (±)	pCi/L	0.1	0.1	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)

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070656-004
Client Sample ID: 711

Report Date: 08/30/17
Collection Date: 07/17/17 12:45
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	281	mg/L	H	5		A2310 B	08/03/17 14:32 / jcg
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	07/21/17 16:20 / mvr
Chloride	27	mg/L	D	2		E300.0	08/03/17 18:17 / jcg
Sulfate	3650	mg/L	D	8		E300.0	08/03/17 18:17 / jcg
Calcium	462	mg/L		1		E200.7	08/02/17 13:12 / eli-b
Magnesium	486	mg/L		1		E200.7	08/02/17 13:12 / eli-b
Potassium	12	mg/L		1		E200.7	08/02/17 13:12 / eli-b
Sodium	115	mg/L	D	2		E200.7	08/02/17 13:12 / eli-b
PHYSICAL PROPERTIES							
pH	3.00	s.u.	H	0.01		A4500-H B	07/21/17 10:39 / mvr
Solids, Total Dissolved TDS @ 180 C	5040	mg/L	D	40		A2540 C	07/21/17 12:07 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	07/28/17 16:24 / lji
Nitrogen, Ammonia as N	1.9	mg/L	D	0.1		A4500-NH ₃ G	07/31/17 13:21 / lji
METALS, TOTAL							
Aluminum	18.0	mg/L		0.1		E200.8	07/27/17 22:34 / eli-b
Beryllium	0.038	mg/L		0.001		E200.8	07/27/17 22:34 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/27/17 03:20 / eli-b
Cobalt	0.81	mg/L		0.01		E200.8	07/27/17 03:20 / eli-b
Lead	0.004	mg/L		0.001		E200.8	07/27/17 03:20 / eli-b
Manganese	10.1	mg/L		0.01		E200.8	07/27/17 03:20 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/27/17 03:20 / eli-b
Nickel	0.99	mg/L		0.05		E200.8	07/27/17 03:20 / eli-b
Uranium	0.220	mg/L		0.0003		E200.8	07/27/17 03:20 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/27/17 03:20 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	0.001	mg/L		0.001		E1632AM	08/07/17 15:05 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:33 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4800	mg/L				A1030 E	08/04/17 17:24 / tla
A/C Balance	-1.90	%				A1030 E	08/04/17 17:24 / tla
Anions	77.0	meq/L				A1030 E	08/04/17 17:24 / tla
Cations	74.1	meq/L				A1030 E	08/04/17 17:24 / tla
TDS Ratio	1.06	unitless				A1030 E	08/04/17 17:24 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	10.3	pCi/L				E900.1	08/11/17 09:53 / cng
Gross Alpha minus Rn & U Precision (±)	2.2	pCi/L				E900.1	08/11/17 09:53 / cng
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/11/17 09:53 / cng
Lead 210	1.2	pCi/L	U			E909.0	08/13/17 13:06 / dmf

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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070656-004
Client Sample ID: 711

Report Date: 08/30/17
Collection Date: 07/17/17 12:45
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 precision (±)	0.8	pCi/L				E909.0	08/13/17 13:06 / dmf
Lead 210 MDC	1.3	pCi/L				E909.0	08/13/17 13:06 / dmf
Radium 226	7.7	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 226 precision (±)	1.5	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 228	5.4	pCi/L				RA-05	08/29/17 10:28 / plj
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/29/17 10:28 / plj
Radium 228 MDC	1.2	pCi/L				RA-05	08/29/17 10:28 / plj
Thorium 230	0.06	pCi/L	U			E908.0	08/16/17 09:46 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/16/17 09:46 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/16/17 09:46 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/25/17 13:56 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/25/17 13:56 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/25/17 13:56 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/25/17 13:56 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	144	%REC	S	71-139		E624	07/25/17 13:56 / eli-b
Surr: p-Bromofluorobenzene	136	%REC	S	80-127		E624	07/25/17 13:56 / eli-b
Surr: Toluene-d8	92.0	%REC		80-123		E624	07/25/17 13:56 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-004
Client Sample ID: 711

Report Date: 11/16/17
Collection Date: 10/09/17 11:47
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	400	mg/L		5		A2310 B	10/15/17 20:28 / mvr
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	10/13/17 12:57 / mvr
Chloride	27	mg/L	D	2		E300.0	10/13/17 23:50 / jcg
Sulfate	3880	mg/L	D	8		E300.0	10/13/17 23:50 / jcg
Calcium	452	mg/L		1		E200.7	10/19/17 15:54 / eli-b
Magnesium	486	mg/L		1		E200.7	10/19/17 15:54 / eli-b
Potassium	11	mg/L		1		E200.7	10/19/17 15:54 / eli-b
Sodium	113	mg/L	D	3		E200.7	10/19/17 15:54 / eli-b
PHYSICAL PROPERTIES							
pH	3.27	s.u.	H	0.01		A4500-H B	10/13/17 11:04 / mvr
Solids, Total Dissolved TDS @ 180 C	5160	mg/L	D	40		A2540 C	10/15/17 21:14 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.01	mg/L		0.01		E353.2	10/19/17 11:46 / ljl
Nitrogen, Ammonia as N	2.2	mg/L	D	0.2		A4500-NH ₃ G	10/14/17 12:17 / ljl
METALS, TOTAL							
Aluminum	21.0	mg/L		0.1		E200.7	10/27/17 18:12 / eli-b
Beryllium	0.036	mg/L		0.001		E200.8	10/25/17 07:52 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/25/17 07:52 / eli-b
Cobalt	0.78	mg/L		0.01		E200.8	10/25/17 07:52 / eli-b
Lead	0.009	mg/L		0.001		E200.8	10/25/17 07:52 / eli-b
Manganese	9.55	mg/L		0.01		E200.7	10/27/17 18:12 / eli-b
Molybdenum	0.3	mg/L		0.1		E200.8	10/25/17 07:52 / eli-b
Nickel	0.99	mg/L		0.05		E200.8	10/25/17 07:52 / eli-b
Uranium	0.254	mg/L		0.0003		E200.8	10/27/17 04:01 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/25/17 07:52 / eli-b
METALS - SPECIATED							
Arsenic-III	0.001	mg/L		0.001		E1632AM	11/01/17 16:36 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 12:41 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5000	mg/L				A1030 E	11/03/17 17:12 / tjp
A/C Balance	-3.73	%				A1030 E	11/03/17 17:12 / tjp
Anions	81.8	meq/L				A1030 E	11/03/17 17:12 / tjp
Cations	75.9	meq/L				A1030 E	11/03/17 17:12 / tjp
TDS Ratio	1.03	unitless				A1030 E	11/03/17 17:12 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	9.5	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U Precision (±)	2.1	pCi/L				E900.1	11/07/17 15:27 / dmf

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.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-004
Client Sample ID: 711

Report Date: 11/16/17
Collection Date: 10/09/17 11:47
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 15:27 / dmf
Lead 210	-4	pCi/L	U			E909.0	10/20/17 00:21 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	10/20/17 00:21 / meh
Lead 210 MDC	1.6	pCi/L				E909.0	10/20/17 00:21 / meh
Radium 226	7.7	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 precision (±)	1.5	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 228	7.2	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 precision (±)	1.5	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 MDC	1.0	pCi/L				RA-05	10/25/17 17:40 / trs
Thorium 230	0.2	pCi/L				E908.0	11/06/17 16:36 / cnh
Thorium 230 precision (±)	0.09	pCi/L				E908.0	11/06/17 16:36 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	11/06/17 16:36 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/17 02:14 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/17 02:14 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/17 02:14 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/17 02:14 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	80.0	%REC		71-139		E624	10/19/17 02:14 / eli-b
Surr: p-Bromofluorobenzene	105	%REC		80-127		E624	10/19/17 02:14 / eli-b
Surr: Toluene-d8	105	%REC		80-123		E624	10/19/17 02:14 / 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

United Nuclear Corporation					
Zone 3					
Well ID:		711	711	711	711
Collection Date:		10/9/2017	7/17/2017	4/10/2017	1/16/2017
Receive Date:		10/12/2017	7/20/2017	4/13/2017	1/20/2017
Report Date:		11/16/2017	8/30/2017	5/12/2017	2/28/2017
Analyte	Units	C17100456-004	C17070656-004	C17040422-007	C17010541-004
Acidity, Total as CaCO ₃	mg/L	400	281	350	310
Bicarbonate as HCO ₃	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	27	27	25	26
Sulfate	mg/L	3880	3650	3690	3980
Calcium	mg/L	452	462	429	439
Magnesium	mg/L	486	486	453	485
Potassium	mg/L	11	12	12	13
Sodium	mg/L	113	115	108	114
pH	s.u.	3.27	3.00	3.44	3.20
Solids, Total Dissolved TDS @ 180 C	mg/L	5160	5040	5100	5090
Nitrogen, Ammonia as N	mg/L	2.2	1.9	2.0	2.1
Nitrogen, Nitrate+Nitrite as N	mg/L	0.01	ND(0.01)	ND(0.01)	0.1
Aluminum	mg/L	21.0	18.0	14.0	12.1
Beryllium	mg/L	0.036	0.038	0.027	0.025
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.78	0.81	0.70	0.67
Lead	mg/L	0.009	0.004	0.006	0.016
Manganese	mg/L	9.55	10.1	9.16	8.72
Molybdenum	mg/L	0.3	ND(0.1)	0.3	ND(0.1)
Nickel	mg/L	0.99	0.99	0.92	0.81
Uranium	mg/L	0.254	0.220	0.164	0.138
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.001	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	%	-3.73	-1.90	-4.68	-4.59
Anions	meq/L	81.8	77.0	77.8	83.8
Cations	meq/L	75.9	74.1	70.8	76.4
Solids, Total Dissolved - Calculated	mg/L	5000	4800	4800	5100
TDS Ratio	unitless	1.03	1.06	1.07	1.00
Gross Alpha minus Rn & U	pCi/L	9.5	10.3	17.6	16.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.1	2.2	3.9	3.8
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.2	1.4
Lead 210	pCi/L	-4	1.2	1.1	0.3
Lead 210 precision (±)	pCi/L	0.9	0.8	0.9	0.7
Lead 210 MDC	pCi/L	1.6	1.3	1.3	1.1
Radium 226	pCi/L	7.7	7.7	8.0	7.2
Radium 226 precision (±)	pCi/L	1.5	1.5	1.6	1.4
Radium 226 MDC	pCi/L	0.2	0.2	0.16	0.18
Radium 228	pCi/L	7.2	5.4	10	6.1
Radium 228 precision (±)	pCi/L	1.5	1.3	2.4	1.6
Radium 228 MDC	pCi/L	1.0	1.2	1.9	1.6
Thorium 230	pCi/L	0.2	0.06	0.4	0.2
Thorium 230 precision (±)	pCi/L	0.09	0.1	0.2	0.2
Thorium 230 MDC	pCi/L	0.1	0.2	0.3	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: C17070656-001
Client Sample ID: 613

Report Date: 08/30/17
Collection Date: 07/17/17 08:32
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	3430	mg/L		5		A2310 B	07/28/17 09:01 / mvr
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	07/21/17 16:10 / mvr
Chloride	126	mg/L	D	5		E300.0	07/26/17 07:04 / jcg
Sulfate	8640	mg/L	D	20		E300.0	07/26/17 07:04 / jcg
Calcium	431	mg/L		1		E200.7	07/26/17 12:24 / eli-b
Magnesium	695	mg/L		1		E200.7	07/25/17 16:59 / eli-b
Potassium	1	mg/L		1		E200.7	07/25/17 16:59 / eli-b
Sodium	229	mg/L	D	3		E200.7	07/25/17 16:59 / eli-b
PHYSICAL PROPERTIES							
pH	3.00	s.u.	H	0.01		A4500-H B	07/21/17 10:28 / mvr
Solids, Total Dissolved TDS @ 180 C	10700	mg/L	D	100		A2540 C	07/21/17 12:06 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	1.87	mg/L	D	0.05		E353.2	07/28/17 16:21 / ljl
Nitrogen, Ammonia as N	144	mg/L	D	5		A4500-NH ₃ G	07/31/17 13:15 / ljl
METALS, TOTAL							
Aluminum	561	mg/L	D	1		E200.7	07/27/17 10:19 / eli-b
Beryllium	0.165	mg/L		0.001		E200.7	07/27/17 10:19 / eli-b
Cadmium	0.043	mg/L		0.005		E200.8	07/27/17 22:26 / eli-b
Cobalt	1.97	mg/L		0.01		E200.8	07/27/17 22:26 / eli-b
Lead	0.010	mg/L		0.001		E200.8	07/27/17 22:26 / eli-b
Manganese	47.7	mg/L		0.01		E200.7	07/27/17 10:19 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/27/17 22:26 / eli-b
Nickel	1.87	mg/L		0.05		E200.7	07/27/17 10:19 / eli-b
Uranium	0.764	mg/L		0.0003		E200.8	07/27/17 22:26 / eli-b
Vanadium	1.3	mg/L		0.1		E200.7	07/27/17 10:19 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/29/17 02:17 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:28 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	10000	mg/L				A1030 E	08/01/17 11:04 / tia
A/C Balance	-4.82	%				A1030 E	08/01/17 11:04 / tia
Anions	184	meq/L				A1030 E	08/01/17 11:04 / tia
Cations	167	meq/L				A1030 E	08/01/17 11:04 / tia
TDS Ratio	1.06	unitless				A1030 E	08/01/17 11:04 / tia
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	38.6	pCi/L				E900.1	08/11/17 08:16 / cng
Gross Alpha minus Rn & U Precision (±)	7.9	pCi/L				E900.1	08/11/17 08:16 / cng
Gross Alpha minus Rn & U MDC	1.1	pCi/L				E900.1	08/11/17 08:16 / cng
Lead 210	1.6	pCi/L				E909.0	08/13/17 05:32 / dmf

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.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070656-001
Client Sample ID: 613

Report Date: 08/30/17
Collection Date: 07/17/17 08:32
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 precision (±)	0.9	pCi/L				E909.0	08/13/17 05:32 / dmf
Lead 210 MDC	1.3	pCi/L				E909.0	08/13/17 05:32 / dmf
Radium 226	12.1	pCi/L				E903.0	08/15/17 11:58 / trs
Radium 226 precision (±)	2.4	pCi/L				E903.0	08/15/17 11:58 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/15/17 11:58 / trs
Radium 228	1	pCi/L	U			RA-05	08/10/17 13:29 / plj
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/10/17 13:29 / plj
Radium 228 MDC	2.1	pCi/L				RA-05	08/10/17 13:29 / plj
Thorium 230	571	pCi/L				E908.0	08/15/17 17:07 / cng
Thorium 230 precision (±)	108	pCi/L				E908.0	08/15/17 17:07 / cng
Thorium 230 MDC	14.4	pCi/L				E908.0	08/15/17 17:07 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/25/17 12:22 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/25/17 12:22 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/25/17 12:22 / eli-b
Chloroform	68	ug/L		5.0		E624	07/25/17 15:29 / eli-b
Trihalomethanes, Total	68	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	07/25/17 12:22 / eli-b
Surr: p-Bromofluorobenzene	130	%REC	S	80-127		E624	07/25/17 12:22 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	07/25/17 12:22 / 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.
S - Spike recovery outside of advisory limits.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-001
Client Sample ID: 613

Report Date: 11/16/17
Collection Date: 10/09/17 08:35
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	3030	mg/L		5		A2310 B	10/15/17 20:27 / mvr
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	10/13/17 12:48 / mvr
Chloride	104	mg/L	DH	5		E300.0	11/08/17 19:48 / jcg
Sulfate	7730	mg/L	DH	20		E300.0	11/08/17 19:48 / jcg
Calcium	416	mg/L	D	3		E200.7	10/19/17 15:35 / eli-b
Magnesium	678	mg/L		1		E200.7	10/19/17 15:35 / eli-b
Potassium	2	mg/L		1		E200.7	10/19/17 15:35 / eli-b
Sodium	211	mg/L	D	6		E200.7	10/19/17 15:35 / eli-b
PHYSICAL PROPERTIES							
pH	3.01	s.u.	H	0.01		A4500-H B	10/13/17 10:54 / mvr
Solids, Total Dissolved TDS @ 180 C	10600	mg/L	D	100		A2540 C	10/15/17 21:14 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	1.90	mg/L	D	0.05		E353.2	10/19/17 11:40 / ljl
Nitrogen, Ammonia as N	151	mg/L	D	10		A4500-NH ₃ G	10/14/17 12:13 / ljl
METALS, TOTAL							
Aluminum	512	mg/L	D	0.2		E200.7	10/27/17 18:01 / eli-b
Beryllium	0.131	mg/L		0.001		E200.8	10/27/17 03:53 / eli-b
Cadmium	0.044	mg/L		0.005		E200.8	10/25/17 07:44 / eli-b
Cobalt	1.81	mg/L		0.01		E200.8	10/25/17 07:44 / eli-b
Lead	0.006	mg/L		0.001		E200.8	10/25/17 07:44 / eli-b
Manganese	45.7	mg/L		0.01		E200.7	10/27/17 18:01 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/25/17 07:44 / eli-b
Nickel	1.86	mg/L		0.05		E200.8	10/25/17 07:44 / eli-b
Uranium	0.732	mg/L		0.0003		E200.8	10/27/17 03:53 / eli-b
Vanadium	1.1	mg/L		0.1		E200.8	10/25/17 07:44 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/17 16:00 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 12:33 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	9200	mg/L				A1030 E	11/15/17 11:02 / tjp
A/C Balance	-2.35	%				A1030 E	11/15/17 11:02 / tjp
Anions	165	meq/L				A1030 E	11/15/17 11:02 / tjp
Cations	157	meq/L				A1030 E	11/15/17 11:02 / tjp
TDS Ratio	1.16	unitless				A1030 E	11/15/17 11:02 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	36.1	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U Precision (±)	7.1	pCi/L				E900.1	11/07/17 15:27 / dmf

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: C17100456-001
Client Sample ID: 613

Report Date: 11/16/17
Collection Date: 10/09/17 08:35
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 15:27 / dmf
Lead 210	-4	pCi/L	U			E909.0	10/19/17 16:53 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	10/19/17 16:53 / meh
Lead 210 MDC	1.7	pCi/L				E909.0	10/19/17 16:53 / meh
Radium 226	10.6	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 precision (±)	2.1	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 228	0.8	pCi/L	U			RA-05	10/25/17 17:40 / trs
Radium 228 precision (±)	0.7	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 MDC	1.1	pCi/L				RA-05	10/25/17 17:40 / trs
Thorium 230	528	pCi/L				E908.0	11/06/17 10:22 / cnh
Thorium 230 precision (±)	100	pCi/L				E908.0	11/06/17 10:22 / cnh
Thorium 230 MDC	12.9	pCi/L				E908.0	11/06/17 10:22 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/17 00:46 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/17 00:46 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/17 00:46 / eli-b
Chloroform	61	ug/L		5.0		E624	10/19/17 14:34 / eli-b
Trihalomethanes, Total	61	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	84.0	%REC		71-139		E624	10/19/17 00:46 / eli-b
Surr: p-Bromofluorobenzene	105	%REC		80-127		E624	10/19/17 00:46 / eli-b
Surr: Toluene-d8	105	%REC		80-123		E624	10/19/17 00:46 / 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.
U - Not detected at minimum detectable concentration



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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

United Nuclear Corporation					
Zone 3					
Well ID:		613	613	613	613
Collection Date:		10/9/2017	7/17/2017	4/10/2017	1/16/2017
Receive Date:		10/12/2017	7/20/2017	4/13/2017	1/20/2017
Report Date:		11/16/2017	8/30/2017	5/12/2017	2/28/2017
Analyte	Units	C17100456-001	C17070656-001	C17040422-001	C17010541-001
Acidity, Total as CaCO ₃	mg/L	3030	3430	3320	3600
Bicarbonate as HCO ₃	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	104	126	123	121
Sulfate	mg/L	7730	8640	8350	9900
Calcium	mg/L	416	431	411	423
Magnesium	mg/L	678	695	669	715
Potassium	mg/L	2	1	2	1
Sodium	mg/L	211	229	222	233
pH	s.u.	3.01	3.00	2.99	2.98
Solids, Total Dissolved TDS @ 180 C	mg/L	10600	10700	10300	10900
Nitrogen, Ammonia as N	mg/L	151	144	142	142
Nitrogen, Nitrate+Nitrite as N	mg/L	1.90	1.87	1.8	2.5
Aluminum	mg/L	512	561	584	503
Beryllium	mg/L	0.131	0.165	0.130	0.149
Cadmium	mg/L	0.044	0.043	0.036	0.036
Cobalt	mg/L	1.81	1.97	1.74	1.59
Lead	mg/L	0.006	0.010	0.008	0.014
Manganese	mg/L	45.7	47.7	44.1	41.4
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	1.86	1.87	1.61	1.58
Uranium	mg/L	0.732	0.764	0.604	0.635
Vanadium	mg/L	1.1	1.3	1.3	1.0
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	%	-2.35	-4.82	-4.77	4.49
Anions	meq/L	165	184	178	213
Cations	meq/L	157	167	162	233
Solids, Total Dissolved - Calculated	mg/L	9200	10000	9900	12000
TDS Ratio	unitless	1.16	1.06	1.04	0.94
Gross Alpha minus Rn & U	pCi/L	36.1	38.6	74.9	101
Gross Alpha minus Rn & U Precision (±)	pCi/L	7.1	7.9	15.2	19.7
Gross Alpha minus Rn & U MDC	pCi/L	0.6	1.1	2.4	1.5
Lead 210	pCi/L	~4	1.6	0.9	1.3
Lead 210 precision (±)	pCi/L	0.9	0.9	0.8	0.8
Lead 210 MDC	pCi/L	1.7	1.3	1.3	1.1
Radium 226	pCi/L	10.6	12.1	8.4	16
Radium 226 precision (±)	pCi/L	2.1	2.4	1.7	3.2
Radium 226 MDC	pCi/L	0.2	0.2	0.19	0.20
Radium 228	pCi/L	0.8	1	1.2	2.1
Radium 228 precision (±)	pCi/L	0.7	1.3	1.2	1.1
Radium 228 MDC	pCi/L	1.1	2.1	2.3	1.8
Thorium 230	pCi/L	528	571	593	522
Thorium 230 precision (±)	pCi/L	100	108	113	99.2
Thorium 230 MDC	pCi/L	12.9	14.4	14.3	13.6
Trihalomethanes, Total	ug/L	61	68	54	60

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: C17070656-003
Client Sample ID: 708

Report Date: 08/30/17
Collection Date: 07/17/17 11:11
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	866	mg/L		5		A2310 B	07/27/17 10:30 / jcg
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	07/21/17 16:17 / mvr
Chloride	28	mg/L	D	2		E300.0	07/26/17 07:41 / jcg
Sulfate	4530	mg/L	D	8		E300.0	07/26/17 07:41 / jcg
Calcium	432	mg/L		1		E200.7	07/25/17 17:18 / eli-b
Magnesium	577	mg/L		1		E200.7	07/25/17 17:18 / eli-b
Potassium	12	mg/L		1		E200.7	07/25/17 17:18 / eli-b
Sodium	117	mg/L	D	3		E200.7	07/25/17 17:18 / eli-b
PHYSICAL PROPERTIES							
pH	3.01	s.u.	H	0.01		A4500-H B	07/21/17 10:36 / mvr
Solids, Total Dissolved TDS @ 180 C	6260	mg/L	D	40		A2540 C	07/21/17 12:07 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	07/28/17 16:23 / ljl
Nitrogen, Ammonia as N	0.81	mg/L		0.05		A4500-NH ₃ G	07/31/17 13:19 / ljl
METALS, TOTAL							
Aluminum	47.6	mg/L		0.1		E200.7	07/31/17 14:56 / eli-b
Beryllium	0.074	mg/L		0.001		E200.8	07/27/17 22:31 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/27/17 03:17 / eli-b
Cobalt	0.54	mg/L		0.01		E200.8	07/27/17 03:17 / eli-b
Lead	0.007	mg/L		0.001		E200.8	07/27/17 03:17 / eli-b
Manganese	14.6	mg/L		0.01		E200.8	07/27/17 03:17 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/27/17 03:17 / eli-b
Nickel	0.60	mg/L		0.05		E200.8	07/27/17 03:17 / eli-b
Uranium	0.137	mg/L		0.0003		E200.8	07/27/17 03:17 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/27/17 03:17 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	ND	mg/L		0.001		E1632AM	08/07/17 14:53 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:32 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5700	mg/L				A1030 E	08/01/17 11:04 / tla
A/C Balance	-2.23	%				A1030 E	08/01/17 11:04 / tla
Anions	96.0	meq/L				A1030 E	08/01/17 11:04 / tla
Cations	91.8	meq/L				A1030 E	08/01/17 11:04 / tla
TDS Ratio	1.10	unitless				A1030 E	08/01/17 11:04 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	15.5	pCi/L				E900.1	08/11/17 09:53 / cng
Gross Alpha minus Rn & U Precision (±)	3.8	pCi/L				E900.1	08/11/17 09:53 / cng
Gross Alpha minus Rn & U MDC	1.6	pCi/L				E900.1	08/11/17 09:53 / cng
Lead 210	2.1	pCi/L				E909.0	08/13/17 10:37 / dmf

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.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070656-003
Client Sample ID: 708

Report Date: 08/30/17
Collection Date: 07/17/17 11:11
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 precision (±)	1.0	pCi/L				E909.0	08/13/17 10:37 / dmf
Lead 210 MDC	1.3	pCi/L				E909.0	08/13/17 10:37 / dmf
Radium 226	8.3	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 226 precision (±)	1.6	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 228	2.8	pCi/L				RA-05	08/29/17 10:28 / plj
Radium 228 precision (±)	0.9	pCi/L				RA-05	08/29/17 10:28 / plj
Radium 228 MDC	1.1	pCi/L				RA-05	08/29/17 10:28 / plj
Thorium 230	0.4	pCi/L	U			E908.0	08/16/17 09:46 / cng
Thorium 230 precision (±)	0.4	pCi/L				E908.0	08/16/17 09:46 / cng
Thorium 230 MDC	0.7	pCi/L				E908.0	08/16/17 09:46 / cng
- Insufficient sample volume to reach Th230 MDC.							
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/25/17 13:25 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/25/17 13:25 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/25/17 13:25 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/25/17 13:25 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	07/25/17 13:25 / eli-b
Surr: p-Bromofluorobenzene	127	%REC		80-127		E624	07/25/17 13:25 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	07/25/17 13:25 / 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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-003
Client Sample ID: 708

Report Date: 11/16/17
Collection Date: 10/09/17 10:30
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	820	mg/L		5		A2310 B	10/15/17 20:28 / mvr
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	10/13/17 12:54 / mvr
Chloride	26	mg/L	DH	2		E300.0	11/08/17 20:22 / jcg
Sulfate	4450	mg/L	DH	8		E300.0	11/08/17 20:22 / jcg
Calcium	426	mg/L		1		E200.7	10/19/17 15:50 / eli-b
Magnesium	573	mg/L		1		E200.7	10/19/17 15:50 / eli-b
Potassium	13	mg/L		1		E200.7	10/19/17 15:50 / eli-b
Sodium	115	mg/L	D	3		E200.7	10/19/17 15:50 / eli-b
PHYSICAL PROPERTIES							
pH	3.31	s.u.	H	0.01		A4500-H B	10/13/17 11:01 / mvr
Solids, Total Dissolved TDS @ 180 C	6410	mg/L	D	100		A2540 C	10/15/17 21:14 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.01	mg/L		0.01		E353.2	10/19/17 11:45 / ljl
Nitrogen, Ammonia as N	0.87	mg/L		0.05		A4500-NH ₃ G	10/14/17 12:16 / ljl
METALS, TOTAL							
Aluminum	42.9	mg/L		0.1		E200.7	10/27/17 18:08 / eli-b
Beryllium	0.069	mg/L		0.001		E200.8	10/25/17 07:49 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/25/17 07:49 / eli-b
Cobalt	0.48	mg/L		0.01		E200.8	10/25/17 07:49 / eli-b
Lead	0.008	mg/L		0.001		E200.8	10/25/17 07:49 / eli-b
Manganese	13.5	mg/L		0.01		E200.7	10/27/17 18:08 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/25/17 07:49 / eli-b
Nickel	0.56	mg/L		0.05		E200.8	10/25/17 07:49 / eli-b
Uranium	0.148	mg/L		0.0003		E200.8	10/27/17 03:59 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/25/17 07:49 / eli-b
METALS - SPECIATED							
Arsenic-III	0.001	mg/L		0.001		E1632AM	11/01/17 16:24 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 12:39 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5600	mg/L				A1030 E	11/15/17 11:03 / tjp
A/C Balance	-2.12	%				A1030 E	11/15/17 11:03 / tjp
Anions	94.0	meq/L				A1030 E	11/15/17 11:03 / tjp
Cations	90.1	meq/L				A1030 E	11/15/17 11:03 / tjp
TDS Ratio	1.13	unitless				A1030 E	11/15/17 11:03 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	16.2	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U Precision (±)	3.4	pCi/L				E900.1	11/07/17 15:27 / dmf

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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-003
Client Sample ID: 708

Report Date: 11/16/17
Collection Date: 10/09/17 10:30
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 15:27 / dmf
Lead 210	-4	pCi/L	U			E909.0	10/19/17 21:36 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	10/19/17 21:36 / meh
Lead 210 MDC	1.7	pCi/L				E909.0	10/19/17 21:36 / meh
Radium 226	8.6	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 precision (±)	1.7	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 228	2.9	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 precision (±)	0.9	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 MDC	1.1	pCi/L				RA-05	10/25/17 17:40 / trs
Thorium 230	0.2	pCi/L	U			E908.0	11/06/17 16:36 / cnh
Thorium 230 precision (±)	0.3	pCi/L				E908.0	11/06/17 16:36 / cnh
Thorium 230 MDC	0.6	pCi/L				E908.0	11/06/17 16:36 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/17 01:45 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/17 01:45 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/17 01:45 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/17 01:45 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	83.0	%REC		71-139		E624	10/19/17 01:45 / eli-b
Surr: p-Bromofluorobenzene	107	%REC		80-127		E624	10/19/17 01:45 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	10/19/17 01:45 / 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:		708	708	708	708
Collection Date:		10/9/2017	7/17/2017	4/10/2017	1/16/2017
Receive Date:		10/12/2017	7/20/2017	4/13/2017	1/20/2017
Report Date:		11/16/2017	8/30/2017	5/12/2017	2/28/2017
Analyte	Units	C17100456-003	C17070656-003	C17040422-003	C17010541-003
Acidity, Total as CaCO ₃	mg/L	820	866	815	883
Bicarbonate as HCO ₃	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	26	28	29	29
Sulfate	mg/L	4450	4530	4480	4720
Calcium	mg/L	426	432	428	432
Magnesium	mg/L	573	577	578	591
Potassium	mg/L	13	12	13	12
Sodium	mg/L	115	117	122	116
pH	s.u.	3.31	3.01	2.92	3.58
Solids, Total Dissolved TDS @ 180 C	mg/L	6410	6260	6110	6500
Nitrogen, Ammonia as N	mg/L	0.87	0.81	0.82	0.8
Nitrogen, Nitrate+Nitrite as N	mg/L	0.01	ND(0.01)	ND(0.01)	0.05
Aluminum	mg/L	42.9	47.6	39.1	43.3
Beryllium	mg/L	0.069	0.074	0.064	0.066
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.48	0.54	0.48	0.41
Lead	mg/L	0.008	0.007	0.006	0.008
Manganese	mg/L	13.5	14.6	13.5	12.4
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.56	0.60	0.59	0.47
Uranium	mg/L	0.148	0.137	0.121	0.123
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	-2.12	-2.23	-2.07	-3.45
Anions	meq/L	94.0	96.0	94.8	99.9
Cations	meq/L	90.1	91.8	90.9	93.2
Solids, Total Dissolved - Calculated	mg/L	5600	5700	5700	6000
TDS Ratio	unitless	1.13	1.10	1.07	1.09
Gross Alpha minus Rn & U	pCi/L	16.2	15.5	26.5	32.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	3.4	3.8	5.6	6.8
Gross Alpha minus Rn & U MDC	pCi/L	0.6	1.6	1.2	1.4
Lead 210	pCi/L	-4	2.1	0.8	1.3
Lead 210 precision (±)	pCi/L	0.9	1.0	0.8	0.8
Lead 210 MDC	pCi/L	1.7	1.3	1.3	1.1
Radium 226	pCi/L	8.6	8.3	11	10
Radium 226 precision (±)	pCi/L	1.7	1.6	2.1	2.0
Radium 226 MDC	pCi/L	0.2	0.2	0.18	0.18
Radium 228	pCi/L	2.9	2.8	4.1	3.1
Radium 228 precision (±)	pCi/L	0.9	0.9	1.5	1.2
Radium 228 MDC	pCi/L	1.1	1.1	2.1	1.6
Thorium 230	pCi/L	0.2	0.4	0.9	1.4
Thorium 230 precision (±)	pCi/L	0.3	0.4	0.5	0.3
Thorium 230 MDC	pCi/L	0.6	0.7	0.7	1.6
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: C17070656-005
Client Sample ID: EPA-13

Report Date: 08/30/17
Collection Date: 07/17/17 14:18
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	41	mg/L		5		A2320 B	07/21/17 16:27 / mvr
Chloride	45	mg/L	D	2		E300.0	07/26/17 08:17 / jcg
Sulfate	5170	mg/L	D	8		E300.0	07/26/17 08:17 / jcg
Calcium	437	mg/L		1		E200.7	07/25/17 17:25 / eli-b
Magnesium	943	mg/L		1		E200.7	07/25/17 17:25 / eli-b
Potassium	13	mg/L		1		E200.7	07/25/17 17:25 / eli-b
Sodium	174	mg/L	D	3		E200.7	07/25/17 17:25 / eli-b
PHYSICAL PROPERTIES							
pH	6.27	s.u.	H	0.01		A4500-H B	07/21/17 10:42 / mvr
Solids, Total Dissolved TDS @ 180 C	5700	mg/L	D	100		A2540 C	07/21/17 12:07 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.05	mg/L		0.01		E353.2	07/28/17 16:25 / ljl
Nitrogen, Ammonia as N	0.10	mg/L		0.05		A4500-NH ₃ G	07/31/17 13:22 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/27/17 22:37 / eli-b
Beryllium	0.003	mg/L		0.001		E200.8	07/27/17 22:37 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/27/17 03:23 / eli-b
Cobalt	0.13	mg/L		0.01		E200.8	07/27/17 03:23 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/27/17 03:23 / eli-b
Manganese	7.46	mg/L		0.01		E200.8	07/27/17 03:23 / eli-b
Molybdenum	0.3	mg/L		0.1		E200.8	07/27/17 03:23 / eli-b
Nickel	0.31	mg/L		0.05		E200.8	07/27/17 03:23 / eli-b
Uranium	0.0160	mg/L		0.0003		E200.8	07/27/17 03:23 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/27/17 03:23 / eli-b
METALS - SPECIATED - TOTAL							
Arsenic-III	0.022	mg/L		0.001		E1632AM	08/07/17 15:41 / eli-h
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:35 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6800	mg/L				A1030 E	08/01/17 11:05 / tla
A/C Balance	-1.09	%				A1030 E	08/01/17 11:05 / tla
Anions	110	meq/L				A1030 E	08/01/17 11:05 / tla
Cations	107	meq/L				A1030 E	08/01/17 11:05 / tla
TDS Ratio	0.84	unitless				A1030 E	08/01/17 11:05 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	6.9	pCi/L				E900.1	08/14/17 15:00 / dmf
Gross Alpha minus Rn & U Precision (±)	1.6	pCi/L				E900.1	08/14/17 15:00 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/14/17 15:00 / dmf
Lead 210	1.4	pCi/L				E909.0	08/13/17 15:47 / dmf
Lead 210 precision (±)	0.9	pCi/L				E909.0	08/13/17 15:47 / dmf

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: C17070656-005
Client Sample ID: EPA-13

Report Date: 08/30/17
Collection Date: 07/17/17 14:18
Date Received: 07/20/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210 MDC	1.3	pCi/L				E909.0	08/13/17 15:47 / dmf
Radium 226	4.0	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 226 precision (±)	0.8	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 226 MDC	0.2	pCi/L				E903.0	08/15/17 13:34 / trs
Radium 228	4.3	pCi/L				RA-05	08/29/17 10:28 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/29/17 10:28 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	08/29/17 10:28 / plj
Thorium 230	0.1	pCi/L	U			E908.0	08/16/17 09:46 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/16/17 09:46 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/16/17 09:46 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/25/17 14:27 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/25/17 14:27 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/25/17 14:27 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/25/17 14:27 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/03/17 11:31 / sec
Surr: 1,2-Dichloroethane-d4	126	%REC		71-139		E624	07/25/17 14:27 / eli-b
Surr: p-Bromofluorobenzene	135	%REC	S	80-127		E624	07/25/17 14:27 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	07/25/17 14:27 / 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.
S - Spike recovery outside of advisory limits.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-005
Client Sample ID: EPA-13

Report Date: 11/16/17
Collection Date: 10/09/17 12:48
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	66	mg/L		5		A2320 B	10/13/17 13:04 / mvr
Chloride	42	mg/L	D	5		E300.0	10/14/17 00:42 / jcg
Sulfate	5310	mg/L	D	20		E300.0	10/14/17 00:42 / jcg
Calcium	432	mg/L		1		E200.7	10/19/17 15:58 / eli-b
Magnesium	950	mg/L		1		E200.7	10/19/17 15:58 / eli-b
Potassium	14	mg/L		1		E200.7	10/19/17 15:58 / eli-b
Sodium	172	mg/L	D	3		E200.7	10/19/17 15:58 / eli-b
PHYSICAL PROPERTIES							
pH	6.09	s.u.	H	0.01		A4500-H B	10/13/17 11:11 / mvr
Solids, Total Dissolved TDS @ 180 C	7240	mg/L	D	100		A2540 C	10/15/17 21:15 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.07	mg/L		0.01		E353.2	10/19/17 11:47 / ljl
Nitrogen, Ammonia as N	0.07	mg/L		0.05		A4500-NH ₃ G	10/14/17 12:18 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.7	10/27/17 18:23 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	10/27/17 04:04 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/25/17 07:54 / eli-b
Cobalt	0.13	mg/L		0.01		E200.8	10/25/17 07:54 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/25/17 07:54 / eli-b
Manganese	7.24	mg/L		0.01		E200.7	10/27/17 18:23 / eli-b
Molybdenum	0.3	mg/L		0.1		E200.8	10/25/17 07:54 / eli-b
Nickel	0.35	mg/L		0.05		E200.8	10/25/17 07:54 / eli-b
Uranium	0.0090	mg/L		0.0003		E200.8	10/27/17 04:04 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/25/17 07:54 / eli-b
METALS - SPECIATED							
Arsenic-III	0.011	mg/L		0.001		E1632AM	11/01/17 16:48 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 12:42 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	7000	mg/L				A1030 E	11/03/17 17:12 / tjp
A/C Balance	-2.42	%				A1030 E	11/03/17 17:12 / tjp
Anions	113	meq/L				A1030 E	11/03/17 17:12 / tjp
Cations	108	meq/L				A1030 E	11/03/17 17:12 / tjp
TDS Ratio	1.04	unitless				A1030 E	11/03/17 17:12 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	6.8	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U Precision (±)	1.6	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 15:27 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-005
Client Sample ID: EPA-13

Report Date: 11/16/17
Collection Date: 10/09/17 12:48
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	-4	pCi/L	U			E909.0	10/20/17 03:09 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	10/20/17 03:09 / meh
Lead 210 MDC	1.7	pCi/L				E909.0	10/20/17 03:09 / meh
Radium 226	5.0	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 precision (±)	1.0	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 228	8.4	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 precision (±)	1.8	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 MDC	1.1	pCi/L				RA-05	10/25/17 17:40 / trs
Thorium 230	0.07	pCi/L	U			E908.0	11/06/17 16:36 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	11/06/17 16:36 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	11/06/17 16:36 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/17 02:43 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/17 02:43 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/17 02:43 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/17 02:43 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	84.0	%REC		71-139		E624	10/19/17 02:43 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	10/19/17 02:43 / eli-b
Surr: Toluene-d8	104	%REC		80-123		E624	10/19/17 02:43 / 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 3					
Well ID:		EPA-13	EPA-13	EPA-13	EPA-13
Collection Date:		10/9/2017	7/17/2017	4/10/2017	1/16/2017
Receive Date:		10/12/2017	7/20/2017	4/13/2017	1/20/2017
Report Date:		11/16/2017	8/30/2017	5/12/2017	2/28/2017
Analyte	Units	C17100456-005	C17070656-005	C17040422-004	C17010541-005
Bicarbonate as HCO ₃	mg/L	66	41	50	50
Chloride	mg/L	42	45	45	45
Sulfate	mg/L	5310	5170	5380	5240
Calcium	mg/L	432	437	434	452
Magnesium	mg/L	950	943	910	968
Potassium	mg/L	14	13	14	14
Sodium	mg/L	172	174	176	173
pH	s.u.	6.09	6.27	6.24	6.28
Solids, Total Dissolved TDS @ 180 C	mg/L	7240	5700	7100	7200
Nitrogen, Ammonia as N	mg/L	0.07	0.10	0.14	0.09
Nitrogen, Nitrate+Nitrite as N	mg/L	0.07	0.05	ND(0.01)	0.1
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	0.003	0.003	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.13	0.13	0.12	0.10
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	7.24	7.46	6.94	5.91
Molybdenum	mg/L	0.3	0.3	0.2	0.2
Nickel	mg/L	0.35	0.31	0.32	0.30
Uranium	mg/L	0.0090	0.0160	0.0120	0.0070
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.011	0.022	0.005	0.004
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.42	-1.09	-4.45	-0.45
Anions	meq/L	113	110	114	111
Cations	meq/L	108	107	104	110
Solids, Total Dissolved - Calculated	mg/L	7000	6800	7000	6900
TDS Ratio	unitless	1.04	0.84	1.01	1.04
Gross Alpha minus Rn & U	pCi/L	6.8	6.9	12.0	10.1
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.6	1.6	2.9	2.6
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.2	1.4
Lead 210	pCi/L	-4	1.4	0.4	0.9
Lead 210 precision (±)	pCi/L	0.9	0.9	0.8	0.7
Lead 210 MDC	pCi/L	1.7	1.3	1.3	1.1
Radium 226	pCi/L	5.0	4.0	6.3	5.5
Radium 226 precision (±)	pCi/L	1.0	0.8	1.3	1.1
Radium 226 MDC	pCi/L	0.2	0.2	0.18	0.19
Radium 228	pCi/L	8.4	4.3	5.7	6.7
Radium 228 precision (±)	pCi/L	1.8	1.1	1.7	1.6
Radium 228 MDC	pCi/L	1.1	1.3	2.1	1.4
Thorium 230	pCi/L	0.07	0.1	0.3	0.05
Thorium 230 precision (±)	pCi/L	0.1	0.1	0.2	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.3	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: C17070708-005
Client Sample ID: 717

Report Date: 09/20/17
Collection Date: 07/18/17 14:22
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	2010	mg/L		5		A2310 B	07/29/17 10:44 / mvr
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	07/27/17 16:54 / jcg
Chloride	64	mg/L	D	2		E300.0	07/28/17 14:26 / jcg
Sulfate	5160	mg/L	D	8		E300.0	07/28/17 14:26 / jcg
Calcium	463	mg/L		1		E200.7	07/28/17 16:29 / eli-b
Magnesium	506	mg/L		1		E200.7	07/28/17 16:29 / eli-b
Potassium	1	mg/L		1		E200.7	07/27/17 22:14 / eli-b
Sodium	181	mg/L		1		E200.7	07/27/17 22:14 / eli-b
PHYSICAL PROPERTIES							
pH	3.11	s.u.	H	0.01		A4500-H B	07/24/17 12:50 / mvr
Solids, Total Dissolved TDS @ 180 C	7650	mg/L	D	100		A2540 C	07/24/17 12:02 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	19.2	mg/L	D	0.2		E353.2	07/28/17 17:29 / ljl
Nitrogen, Ammonia as N	40	mg/L	D	1		A4500-NH ₃ G	07/31/17 13:31 / ljl
METALS, TOTAL							
Aluminum	274	mg/L		0.1		E200.7	08/02/17 14:46 / eli-b
Beryllium	0.130	mg/L		0.001		E200.8	08/01/17 03:59 / eli-b
Cadmium	0.019	mg/L		0.005		E200.8	07/27/17 23:30 / eli-b
Cobalt	1.09	mg/L		0.01		E200.8	07/27/17 23:30 / eli-b
Lead	0.039	mg/L		0.001		E200.8	08/01/17 03:59 / eli-b
Manganese	20.2	mg/L		0.01		E200.8	07/27/17 23:30 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	07/27/17 23:30 / eli-b
Nickel	1.22	mg/L		0.05		E200.8	07/27/17 23:30 / eli-b
Uranium	0.516	mg/L		0.0003		E200.8	07/27/17 23:30 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/27/17 23:30 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/29/17 01:29 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:14 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6600	mg/L				A1030 E	08/03/17 15:51 / tla
A/C Balance	1.94	%				A1030 E	08/03/17 15:51 / tla
Anions	111	meq/L				A1030 E	08/03/17 15:51 / tla
Cations	116	meq/L				A1030 E	08/03/17 15:51 / tla
TDS Ratio	1.15	unitless				A1030 E	08/03/17 15:51 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	30.8	pCi/L				E900.1	08/14/17 16:55 / dmf
Gross Alpha minus Rn & U Precision (±)	6.1	pCi/L				E900.1	08/14/17 16:55 / dmf

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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070708-005
Client Sample ID: 717

Report Date: 09/20/17
Collection Date: 07/18/17 14:22
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/14/17 16:55 / dmf
Lead 210	3.4	pCi/L				E909.0	08/25/17 21:25 / meh
Lead 210 precision (±)	1.4	pCi/L				E909.0	08/25/17 21:25 / meh
Lead 210 MDC	1.5	pCi/L				E909.0	08/25/17 21:25 / meh
Radium 226	12.6	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 226 precision (±)	2.5	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 226 MDC	0.3	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 228	0.6	pCi/L	U			RA-05	09/13/17 09:02 / trs
Radium 228 precision (±)	0.9	pCi/L				RA-05	09/13/17 09:02 / trs
Radium 228 MDC	1.4	pCi/L				RA-05	09/13/17 09:02 / trs
Thorium 230	19.8	pCi/L				E908.0	09/01/17 09:17 / cng
Thorium 230 precision (±)	3.8	pCi/L				E908.0	09/01/17 09:17 / cng
Thorium 230 MDC	0.8	pCi/L				E908.0	09/01/17 09:17 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/17 16:35 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/26/17 16:35 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/17 16:35 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/26/17 16:35 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	07/26/17 16:35 / eli-b
Surr: p-Bromofluorobenzene	124	%REC		80-127		E624	07/26/17 16:35 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	07/26/17 16:35 / 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

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-007
Client Sample ID: 717

Report Date: 11/16/17
Collection Date: 10/09/17 15:00
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	1750	mg/L		5		A2310 B	10/15/17 20:28 / mvr
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	10/13/17 13:15 / mvr
Chloride	57	mg/L	DH	2		E300.0	11/08/17 20:39 / jcg
Sulfate	5230	mg/L	DH	8		E300.0	11/08/17 20:39 / jcg
Calcium	445	mg/L		1		E200.7	10/19/17 16:06 / eli-b
Magnesium	496	mg/L		1		E200.7	10/19/17 16:06 / eli-b
Potassium	2	mg/L		1		E200.7	10/19/17 16:06 / eli-b
Sodium	163	mg/L	D	3		E200.7	10/19/17 16:06 / eli-b
PHYSICAL PROPERTIES							
pH	3.20	s.u.	H	0.01		A4500-H B	10/13/17 11:17 / mvr
Solids, Total Dissolved TDS @ 180 C	7300	mg/L	D	100		A2540 C	10/15/17 21:15 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	17.6	mg/L	D	0.1		E353.2	10/19/17 11:49 / ljl
Nitrogen, Ammonia as N	39	mg/L	D	2		A4500-NH ₃ G	10/14/17 12:21 / ljl
METALS, TOTAL							
Aluminum	285	mg/L		0.1		E200.7	10/27/17 18:30 / eli-b
Beryllium	0.156	mg/L		0.001		E200.8	10/27/17 04:09 / eli-b
Cadmium	0.019	mg/L		0.005		E200.8	10/25/17 07:59 / eli-b
Cobalt	1.16	mg/L		0.01		E200.8	10/25/17 07:59 / eli-b
Lead	0.036	mg/L		0.001		E200.8	10/25/17 07:59 / eli-b
Manganese	20.2	mg/L		0.01		E200.7	10/27/17 18:30 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/25/17 07:59 / eli-b
Nickel	1.26	mg/L		0.05		E200.8	10/25/17 07:59 / eli-b
Uranium	0.619	mg/L		0.0003		E200.8	10/27/17 04:09 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/25/17 07:59 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/02/17 11:01 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 12:45 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	6500	mg/L				A1030 E	11/15/17 11:03 / tjp
A/C Balance	-2.11	%				A1030 E	11/15/17 11:03 / tjp
Anions	113	meq/L				A1030 E	11/15/17 11:03 / tjp
Cations	108	meq/L				A1030 E	11/15/17 11:03 / tjp
TDS Ratio	1.12	unitless				A1030 E	11/15/17 11:03 / tjp
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	24.4	pCi/L				E900.1	11/07/17 15:27 / dmf
Gross Alpha minus Rn & U Precision (±)	4.9	pCi/L				E900.1	11/07/17 15:27 / dmf

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.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100456-007
Client Sample ID: 717

Report Date: 11/16/17
Collection Date: 10/09/17 15:00
Date Received: 10/12/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 15:27 / dmf
Lead 210	-3	pCi/L	U			E909.0	10/20/17 08:28 / meh
Lead 210 precision (±)	1	pCi/L				E909.0	10/20/17 08:28 / meh
Lead 210 MDC	1.7	pCi/L				E909.0	10/20/17 08:28 / meh
Radium 226	12.0	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 precision (±)	2.3	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/30/17 11:30 / arh
Radium 228	7.0	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 precision (±)	1.6	pCi/L				RA-05	10/25/17 17:40 / trs
Radium 228 MDC	1.2	pCi/L				RA-05	10/25/17 17:40 / trs
Thorium 230	19.4	pCi/L	U			E908.0	11/06/17 10:22 / cnh
Thorium 230 precision (±)	3.8	pCi/L				E908.0	11/06/17 10:22 / cnh
Thorium 230 MDC	24.3	pCi/L				E908.0	11/06/17 10:22 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/17 03:42 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/17 03:42 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/17 03:42 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/17 03:42 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/06/17 17:15 / sec
Surr: 1,2-Dichloroethane-d4	83.0	%REC		71-139		E624	10/19/17 03:42 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127		E624	10/19/17 03:42 / eli-b
Surr: Toluene-d8	104	%REC		80-123		E624	10/19/17 03:42 / 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

United Nuclear Corporation					
Zone 3					
Well ID:		717	717	717	717
Collection Date:		10/9/2017	7/18/2017	4/11/2017	1/16/2017
Receive Date:		10/12/2017	7/21/2017	4/17/2017	1/20/2017
Report Date:		11/16/2017	9/20/2017	5/24/2017	2/28/2017
Analyte	Units	C17100456-007	C17070708-005	C17040482-003	C17010541-009
Acidity, Total as CaCO ₃	mg/L	1750	2010	1650	1790
Calcium	mg/L	445	463	452	459
Magnesium	mg/L	496	506	489	485
Sulfate	mg/L	5230	5160	5320	5500
Bicarbonate as HCO ₃	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Chloride	mg/L	57	64	62	64
Potassium	mg/L	2	1	ND(1)	2
Sodium	mg/L	163	181	174	161
pH	s.u.	3.20	3.11	3.03	2.95
Solids, Total Dissolved TDS @ 180 C	mg/L	7300	7650	6620	7110
Nitrogen, Ammonia as N	mg/L	39	40	38	38
Nitrogen, Nitrate+Nitrite as N	mg/L	17.6	19.2	18	20
Aluminum	mg/L	285	274	254	216
Beryllium	mg/L	0.156	0.130	0.149	0.128
Cadmium	mg/L	0.019	0.019	0.017	0.017
Cobalt	mg/L	1.16	1.09	0.93	0.88
Lead	mg/L	0.036	0.039	0.056	0.050
Manganese	mg/L	20.2	20.2	18.2	16.1
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	1.26	1.22	0.99	0.89
Uranium	mg/L	0.619	0.516	0.374	0.363
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(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	%	-2.11	1.94	-3.76	-4.38
Anions	meq/L	113	111	114	118
Cations	meq/L	108	116	106	108
Solids, Total Dissolved - Calculated	mg/L	6500	6600	6700	6900
TDS Ratio	unitless	1.12	1.15	0.98	1.03
Gross Alpha minus Rn & U	pCi/L	24.4	30.8	135	148
Gross Alpha minus Rn & U Precision (±)	pCi/L	4.9	6.1	26.2	28.5
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.9	1.4
Lead 210	pCi/L	-3	3.4	3.3	4.0
Lead 210 precision (±)	pCi/L	1	1.4	1.3	1.4
Lead 210 MDC	pCi/L	1.7	1.5	1.3	1.3
Radium 226	pCi/L	12.0	12.6	8.6	18
Radium 226 precision (±)	pCi/L	2.3	2.5	1.7	3.4
Radium 226 MDC	pCi/L	0.2	0.3	0.23	0.19
Radium 228	pCi/L	7.0	0.6	0.33	1.8
Radium 228 precision (±)	pCi/L	1.6	0.9	1.4	0.94
Radium 228 MDC	pCi/L	1.2	1.4	2.3	1.6
Thorium 230	pCi/L	19.4	19.8	25.0	21.0
Thorium 230 precision (±)	pCi/L	3.8	3.8	4.8	4.0
Thorium 230 MDC	pCi/L	24.3	0.8	3.7	2.8
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	0.53	1.5

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070708-002
Client Sample ID: 719

Report Date: 09/20/17
Collection Date: 07/18/17 10:10
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	8	mg/L		5		A2320 B	07/27/17 16:34 / jcg
Chloride	30	mg/L	D	2		E300.0	07/28/17 11:59 / jcg
Sulfate	4040	mg/L	D	8		E300.0	07/28/17 11:59 / jcg
Calcium	465	mg/L		1		E200.7	07/31/17 15:00 / eli-b
Magnesium	709	mg/L		1		E200.7	07/31/17 15:00 / eli-b
Potassium	12	mg/L		1		E200.7	07/27/17 21:53 / eli-b
Sodium	150	mg/L		1		E200.7	07/27/17 21:53 / eli-b
PHYSICAL PROPERTIES							
pH	5.65	s.u.	H	0.01		A4500-H B	07/24/17 12:38 / mvr
Solids, Total Dissolved TDS @ 180 C	6130	mg/L	D	40		A2540 C	07/24/17 12:01 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.07	mg/L		0.01		E353.2	07/28/17 17:20 / ljl
Nitrogen, Ammonia as N	0.41	mg/L		0.05		A4500-NH ₃ G	07/31/17 13:25 / ljl
METALS, TOTAL							
Aluminum	0.6	mg/L		0.1		E200.8	07/27/17 23:19 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	08/01/17 03:39 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/27/17 23:19 / eli-b
Cobalt	0.26	mg/L		0.01		E200.8	07/27/17 23:19 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/27/17 23:19 / eli-b
Manganese	6.40	mg/L		0.01		E200.8	07/27/17 23:19 / eli-b
Molybdenum	0.2	mg/L		0.1		E200.8	07/27/17 23:19 / eli-b
Nickel	0.38	mg/L		0.05		E200.8	07/27/17 23:19 / eli-b
Uranium	0.0201	mg/L		0.0003		E200.8	07/27/17 23:19 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/27/17 23:19 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/29/17 00:53 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:09 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5400	mg/L				A1030 E	08/03/17 15:50 / tla
A/C Balance	1.94	%				A1030 E	08/03/17 15:50 / tla
Anions	85.0	meq/L				A1030 E	08/03/17 15:50 / tla
Cations	88.4	meq/L				A1030 E	08/03/17 15:50 / tla
TDS Ratio	1.13	unitless				A1030 E	08/03/17 15:50 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	5.8	pCi/L				E900.1	08/14/17 16:55 / dmf
Gross Alpha minus Rn & U Precision (±)	1.4	pCi/L				E900.1	08/14/17 16:55 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/14/17 16:55 / dmf

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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070708-002
Client Sample ID: 719

Report Date: 09/20/17
Collection Date: 07/18/17 10:10
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.4	pCi/L				E909.0	08/25/17 13:17 / meh
Lead 210 precision (±)	1	pCi/L				E909.0	08/25/17 13:17 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	08/25/17 13:17 / meh
Radium 226	5.2	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 226 precision (±)	1.1	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 226 MDC	0.2	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 228	9.3	pCi/L				RA-05	08/16/17 15:37 / plj
Radium 228 precision (±)	2.0	pCi/L				RA-05	08/16/17 15:37 / plj
Radium 228 MDC	1.6	pCi/L				RA-05	08/16/17 15:37 / plj
Thorium 230	0.2	pCi/L				E908.0	09/01/17 09:17 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	09/01/17 09:17 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	09/01/17 09:17 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/17 15:02 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/26/17 15:02 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/17 15:02 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/26/17 15:02 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	103	%REC		71-139		E624	07/26/17 15:02 / eli-b
Surr: p-Bromofluorobenzene	134	%REC	S	80-127		E624	07/26/17 15:02 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	07/26/17 15:02 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100506-001
Client Sample ID: 719

Report Date: 11/14/17
Collection Date: 10/10/17 08:27
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	17	mg/L		5		A2320 B	10/15/17 22:33 / mvr
Chloride	34	mg/L	D	2		E300.0	10/18/17 04:00 / jcg
Sulfate	4390	mg/L	D	8		E300.0	10/18/17 04:00 / jcg
Calcium	457	mg/L		1		E200.7	10/19/17 21:36 / eli-b
Magnesium	698	mg/L		1		E200.7	10/19/17 21:36 / eli-b
Potassium	12	mg/L		1		E200.7	10/19/17 21:36 / eli-b
Sodium	145	mg/L	D	3		E200.7	10/19/17 21:36 / eli-b
PHYSICAL PROPERTIES							
pH	5.68	s.u.	H	0.01		A4500-H B	10/15/17 20:33 / mvr
Solids, Total Dissolved TDS @ 180 C	6100	mg/L	D	40		A2540 C	10/15/17 21:23 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.02	mg/L		0.01		E353.2	10/19/17 12:30 / ljl
Nitrogen, Ammonia as N	0.51	mg/L		0.05		A4500-NH ₃ G	10/14/17 12:32 / ljl
METALS, TOTAL							
Aluminum	0.3	mg/L		0.1		E200.8	10/29/17 11:57 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	11/02/17 07:37 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/28/17 04:18 / eli-b
Cobalt	0.27	mg/L		0.01		E200.8	10/28/17 04:18 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/28/17 04:18 / eli-b
Manganese	6.35	mg/L		0.01		E200.8	10/28/17 04:18 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/28/17 04:18 / eli-b
Nickel	0.30	mg/L		0.05		E200.8	10/28/17 04:18 / eli-b
Uranium	0.0166	mg/L		0.0003		E200.8	10/28/17 04:18 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/28/17 04:18 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/17 18:25 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 12:50 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5800	mg/L				A1030 E	11/10/17 15:53 / tla
A/C Balance	-3.22	%				A1030 E	11/10/17 15:53 / tla
Anions	92.7	meq/L				A1030 E	11/10/17 15:53 / tla
Cations	86.9	meq/L				A1030 E	11/10/17 15:53 / tla
TDS Ratio	1.06	unitless				A1030 E	11/10/17 15:53 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	4.9	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U Precision (±)	1.2	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 17:07 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100506-001
Client Sample ID: 719

Report Date: 11/14/17
Collection Date: 10/10/17 08:27
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.3	pCi/L	U			E909.0	10/25/17 00:17 / meh
Lead 210 precision (±)	1.0	pCi/L				E909.0	10/25/17 00:17 / meh
Lead 210 MDC	1.5	pCi/L				E909.0	10/25/17 00:17 / meh
Radium 226	3.8	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 226 precision (±)	0.8	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 228	11.7	pCi/L				RA-05	11/08/17 16:10 / trs
Radium 228 precision (±)	2.4	pCi/L				RA-05	11/08/17 16:10 / trs
Radium 228 MDC	1.2	pCi/L				RA-05	11/08/17 16:10 / trs
Thorium 230	0.4	pCi/L				E908.0	11/06/17 10:22 / cnh
Thorium 230 precision (±)	0.3	pCi/L				E908.0	11/06/17 10:22 / cnh
Thorium 230 MDC	0.3	pCi/L				E908.0	11/06/17 10:22 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/20/17 15:42 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/20/17 15:42 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/20/17 15:42 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/20/17 15:42 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/12/17 11:19 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	10/20/17 15:42 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127		E624	10/20/17 15:42 / eli-b
Surr: Toluene-d8	97.0	%REC		80-123		E624	10/20/17 15:42 / 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

United Nuclear Corporation					
Zone 3					
Well ID:		719	719	719	719
Collection Date:		10/10/2017	7/18/2017	4/11/2017	1/16/2017
Receive Date:		10/13/2017	7/21/2017	4/17/2017	1/20/2017
Report Date:		11/14/2017	9/20/2017	5/24/2017	2/28/2017
Analyte	Units	C17100506-001	C17070708-002	C17040482-001	C17010541-008
Bicarbonate as HCO ₃	mg/L	17	8	8	11
Chloride	mg/L	34	30	30	32
Sulfate	mg/L	4390	4040	4230	4360
Calcium	mg/L	457	465	441	456
Magnesium	mg/L	698	709	677	701
Potassium	mg/L	12	12	12	12
Sodium	mg/L	145	150	138	139
pH	s.u.	5.68	5.65	5.59	5.78
Solids, Total Dissolved TDS @ 180 C	mg/L	6100	6130	6070	5960
Nitrogen, Ammonia as N	mg/L	0.51	0.41	0.42	0.4
Nitrogen, Nitrate+Nitrite as N	mg/L	0.02	0.07	0.03	0.09
Aluminum	mg/L	0.3	0.6	0.3	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.27	0.26	0.24	0.24
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	6.35	6.40	5.81	5.26
Molybdenum	mg/L	ND(0.1)	0.2	ND(0.1)	ND(0.1)
Nickel	mg/L	0.30	0.38	0.33	0.38
Uranium	mg/L	0.0166	0.0201	0.0103	0.0072
Vanadium	mg/L	ND(0.1)	ND(0.1)	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	%	-3.22	1.94	-2.91	-2.77
Anions	meq/L	92.7	85.0	89.1	91.8
Cations	meq/L	86.9	88.4	84.0	86.8
Solids, Total Dissolved - Calculated	mg/L	5800	5400	5600	5700
TDS Ratio	unitless	1.06	1.13	1.09	1.04
Gross Alpha minus Rn & U	pCi/L	4.9	5.8	6.3	5.9
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.2	1.4	2.3	1.8
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.9	1.4
Lead 210	pCi/L	1.3	1.4	1.1	0.9
Lead 210 precision (±)	pCi/L	1.0	1	0.8	0.7
Lead 210 MDC	pCi/L	1.5	1.4	1.2	1.1
Radium 226	pCi/L	3.8	5.2	5.3	3.8
Radium 226 precision (±)	pCi/L	0.8	1.1	1.1	0.79
Radium 226 MDC	pCi/L	0.1	0.2	0.20	0.17
Radium 228	pCi/L	11.7	9.3	16	9.8
Radium 228 precision (±)	pCi/L	2.4	2.0	3.3	2.2
Radium 228 MDC	pCi/L	1.2	1.6	1.6	1.4
Thorium 230	pCi/L	0.4	0.2	0.2	0.2
Thorium 230 precision (±)	pCi/L	0.3	0.1	0.2	0.2
Thorium 230 MDC	pCi/L	0.3	0.2	0.3	0.3
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
JULY TO DECEMBER OF 2017

ZONE-3

NBL-2
RW-A
NW-1
NW-2
NW-3
NW-4
NW-5
MW-7
RW-11 (OCTOBER ONLY)

LEVELS ONLY

PB-2
PB-3
PB-4
MW-6
IW-A
MW-2
MW-3
703
709
715
716
718
RW-16
RW-17
Z3M-1
Z3M-2

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: C17070709-001
Client Sample ID: NBL-2

Report Date: 08/01/17
Collection Date: 07/18/17 16:54
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	309	mg/L		5		A2320 B	07/27/17 17:15 / jcg
Chloride	43	mg/L		1		E300.0	07/28/17 15:40 / jcg
PHYSICAL PROPERTIES							
pH	6.57	s.u.	H	0.01		A4500-H B	07/24/17 13:01 / mvr
Solids, Total Dissolved TDS @ 180 C	3470	mg/L	D	40		A2540 C	07/24/17 12:03 / 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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100506-002
Client Sample ID: NBL-2

Report Date: 11/14/17
Collection Date: 10/10/17 12:30
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	344	mg/L		5		A2320 B	10/15/17 23:01 / mvr
Chloride	45	mg/L		1		E300.0	10/18/17 04:17 / jcg
Sulfate	2270	mg/L	D	4		E300.0	10/18/17 04:17 / jcg
Calcium	616	mg/L		1		E200.7	10/19/17 21:52 / eli-b
Magnesium	176	mg/L		1		E200.7	10/19/17 21:52 / eli-b
Potassium	7	mg/L		1		E200.7	10/19/17 21:52 / eli-b
Sodium	151	mg/L	D	2		E200.7	10/19/17 21:52 / eli-b
PHYSICAL PROPERTIES							
pH	6.76	s.u.	H	0.01		A4500-H B	10/15/17 20:44 / mvr
Solids, Total Dissolved TDS @ 180 C	3510	mg/L	D	40		A2540 C	10/15/17 21:23 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.05	mg/L		0.01		E353.2	10/19/17 12:34 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/14/17 12:34 / ljl
METALS, TOTAL							
Aluminum	0.1	mg/L		0.1		E200.8	10/29/17 12:28 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	11/02/17 07:41 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/28/17 04:35 / eli-b
Cobalt	0.03	mg/L		0.01		E200.8	10/28/17 04:35 / eli-b
Lead	0.001	mg/L		0.001		E200.8	10/28/17 04:35 / eli-b
Manganese	1.89	mg/L		0.01		E200.8	10/28/17 04:35 / eli-b
Molybdenum	0.1	mg/L		0.1		E200.8	10/28/17 04:35 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/28/17 04:35 / eli-b
Uranium	0.235	mg/L		0.0003		E200.8	10/28/17 04:35 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/28/17 04:35 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/17 19:01 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 12:55 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	3400	mg/L				A1030 E	11/10/17 15:53 / tla
A/C Balance	-2.13	%				A1030 E	11/10/17 15:53 / tla
Anions	54.2	meq/L				A1030 E	11/10/17 15:53 / tla
Cations	52.0	meq/L				A1030 E	11/10/17 15:53 / tla
TDS Ratio	1.02	unitless				A1030 E	11/10/17 15:53 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	5.6	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U Precision (±)	1.4	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 17:07 / dmf

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: C17100506-002
Client Sample ID: NBL-2

Report Date: 11/14/17
Collection Date: 10/10/17 12:30
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.7	pCi/L				E909.0	10/25/17 04:41 / meh
Lead 210 precision (±)	1.1	pCi/L				E909.0	10/25/17 04:41 / meh
Lead 210 MDC	1.6	pCi/L				E909.0	10/25/17 04:41 / meh
Radium 226	4.9	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 226 precision (±)	1	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 228	11.1	pCi/L				RA-05	11/08/17 16:10 / trs
Radium 228 precision (±)	2.4	pCi/L				RA-05	11/08/17 16:10 / trs
Radium 228 MDC	1.1	pCi/L				RA-05	11/08/17 16:10 / trs
Thorium 230	0.2	pCi/L	U			E908.0	11/06/17 16:28 / cnh
Thorium 230 precision (±)	0.2	pCi/L				E908.0	11/06/17 16:28 / cnh
Thorium 230 MDC	0.3	pCi/L				E908.0	11/06/17 16:28 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/20/17 19:36 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/20/17 19:36 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/20/17 19:36 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/20/17 19:36 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/12/17 11:19 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	10/20/17 19:36 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	10/20/17 19:36 / eli-b
Surr: Toluene-d8	98.0	%REC		80-123		E624	10/20/17 19:36 / 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

United Nuclear Corporation					
Zone 3					
Well ID:		NBL-2	NBL-2	NBL-2	NBL-2
Collection Date:		10/10/2017	7/18/2017	4/11/2017	1/16/2017
Receive Date:		10/13/2017	7/21/2017	4/17/2017	1/20/2017
Report Date:		11/14/2017	9/20/2017	5/24/2017	2/28/2017
Analyte	Units	C17100506-002	C17070709-001	C17040483-001	C17010543-006
Bicarbonate as HCO ₃	mg/L	344	309	335	336
Chloride	mg/L	45	43	41	42
Sulfate	mg/L	2270			
Calcium	mg/L	616			
Magnesium	mg/L	176			
Potassium	mg/L	7			
Sodium	mg/L	151			
pH	s.u.	6.76	6.57	6.59	6.51
Solids, Total Dissolved TDS @ 180 C	mg/L	3510	3470	3560	3530
Nitrogen, Ammonia as N	mg/L	ND(0.05)			
Nitrogen, Nitrate+Nitrite as N	mg/L	0.05			
Aluminum	mg/L	0.1			
Beryllium	mg/L	ND(0.001)			
Cadmium	mg/L	ND(0.005)			
Cobalt	mg/L	0.03			
Lead	mg/L	0.001			
Manganese	mg/L	1.89			
Molybdenum	mg/L	0.1			
Nickel	mg/L	ND(0.05)			
Uranium	mg/L	0.235			
Vanadium	mg/L	ND(0.1)			
Arsenic-III	mg/L	ND(0.001)			
Selenium-IV	mg/L	ND(0.001)			
A/C Balance	%	-2.13			
Anions	meq/L	54.2			
Cations	meq/L	52.0			
Solids, Total Dissolved - Calculated	mg/L	3400			
TDS Ratio	unitless	1.02			
Gross Alpha minus Rn & U	pCi/L	5.6			
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.4			
Gross Alpha minus Rn & U MDC	pCi/L	0.6			
Lead 210	pCi/L	1.7			
Lead 210 precision (±)	pCi/L	1.1			
Lead 210 MDC	pCi/L	1.6			
Radium 226	pCi/L	4.9			
Radium 226 precision (±)	pCi/L	1			
Radium 226 MDC	pCi/L	0.1			
Radium 228	pCi/L	11.1			
Radium 228 precision (±)	pCi/L	2.4			
Radium 228 MDC	pCi/L	1.1			
Thorium 230	pCi/L	0.2			
Thorium 230 precision (±)	pCi/L	0.2			
Thorium 230 MDC	pCi/L	0.3			
Trihalomethanes, Total	ug/L	ND(0.50)			



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070709-005
Client Sample ID: RW-A

Report Date: 08/01/17
Collection Date: 07/19/17 11:18
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	31	mg/L		5		A2320 B	07/27/17 17:51 / jcg
Chloride	27	mg/L	D	2		E300.0	07/28/17 17:30 / jcg
PHYSICAL PROPERTIES							
pH	5.55	s.u.	H	0.01		A4500-H B	07/24/17 13:13 / mvr
Solids, Total Dissolved TDS @ 180 C	5570	mg/L	D	40		A2540 C	07/24/17 12:04 / 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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100506-007
Client Sample ID: RW-A

Report Date: 11/14/17
Collection Date: 10/10/17 16:32
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	57	mg/L		5		A2320 B	10/15/17 23:41 / mvr
Chloride	32	mg/L	D	2		E300.0	10/18/17 06:54 / jcg
Sulfate	4200	mg/L	D	8		E300.0	10/18/17 06:54 / jcg
Calcium	527	mg/L		1		E200.7	10/19/17 22:19 / eli-b
Magnesium	625	mg/L		1		E200.7	10/19/17 22:19 / eli-b
Potassium	11	mg/L		1		E200.7	10/19/17 22:19 / eli-b
Sodium	157	mg/L	D	3		E200.7	10/19/17 22:19 / eli-b
PHYSICAL PROPERTIES							
pH	5.94	s.u.	H	0.01		A4500-H B	10/15/17 21:03 / mvr
Solids, Total Dissolved TDS @ 180 C	5950	mg/L	D	40		A2540 C	10/15/17 21:24 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.03	mg/L		0.01		E353.2	10/19/17 12:40 / ljl
Nitrogen, Ammonia as N	0.96	mg/L		0.05		A4500-NH ₃ G	10/14/17 12:44 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/29/17 12:45 / eli-b
Beryllium	0.001	mg/L		0.001		E200.8	11/02/17 08:32 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/28/17 05:02 / eli-b
Cobalt	0.51	mg/L		0.01		E200.8	10/28/17 05:02 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/28/17 05:02 / eli-b
Manganese	7.63	mg/L		0.01		E200.8	10/28/17 05:02 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	10/28/17 05:02 / eli-b
Nickel	0.44	mg/L		0.05		E200.8	10/28/17 05:02 / eli-b
Uranium	0.0123	mg/L		0.0003		E200.8	11/09/17 15:35 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/28/17 05:02 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/17 20:01 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 13:12 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	5600	mg/L				A1030 E	11/10/17 15:55 / tla
A/C Balance	-2.55	%				A1030 E	11/10/17 15:55 / tla
Anions	89.3	meq/L				A1030 E	11/10/17 15:55 / tla
Cations	84.9	meq/L				A1030 E	11/10/17 15:55 / tla
TDS Ratio	1.06	unitless				A1030 E	11/10/17 15:55 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	14.9	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U Precision (±)	3.1	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 17:07 / dmf

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 3
Lab ID: C17100506-007
Client Sample ID: RW-A

Report Date: 11/14/17
Collection Date: 10/10/17 16:32
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.3	pCi/L	U		E909.0		10/25/17 17:24 / meh
Lead 210 precision (±)	1.0	pCi/L			E909.0		10/25/17 17:24 / meh
Lead 210 MDC	1.5	pCi/L			E909.0		10/25/17 17:24 / meh
Radium 226	12.4	pCi/L			E903.0		11/07/17 11:32 / arh
Radium 226 precision (±)	2.4	pCi/L			E903.0		11/07/17 11:32 / arh
Radium 226 MDC	0.1	pCi/L			E903.0		11/07/17 11:32 / arh
Radium 228	19.9	pCi/L			RA-05		11/08/17 18:16 / trs
Radium 228 precision (±)	3.8	pCi/L			RA-05		11/08/17 18:16 / trs
Radium 228 MDC	1.6	pCi/L			RA-05		11/08/17 18:16 / trs
Thorium 230	0.07	pCi/L	U		E908.0		11/08/17 10:14 / cnh
Thorium 230 precision (±)	0.1	pCi/L			E908.0		11/08/17 10:14 / cnh
Thorium 230 MDC	0.2	pCi/L			E908.0		11/08/17 10:14 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		10/20/17 20:35 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/20/17 20:35 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/20/17 20:35 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/20/17 20:35 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/12/17 11:19 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139	E624		10/20/17 20:35 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127	E624		10/20/17 20:35 / eli-b
Surr: Toluene-d8	100	%REC		80-123	E624		10/20/17 20:35 / 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:		RW-A	RW-A	RW-A	RW-A
Collection Date:		10/10/2017	7/18/2017	4/11/2017	1/16/2017
Receive Date:		10/13/2017	7/21/2017	4/17/2017	1/20/2017
Report Date:		11/14/2017	9/20/2017	5/24/2017	2/28/2017
Analyte	Units	C17100506-007	C17070709-005	C17040483-006	C17010543-001
Bicarbonate as HCO ₃	mg/L	57	31	61	83
Chloride	mg/L	32	27	27	30
Sulfate	mg/L	4200			
Calcium	mg/L	527			
Magnesium	mg/L	625			
Potassium	mg/L	11			
Sodium	mg/L	157			
pH	s.u.	5.94	5.55	5.92	5.93
Solids, Total Dissolved TDS @ 180 C	mg/L	5950	5570	5700	5550
Nitrogen, Ammonia as N	mg/L	0.96			
Nitrogen, Nitrate+Nitrite as N	mg/L	0.03			
Aluminum	mg/L	ND(0.1)			
Beryllium	mg/L	0.001			
Cadmium	mg/L	ND(0.005)			
Cobalt	mg/L	0.51			
Lead	mg/L	ND(0.001)			
Manganese	mg/L	7.63			
Molybdenum	mg/L	ND(0.1)			
Nickel	mg/L	0.44			
Uranium	mg/L	0.0123			
Vanadium	mg/L	ND(0.1)			
Arsenic-III	mg/L	ND(0.001)			
Selenium-IV	mg/L	ND(0.001)			
A/C Balance	%	-2.55			
Anions	meq/L	89.3			
Cations	meq/L	84.9			
Solids, Total Dissolved - Calculated	mg/L	5600			
TDS Ratio	unitless	1.06			
Gross Alpha minus Rn & U	pCi/L	14.9			
Gross Alpha minus Rn & U Precision (±)	pCi/L	3.1			
Gross Alpha minus Rn & U MDC	pCi/L	0.6			
Lead 210	pCi/L	1.3			
Lead 210 precision (±)	pCi/L	1.0			
Lead 210 MDC	pCi/L	1.5			
Radium 226	pCi/L	12.4			
Radium 226 precision (±)	pCi/L	2.4			
Radium 226 MDC	pCi/L	0.1			
Radium 228	pCi/L	19.9			
Radium 228 precision (±)	pCi/L	3.8			
Radium 228 MDC	pCi/L	1.6			
Thorium 230	pCi/L	0.07			
Thorium 230 precision (±)	pCi/L	0.1			
Thorium 230 MDC	pCi/L	0.2			
Trihalomethanes, Total	ug/L	ND(0.50)			

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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070709-002
Client Sample ID: NW-1

Report Date: 08/01/17
Collection Date: 07/19/17 10:15
DateReceived: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	409	mg/L		5		A2320 B	07/27/17 17:31 / jcg
Chloride	16	mg/L		1		E300.0	07/28/17 15:58 / jcg
PHYSICAL PROPERTIES							
pH	7.13	s.u.	H	0.01		A4500-H B	07/24/17 13:04 / mvr
Solids, Total Dissolved TDS @ 180 C	3700	mg/L	D	40		A2540 C	07/24/17 12:03 / 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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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100505-001
Client Sample ID: NW-1

Report Date: 10/23/17
Collection Date: 10/11/17 10:06
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	428	mg/L		5		A2320 B	10/15/17 22:10 / mvr
Chloride	17	mg/L		1		E300.0	10/18/17 02:50 / jcg
PHYSICAL PROPERTIES							
pH	7.15	s.u.	H	0.01		A4500-H B	10/15/17 20:21 / mvr
Solids, Total Dissolved TDS @ 180 C	3710	mg/L	D	40		A2540 C	10/17/17 13:23 / 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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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070709-004
Client Sample ID: NW-2

Report Date: 08/01/17
Collection Date: 07/19/17 10:55
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	132	mg/L		5		A2320 B	07/27/17 17:44 / jcg
Chloride	29	mg/L	D	2		E300.0	07/28/17 16:35 / jcg
PHYSICAL PROPERTIES							
pH	6.16	s.u.	H	0.01		A4500-H B	07/24/17 13:10 / mvr
Solids, Total Dissolved TDS @ 180 C	4950	mg/L	D	40		A2540 C	07/24/17 12:04 / 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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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100505-003
Client Sample ID: NW-2

Report Date: 10/23/17
Collection Date: 10/11/17 10:40
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	143	mg/L		5		A2320 B	10/15/17 22:24 / mvr
Chloride	32	mg/L	D	2		E300.0	10/18/17 03:25 / jcg
PHYSICAL PROPERTIES							
pH	6.18	s.u.	H	0.01		A4500-H B	10/15/17 20:27 / mvr
Solids, Total Dissolved TDS @ 180 C	4850	mg/L	D	40		A2540 C	10/17/17 13:26 / 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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070708-004
Client Sample ID: NW-3

Report Date: 09/20/17
Collection Date: 07/18/17 14:15
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	350	mg/L		5		A2320 B	07/27/17 16:51 / jcg
Chloride	34	mg/L	D	2		E300.0	07/28/17 14:08 / jcg
Sulfate	2530	mg/L	D	8		E300.0	07/28/17 14:08 / jcg
Calcium	526	mg/L		1		E200.7	07/28/17 16:26 / eli-b
Magnesium	297	mg/L		1		E200.7	07/28/17 16:26 / eli-b
Potassium	8	mg/L		1		E200.7	07/27/17 22:00 / eli-b
Sodium	167	mg/L		1		E200.7	07/27/17 22:00 / eli-b
PHYSICAL PROPERTIES							
pH	6.85	s.u.	H	0.01		A4500-H B	07/24/17 12:44 / mvr
Solids, Total Dissolved TDS @ 180 C	4100	mg/L	D	40		A2540 C	07/24/17 12:02 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.01		E353.2	07/28/17 17:27 / ljl
Nitrogen, Ammonia as N	0.34	mg/L		0.05		A4500-NH ₃ G	07/31/17 13:28 / ljl
METALS, TOTAL							
Aluminum	0.1	mg/L		0.1		E200.8	07/27/17 23:26 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	08/01/17 03:56 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/27/17 23:26 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	07/27/17 23:26 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/27/17 23:26 / eli-b
Manganese	1.46	mg/L		0.01		E200.8	07/27/17 23:26 / eli-b
Molybdenum	0.7	mg/L		0.1		E200.8	07/27/17 23:26 / eli-b
Nickel	ND	mg/L		0.05		E200.8	07/27/17 23:26 / eli-b
Uranium	0.201	mg/L		0.0003		E200.8	07/27/17 23:26 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/27/17 23:26 / eli-b
METALS - SPECIATED							
Arsenic-III	0.033	mg/L		0.001		E1632AM	07/29/17 01:17 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:13 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	3800	mg/L				A1030 E	08/03/17 15:51 / tla
A/C Balance	-0.97	%				A1030 E	08/03/17 15:51 / tla
Anions	59.3	meq/L				A1030 E	08/03/17 15:51 / tla
Cations	58.2	meq/L				A1030 E	08/03/17 15:51 / tla
TDS Ratio	1.09	unitless				A1030 E	08/03/17 15:51 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	27.9	pCi/L				E900.1	08/14/17 16:55 / dmf
Gross Alpha minus Rn & U Precision (±)	5.5	pCi/L				E900.1	08/14/17 16:55 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/14/17 16:55 / dmf

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: C17070708-004
Client Sample ID: NW-3

Report Date: 09/20/17
Collection Date: 07/18/17 14:15
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	1.8	pCi/L			E909.0		08/25/17 18:43 / meh
Lead 210 precision (±)	1.0	pCi/L			E909.0		08/25/17 18:43 / meh
Lead 210 MDC	1.4	pCi/L			E909.0		08/25/17 18:43 / meh
Radium 226	29.0	pCi/L			E903.0		08/21/17 14:03 / meh
Radium 226 precision (±)	5.6	pCi/L			E903.0		08/21/17 14:03 / meh
Radium 226 MDC	0.2	pCi/L			E903.0		08/21/17 14:03 / meh
Radium 228	15.4	pCi/L			RA-05		08/16/17 15:38 / plj
Radium 228 precision (±)	3.1	pCi/L			RA-05		08/16/17 15:38 / plj
Radium 228 MDC	1.7	pCi/L			RA-05		08/16/17 15:38 / plj
Thorium 230	0.08	pCi/L	U		E908.0		08/17/17 13:51 / cng
Thorium 230 precision (±)	0.1	pCi/L			E908.0		08/17/17 13:51 / cng
Thorium 230 MDC	0.2	pCi/L			E908.0		08/17/17 13:51 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50	E624		07/26/17 16:04 / eli-b
Bromoform	ND	ug/L		0.50	E624		07/26/17 16:04 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		07/26/17 16:04 / eli-b
Chloroform	ND	ug/L		0.50	E624		07/26/17 16:04 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139	E624		07/26/17 16:04 / eli-b
Surr: p-Bromofluorobenzene	132	%REC	S	80-127	E624		07/26/17 16:04 / eli-b
Surr: Toluene-d8	102	%REC		80-123	E624		07/26/17 16:04 / 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.
S - Spike recovery outside of advisory limits.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100506-004
Client Sample ID: NW-3

Report Date: 11/14/17
Collection Date: 10/10/17 15:32
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	448	mg/L		5		A2320 B	10/15/17 23:25 / mvr
Chloride	39	mg/L	D	2		E300.0	10/18/17 04:52 / jcg
Sulfate	2700	mg/L	D	8		E300.0	10/18/17 04:52 / jcg
Calcium	544	mg/L		1		E200.7	10/19/17 21:59 / eli-b
Magnesium	304	mg/L		1		E200.7	10/19/17 21:59 / eli-b
Potassium	8	mg/L		1		E200.7	10/19/17 21:59 / eli-b
Sodium	171	mg/L	D	2		E200.7	10/19/17 21:59 / eli-b
PHYSICAL PROPERTIES							
pH	6.91	s.u.	H	0.01		A4500-H B	10/15/17 20:54 / mvr
Solids, Total Dissolved TDS @ 180 C	4080	mg/L	D	40		A2540 C	10/15/17 21:24 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.02	mg/L		0.01		E353.2	10/19/17 12:36 / ljl
Nitrogen, Ammonia as N	0.28	mg/L		0.05		A4500-NH ₃ G	10/14/17 12:36 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/29/17 12:34 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	11/02/17 08:22 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/28/17 04:41 / eli-b
Cobalt	ND	mg/L		0.01		E200.8	10/28/17 04:41 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/28/17 04:41 / eli-b
Manganese	1.38	mg/L		0.01		E200.8	10/28/17 04:41 / eli-b
Molybdenum	0.8	mg/L		0.1		E200.8	10/28/17 04:41 / eli-b
Nickel	ND	mg/L		0.05		E200.8	10/28/17 04:41 / eli-b
Uranium	0.196	mg/L		0.0003		E200.8	10/28/17 04:41 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/28/17 04:41 / eli-b
METALS - SPECIATED							
Arsenic-III	0.212	mg/L	D	0.005		E1632AM	11/02/17 11:25 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 13:07 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4000	mg/L				A1030 E	11/10/17 15:54 / tia
A/C Balance	-3.89	%				A1030 E	11/10/17 15:54 / tia
Anions	64.7	meq/L				A1030 E	11/10/17 15:54 / tia
Cations	59.9	meq/L				A1030 E	11/10/17 15:54 / tia
TDS Ratio	1.02	unitless				A1030 E	11/10/17 15:54 / tia
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	27.6	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U Precision (±)	5.5	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 17:07 / dmf

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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100506-004
Client Sample ID: NW-3

Report Date: 11/14/17
Collection Date: 10/10/17 15:32
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	2.4	pCi/L				E909.0	10/25/17 09:51 / meh
Lead 210 precision (±)	1.2	pCi/L				E909.0	10/25/17 09:51 / meh
Lead 210 MDC	1.6	pCi/L				E909.0	10/25/17 09:51 / meh
Radium 226	20.0	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 226 precision (±)	3.8	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 228	15.1	pCi/L				RA-05	11/08/17 16:10 / trs
Radium 228 precision (±)	3.0	pCi/L				RA-05	11/08/17 16:10 / trs
Radium 228 MDC	1.3	pCi/L				RA-05	11/08/17 16:10 / trs
Thorium 230	0.06	pCi/L	U			E908.0	11/07/17 10:50 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	11/07/17 10:50 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	11/07/17 10:50 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/20/17 18:38 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/20/17 18:38 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/20/17 18:38 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/20/17 18:38 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/12/17 11:19 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139		E624	10/20/17 18:38 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127		E624	10/20/17 18:38 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	10/20/17 18:38 / 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:		10/10/2017	7/18/2017	4/11/2017	1/16/2017
Receive Date:		10/13/2017	7/21/2017	4/17/2017	1/20/2017
Report Date:		11/14/2017	9/20/2017	5/24/2017	2/28/2017
Analyte	Units	C17100506-004	C17070708-004	C17040482-005	C17010541-012
Bicarbonate as HCO ₃	mg/L	448	350	390	382
Chloride	mg/L	39	34	36	35
Sulfate	mg/L	2700	2530	2660	2730
Calcium	mg/L	544	526	545	543
Magnesium	mg/L	304	297	324	329
Potassium	mg/L	8	8	8	8
Sodium	mg/L	171	167	170	162
pH	s.u.	6.91	6.85	6.86	6.96
Solids, Total Dissolved TDS @ 180 C	mg/L	4080	4100	4060	4360
Nitrogen, Ammonia as N	mg/L	0.28	0.34	0.32	0.4
Nitrogen, Nitrate+Nitrite as N	mg/L	0.02	ND(0.01)	ND(0.01)	0.1
Aluminum	mg/L	ND(0.1)	0.1	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	0.01
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	1.38	1.46	1.20	1.04
Molybdenum	mg/L	0.8	0.7	0.8	0.9
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.196	0.201	0.214	0.234
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.212	0.033	0.014	0.180
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-3.89	-0.97	-1.02	-2.14
Anions	meq/L	64.7	59.3	62.8	64.1
Cations	meq/L	59.9	58.2	61.5	61.4
Solids, Total Dissolved - Calculated	mg/L	4000	3800	4000	4000
TDS Ratio	unitless	1.02	1.09	1.03	1.09
Gross Alpha minus Rn & U	pCi/L	27.6	27.9	31.1	31.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	5.5	5.5	6.7	6.6
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.9	1.5
Lead 210	pCi/L	2.4	1.8	1.1	1.8
Lead 210 precision (±)	pCi/L	1.2	1.0	0.8	0.9
Lead 210 MDC	pCi/L	1.6	1.4	1.2	1.2
Radium 226	pCi/L	20.0	29.0	22	23
Radium 226 precision (±)	pCi/L	3.8	5.6	4.3	4.3
Radium 226 MDC	pCi/L	0.1	0.2	0.20	0.19
Radium 228	pCi/L	15.1	15.4	0.02	8.5
Radium 228 precision (±)	pCi/L	3.0	3.1	1.2	1.9
Radium 228 MDC	pCi/L	1.3	1.7	2.1	1.5
Thorium 230	pCi/L	0.06	0.08	0.4	0.04
Thorium 230 precision (±)	pCi/L	0.1	0.1	0.2	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.3	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: C17070709-003
Client Sample ID: NW-4

Report Date: 08/01/17
Collection Date: 07/19/17 10:36
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	40	mg/L		5		A2320 B	07/27/17 17:37 / jcg
Chloride	20	mg/L	D	2		E300.0	07/28/17 16:17 / jcg
PHYSICAL PROPERTIES							
pH	6.44	s.u.	H	0.01		A4500-H B	07/24/17 13:07 / mvr
Solids, Total Dissolved TDS @ 180 C	4380	mg/L	D	40		A2540 C	07/24/17 12:03 / 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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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100505-002
Client Sample ID: NW-4

Report Date: 10/23/17
Collection Date: 10/11/17 10:28
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	42	mg/L		5		A2320 B	10/15/17 22:17 / mvr
Chloride	23	mg/L	D	2		E300.0	10/18/17 03:08 / jcg
PHYSICAL PROPERTIES							
pH	6.48	s.u.	H	0.01		A4500-H B	10/15/17 20:24 / mvr
Solids, Total Dissolved TDS @ 180 C	4370	mg/L	D	40		A2540 C	10/17/17 13:23 / 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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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070709-006
Client Sample ID: NW-5

Report Date: 08/01/17
Collection Date: 07/19/17 11:38
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	07/27/17 17:56 / jcg
Chloride	28	mg/L	D	2		E300.0	07/28/17 18:26 / jcg
PHYSICAL PROPERTIES							
pH	5.39	s.u.	H	0.01		A4500-H B	07/24/17 13:24 / mvr
Solids, Total Dissolved TDS @ 180 C	5750	mg/L	D	40		A2540 C	07/24/17 12:04 / 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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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100505-004
Client Sample ID: NW-5

Report Date: 10/23/17
Collection Date: 10/11/17 10:52
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO ₃	100	mg/L		5		A2310 B	10/18/17 10:54 / mvr
Bicarbonate as HCO ₃	ND	mg/L		5		A2320 B	10/15/17 22:27 / mvr
Chloride	34	mg/L	D	2		E300.0	10/18/17 03:42 / jcg
PHYSICAL PROPERTIES							
pH	3.83	s.u.	H	0.01		A4500-H B	10/15/17 20:30 / mvr
Solids, Total Dissolved TDS @ 180 C	5320	mg/L	D	40		A2540 C	10/17/17 13:27 / 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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070708-003
Client Sample ID: MW-7

Report Date: 09/20/17
Collection Date: 07/18/17 12:36
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	220	mg/L		5		A2320 B	07/27/17 16:42 / jcg
Chloride	34	mg/L	D	2		E300.0	07/28/17 13:12 / jcg
Sulfate	2700	mg/L	D	8		E300.0	07/28/17 13:12 / jcg
Calcium	585	mg/L		1		E200.7	07/28/17 16:22 / eli-b
Magnesium	319	mg/L		1		E200.7	07/28/17 16:22 / eli-b
Potassium	9	mg/L		1		E200.7	07/27/17 21:57 / eli-b
Sodium	148	mg/L		1		E200.7	07/27/17 21:57 / eli-b
PHYSICAL PROPERTIES							
pH	7.67	s.u.	H	0.01		A4500-H B	07/24/17 12:41 / mvr
Solids, Total Dissolved TDS @ 180 C	4330	mg/L	D	40		A2540 C	07/24/17 12:02 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.41	mg/L		0.01		E353.2	07/28/17 17:24 / ljl
Nitrogen, Ammonia as N	0.25	mg/L		0.05		A4500-NH ₃ G	07/31/17 13:27 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	07/27/17 23:23 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	08/01/17 03:52 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	07/27/17 23:23 / eli-b
Cobalt	0.15	mg/L		0.01		E200.8	07/27/17 23:23 / eli-b
Lead	ND	mg/L		0.001		E200.8	07/27/17 23:23 / eli-b
Manganese	4.81	mg/L		0.01		E200.8	07/27/17 23:23 / eli-b
Molybdenum	0.4	mg/L		0.1		E200.8	07/27/17 23:23 / eli-b
Nickel	0.16	mg/L		0.05		E200.8	07/27/17 23:23 / eli-b
Uranium	0.0532	mg/L		0.0003		E200.8	07/27/17 23:23 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	07/27/17 23:23 / eli-b
METALS - SPECIATED							
Arsenic-III	0.004	mg/L		0.001		E1632AM	07/29/17 01:05 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	07/27/17 13:11 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	3900	mg/L				A1030 E	08/03/17 15:51 / tla
A/C Balance	1.09	%				A1030 E	08/03/17 15:51 / tla
Anions	60.8	meq/L				A1030 E	08/03/17 15:51 / tla
Cations	62.2	meq/L				A1030 E	08/03/17 15:51 / tla
TDS Ratio	1.10	unitless				A1030 E	08/03/17 15:51 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	11.9	pCi/L				E900.1	08/14/17 16:55 / dmf
Gross Alpha minus Rn & U Precision (±)	2.5	pCi/L				E900.1	08/14/17 16:55 / dmf
Gross Alpha minus Rn & U MDC	0.5	pCi/L				E900.1	08/14/17 16:55 / dmf

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.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17070708-003
Client Sample ID: MW-7

Report Date: 09/20/17
Collection Date: 07/18/17 12:36
Date Received: 07/21/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	2.1	pCi/L				E909.0	08/25/17 16:04 / meh
Lead 210 precision (±)	1.1	pCi/L				E909.0	08/25/17 16:04 / meh
Lead 210 MDC	1.4	pCi/L				E909.0	08/25/17 16:04 / meh
Radium 226	10.7	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 226 precision (±)	2.1	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 226 MDC	0.2	pCi/L				E903.0	08/21/17 14:03 / meh
Radium 228	15.3	pCi/L				RA-05	08/16/17 15:38 / plj
Radium 228 precision (±)	3.2	pCi/L				RA-05	08/16/17 15:38 / plj
Radium 228 MDC	1.6	pCi/L				RA-05	08/16/17 15:38 / plj
Thorium 230	0.01	pCi/L	U			E908.0	08/17/17 09:33 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/17/17 09:33 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/17/17 09:33 / cng
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/17 15:33 / eli-b
Bromoform	ND	ug/L		0.50		E624	07/26/17 15:33 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/17 15:33 / eli-b
Chloroform	ND	ug/L		0.50		E624	07/26/17 15:33 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	08/15/17 12:02 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	07/26/17 15:33 / eli-b
Surr: p-Bromofluorobenzene	132	%REC	S	80-127		E624	07/26/17 15:33 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	07/26/17 15:33 / 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.
S - Spike recovery outside of advisory limits.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100506-003
Client Sample ID: MW-7

Report Date: 11/14/17
Collection Date: 10/10/17 14:05
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	263	mg/L		5		A2320 B	10/15/17 23:18 / mvr
Chloride	37	mg/L	D	2		E300.0	10/18/17 04:35 / jcg
Sulfate	2810	mg/L	D	8		E300.0	10/18/17 04:35 / jcg
Calcium	592	mg/L		1		E200.7	10/19/17 21:56 / eli-b
Magnesium	311	mg/L		1		E200.7	10/19/17 21:56 / eli-b
Potassium	9	mg/L		1		E200.7	10/19/17 21:56 / eli-b
Sodium	145	mg/L	D	2		E200.7	10/19/17 21:56 / eli-b
PHYSICAL PROPERTIES							
pH	7.20	s.u.	H	0.01		A4500-H B	10/15/17 20:51 / mvr
Solids, Total Dissolved TDS @ 180 C	4240	mg/L	D	40		A2540 C	10/15/17 21:24 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.64	mg/L		0.01		E353.2	10/19/17 12:35 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH ₃ G	10/14/17 12:35 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/29/17 12:31 / eli-b
Beryllium	ND	mg/L		0.001		E200.8	11/02/17 07:44 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/28/17 04:38 / eli-b
Cobalt	0.15	mg/L		0.01		E200.8	10/28/17 04:38 / eli-b
Lead	ND	mg/L		0.001		E200.8	10/28/17 04:38 / eli-b
Manganese	4.85	mg/L		0.01		E200.8	10/28/17 04:38 / eli-b
Molybdenum	0.4	mg/L		0.1		E200.8	10/28/17 04:38 / eli-b
Nickel	0.14	mg/L		0.05		E200.8	10/28/17 04:38 / eli-b
Uranium	0.0615	mg/L		0.0003		E200.8	10/28/17 04:38 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/28/17 04:38 / eli-b
METALS - SPECIATED							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/17 19:13 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 13:02 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4000	mg/L				A1030 E	11/10/17 15:54 / tla
A/C Balance	-1.71	%				A1030 E	11/10/17 15:54 / tla
Anions	63.8	meq/L				A1030 E	11/10/17 15:54 / tla
Cations	61.7	meq/L				A1030 E	11/10/17 15:54 / tla
TDS Ratio	1.05	unitless				A1030 E	11/10/17 15:54 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	10.3	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U Precision (±)	2.2	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 17:07 / dmf

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



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation
Project: Zone 3
Lab ID: C17100506-003
Client Sample ID: MW-7

Report Date: 11/14/17
Collection Date: 10/10/17 14:05
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	0.7	pCi/L	U			E909.0	10/25/17 07:10 / meh
Lead 210 precision (±)	0.9	pCi/L				E909.0	10/25/17 07:10 / meh
Lead 210 MDC	1.5	pCi/L				E909.0	10/25/17 07:10 / meh
Radium 226	8.3	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 226 precision (±)	1.6	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	11/07/17 09:57 / arh
Radium 228	15.0	pCi/L				RA-05	11/08/17 16:10 / trs
Radium 228 precision (±)	3.0	pCi/L				RA-05	11/08/17 16:10 / trs
Radium 228 MDC	1.4	pCi/L				RA-05	11/08/17 16:10 / trs
Thorium 230	0.05	pCi/L	U			E908.0	11/08/17 10:14 / cnh
Thorium 230 precision (±)	0.06	pCi/L				E908.0	11/08/17 10:14 / cnh
Thorium 230 MDC	0.1	pCi/L				E908.0	11/08/17 10:14 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/20/17 19:07 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/20/17 19:07 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/20/17 19:07 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/20/17 19:07 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/12/17 11:19 / sec
Surr: 1,2-Dichloroethane-d4	103	%REC		71-139		E624	10/20/17 19:07 / eli-b
Surr: p-Bromofluorobenzene	106	%REC		80-127		E624	10/20/17 19:07 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	10/20/17 19:07 / 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:		10/10/2017	7/18/2017	4/11/2017	1/16/2017
Receive Date:		10/13/2017	7/21/2017	4/17/2017	1/20/2017
Report Date:		11/14/2017	9/20/2017	5/24/2017	2/28/2017
Analyte	Units	C17100506-003	C17070708-003	C17040482-002	C17010541-011
Bicarbonate as HCO ₃	mg/L	263	220	257	221
Chloride	mg/L	37	34	34	33
Sulfate	mg/L	2810	2700	2770	2830
Calcium	mg/L	592	585	584	588
Magnesium	mg/L	311	319	309	312
Potassium	mg/L	9	9	9	8
Sodium	mg/L	145	148	143	139
pH	s.u.	7.20	7.67	6.74	6.66
Solids, Total Dissolved TDS @ 180 C	mg/L	4240	4330	4110	3930
Nitrogen, Ammonia as N	mg/L	ND(0.05)	0.25	0.22	0.56
Nitrogen, Nitrate+Nitrite as N	mg/L	0.64	0.41	0.4	0.1
Aluminum	mg/L	ND(0.1)	ND(0.1)	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(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.15	0.15	0.14	0.15
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	4.85	4.81	4.37	3.98
Molybdenum	mg/L	0.4	0.4	0.3	0.4
Nickel	mg/L	0.14	0.16	0.15	0.17
Uranium	mg/L	0.0615	0.0532	0.0455	0.0486
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.004	0.003	0.016
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-1.71	1.09	-1.52	-1.79
Anions	meq/L	63.8	60.8	62.9	63.5
Cations	meq/L	61.7	62.2	61.0	61.3
Solids, Total Dissolved - Calculated	mg/L	4000	3900	4000	4000
TDS Ratio	unitless	1.05	1.10	1.03	0.97
Gross Alpha minus Rn & U	pCi/L	10.3	11.9	15.6	14.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.2	2.5	3.9	3.5
Gross Alpha minus Rn & U MDC	pCi/L	0.6	0.5	1.9	1.4
Lead 210	pCi/L	0.7	2.1	0.6	0.3
Lead 210 precision (±)	pCi/L	0.9	1.1	0.7	0.7
Lead 210 MDC	pCi/L	1.5	1.4	1.1	1.1
Radium 226	pCi/L	8.3	10.7	8.7	8.5
Radium 226 precision (±)	pCi/L	1.6	2.1	1.7	1.7
Radium 226 MDC	pCi/L	0.1	0.2	0.20	0.18
Radium 228	pCi/L	15.0	15.3	1.1	13
Radium 228 precision (±)	pCi/L	3.0	3.2	1.3	2.7
Radium 228 MDC	pCi/L	1.4	1.6	2.0	1.6
Thorium 230	pCi/L	0.05	0.01	0.05	0.02
Thorium 230 precision (±)	pCi/L	0.06	0.1	0.09	0.06
Thorium 230 MDC	pCi/L	0.1	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: Zone 3
Lab ID: C17100506-008
Client Sample ID: RW-11

Report Date: 11/14/17
Collection Date: 10/10/17 17:00
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO ₃	137	mg/L		5		A2320 B	10/15/17 23:49 / mvr
Chloride	36	mg/L	D	2		E300.0	10/18/17 07:12 / jcg
Sulfate	3610	mg/L	D	8		E300.0	10/18/17 07:12 / jcg
Calcium	550	mg/L		1		E200.7	10/19/17 22:23 / eli-b
Magnesium	488	mg/L		1		E200.7	10/19/17 22:23 / eli-b
Potassium	12	mg/L		1		E200.7	10/19/17 22:23 / eli-b
Sodium	143	mg/L	D	3		E200.7	10/19/17 22:23 / eli-b
PHYSICAL PROPERTIES							
pH	6.48	s.u.	H	0.01		A4500-H B	10/15/17 21:06 / mvr
Solids, Total Dissolved TDS @ 180 C	5120	mg/L	D	40		A2540 C	10/15/17 21:25 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.01	mg/L		0.01		E353.2	10/19/17 12:41 / ljl
Nitrogen, Ammonia as N	3.4	mg/L	D	0.2		A4500-NH3 G	10/14/17 12:46 / ljl
METALS, TOTAL							
Aluminum	ND	mg/L		0.1		E200.8	10/29/17 12:48 / eli-b
Beryllium	0.001	mg/L		0.001		E200.8	11/02/17 08:46 / eli-b
Cadmium	ND	mg/L		0.005		E200.8	10/28/17 05:05 / eli-b
Cobalt	0.41	mg/L		0.01		E200.8	10/28/17 05:05 / eli-b
Lead	0.002	mg/L		0.001		E200.8	10/28/17 05:05 / eli-b
Manganese	6.72	mg/L		0.01		E200.8	10/28/17 05:05 / eli-b
Molybdenum	0.2	mg/L		0.1		E200.8	10/28/17 05:05 / eli-b
Nickel	0.35	mg/L		0.05		E200.8	10/28/17 05:05 / eli-b
Uranium	0.0734	mg/L		0.0003		E200.8	11/09/17 15:38 / eli-b
Vanadium	ND	mg/L		0.1		E200.8	10/28/17 05:05 / eli-b
METALS - SPECIATED							
Arsenic-III	0.001	mg/L		0.001		E1632AM	11/01/17 20:13 / eli-h
METALS - SPECIATED							
Selenium-IV	ND	mg/L		0.001		A3114 B	10/24/17 13:13 / eli-h
DATA QUALITY							
Solids, Total Dissolved - Calculated	4900	mg/L				A1030 E	11/10/17 15:55 / tla
A/C Balance	-2.68	%				A1030 E	11/10/17 15:55 / tla
Anions	78.5	meq/L				A1030 E	11/10/17 15:55 / tla
Cations	74.4	meq/L				A1030 E	11/10/17 15:55 / tla
TDS Ratio	1.04	unitless				A1030 E	11/10/17 15:55 / tla
RADIONUCLIDES, TOTAL							
Gross Alpha minus Rn & U	12.0	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U Precision (±)	2.6	pCi/L				E900.1	11/07/17 17:07 / dmf
Gross Alpha minus Rn & U MDC	0.6	pCi/L				E900.1	11/07/17 17:07 / dmf

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: C17100506-008
Client Sample ID: RW-11

Report Date: 11/14/17
Collection Date: 10/10/17 17:00
Date Received: 10/13/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Lead 210	2.7	pCi/L				E909.0	10/25/17 19:58 / meh
Lead 210 precision (±)	1.3	pCi/L				E909.0	10/25/17 19:58 / meh
Lead 210 MDC	1.6	pCi/L				E909.0	10/25/17 19:58 / meh
Radium 226	9.7	pCi/L				E903.0	11/07/17 11:32 / arh
Radium 226 precision (±)	1.9	pCi/L				E903.0	11/07/17 11:32 / arh
Radium 226 MDC	0.1	pCi/L				E903.0	11/07/17 11:32 / arh
Radium 228	20.6	pCi/L				RA-05	11/08/17 18:16 / trs
Radium 228 precision (±)	4.0	pCi/L				RA-05	11/08/17 18:16 / trs
Radium 228 MDC	1.6	pCi/L				RA-05	11/08/17 18:16 / trs
Thorium 230	0.1	pCi/L	U			E908.0	11/08/17 10:14 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	11/08/17 10:14 / cnh
Thorium 230 MDC	0.2	pCi/L				E908.0	11/08/17 10:14 / cnh
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E624	10/20/17 21:04 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/20/17 21:04 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/20/17 21:04 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/20/17 21:04 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/12/17 11:19 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	10/20/17 21:04 / eli-b
Surr: p-Bromofluorobenzene	109	%REC		80-127		E624	10/20/17 21:04 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	10/20/17 21:04 / 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

United Nuclear Corporation					
Zone 3					
Well ID:		RW-11	RW-11	RW-11	RW-11
Collection Date:		10/10/2017	10/10/2016	10/12/2015	10/14/2014
Receive Date:		10/13/2017	10/14/2016	10/16/2015	10/17/2014
Report Date:		11/14/2017	12/15/2016	11/13/2015	11/24/2014
Analyte	Units	C17100506-008	C16100488-015	C15100581-013	C14100818-004
Bicarbonate as HCO ₃	mg/L	137	130	150	156
Chloride	mg/L	36	32	36	37
Sulfate	mg/L	3610	3390	3320	3240
Calcium	mg/L	550	522	531	542
Magnesium	mg/L	488	459	429	419
Potassium	mg/L	12	11	12	11
Sodium	mg/L	143	129	134	133
pH	s.u.	6.48	6.12	6.11	6.42
Solids, Total Dissolved TDS @ 180 C	mg/L	5120	4970	5020	4860
Nitrogen, Ammonia as N	mg/L	3.4	3.1	3.1	2.74
Nitrogen, Nitrate+Nitrite as N	mg/L	0.01	ND(0.1)	ND(0.1)	ND(0.1)
Aluminum	mg/L	ND(0.1)	0.1	ND(0.1)	0.2
Beryllium	mg/L	0.001	0.002	0.001	0.002
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.41	0.36	0.32	0.32
Lead	mg/L	0.002	0.002	0.002	0.032
Manganese	mg/L	6.72	5.71	5.94	6.01
Molybdenum	mg/L	0.2	0.3	0.2	0.5
Nickel	mg/L	0.35	0.35	0.34	0.34
Uranium	mg/L	0.0734	0.0774	0.0808	0.142
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.001	0.002	ND(0.001)	0.004
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
A/C Balance	%	-2.68	-2.79	-3.15	-2.48
Anions	meq/L	78.5	73.7	72.5	71.0
Cations	meq/L	74.4	69.7	68.1	67.6
Solids, Total Dissolved - Calculated	mg/L	4900	4600	4600	4480
TDS Ratio	unitless	1.04	1.07	1.10	
Gross Alpha minus Rn & U	pCi/L	12.0	19.2	23.2	14.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.6	4.3	4.8	1.1
Gross Alpha minus Rn & U MDC	pCi/L	0.6	1.3	0.7	0.4
Lead 210	pCi/L	2.7	0.9	2.6	2.4
Lead 210 precision (±)	pCi/L	1.3	0.6	1	0.9
Lead 210 MDC	pCi/L	1.6	1	1.4	1.3
Radium 226	pCi/L	9.7	8.7	12	10
Radium 226 precision (±)	pCi/L	1.9	1.7	2.3	0.51
Radium 226 MDC	pCi/L	0.1	0.18	0.15	0.09
Radium 228	pCi/L	20.6	18	23	33
Radium 228 precision (±)	pCi/L	4.0	3.4	4.3	2.3
Radium 228 MDC	pCi/L	1.6	1.3	1.3	1.8
Thorium 230	pCi/L	0.1	-0.04	0.7	0.4
Thorium 230 precision (±)	pCi/L	0.1	0.07	0.4	0.3
Thorium 230 MDC	pCi/L	0.2	0.2	0.4	0.4
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**SEMI-ANNUAL
ENVIRONMENTAL MONITORING REPORT
JULY TO DECEMBER OF 2017**

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: 7-27-17

TIME START: 1115

INSPECTOR: Wally Churchill Jr.

TIME END: 1245

TAILINGS AREA:

OKAY

PROBLEM

COMMENTS

1. Fences

✓

2. Air Monitors

-

NA

-

Only under RWP

3. Radiation Warning Signs

✓

4. Locked Gates

✓

ACTION TAKEN: Domestic water is being discharged into North Pond
(water nearly covering bottom liners and South Pond bottom liners
is all covered).

ENVIRONMENTAL INSPECTION

DATE: 8-22-17

TIME START: 1155

INSPECTOR: May Cheskelley

TIME END: 1310

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>Only under RWP</u>
3. Radiation Warning Signs	<u>✓</u>	<u> </u>	<u> </u>
4. Locked Gates	<u>✓</u>	<u> </u>	<u> </u>

ACTION TAKEN:

COMMENT: Bottom of North and South pond have 6" water depth.

ENVIRONMENTAL INSPECTION

DATE: 9-25-17

TIME START: 1409

INSPECTOR: Map Chisellig J.

TIME END: 1525

TAILINGS AREA:

OKAY

PROBLEM

COMMENTS

- | | | | |
|----------------------------|---|----|-------------|
| 1. Fences | ✓ | | |
| 2. Air Monitors | - | NA | - Under RWP |
| 3. Radiation Warning Signs | ✓ | | |
| 4. Locked Gates | ✓ | | |

ACTION TAKEN: _____

ENVIRONMENTAL INSPECTION

DATE: 10-25-17

TIME START: 1225

INSPECTOR: My Chicheley J.

TIME END: 1336

TAILINGS AREA:

	<u>OKAY</u>	<u>PROBLEM</u>	<u>COMMENTS</u>
1. Fences	<u>✓</u>	<u> </u>	<u>Also see below</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: South perimeter fenceline (bottom of small ditch area
adjacent to gate) damaged by rain runoff was repaired on 10-17-17.

ENVIRONMENTAL INSPECTION

DATE: 11-30-17

TIME START: 1049

INSPECTOR: Waf Chindelly J.

TIME END: 1228

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: Water depth of 0.5' in both north and south
evaporation ponds.

ACTION TAKEN: _____