

WORTHINGTON MILLER ENVIRONMENTAL, LLC

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January 10, 2018

Attn: Document Control Desk
US Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2739

40-1162

Deputy Director
Decommission and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental Management Programs
US Nuclear Regulatory Commission
11545 Rockville Pike
Mail Stop T8F5
Rockville, Maryland 20852-2746

RE: Source Material License SUA-56; Western Nuclear, Inc., Split Rock Uranium Mill Tailings Facility; Surface Water and Groundwater Monitoring Report for Second Half of 2017

Dear Deputy Director:

The combined surface water and groundwater sampling results for the second half of 2017 for the Split Rock Uranium mill tailings facility are enclosed. This monitoring was performed as required by license conditions 24 and 74.

Figure 1 shows the location of the monitor wells and the surface water sample locations. The analytical results for all monitoring wells and surface water locations for the second half of 2017 are presented in Table 1. In addition, the results of the point of compliance wells, WN-5 and WN-21, along with the Protection Standards and ACLs specific to them per license conditions 74B and 74C are included in Table 1-A. Graphs are included in the enclosure, which show the temporal changes in water quality for key constituents. Laboratory data reports for each well and surface water location are also included.

The surface water and groundwater quality data indicate that all parameters meet the required limits in the license. All values are consistent with previous values with the exception of TDS and sulfate in SWAB-22. Values from the second half of 2017 for these constituents are greater than previously measured. It is uncertain if these values are anomalous or are indicative of the plume spreading to the north from the south west valley as predicted. Data from the first half of 2018 will provide additional information to determine if the values are anomalous. Regardless, SWAB-22 is within the long-term care boundary and institutional controls will provide the necessary controls to prevent access to groundwater in this area.

If you have any questions, please contact me at your convenience.

Sincerely,

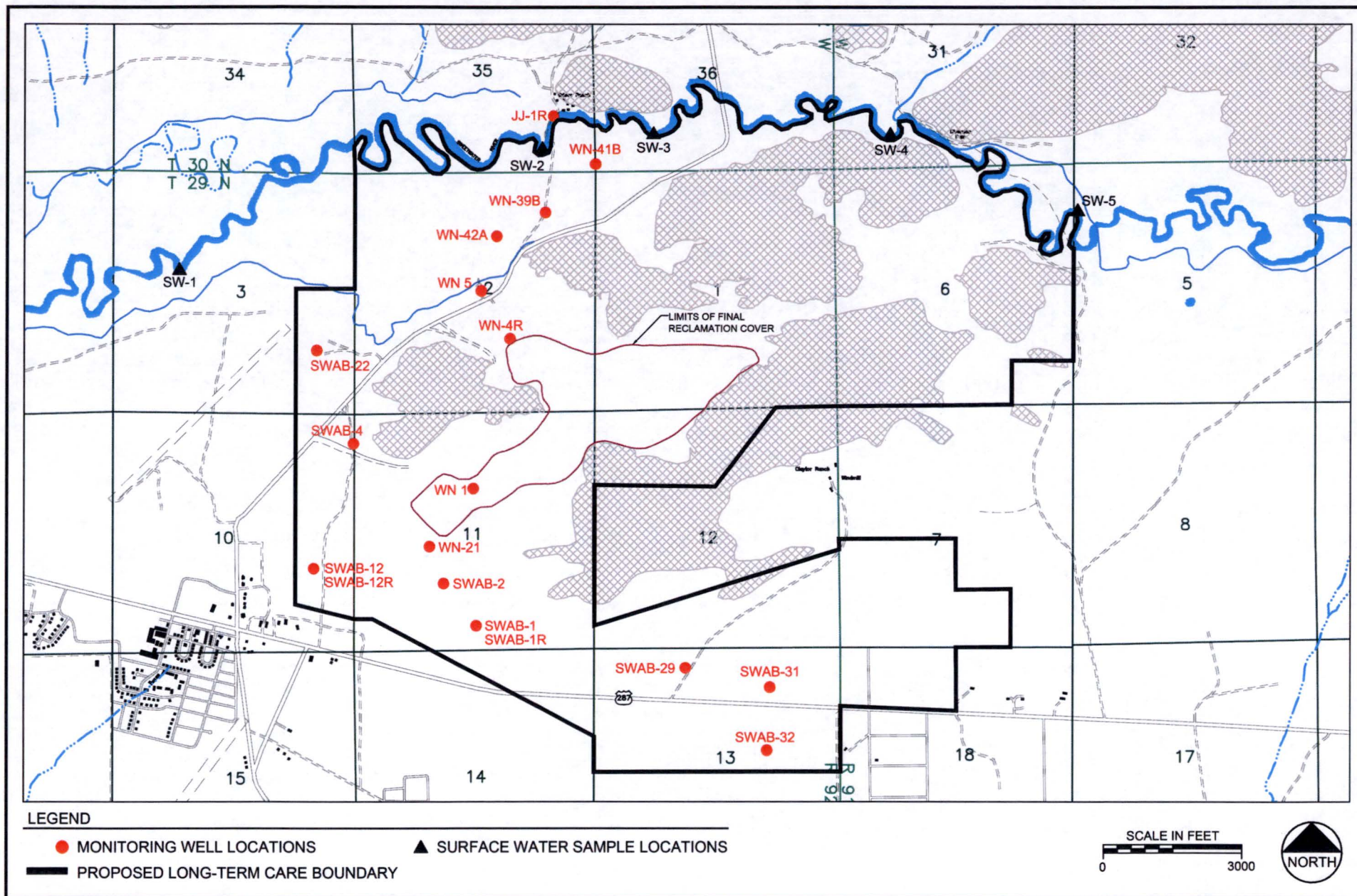


Louis Miller
Consulting Engineer

Enclosure

cc. Steve Hall, Stoller
Mark Kautsky, DOE
James O'Connor WDEQ
Anne Thomas, WNI

IE25
NMSSDI
NMSS



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FIGURE 1
SURFACE WATER AND GROUND WATER MONITORING LOCATIONS

Date:	SEPTEMBER 2017
Project:	Jeffrey City
File:	SW-GW-MON-2017

Table 1. WNI Split Rock Mill - Groundwater and Surface Water Quality
Second Half 2017 (Sampled: 9/6/17 - 9/7/17)

Parameter(1)	JJ-1R	SWAB-1R	SWAB-2	SWAB-4	SWAB-12R	SWAB-22	SWAB-29	SWAB-31	SWAB-32	WN-1	WN-4R
Aluminum (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	2.7
Ammonia, Free as N(2) (mg/L)	<0.00150	<0.00070	0.0068	0.0027	<0.00228	0.0100	0.0048	<0.00123	<0.00474	0.2806	0.3659
Antimony (mg/L)	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Arsenic (mg/L)	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Beryllium (mg/L)	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Cadmium (mg/L)	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.017
Chloride (mg/L)	14	23	24	37	22	42	6	10	12	9	75
Conductivity Field (mS/cm)	573	2360	3130	1418	557	670	461	373	434	2650	5290
Fluoride (mg/L)	0.5	0.2	0.7	0.3	0.2	0.4	0.2	0.3	0.4	1.7	7.9
Lead (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese (mg/L)	0.18	<0.05	0.21	<0.05	<0.05	0.14	0.3	<0.05	<0.05	14.6	87.6
Molybdenum (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	0.42
Nitrate + Nitrite as N (mg/L)	<0.2	118	151	26.3	0.6	<0.2	<0.2	<0.2	1.3	13.4	157
pH Field (std units)	7.79	7.45	7.18	7.70	7.98	7.87	7.67	7.70	8.32	6.70	6.51
pH Lab (std units)	7.35	7.33	7.04	7.41	7.72	7.49	7.28	7.35	7.95	6.82	6.28
Radium-226 (pCi/L)	0.3	0.2	0.2	1	<0.2	<0.2	0.2	0.2	<0.2	0.5	0.2
Radium-228 (pCi/L)	2.1	1.3	<1.2	<1.7	1.9	<2	<1.7	<1.9	<1.6	<1.1	2.1
Selenium (mg/L)	<0.005	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.013	0.008	0.013	0.052
Sulfate (mg/L)	52	890	650	520	108	107	38	31	48	1990	2910
TDS (mg/L)	408	2390	2260	1260	405	479	309	256	320	2790	4530
Temperature Field (C)	13.9	15.1	22.6	22.8	14.0	18.5	14.2	19.9	23.4	14.3	13.8
Thallium (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.017	0.001
Thorium-230 (pCi/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.3	<0.2	0.2	<0.3	<0.3
Uranium (mg/L)	0.014	1.6	0.74	0.995	0.038	0.019	0.024	0.031	0.121	1.48	0.115
Water Elevation (ft)	NA	6295.30	6293.10	6291.55	6298.55	6288.95	6277.30	6270.10	6271.90	6294.95	6285.90

Notes:

- (1) All metals are dissolved analyte concentrations.
- (2) Free ammonia concentration calculated from the laboratory reported total ammonia concentration and field measured pH, consistent with the method used to determine the ACL for ammonia.
- (3) Well SWAB-1R installed as replacement for SWAB-1. Water Elevation taken at SWAB-1.
- (4) Well SWAB-12R installed as replacement for SWAB-12. Water Elevation taken at SWAB-12.
- (5) Point of Compliance Well

Table 1. WNI Split Rock Mill - Groundwater and Surface Water Quality
Second Half 2017 (Sampled: 9/6/17 - 9/7/17)

Parameter(1)	WN-5	WN-21	WN-39B	WN-41B	WN-42A	SW-1	SW-2	SW-3	SW-4	SW-5
Aluminum (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ammonia, Free as N(2) (mg/L)	<0.00040	0.0328	<0.00317	<0.00785	<0.00052	<0.01377	<0.01332	<0.01447	<0.01022	<0.01447
Antimony (mg/L)	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Arsenic (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Beryllium (mg/L)	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Cadmium (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chloride (mg/L)	110	15	16	398	62	10	11	12	12	12
Conductivity Field (mS/cm)	3310	530	5890	2310	3610	252	303	318	329	313
Fluoride (mg/L)	<0.1	0.2	0.3	1.3	0.1	0.2	0.3	0.3	0.3	0.3
Lead (mg/L)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese (mg/L)	0.63	0.18	<0.05	<0.05	0.19	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel (mg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrate + Nitrite as N (mg/L)	50	2.4	11.4	<0.2	1.5	<0.2	<0.2	<0.2	<0.2	<0.2
pH Field (std units)	7.21	7.92	8.13	8.57	7.32	8.88	8.86	8.91	8.71	8.91
pH Lab (std units)	6.9	7.69	7.88	8.12	6.98	8.3	8.34	8.37	8.21	8.36
Radium-226 (pCi/L)	0.2	<0.2	<0.2	<0.2	<0.3	0.2	<0.2	<0.2	<0.2	<0.2
Radium-228 (pCi/L)	<1.1	1.8	<1.6	<1.4	<2.3	<2.2	<1.5	<1.6	2.1	<1.5
Selenium (mg/L)	0.016	<0.005	0.005	<0.005	0.047	<0.005	<0.005	<0.005	<0.005	<0.005
Sulfate (mg/L)	1680	80	101	386	1840	33	34	36	37	37
TDS (mg/L)	3660	392	449	1460	4150	204	225	211	227	225
Temperature Field (C)	12.4	13.6	10.1	9.5	11.5	20.8	20.2	20.5	18.5	19.1
Thallium (mg/L)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Thorium-230 (pCi/L)	<0.3	<0.4	<0.3	<0.2	<0.3	<0.3	<0.2	<0.3	<0.3	<0.3
Uranium (mg/L)	1.67	0.062	0.119	0.008	1.06	0.003	0.004	0.005	0.005	0.005
Water Elevation (ft)	6281.05	6295.30	6272.80	6271.30	6275.60	NA	NA	NA	NA	NA

Notes:

- (1) All metals are dissolved analyte concentrations.
- (2) Free ammonia concentration calculated from the laboratory reported total ammonia concentration and field measured pH, consistent with the method used to determine the ACL for ammonia.
- (3) Well SWAB-1R installed as replacement for SWAB-1. Water Elevation taken at SWAB-1.
- (4) Well SWAB-12R installed as replacement for SWAB-12. Water Elevation taken at SWAB-12.
- (5) Point of Compliance Well

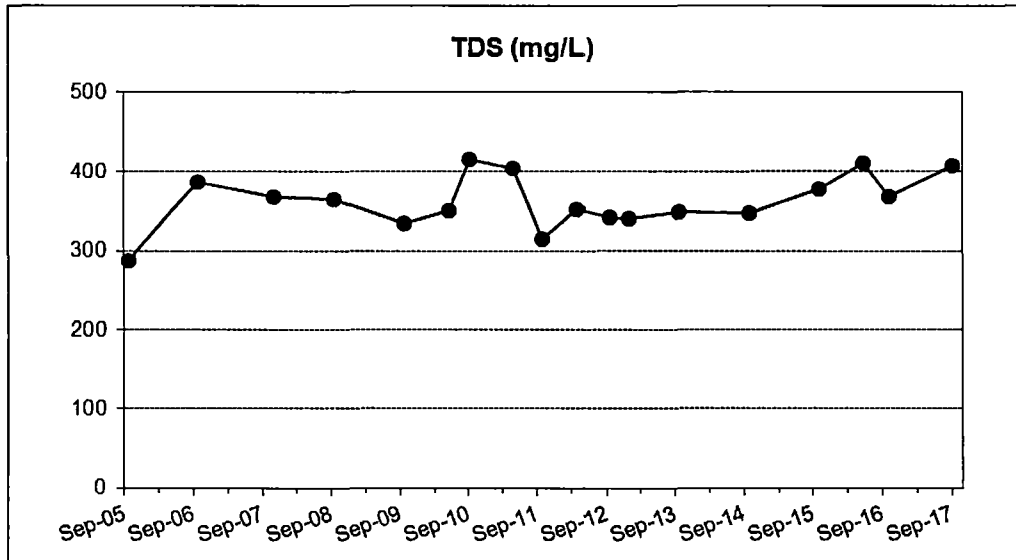
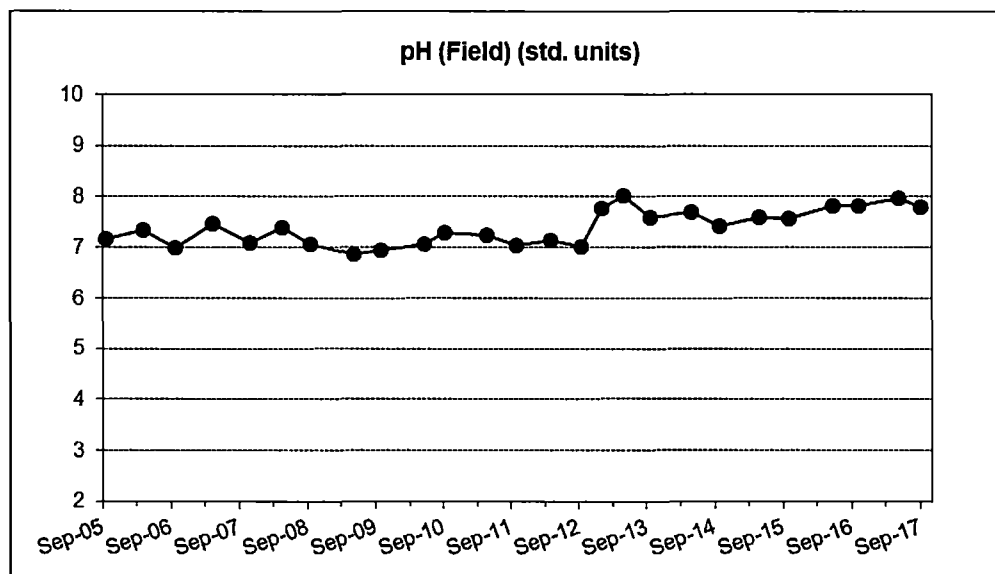
**Table 1-A. WNI Split Rock Mill - Point of Compliance Well Water Quality
Second Half 2017 - Sampled 9/7/2017**

Well	pH-Field (std units)	Cond -Field (µS/cm)	Temp - Field (C)	Water Elevation (ft)	Aluminum (mg/L)	Ammonia, free as N (mg/L) ⁽¹⁾	Antimony (mg/L)	Arsenic (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Lead (mg/L)
Protection Std/ACL (WN-5)					37	0.50 [*]	0.006	0.05	0.01	0.01		4	0.05
WN-5	7.21	3310	12.4	6281.05	<0.1	<0.00040	<0.003	<0.01	<0.004	<0.001	110	<0.1	<0.005
Protection Std/ACL (WN-21)					37	0.69	0.006	0.05	0.01	0.01		4	0.05
WN-21	7.92	530	13.6	6295.30	<0.1	0.0328	<0.003	<0.01	<0.004	<0.001	15	0.2	<0.005

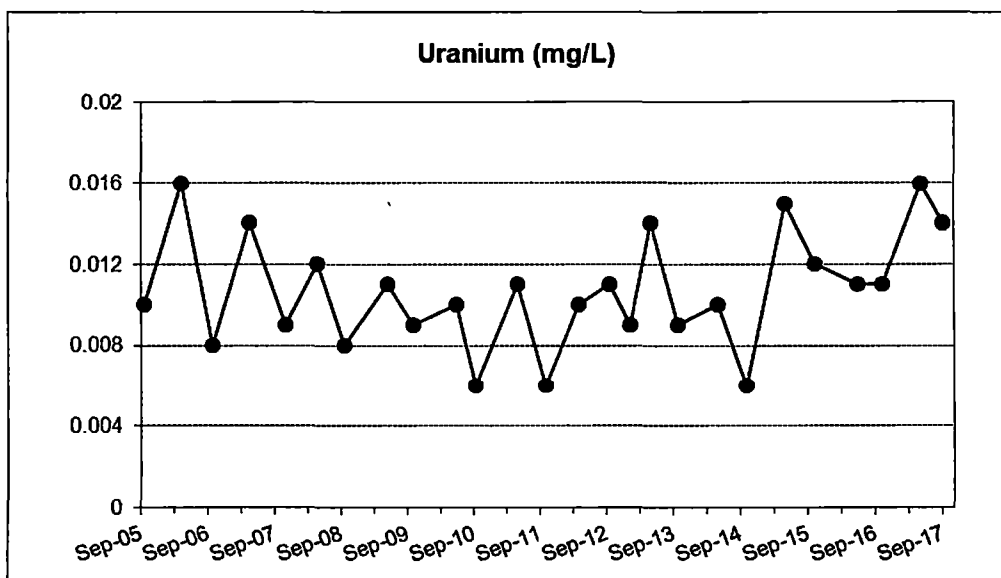
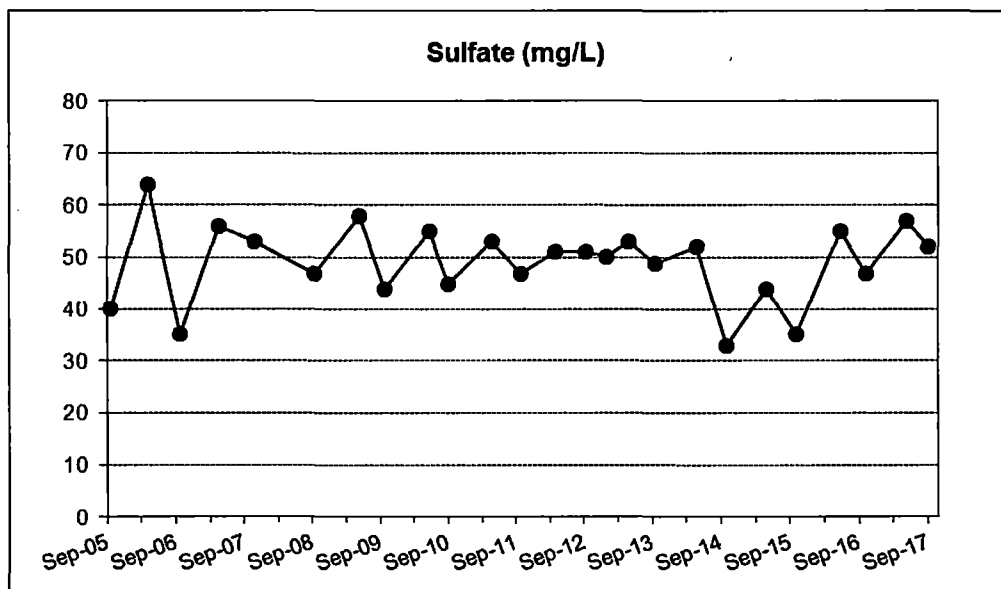
Well	Manganese (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Nitrate + Nitrite as N (mg/L)	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Selenium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Thallium (mg/L)	Thorium- 230 (pCi/L)	Uranium (mg/L)
Protection Std/ACL (WN-5)	225	0.66	0.05	317	7.2		0.05			0.002	0.95	4.8
WN-5	0.63	<0.1	<0.05	50	0.2	<1.1	0.016	1680	3660	<0.001	<0.3	1.67
Protection Std/ACL (WN-21)	35	0.22	0.05	70.7	19.9		0.05			0.002	0.95	3.4
WN-21	0.18	<0.1	<0.05	2.4	<0.2	1.8	<0.005	80	392	<0.001	<0.4	0.062

(1) Free ammonia concentration calculated from the laboratory reported total ammonia concentration and field measured pH, consistent with the method used to determine the ACL for ammonia. For comparison, the ammonia ACL is expressed as NH₃-N, converted from NH₃ values stated in licence conditions 74B and 74C.

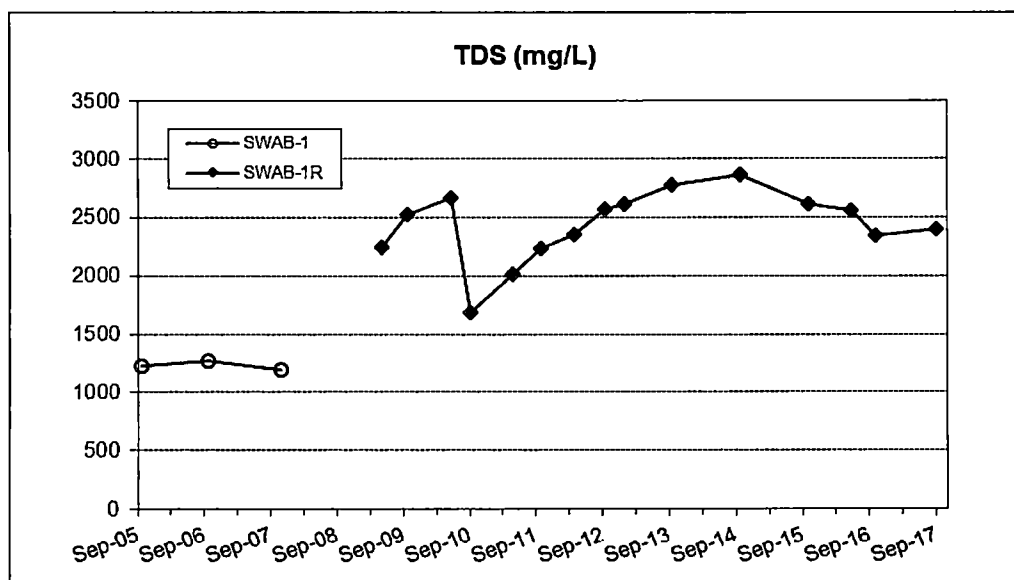
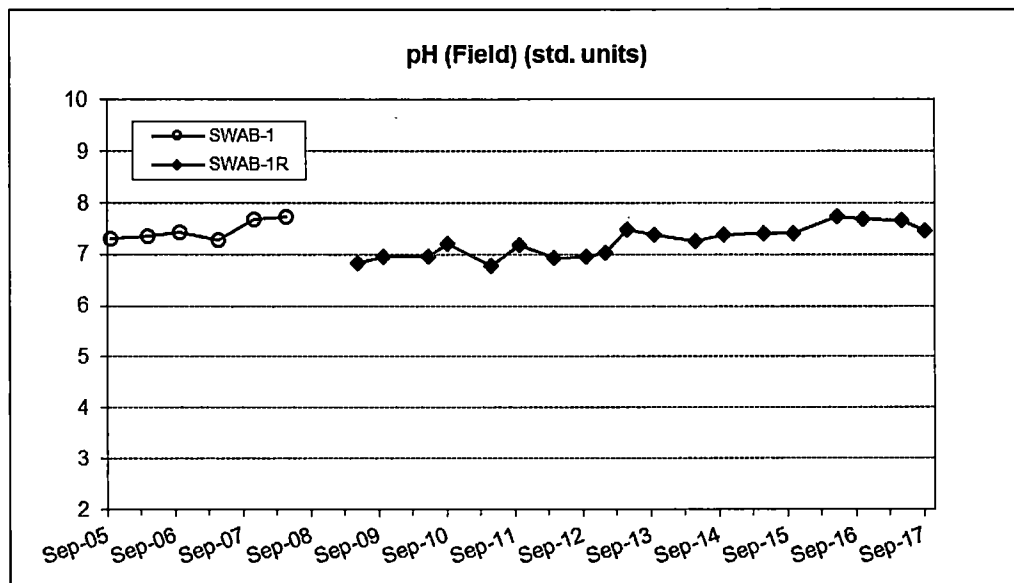
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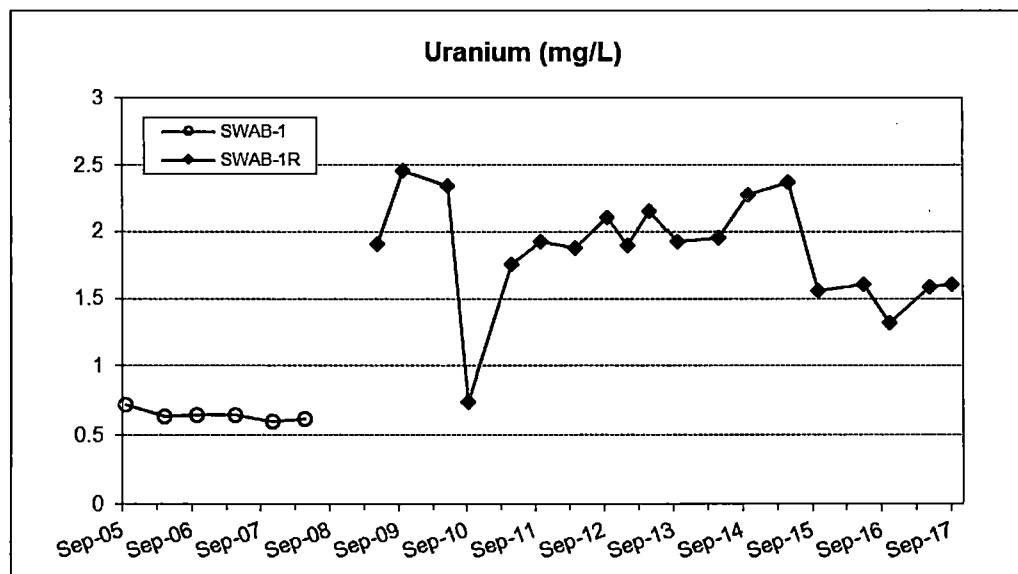
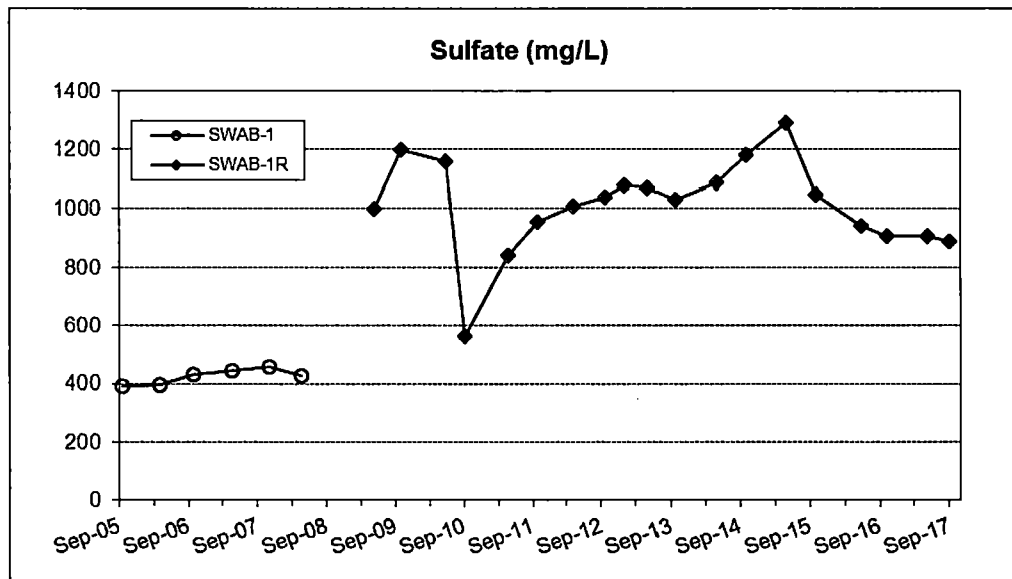
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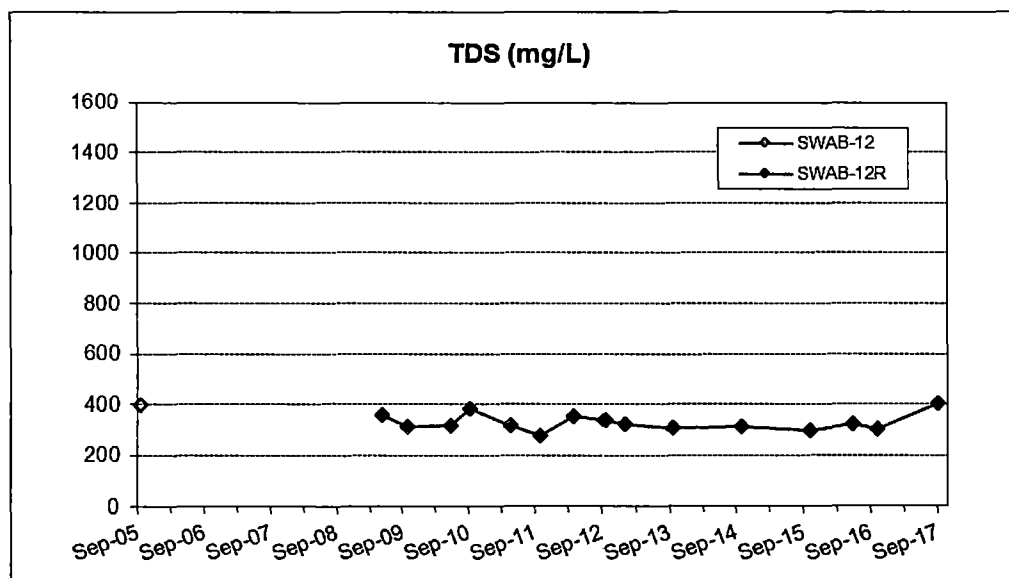
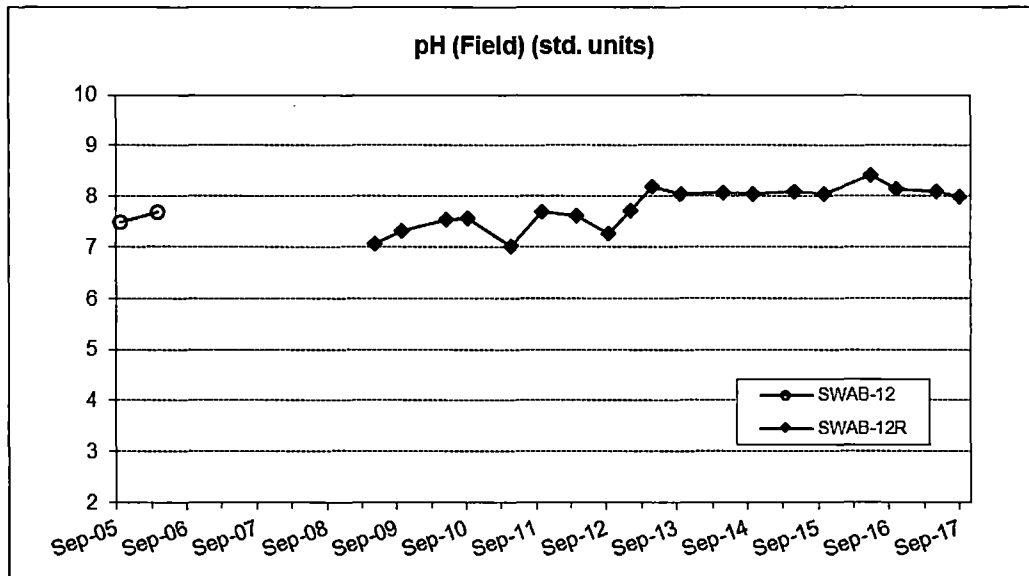
SWAB-1 and 1R



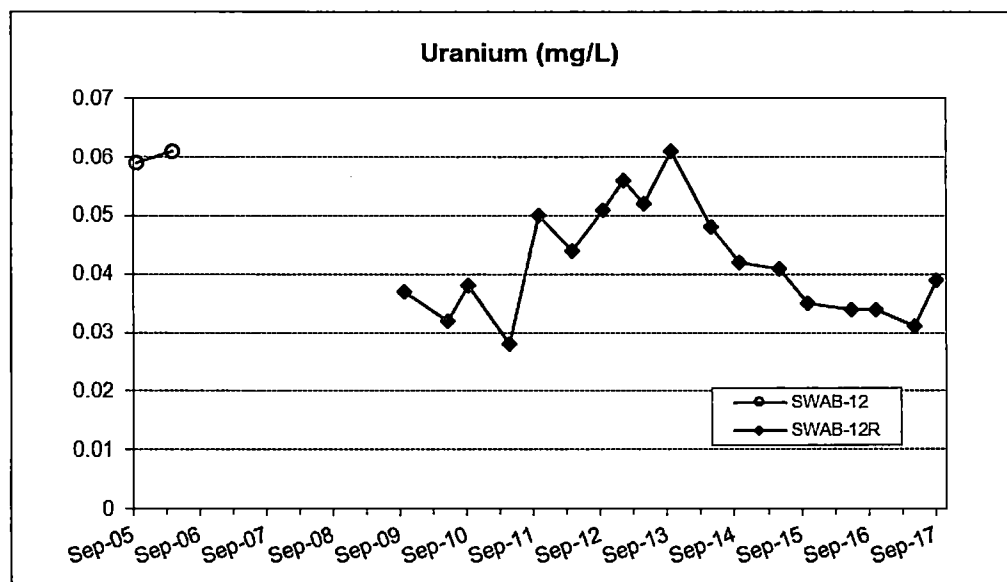
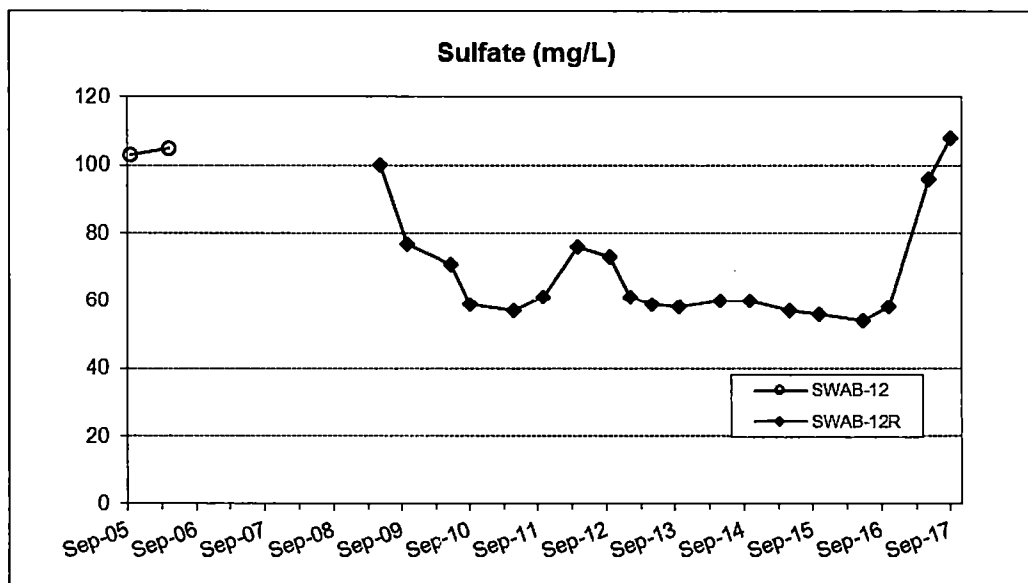
SWAB-1 and 1R



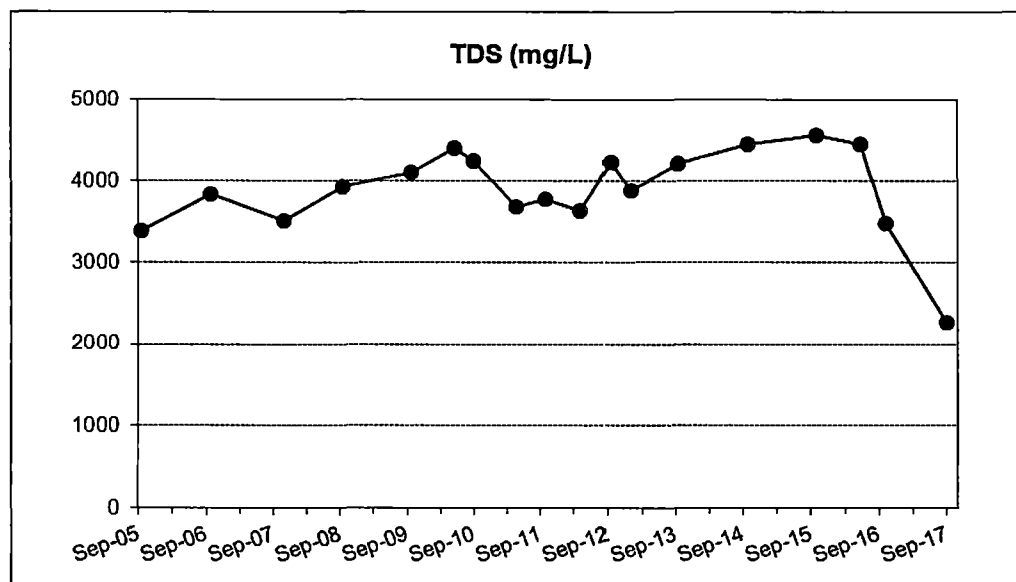
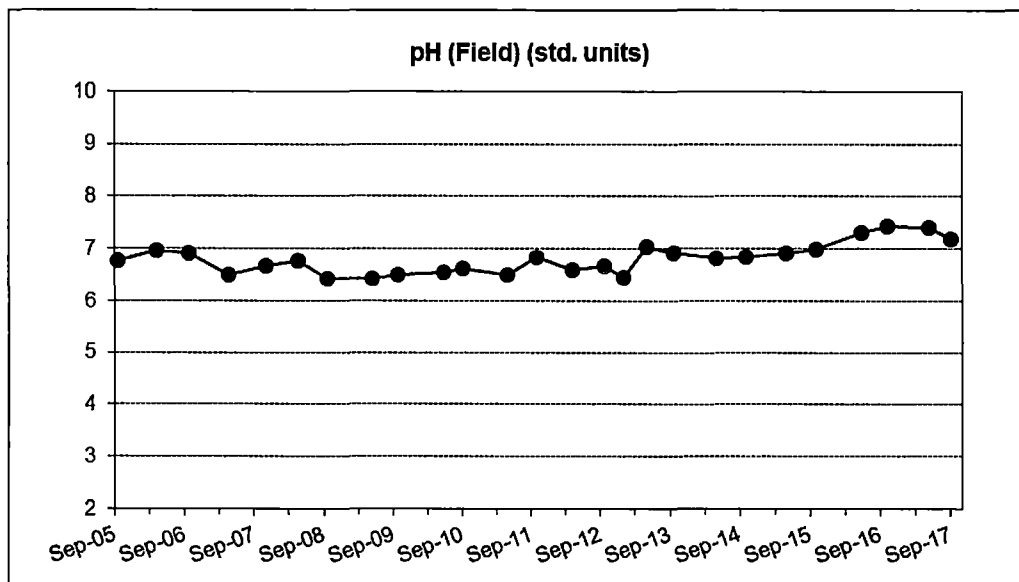
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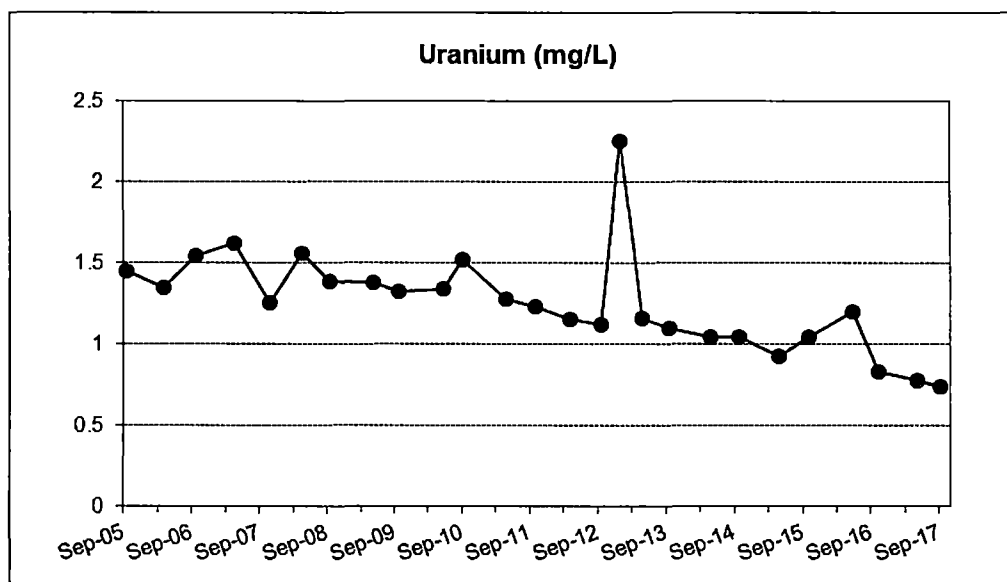
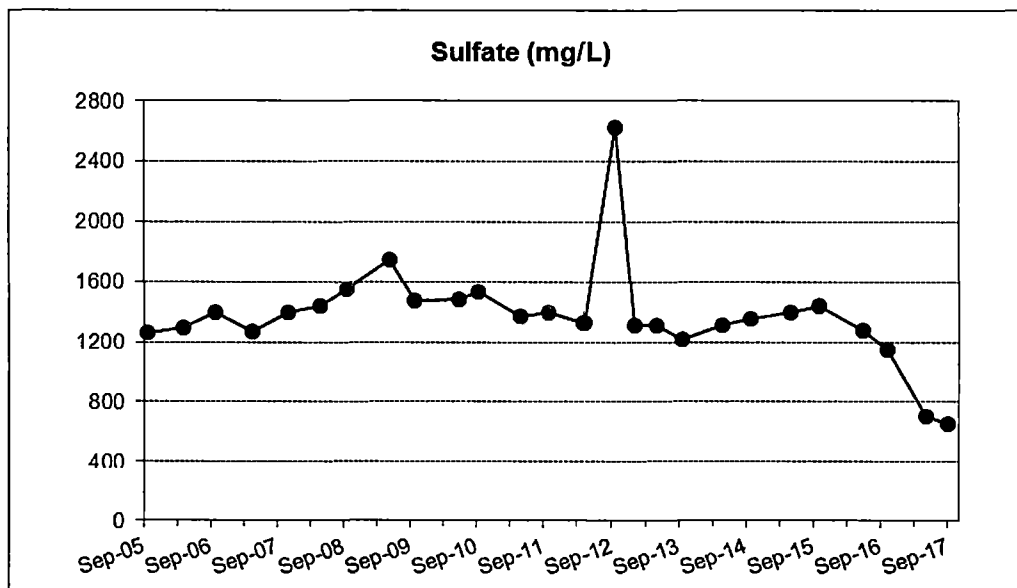
SWAB-12 and 12R



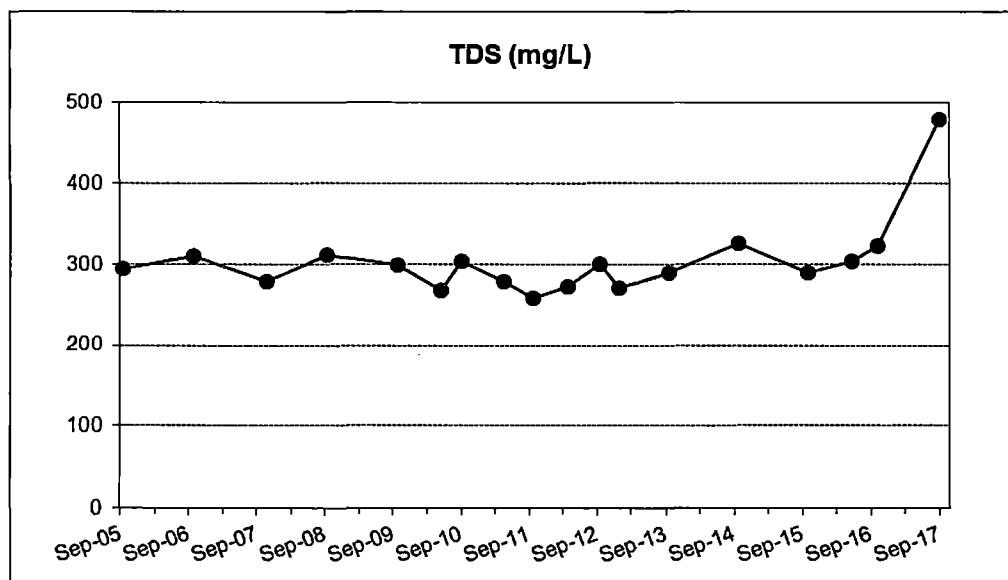
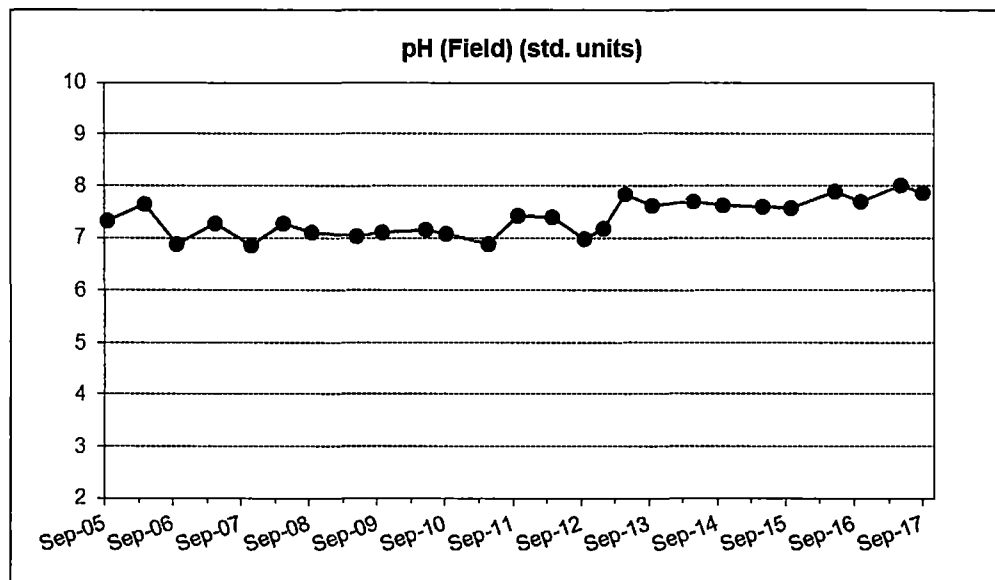
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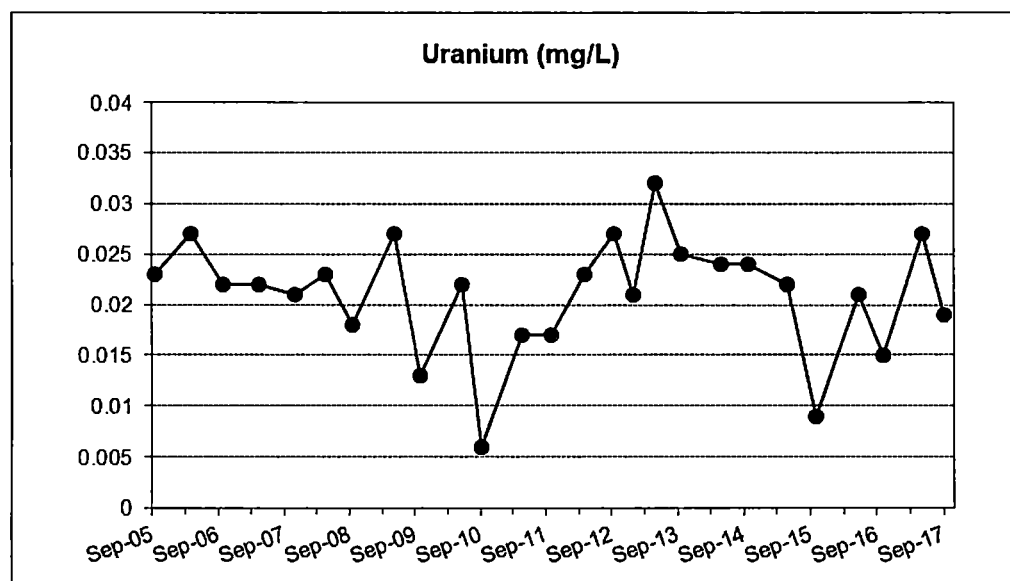
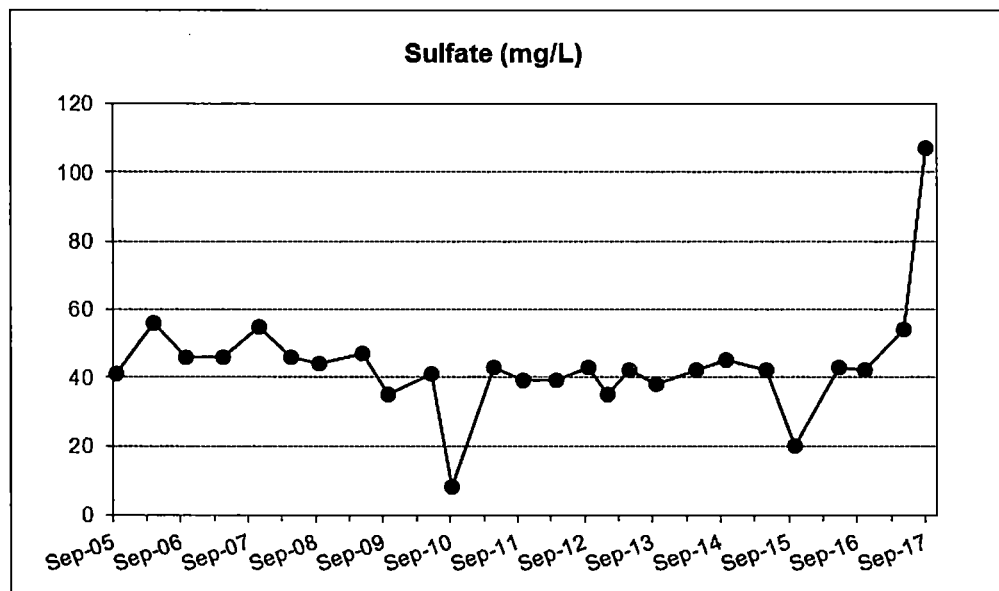
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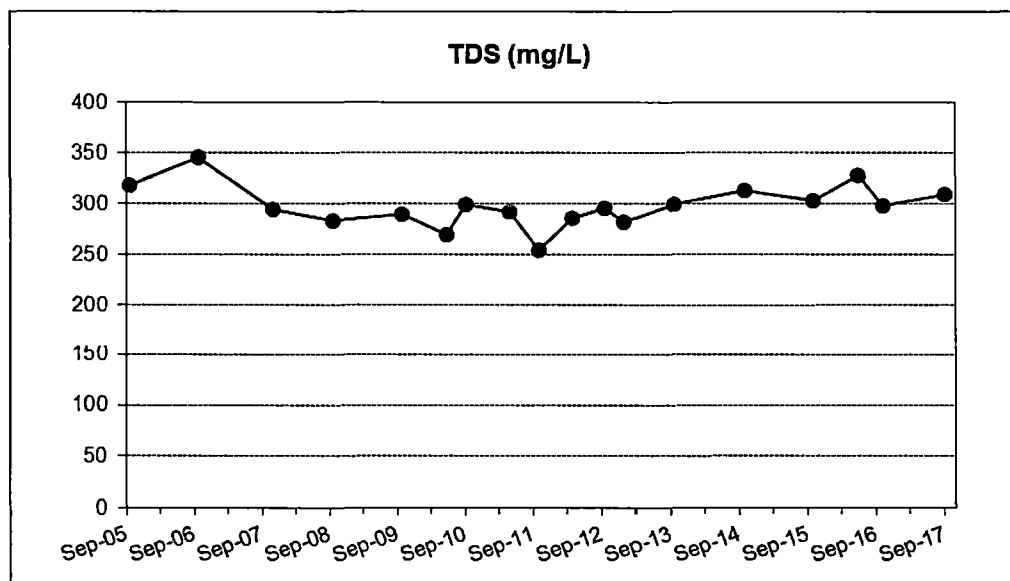
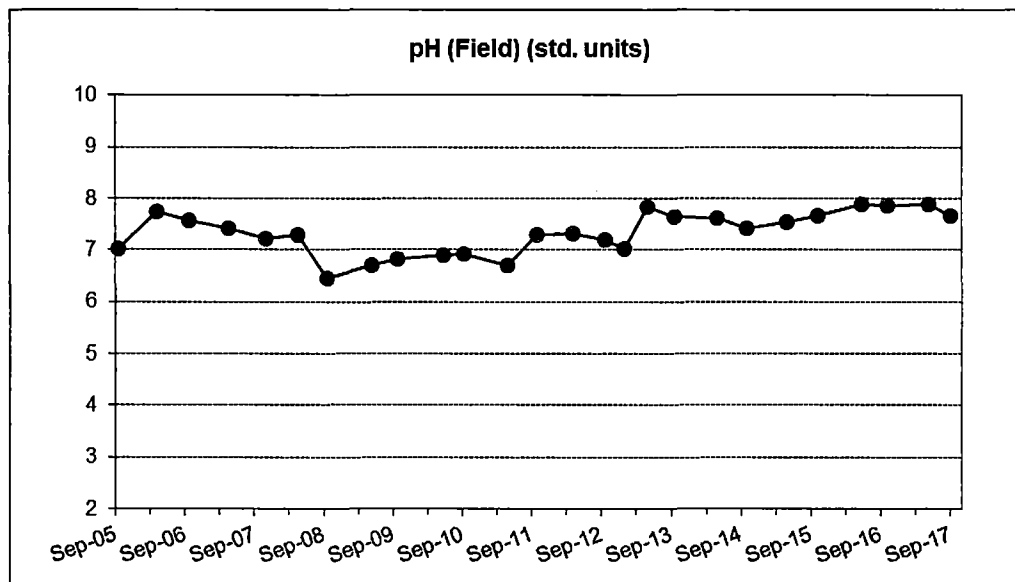
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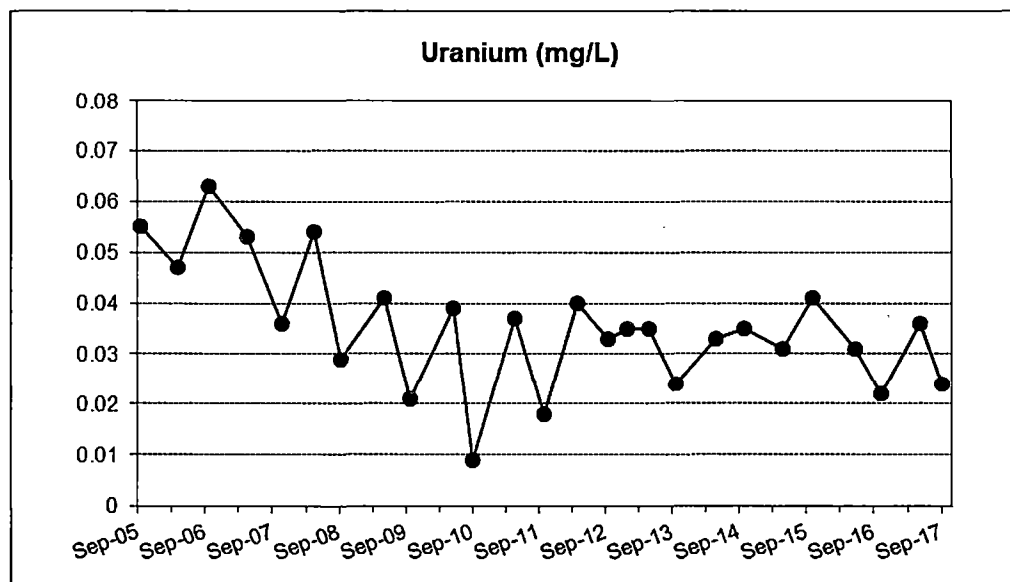
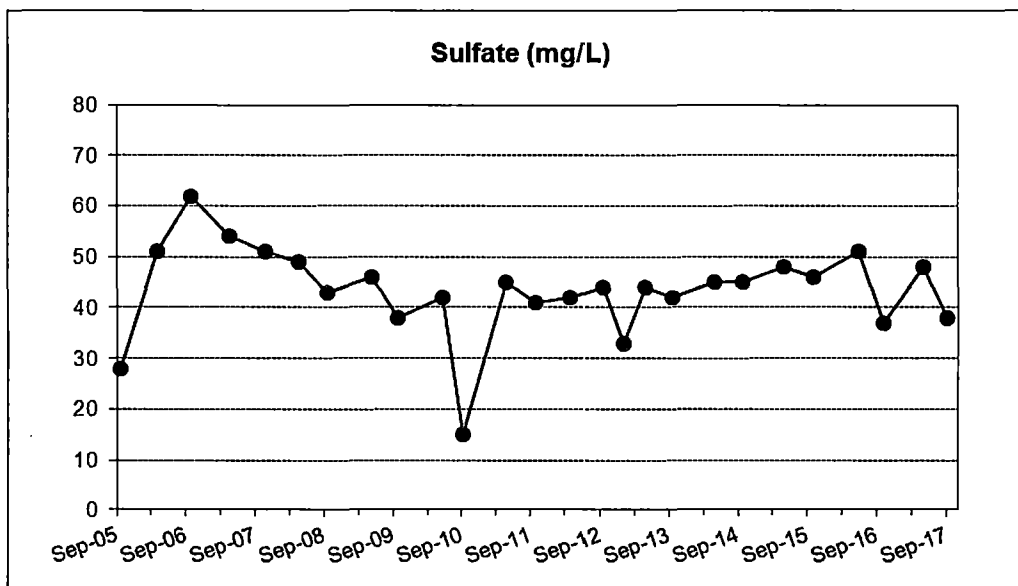
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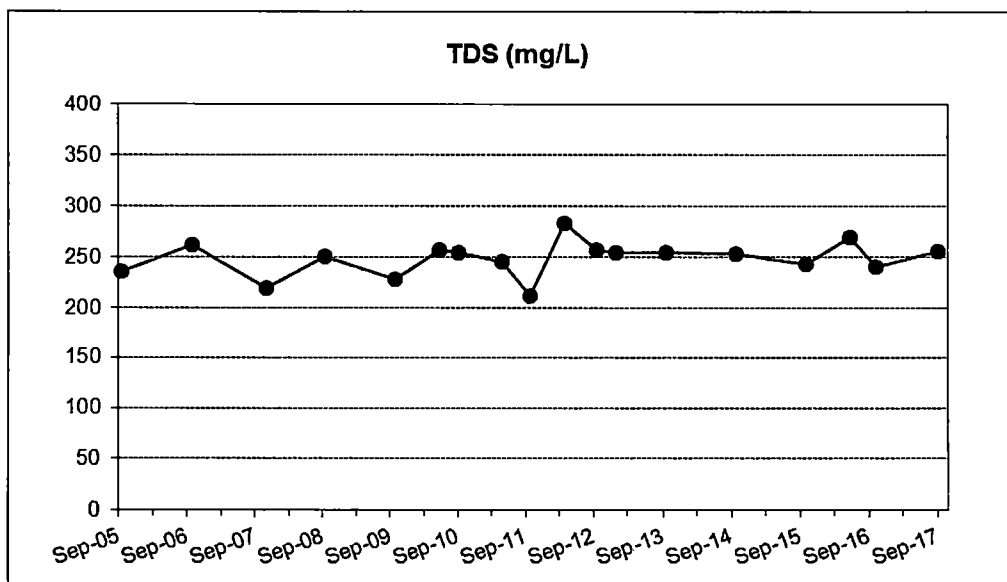
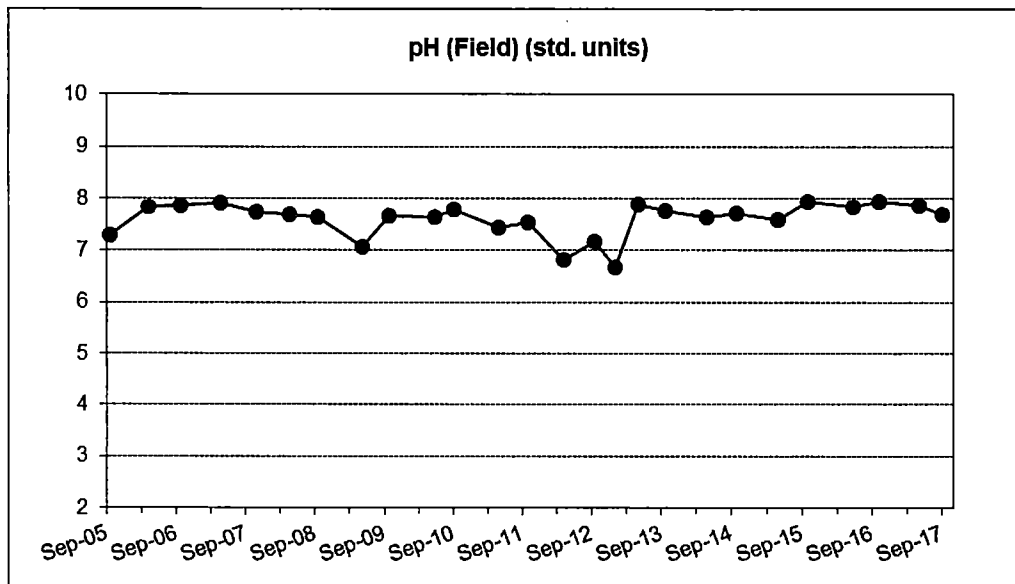
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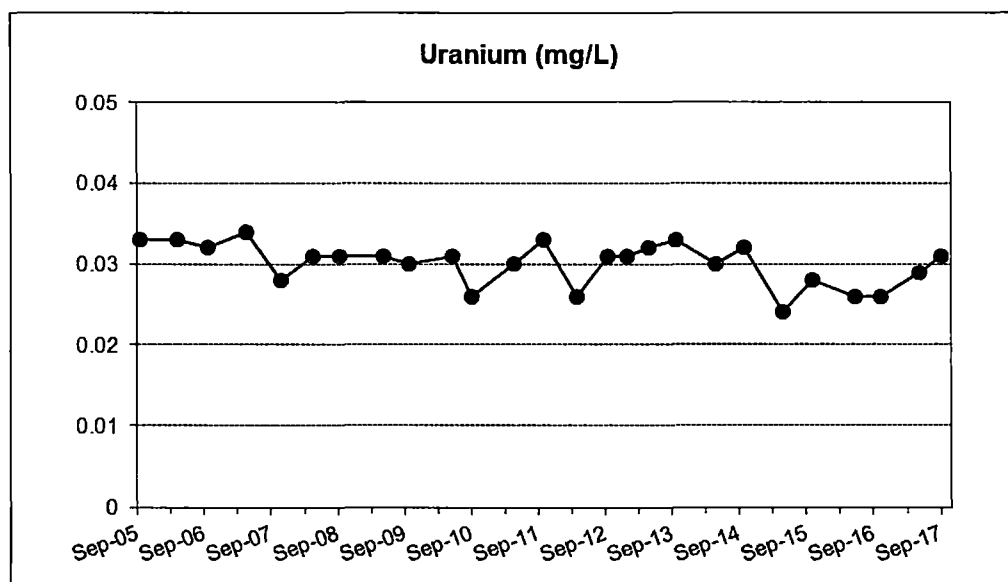
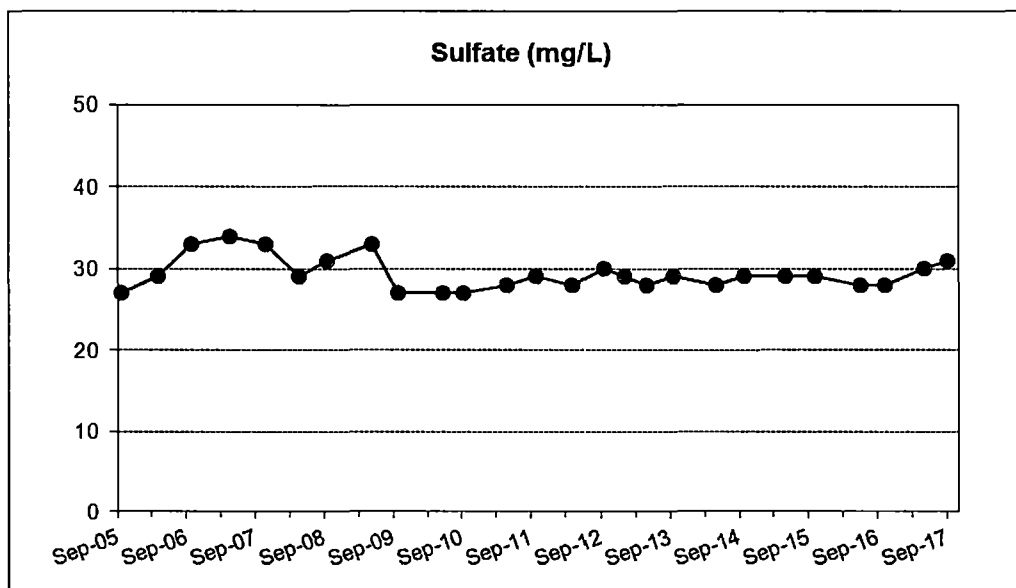
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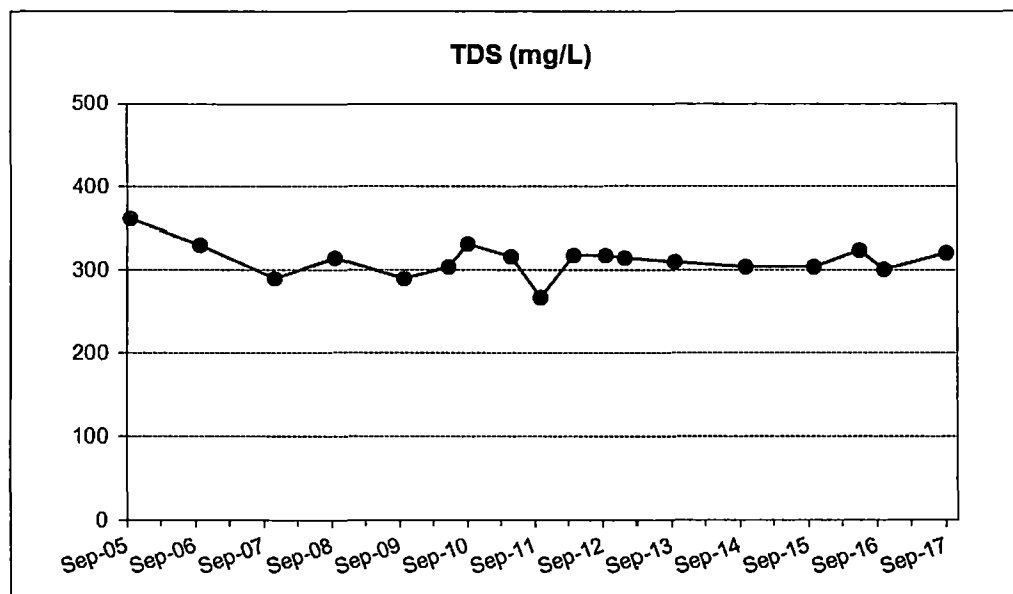
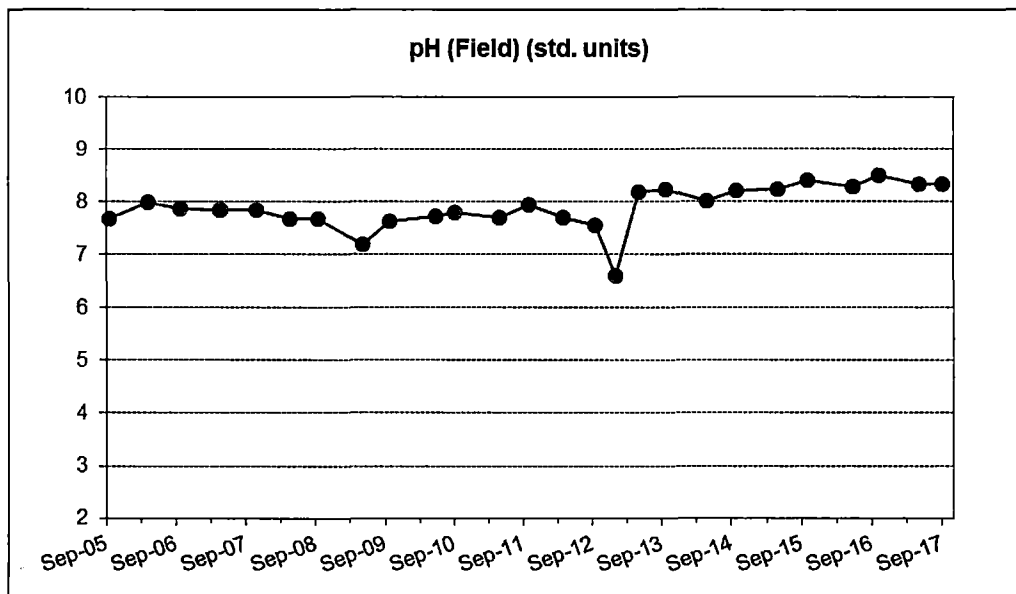
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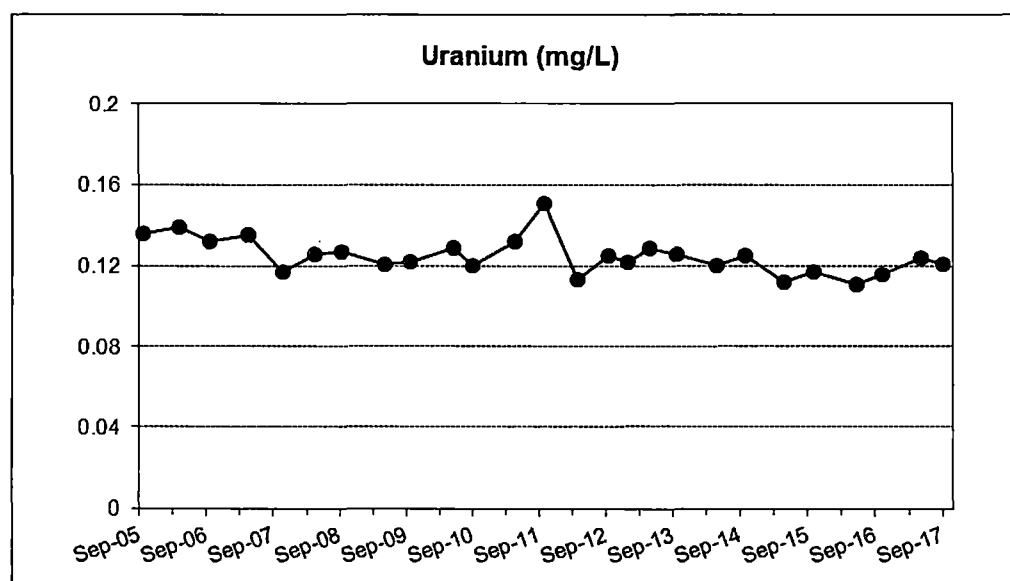
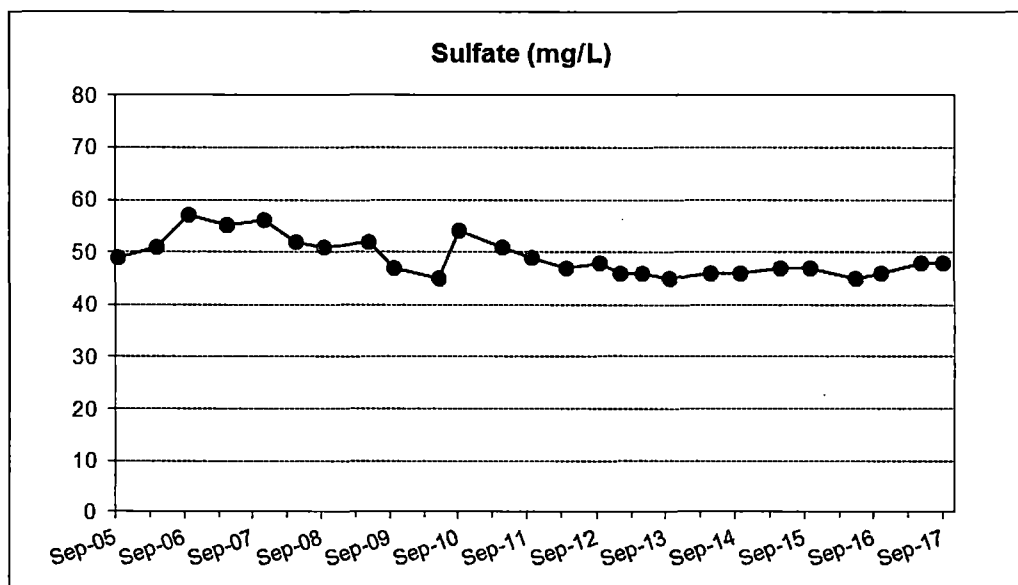
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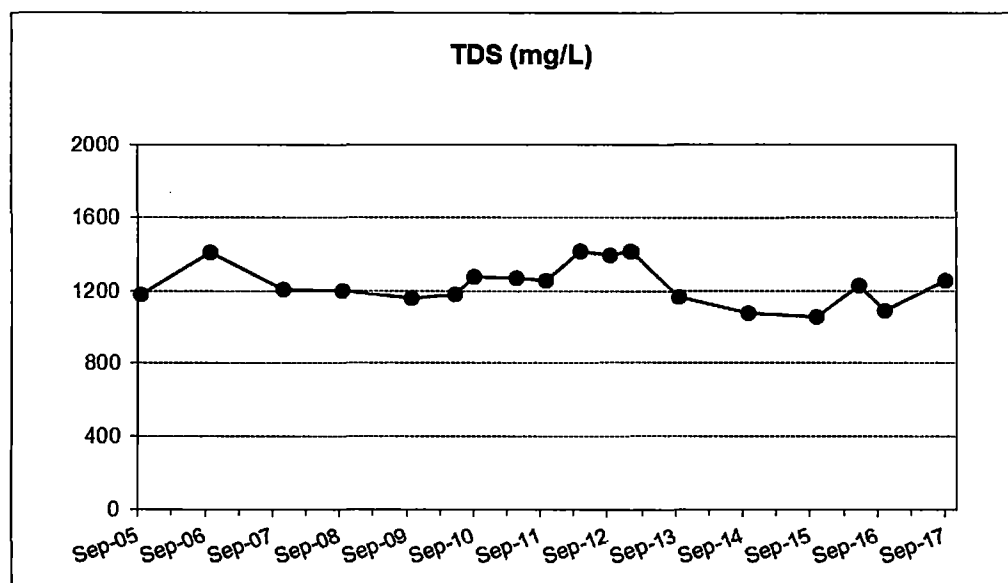
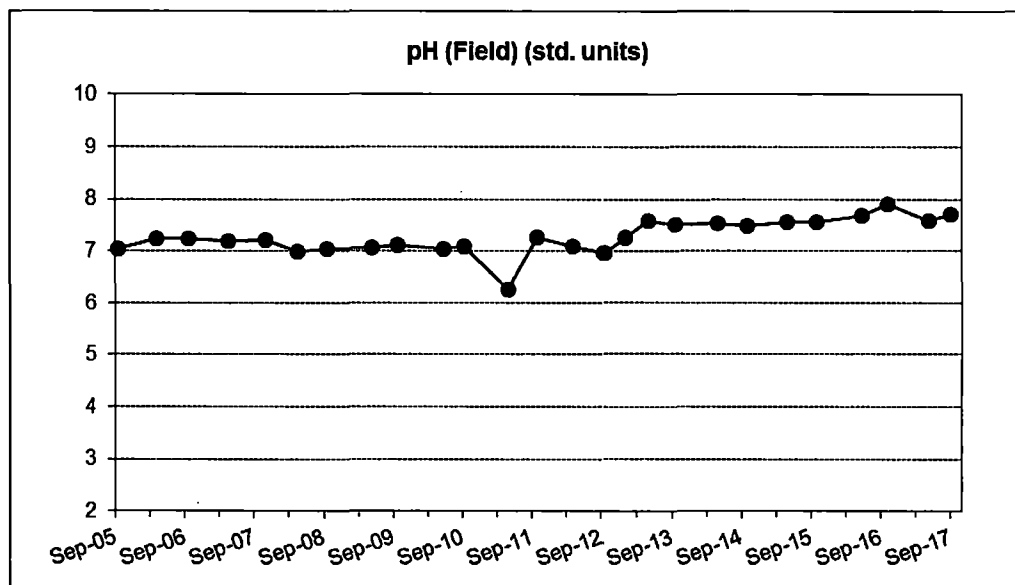
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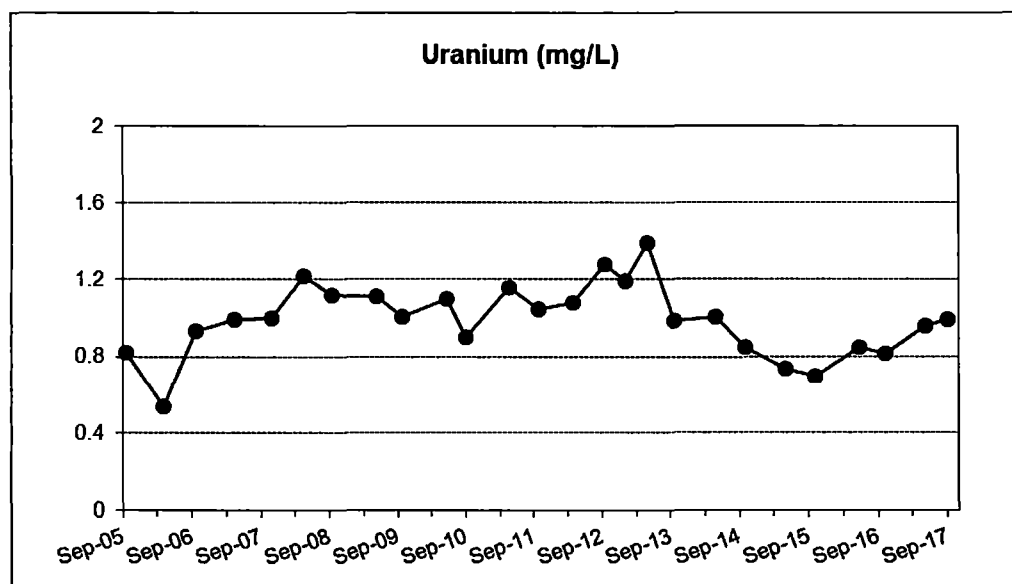
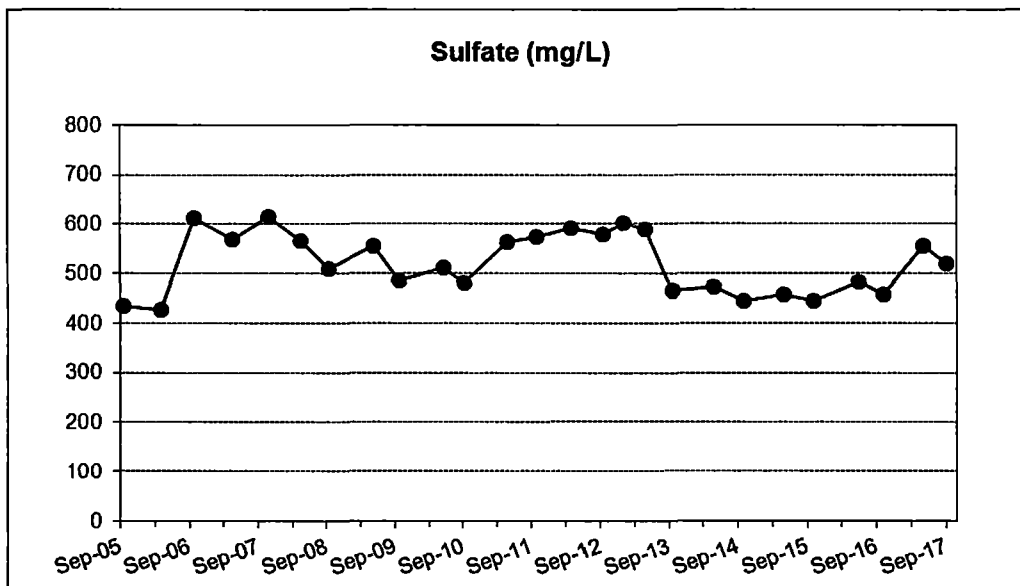
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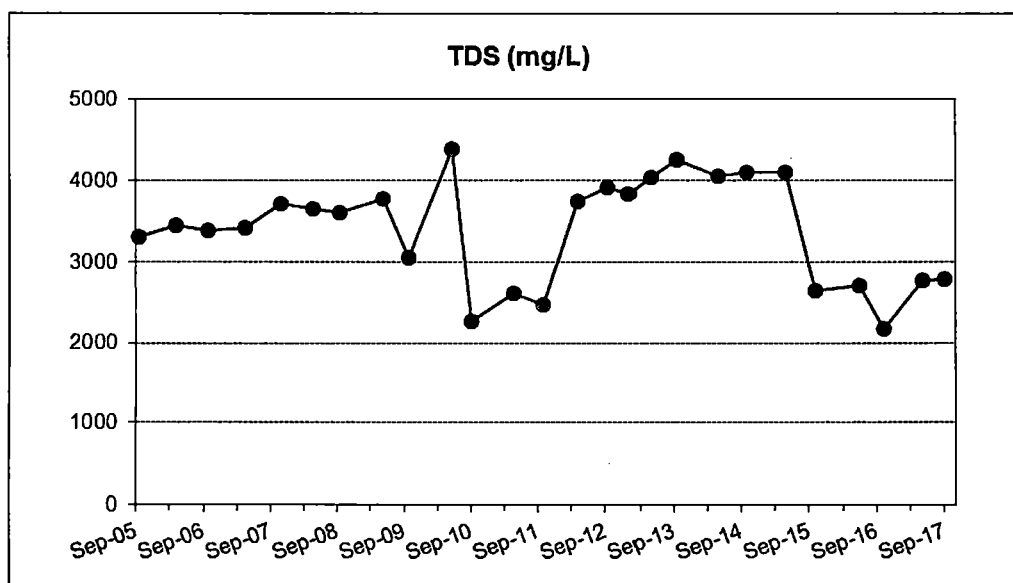
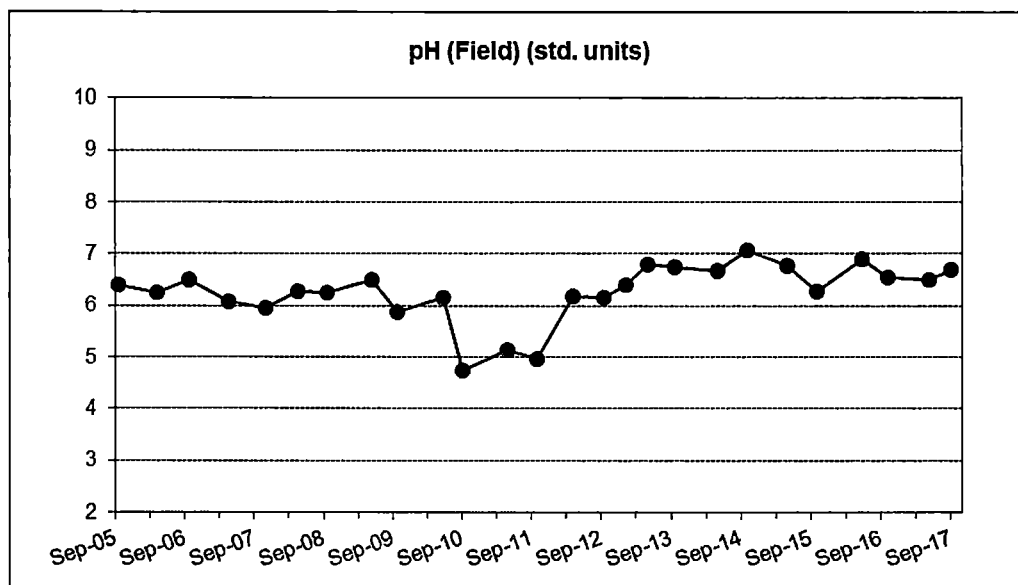
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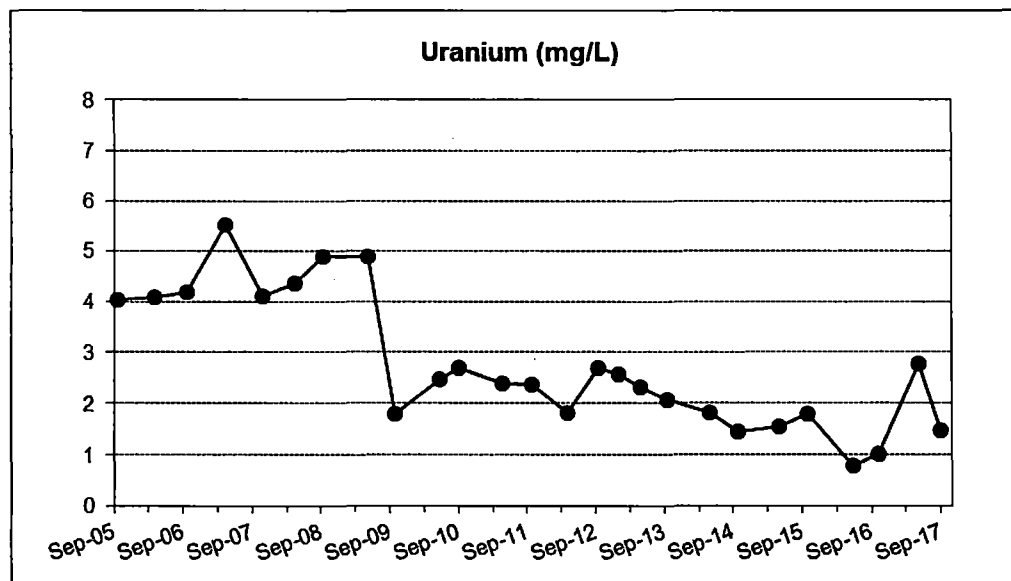
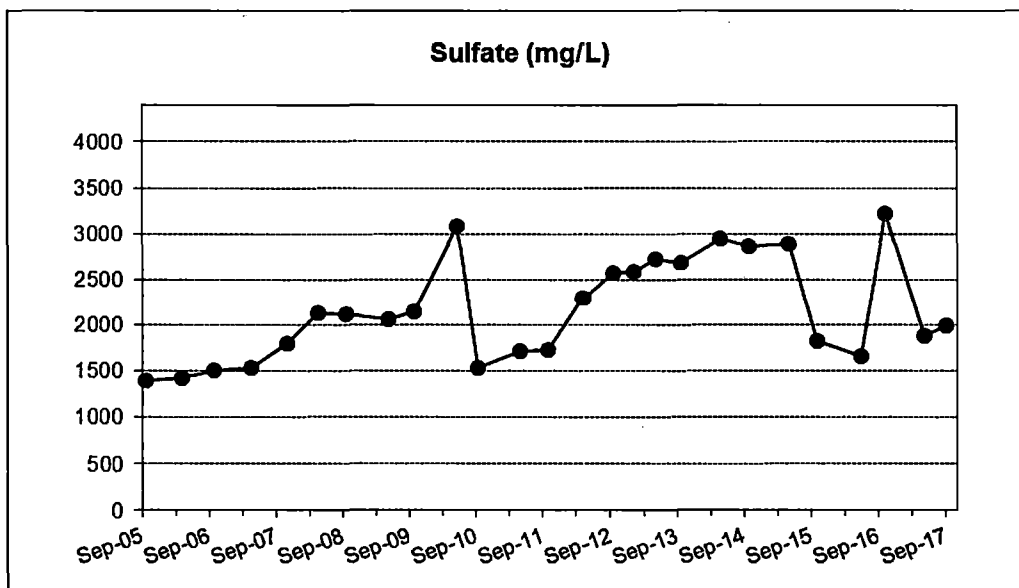
SWAB-4



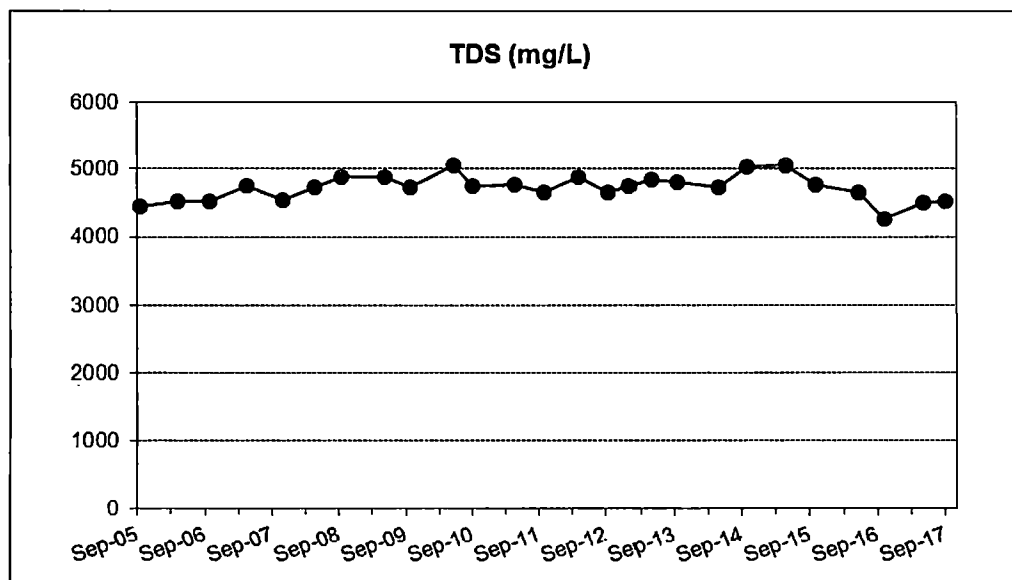
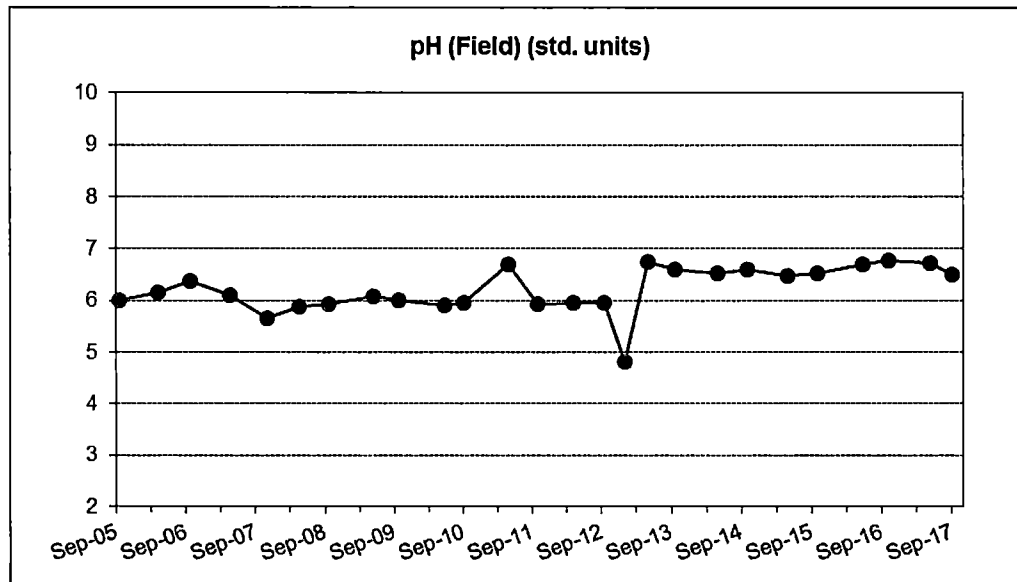
WN-1



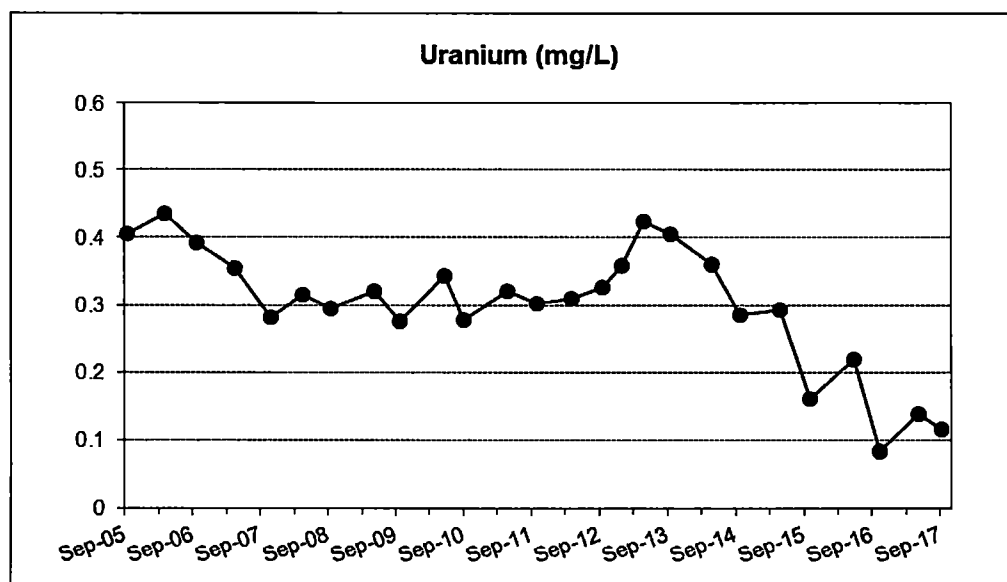
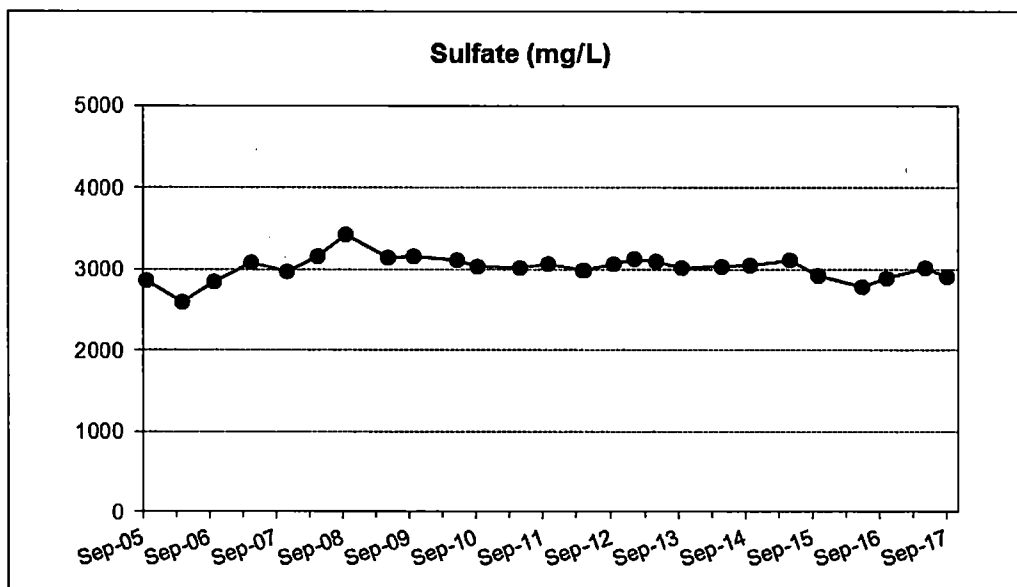
WN-1



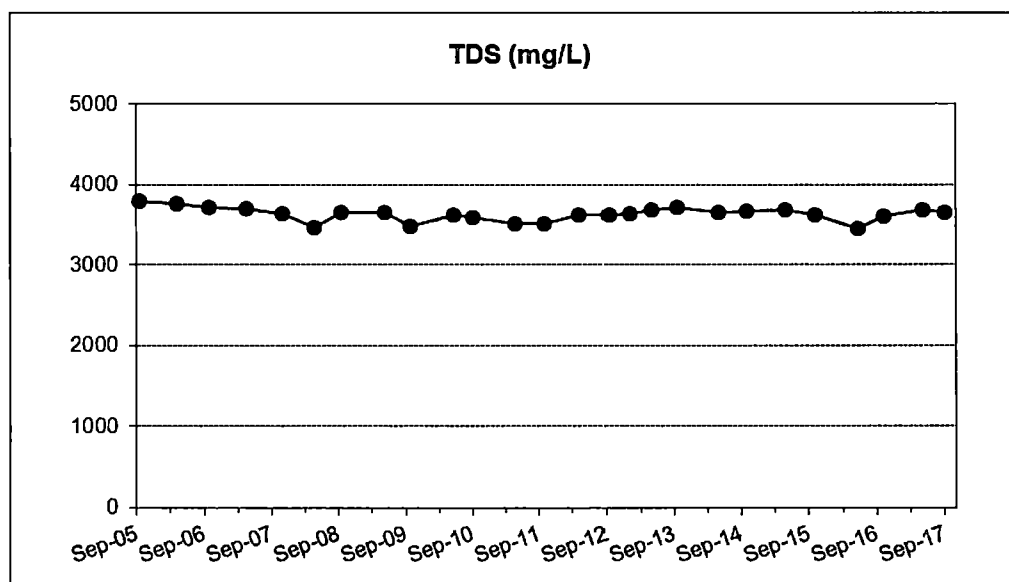
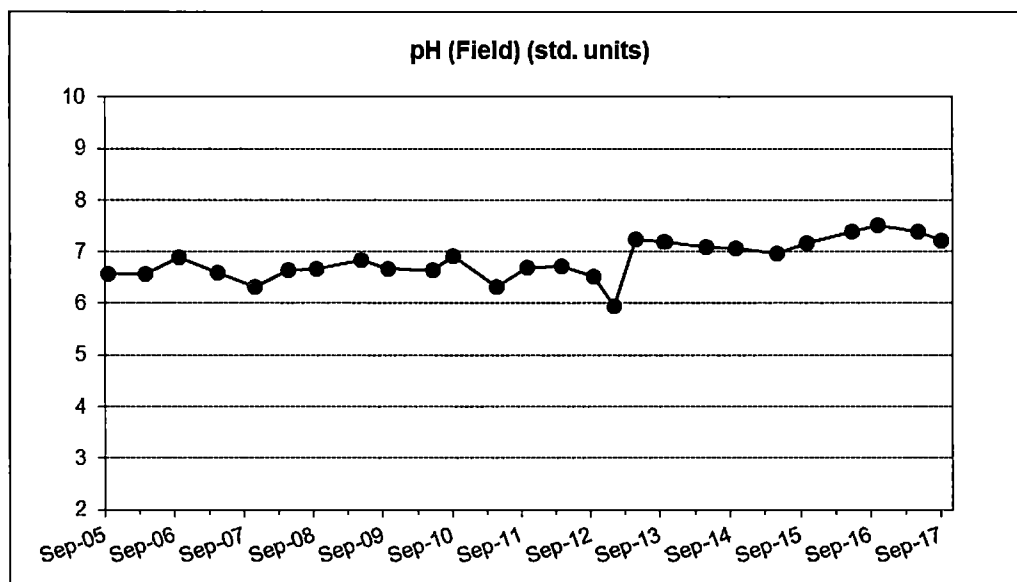
WN-4R



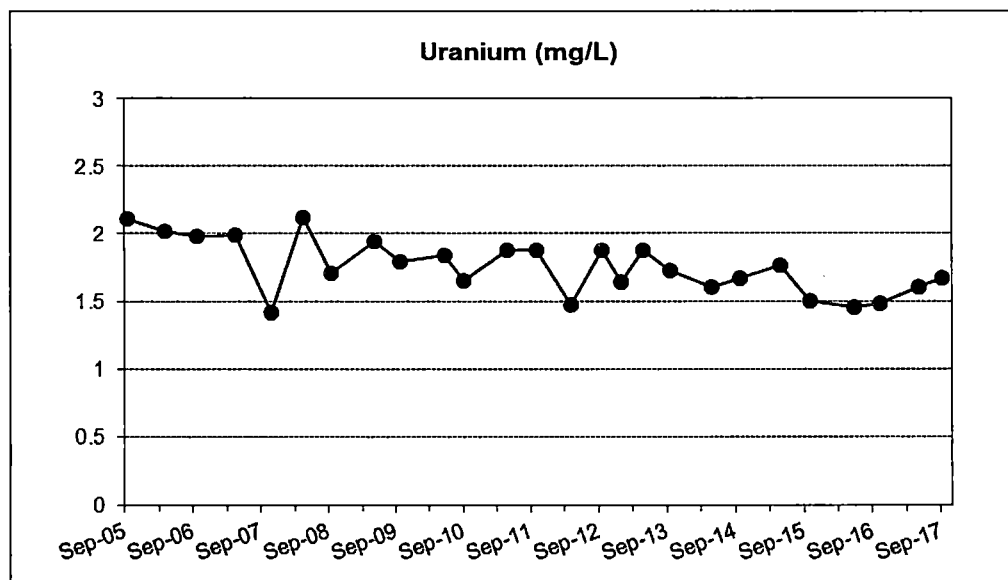
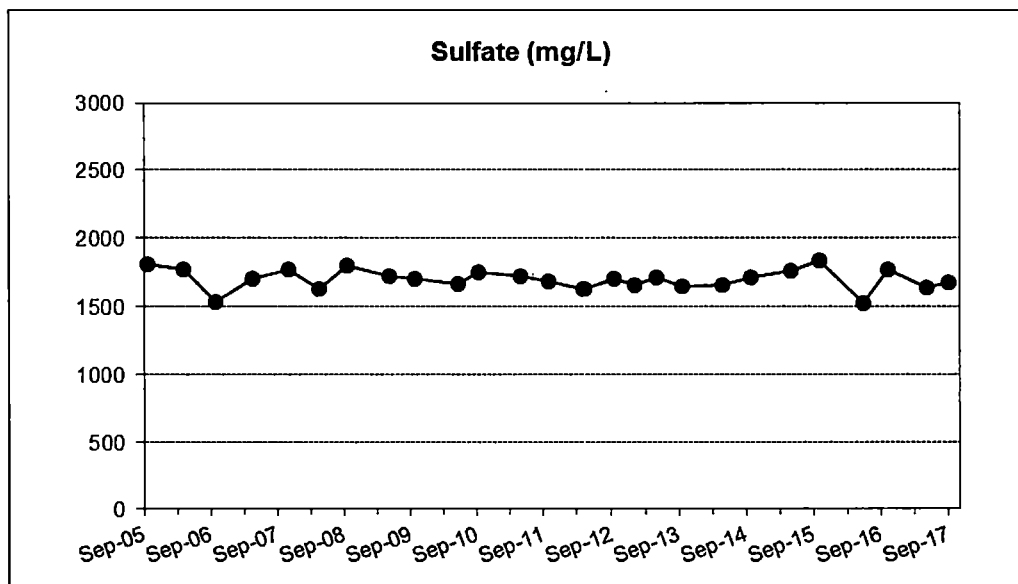
WN-4R



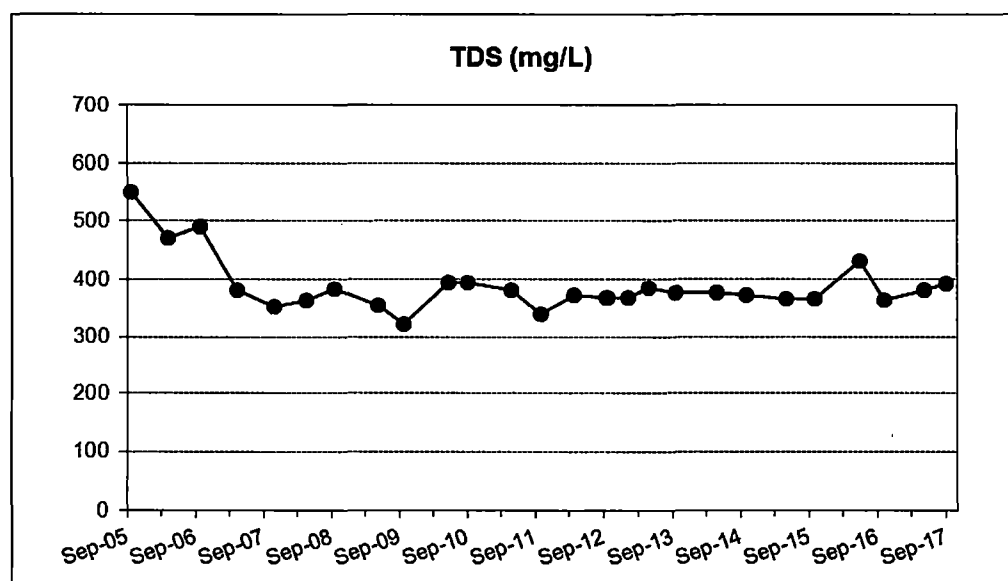
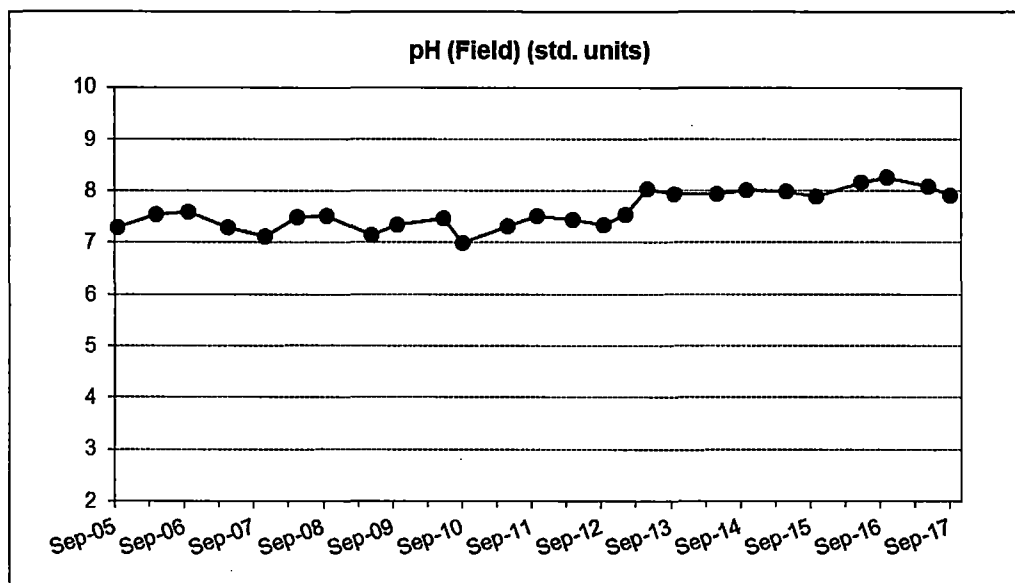
WN-5



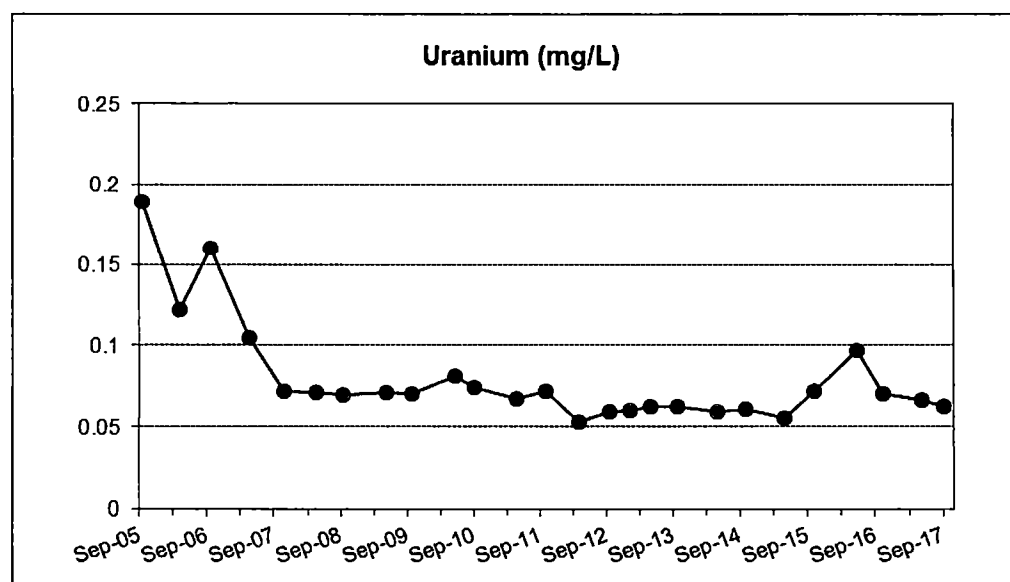
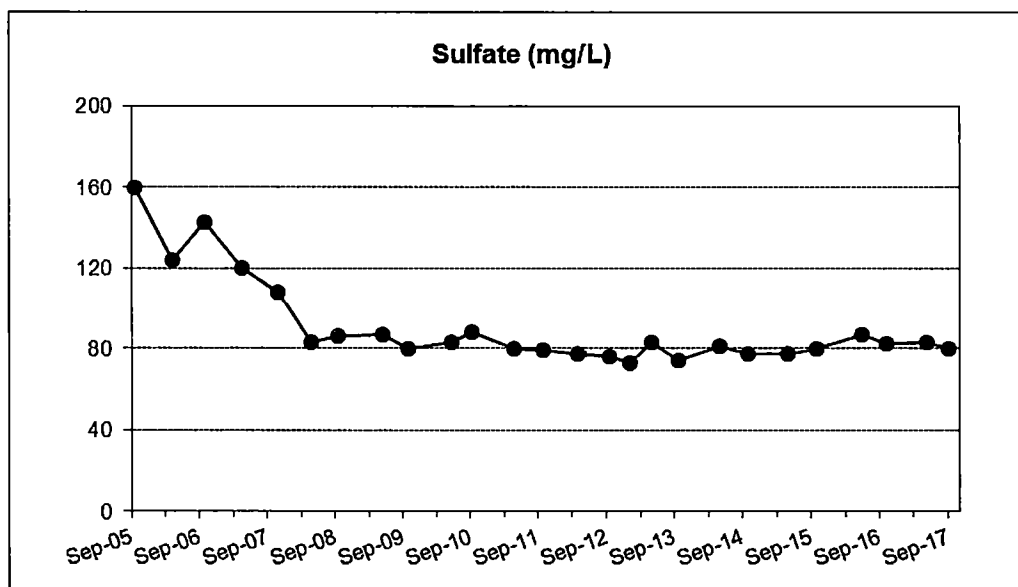
WN-5



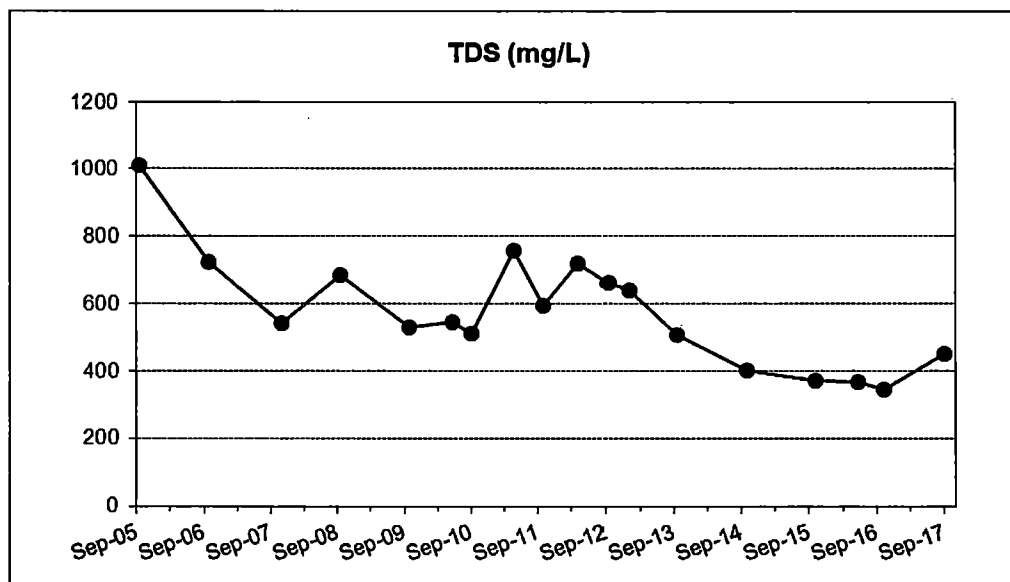
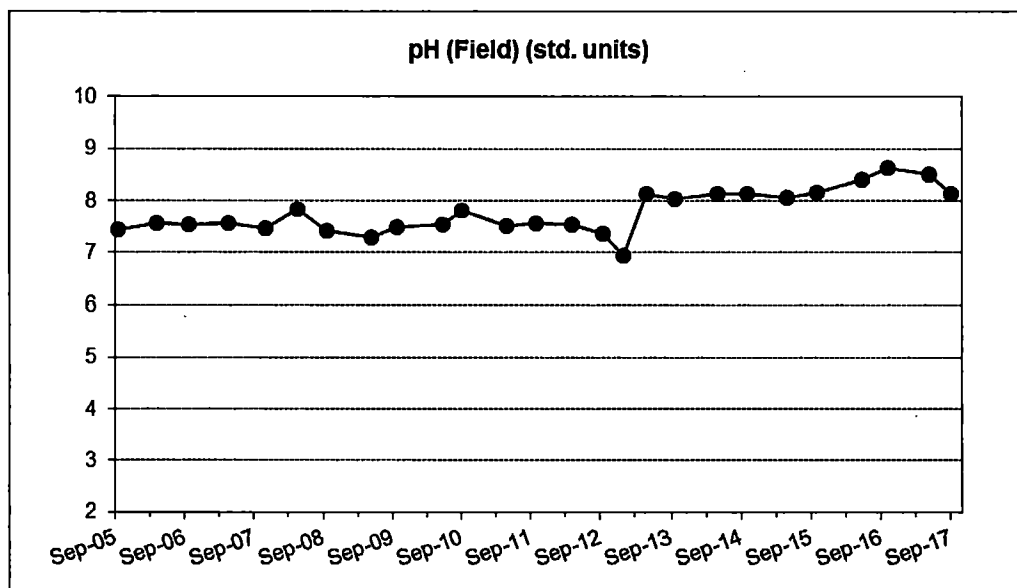
WN-21



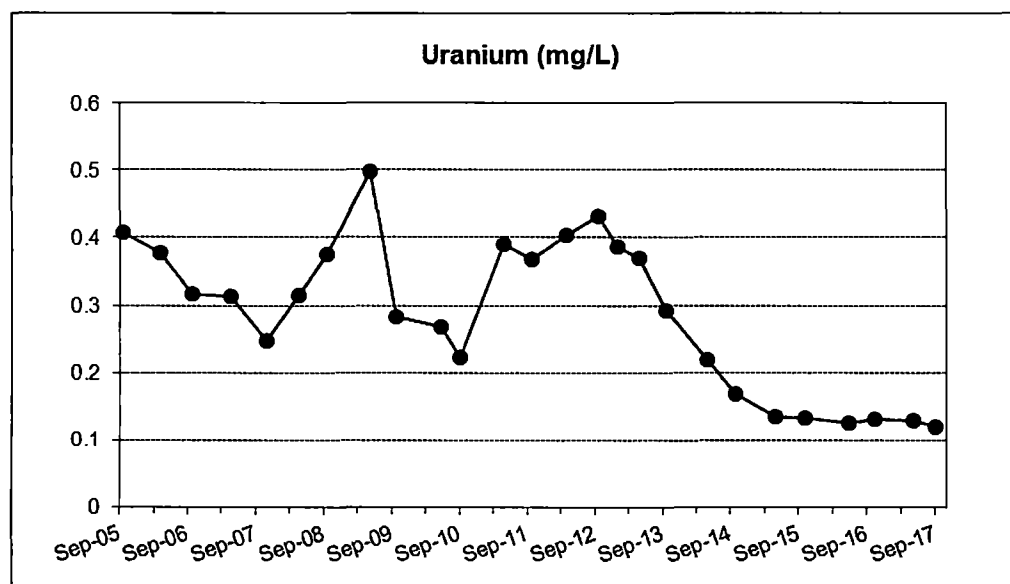
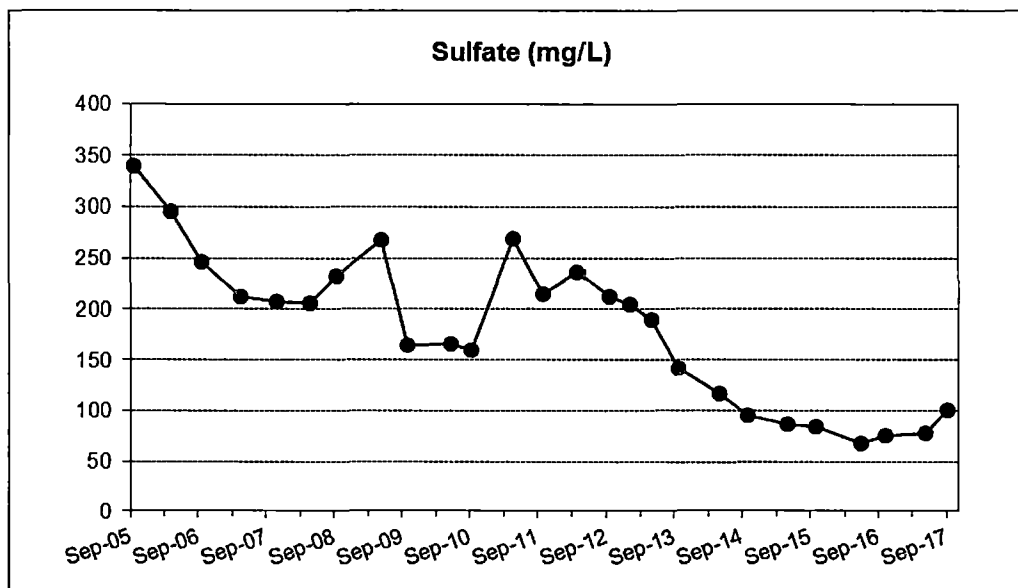
WN-21



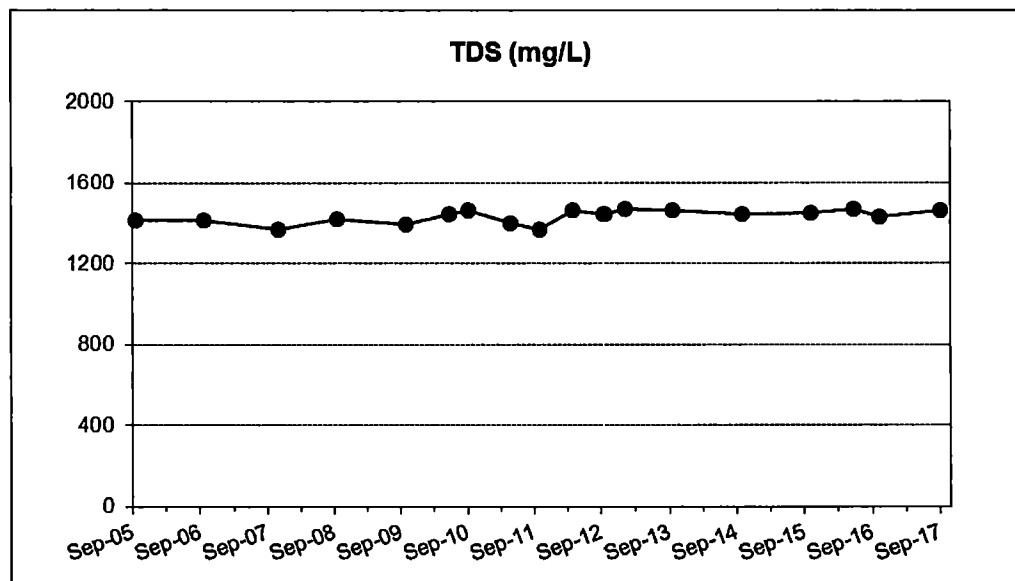
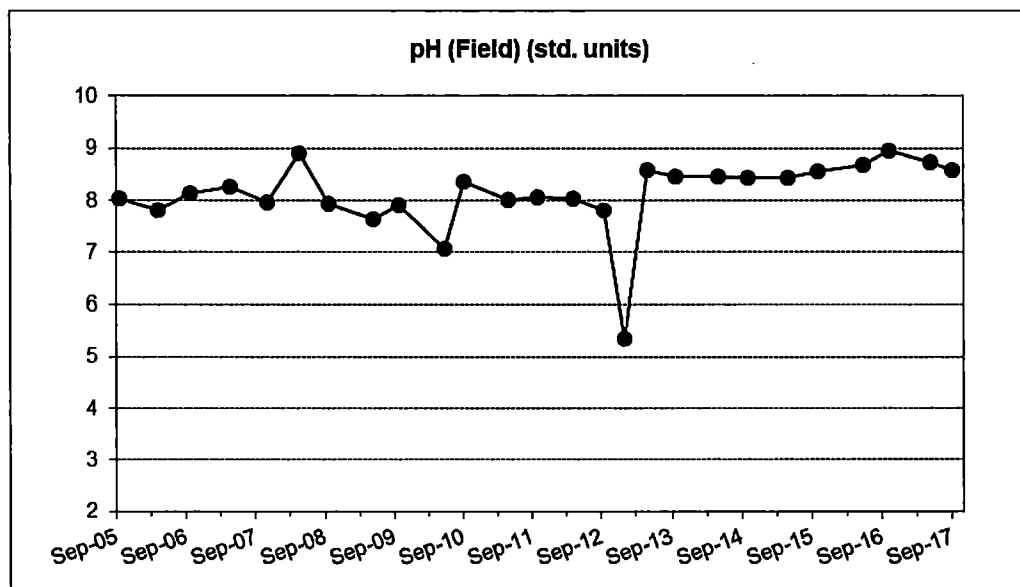
WN-39B



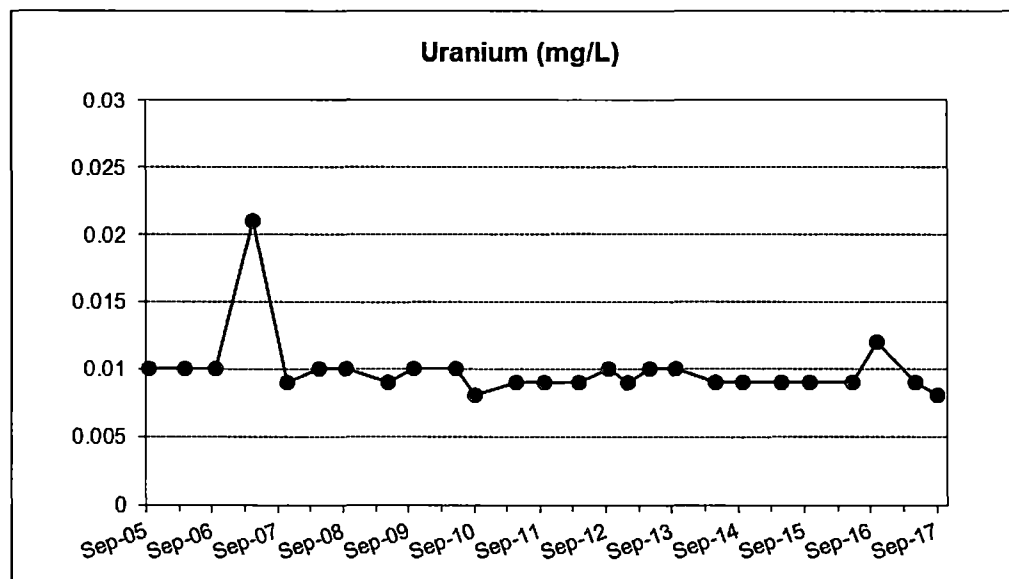
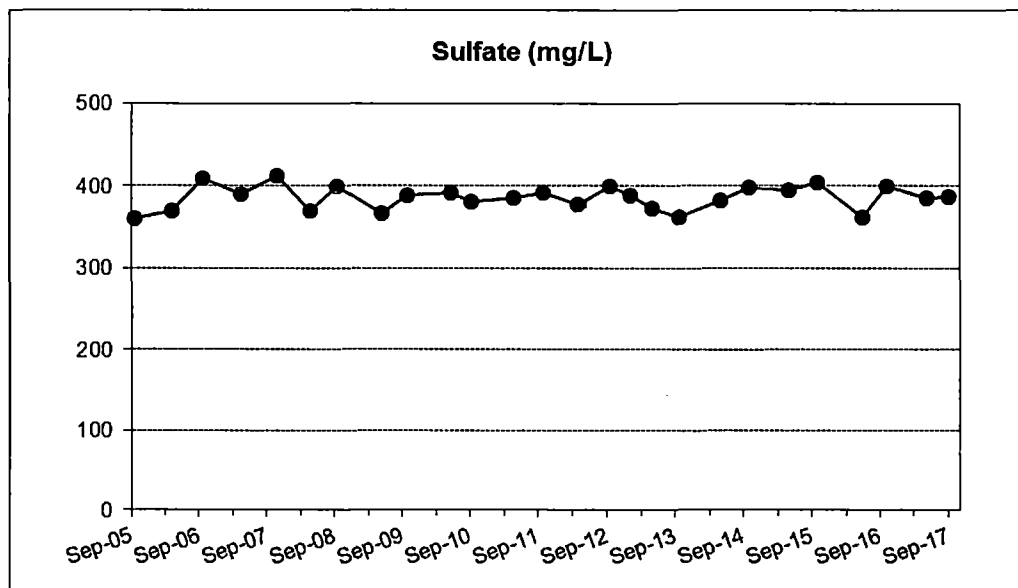
WN-39B



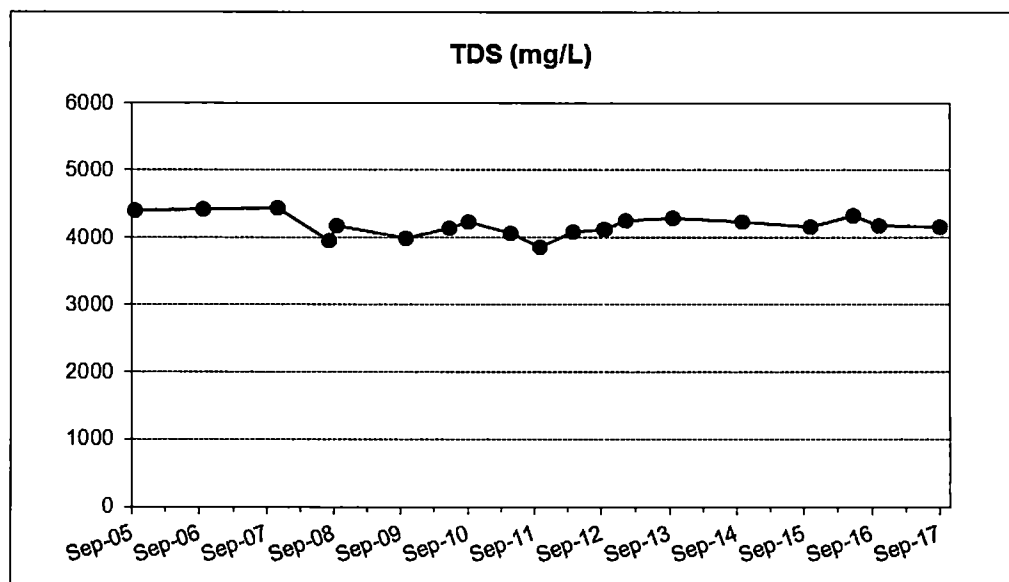
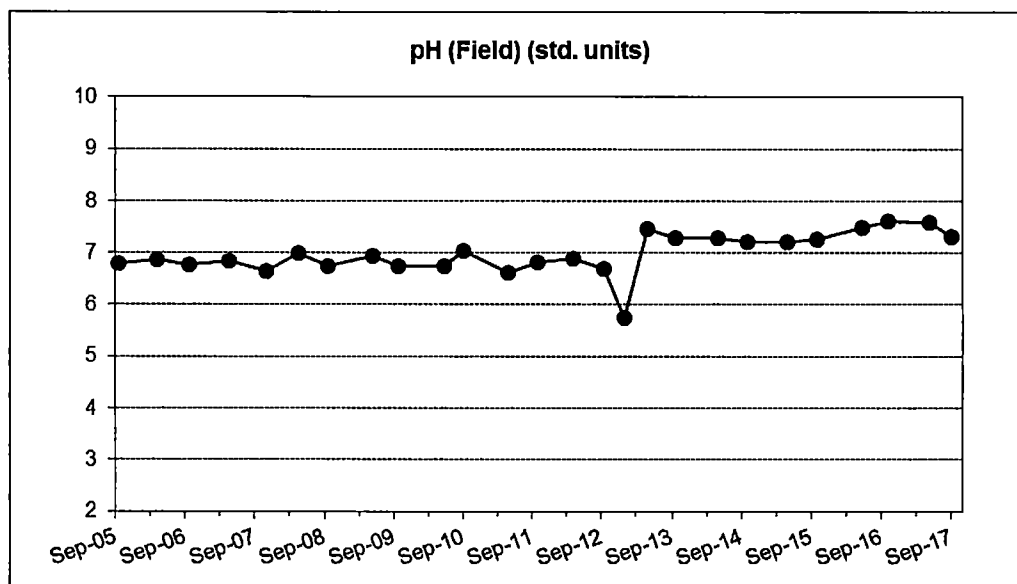
WN-41B



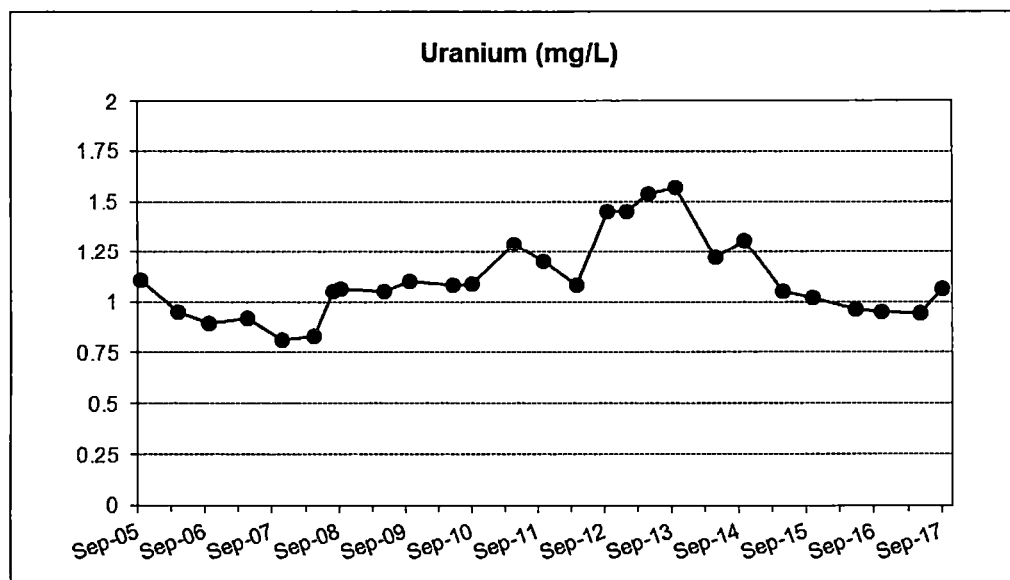
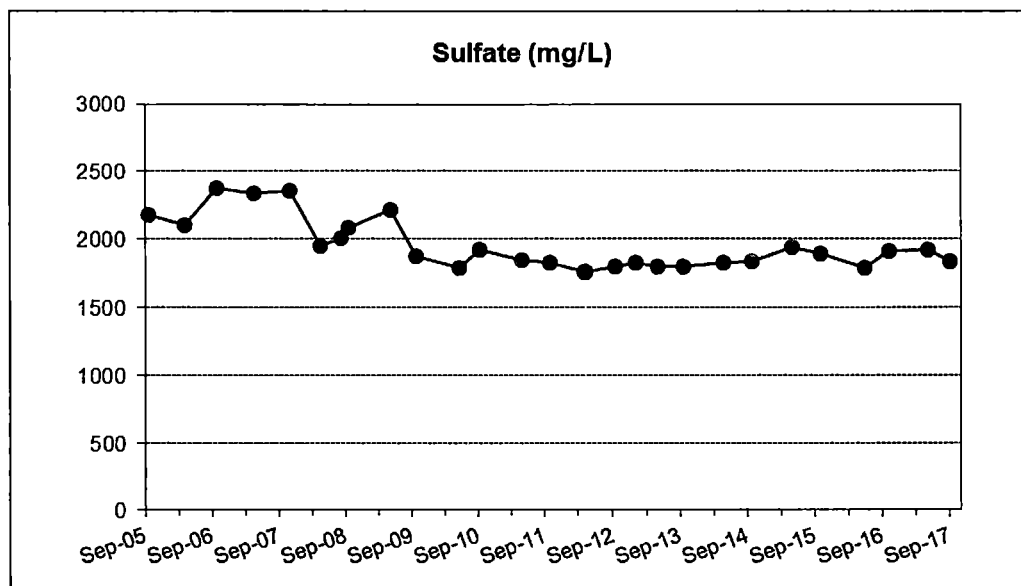
WN-41B



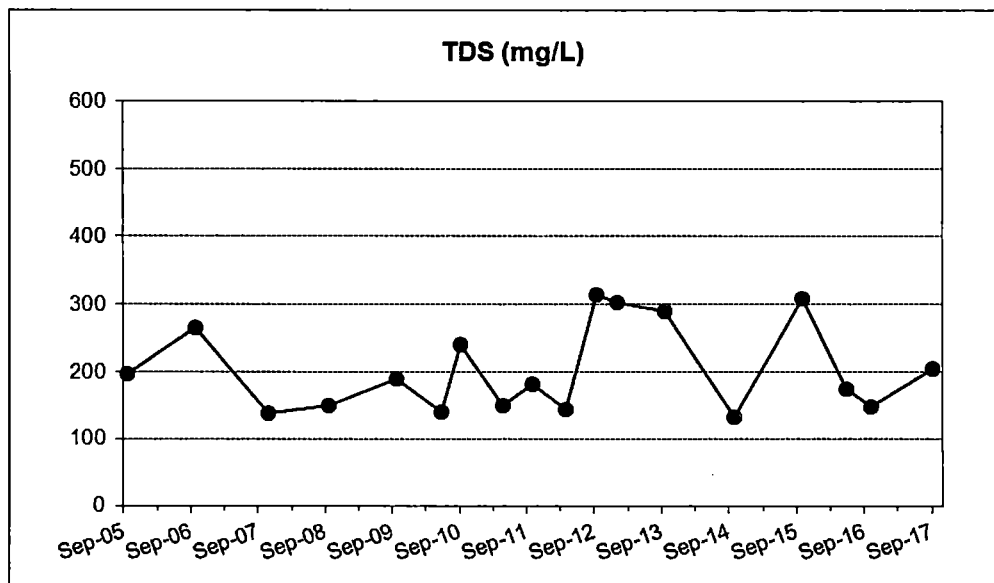
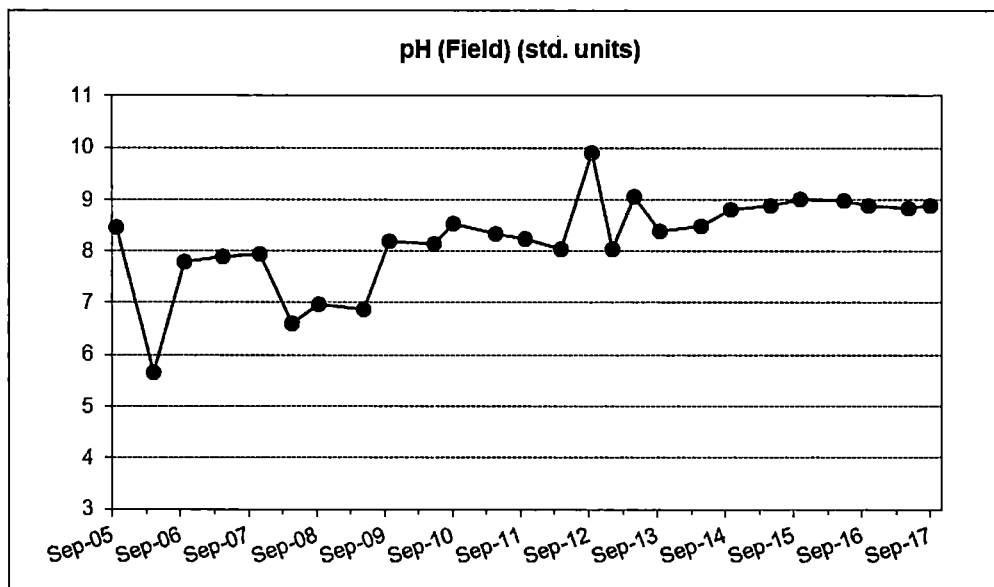
WN-42A



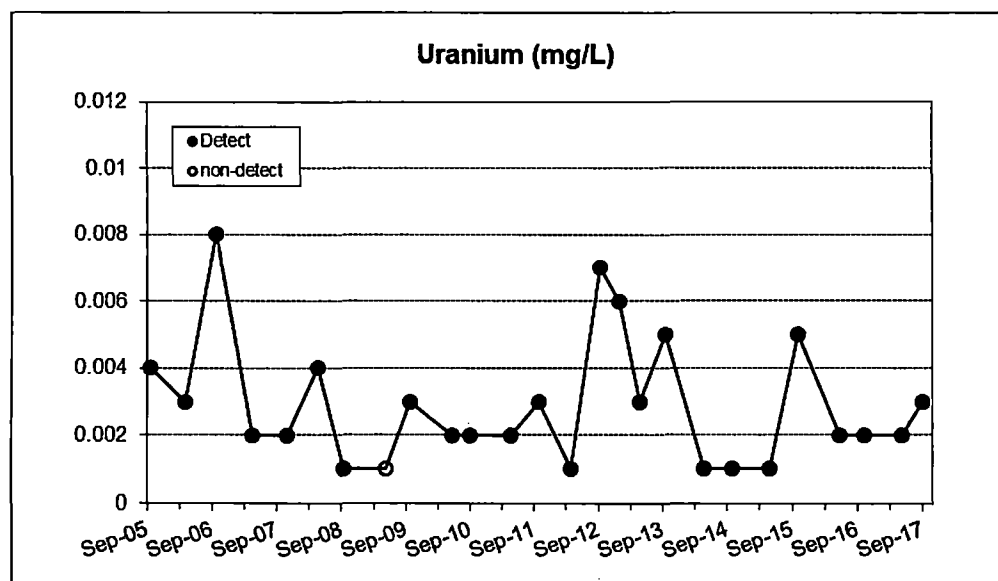
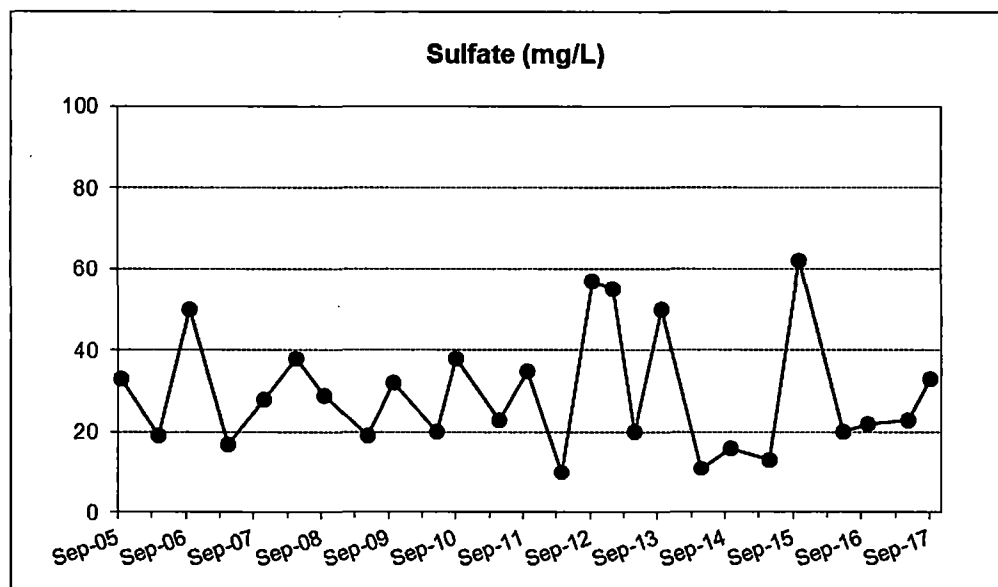
WN-42A



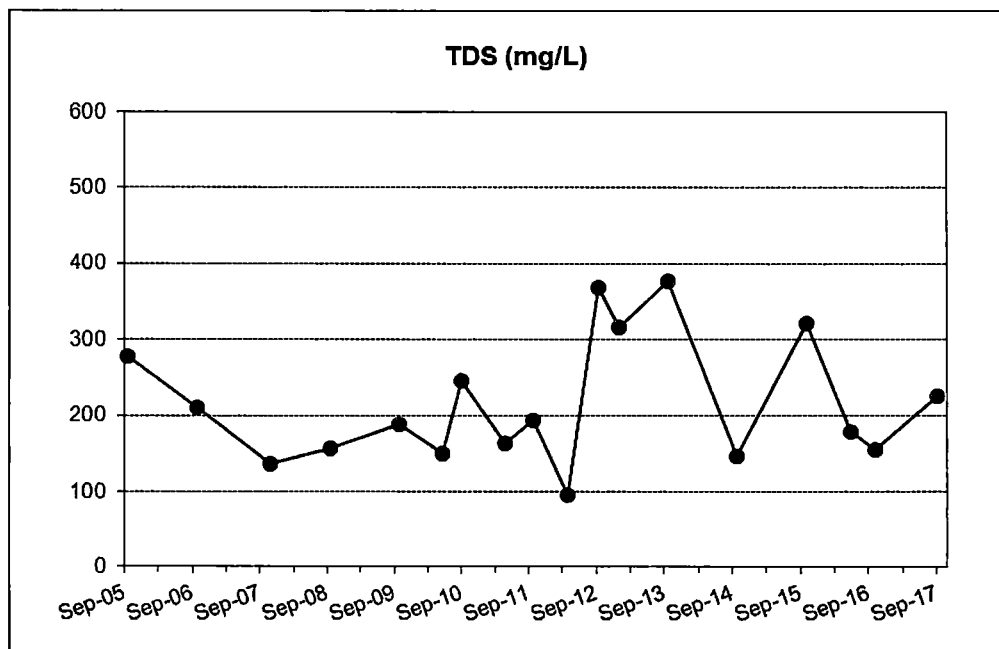
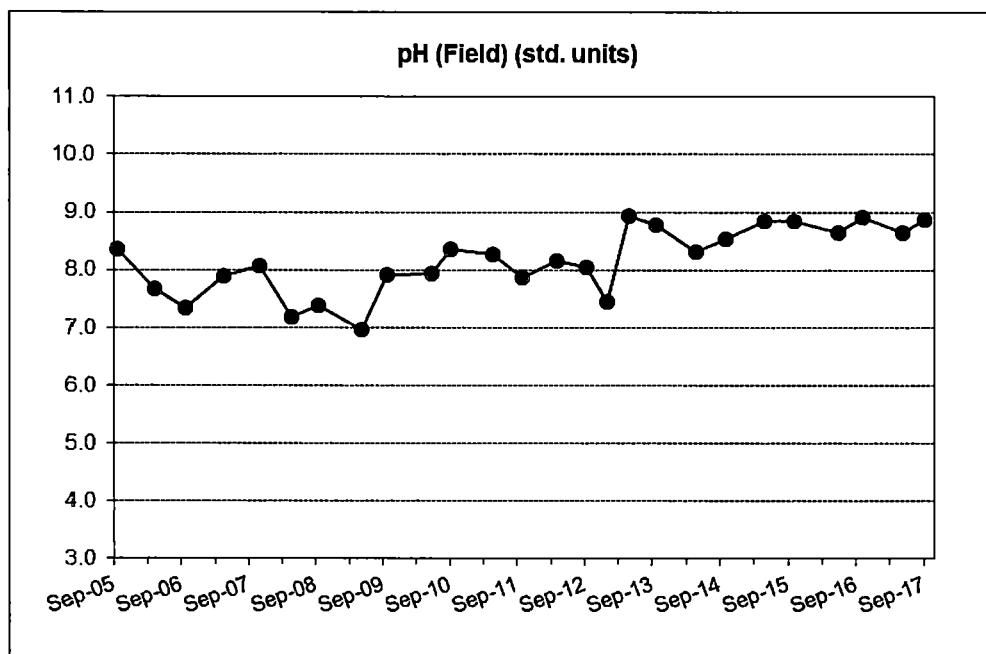
SW-1



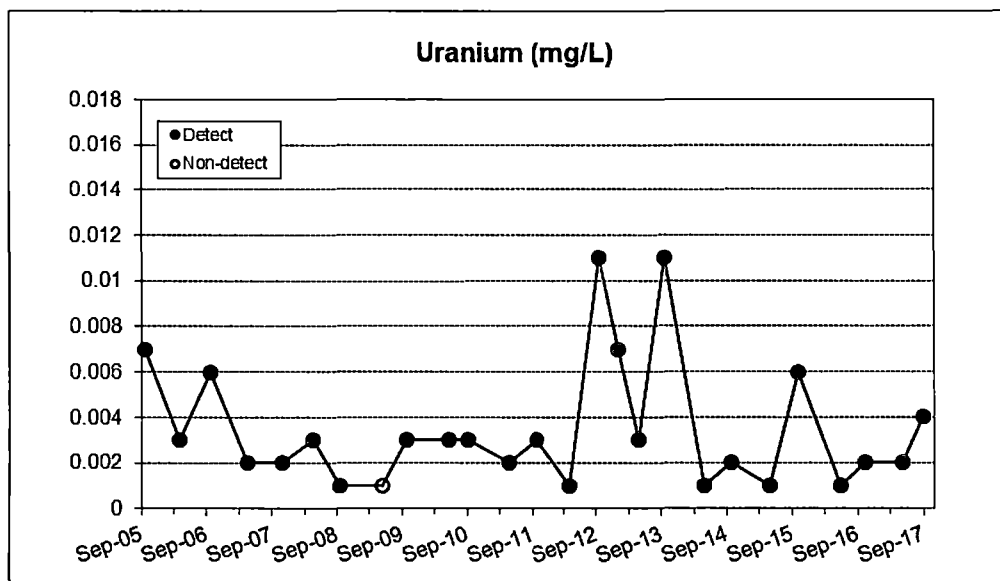
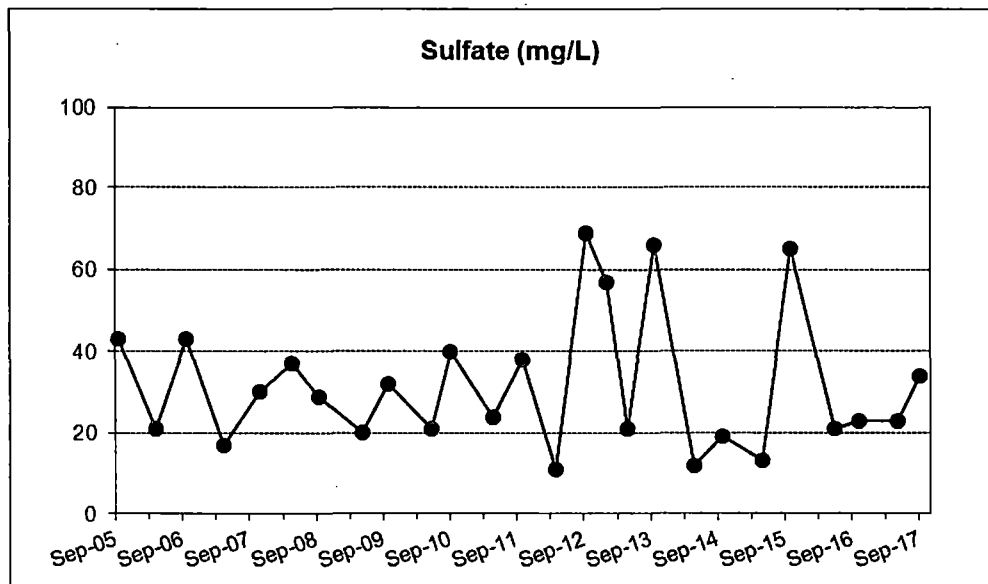
SW-1



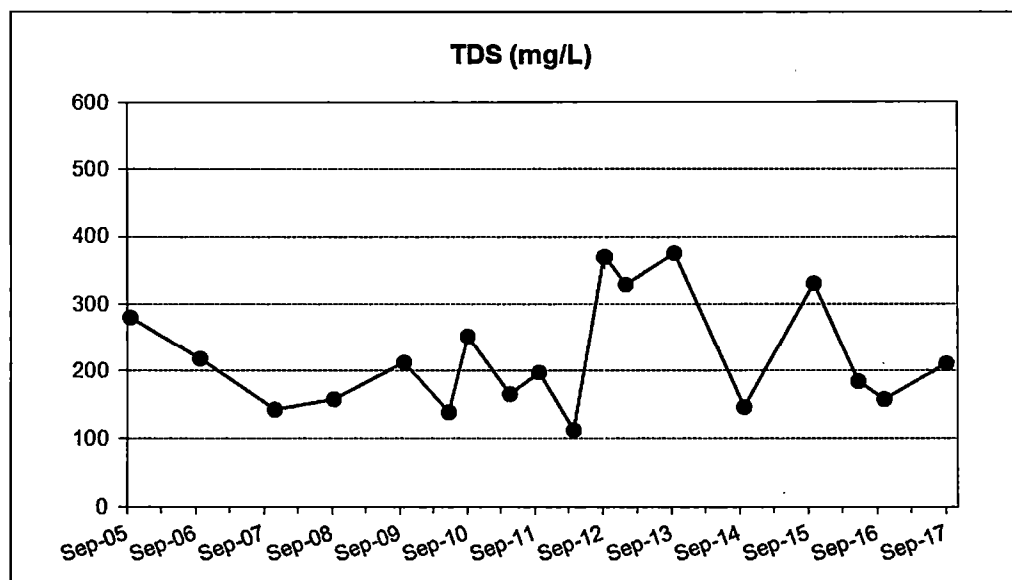
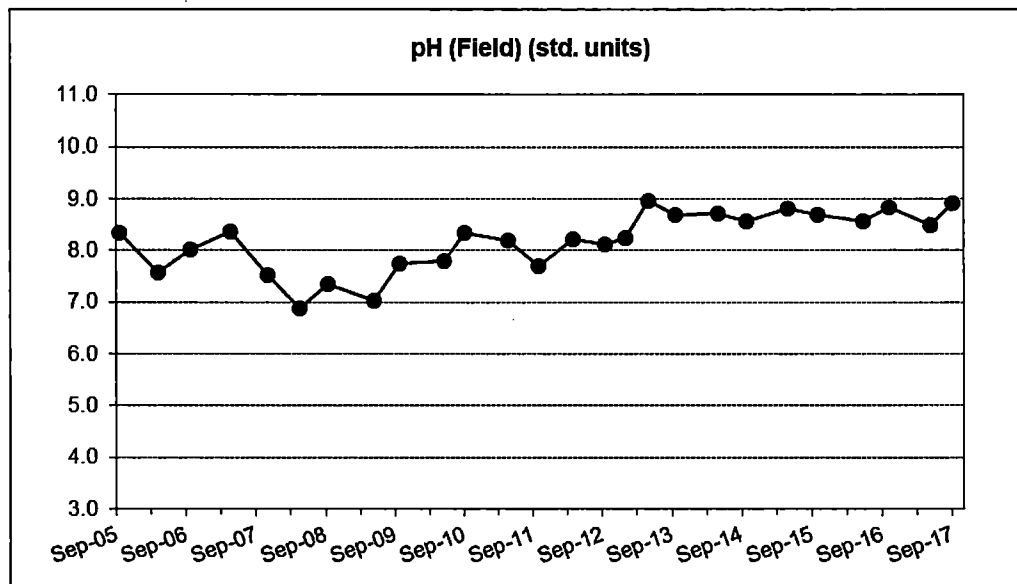
SW-2



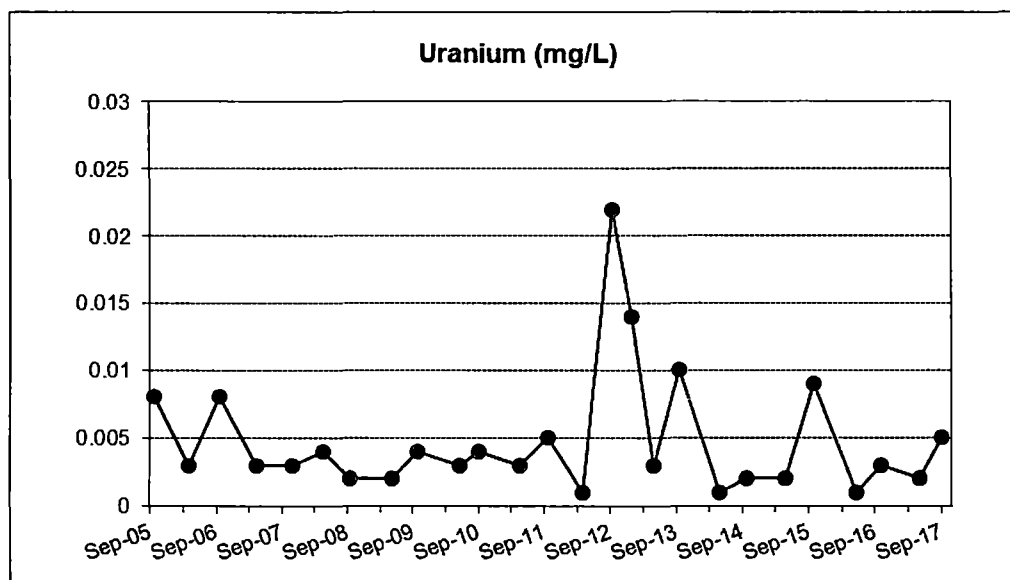
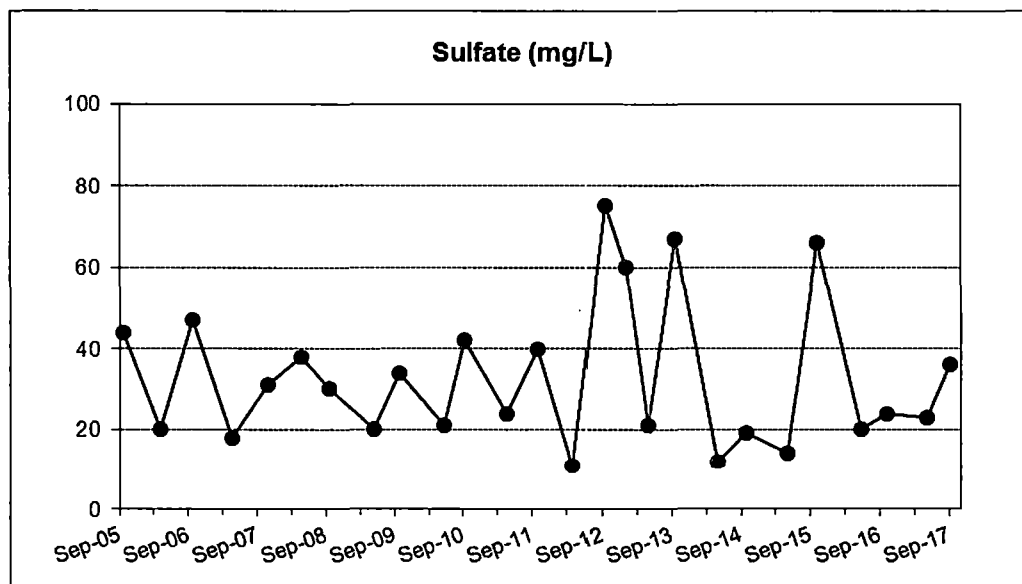
SW-2



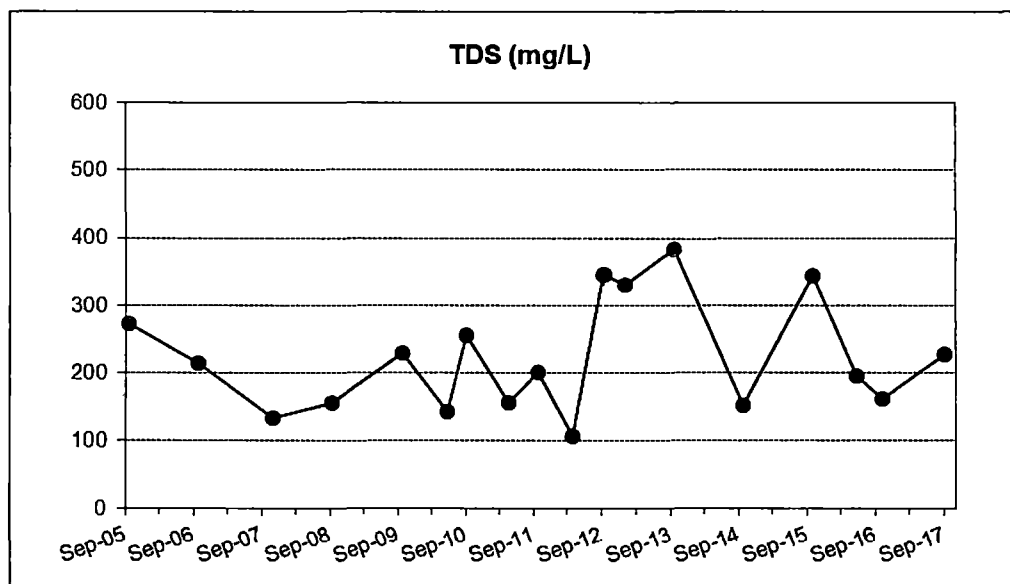
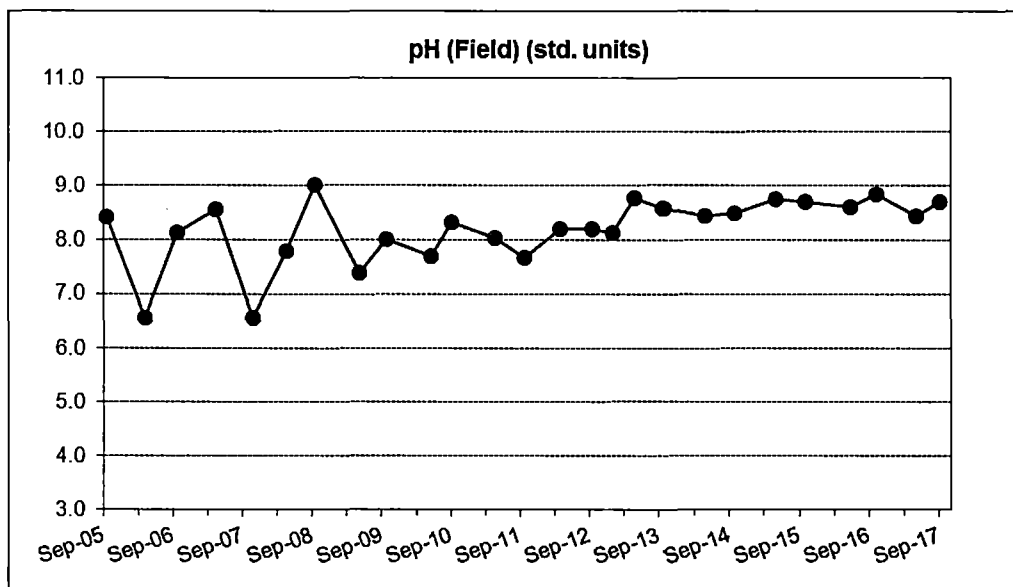
SW-3



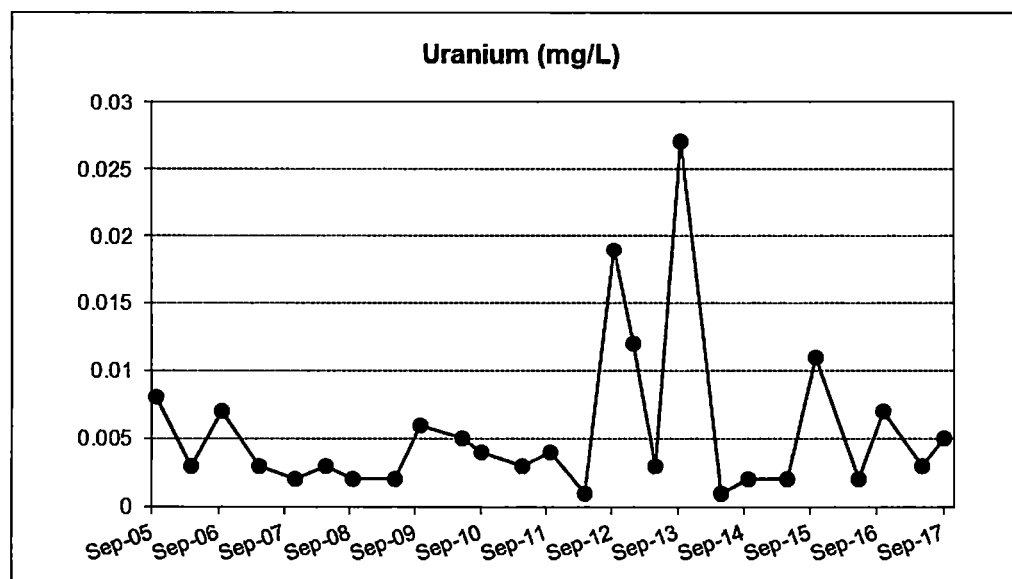
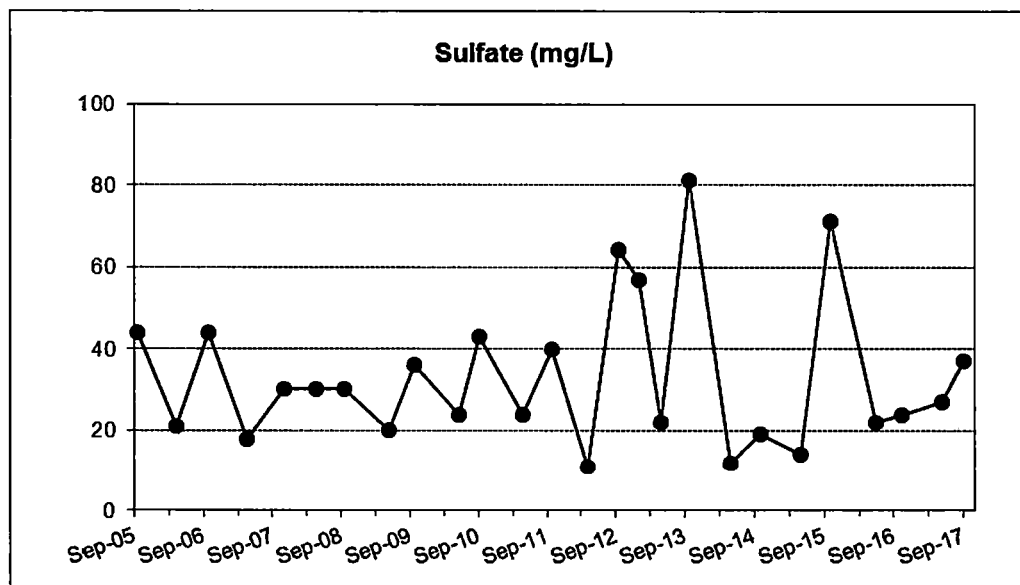
SW-3



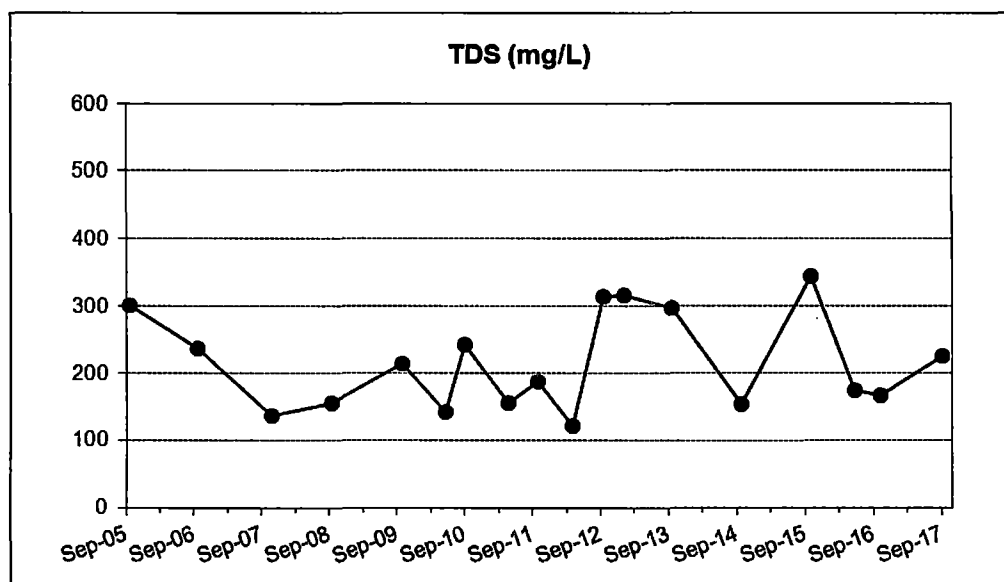
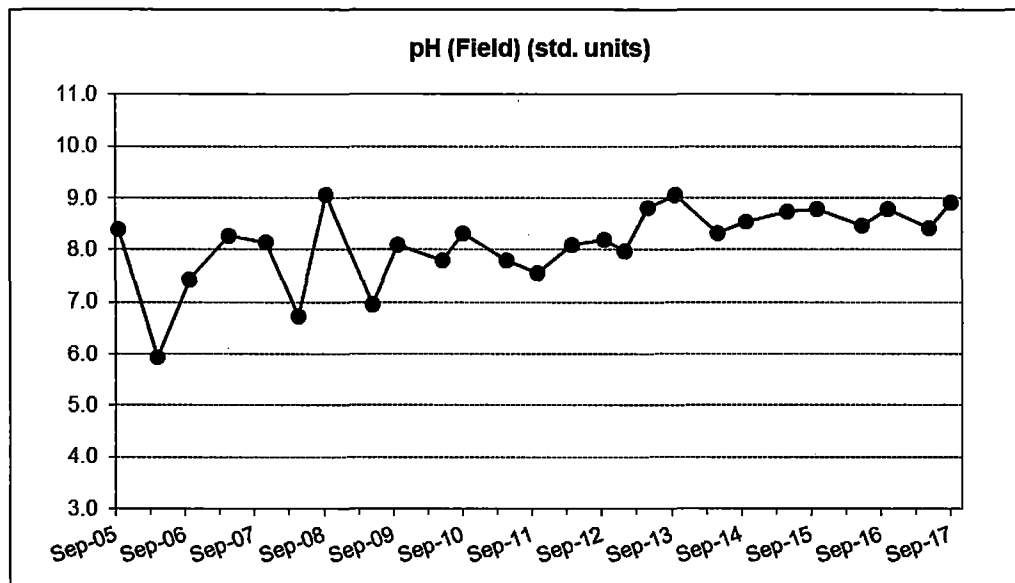
SW-4



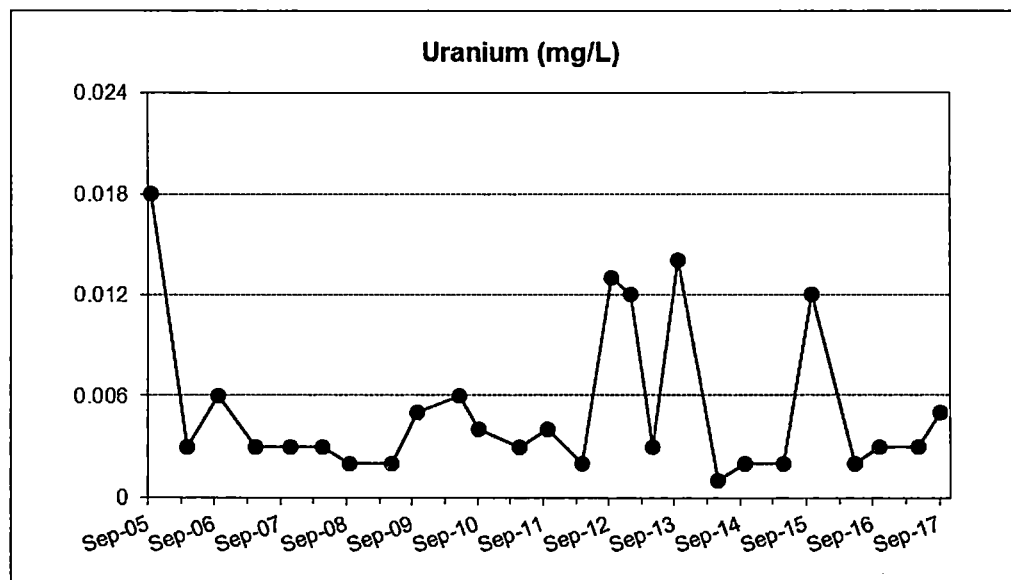
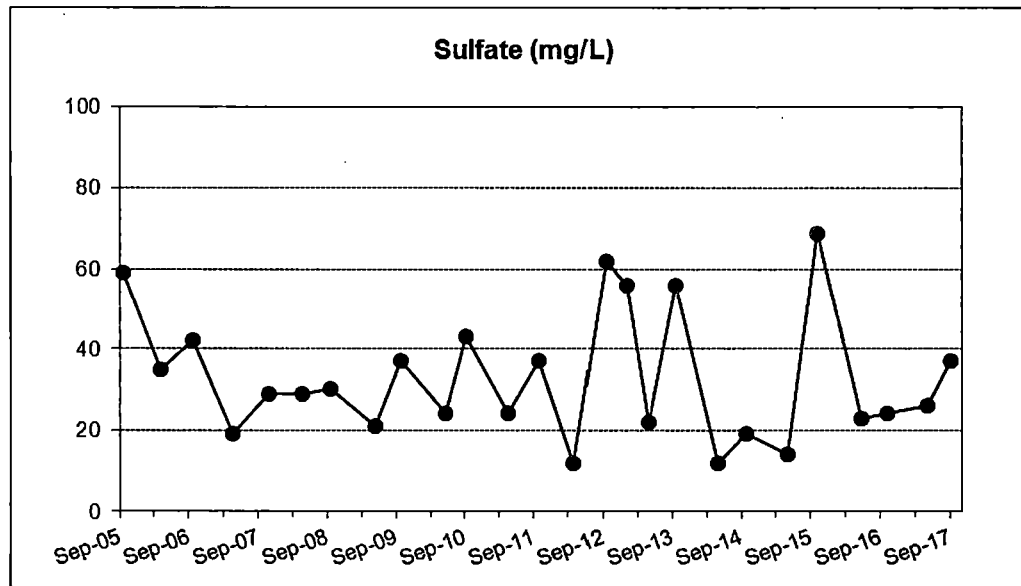
SW-4



SW-5



SW-5





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ANALYTICAL SUMMARY REPORT

October 13, 2017

Western Nuclear Inc
Split Rock Mill
Jeffrey City, WY 82310

Work Order: C17090235 Quote ID: C119 - Annual
Project Name: Split Rock Mill GWPP

Energy Laboratories, Inc. Casper WY received the following 25 samples for Western Nuclear Inc on 9/8/2017 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C17090235-001	WN-1	09/07/17 11:24	09/08/17	Aqueous	Metals by ICP/ICPMS, Dissolved Client Provided Field Parameters Fluoride Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Radium 226, Dissolved Radium 228, Dissolved Thorium, Isotopic Solids, Total Dissolved
C17090235-002	WN-4R	09/07/17 10:12	09/08/17	Aqueous	Same As Above
C17090235-003	WN-5	09/07/17 09:47	09/08/17	Aqueous	Same As Above
C17090235-004	WN-21	09/07/17 14:02	09/08/17	Aqueous	Same As Above
C17090235-005	WN-39B	09/07/17 09:07	09/08/17	Aqueous	Same As Above
C17090235-006	WN-41B	09/07/17 08:57	09/08/17	Aqueous	Same As Above
C17090235-007	WN-42A	09/07/17 09:27	09/08/17	Aqueous	Metals by ICP/ICPMS, Dissolved Client Provided Field Parameters Fluoride Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Preservation by the Laboratory Radium 226, Dissolved Radium 228, Dissolved Thorium, Isotopic Solids, Total Dissolved
C17090235-008	JJ-1R	09/07/17 08:32	09/08/17	Aqueous	Metals by ICP/ICPMS, Dissolved Client Provided Field Parameters Fluoride Anions by Ion Chromatography Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Radium 226, Dissolved Radium 228, Dissolved Thorium, Isotopic Solids, Total Dissolved
C17090235-009	SWAB-1R	09/07/17 14:35	09/08/17	Aqueous	Same As Above
C17090235-010	SWAB-2	09/07/17 14:15	09/08/17	Aqueous	Same As Above



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ANALYTICAL SUMMARY REPORT

C17090235-011	SWAB-4	09/07/17 11:05 09/08/17	Aqueous	Same As Above
C17090235-012	SWAB-12R	09/07/17 13:43 09/08/17	Aqueous	Same As Above
C17090235-013	SWAB-22	09/07/17 10:27 09/08/17	Aqueous	Same As Above
C17090235-014	SWAB-29	09/07/17 11:50 09/08/17	Aqueous	Same As Above
C17090235-015	SWAB-31	09/07/17 15:04 09/08/17	Aqueous	Same As Above
C17090235-016	SWAB-32	09/07/17 15:27 09/08/17	Aqueous	Same As Above
C17090235-017	SWR-UG	09/06/17 13:30 09/08/17	Aqueous	Same As Above
C17090235-018	SWR-A	09/06/17 14:01 09/08/17	Aqueous	Same As Above
C17090235-019	SWR-B	09/06/17 14:14 09/08/17	Aqueous	Same As Above
C17090235-020	SWR-C	09/06/17 14:40 09/08/17	Aqueous	Same As Above
C17090235-021	SWR-DG	09/06/17 15:17 09/08/17	Aqueous	Same As Above
C17090235-022	Field Blank	09/07/17 08:50 09/08/17	Aqueous	Same As Above
C17090235-023	WN-1R	09/07/17 11:24 09/08/17	Aqueous	Same As Above
C17090235-024	WN-5R	09/07/17 09:47 09/08/17	Aqueous	Same As Above
C17090235-025	WN-5S	09/07/17 09:47 09/08/17	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:


Project Manager

Digitally signed by
Tracey Archer
Date: 2017.10.13 13:05:25 -06:00



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CLIENT: Western Nuclear Inc
Project: Split Rock Mill GWPP
Work Order: C17090235

Report Date: 10/13/17

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Note:

The 500 mL raw sample submitted was marked filtered.

Prep Comments for Sample C17090235-007D, Test PRESERVATION: - The sample fraction submitted for Nitrogen, Nitrate+Nitrite as N was received in the laboratory with a pH of ~ 7. This is outside of the method specified requirement of pH < 2. Proper preservation was added before sample analysis.



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-001
Client Sample ID: WN-1

Report Date: 10/13/17
Collection Date: 09/07/17 11:24
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	9	mg/L		1		E300.0	09/11/17 22:44 / jcg
Fluoride	1.7	mg/L		0.1		A4500-F C	09/13/17 19:52 / eli-b
Sulfate	1990	mg/L	D	4		E300.0	09/11/17 22:44 / jcg
PHYSICAL PROPERTIES							
pH	6.82	s.u.	H	0.01		A4500-H B	09/09/17 12:36 / mvr
Solids, Total Dissolved TDS @ 180 C	2790	mg/L	D	40		A2540 C	09/11/17 09:28 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	13.4	mg/L		0.2		E353.2	09/11/17 15:32 / ljl
Nitrogen, Ammonia as N	112	mg/L	D	5		A4500-NH3 G	09/12/17 10:00 / ljl
METALS, DISSOLVED							
Aluminum	0.3	mg/L		0.1		E200.8	09/14/17 14:45 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 14:45 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 14:45 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 14:45 / eli-b
Cadmium	0.003	mg/L		0.001		E200.8	09/14/17 14:45 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 14:45 / eli-b
Manganese	14.6	mg/L		0.05		E200.8	09/14/17 14:45 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 14:45 / eli-b
Nickel	0.08	mg/L		0.05		E200.8	09/14/17 14:45 / eli-b
Selenium	0.013	mg/L		0.005		E200.8	09/14/17 14:45 / eli-b
Thallium	0.017	mg/L		0.001		E200.8	09/14/17 14:45 / eli-b
Uranium	1.48	mg/L		0.001		E200.8	09/14/17 14:45 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.5	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 228	0.7	pCi/L	U			RA-05	10/08/17 15:34 / trs
Radium 228 precision (±)	0.7	pCi/L				RA-05	10/08/17 15:34 / trs
Radium 228 MDC	1.1	pCi/L				RA-05	10/08/17 15:34 / trs
Thorium 230	0.06	pCi/L	U			E908.0	09/28/17 11:07 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	09/28/17 11:07 / cnh
Thorium 230 MDC	0.3	pCi/L				E908.0	09/28/17 11:07 / cnh
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	6.70	s.u.				FIELD	09/07/17 11:24 / ***

*** Field data provided by client

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: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-002
Client Sample ID: WN-4R

Report Date: 10/13/17
Collection Date: 09/07/17 10:12
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	75	mg/L	D	2		E300.0	09/11/17 23:02 / jcg
Fluoride	7.9	mg/L	L	0.2		A4500-F C	09/19/17 10:20 / eli-b
Sulfate	2910	mg/L	D	8		E300.0	09/11/17 23:02 / jcg
PHYSICAL PROPERTIES							
pH	6.28	s.u.	H	0.01		A4500-H B	09/09/17 12:39 / mvr
Solids, Total Dissolved TDS @ 180 C	4530	mg/L	D	100		A2540 C	09/11/17 09:29 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	157	mg/L	D	2		E353.2	09/11/17 15:34 / ljl
Nitrogen, Ammonia as N	226	mg/L	D	10		A4500-NH3 G	09/12/17 10:01 / ljl
METALS, DISSOLVED							
Aluminum	2.7	mg/L		0.1		E200.8	09/14/17 15:02 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 15:02 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 15:02 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 15:02 / eli-b
Cadmium	0.017	mg/L		0.001		E200.8	09/14/17 15:02 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 15:02 / eli-b
Manganese	87.6	mg/L		0.05		E200.8	09/14/17 15:02 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 15:02 / eli-b
Nickel	0.42	mg/L		0.05		E200.8	09/14/17 15:02 / eli-b
Selenium	0.052	mg/L		0.005		E200.8	09/14/17 15:02 / eli-b
Thallium	0.001	mg/L		0.001		E200.8	09/14/17 15:02 / eli-b
Uranium	0.115	mg/L		0.001		E200.8	09/14/17 15:02 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 228	2.1	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 precision (±)	0.8	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 MDC	1.4	pCi/L				RA-05	09/25/17 11:19 / trs
Thorium 230	-0.06	pCi/L	U			E908.0	09/28/17 11:07 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	09/28/17 11:07 / cnh
Thorium 230 MDC	0.3	pCi/L				E908.0	09/28/17 11:07 / cnh
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	6.51	s.u.				FIELD	09/07/17 10:12 / ***

*** Field data provided by client

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.
 L - Lowest available reporting limit for the analytical method used.



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-003
Client Sample ID: WN-5

Report Date: 10/13/17
Collection Date: 09/07/17 09:47
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	110	mg/L		1		E300.0	09/13/17 16:16 / jcg
Fluoride	ND	mg/L		0.1		A4500-F C	09/13/17 19:59 / eli-b
Sulfate	1680	mg/L	D	4		E300.0	09/13/17 16:16 / jcg
PHYSICAL PROPERTIES							
pH	6.90	s.u.	H	0.01		A4500-H B	09/09/17 12:42 / mvr
Solids, Total Dissolved TDS @ 180 C	3660	mg/L	D	40		A2540 C	09/11/17 09:29 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	50.0	mg/L		0.2		E353.2	09/13/17 12:18 / jcg
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:02 / jlj
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 15:05 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 15:05 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 15:05 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 15:05 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 15:05 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 15:05 / eli-b
Manganese	0.63	mg/L		0.05		E200.8	09/14/17 15:05 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 15:05 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 15:05 / eli-b
Selenium	0.016	mg/L		0.005		E200.8	09/14/17 15:05 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 15:05 / eli-b
Uranium	1.67	mg/L		0.001		E200.8	09/14/17 15:05 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 228	0.9	pCi/L	U			RA-05	10/08/17 15:34 / trs
Radium 228 precision (±)	0.7	pCi/L				RA-05	10/08/17 15:34 / trs
Radium 228 MDC	1.1	pCi/L				RA-05	10/08/17 15:34 / trs
Thorium 230	0.02	pCi/L	U			E908.0	09/28/17 11:07 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	09/28/17 11:07 / cnh
Thorium 230 MDC	0.3	pCi/L				E908.0	09/28/17 11:07 / cnh
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	7.21	s.u.				FIELD	09/07/17 09:47 / ***
*** Field data provided by client							

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: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-004
Client Sample ID: WN-21

Report Date: 10/13/17
Collection Date: 09/07/17 14:02
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	15	mg/L		1		E300.0	09/11/17 23:37 / jcg
Fluoride	0.2	mg/L		0.1		A4500-F C	09/13/17 20:01 / eli-b
Sulfate	80	mg/L		1		E300.0	09/11/17 23:37 / jcg
PHYSICAL PROPERTIES							
pH	7.69	s.u.	H	0.01		A4500-H B	09/09/17 12:45 / mvr
Solids, Total Dissolved TDS @ 180 C	392	mg/L		10		A2540 C	09/11/17 09:29 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	2.4	mg/L		0.2		E353.2	09/11/17 15:41 / ljl
Nitrogen, Ammonia as N	0.82	mg/L		0.05		A4500-NH3 G	09/12/17 10:04 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 15:09 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 15:09 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 15:09 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 15:09 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 15:09 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 15:09 / eli-b
Manganese	0.18	mg/L		0.05		E200.8	09/14/17 15:09 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 15:09 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 15:09 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 15:09 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 15:09 / eli-b
Uranium	0.062	mg/L		0.001		E200.8	09/14/17 15:09 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.1	pCi/L	U			E903.0	10/03/17 12:05 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 228	1.8	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 precision (±)	0.8	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 MDC	1.3	pCi/L				RA-05	09/25/17 11:19 / trs
Thorium 230	0.05	pCi/L	U			E908.0	09/28/17 11:07 / cnh
Thorium 230 precision (±)	0.2	pCi/L				E908.0	09/28/17 11:07 / cnh
Thorium 230 MDC	0.4	pCi/L				E908.0	09/28/17 11:07 / cnh
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	7.92	s.u.				FIELD	09/07/17 14:02 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-005
Client Sample ID: WN-39B

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

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	16	mg/L		1		E300.0	09/11/17 23:54 / jcg
Fluoride	0.3	mg/L		0.1		A4500-F C	09/19/17 10:24 / eli-b
Sulfate	101	mg/L		1		E300.0	09/11/17 23:54 / jcg
PHYSICAL PROPERTIES							
pH	7.88	s.u.	H	0.01		A4500-H B	09/09/17 12:48 / mvr
Solids, Total Dissolved TDS @ 180 C	449	mg/L		10		A2540 C	09/11/17 09:29 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	11.4	mg/L		0.2		E353.2	09/11/17 15:42 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:05 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 15:23 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 15:23 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 15:23 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 15:23 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 15:23 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 15:23 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 15:23 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 15:23 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 15:23 / eli-b
Selenium	0.005	mg/L		0.005		E200.8	09/14/17 15:23 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 15:23 / eli-b
Uranium	0.119	mg/L		0.001		E200.8	09/14/17 15:23 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.09	pCi/L	U			E903.0	10/03/17 12:05 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 228	1.3	pCi/L	U			RA-05	09/25/17 11:19 / trs
Radium 228 precision (±)	0.8	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 MDC	1.6	pCi/L				RA-05	09/25/17 11:19 / trs
Thorium 230	-0.04	pCi/L	U			E908.0	09/29/17 12:25 / cnh
Thorium 230 precision (±)	0.1	pCi/L				E908.0	09/29/17 12:25 / cnh
Thorium 230 MDC	0.3	pCi/L				E908.0	09/29/17 12:25 / cnh
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	8.13	s.u.				FIELD	09/07/17 09:07 / ***

*** Field data provided by client

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-006
Client Sample ID: WN-41B

Report Date: 10/13/17
Collection Date: 09/07/17 08:57
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	398	mg/L		1		E300.0	09/12/17 00:12 / jcg
Fluoride	1.3	mg/L		0.1		A4500-F C	09/19/17 10:32 / eli-b
Sulfate	386	mg/L	D	2		E300.0	09/12/17 00:12 / jcg
PHYSICAL PROPERTIES							
pH	8.12	s.u.	H	0.01		A4500-H B	09/09/17 12:51 / mvr
Solids, Total Dissolved TDS @ 180 C	1460	mg/L	D	20		A2540 C	09/11/17 09:30 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 15:43 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:06 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 15:26 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 15:26 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 15:26 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 15:26 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 15:26 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 15:26 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 15:26 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 15:26 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 15:26 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 15:26 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 15:26 / eli-b
Uranium	0.008	mg/L		0.001		E200.8	09/14/17 15:26 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.1	pCi/L	U			E903.0	10/03/17 12:05 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 228	0.6	pCi/L	U			RA-05	10/08/17 15:34 / trs
Radium 228 precision (±)	0.9	pCi/L				RA-05	10/08/17 15:34 / trs
Radium 228 MDC	1.4	pCi/L				RA-05	10/08/17 15:34 / trs
Thorium 230	-0.04	pCi/L	U			E908.0	10/09/17 10:34 / dmf
Thorium 230 precision (±)	0.09	pCi/L				E908.0	10/09/17 10:34 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:34 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	8.57	s.u.				FIELD	09/07/17 08:57 / ***
*** Field data provided by client							

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: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-007
Client Sample ID: WN-42A

Report Date: 10/13/17
Collection Date: 09/07/17 09:27
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	62	mg/L	D	2		E300.0	09/12/17 12:35 / jcg
Fluoride	0.1	mg/L		0.1		A4500-F C	09/19/17 10:35 / eli-b
Sulfate	1840	mg/L	D	8		E300.0	09/12/17 12:35 / jcg
PHYSICAL PROPERTIES							
pH	6.98	s.u.	H	0.01		A4500-H B	09/09/17 12:54 / mvr
Solids, Total Dissolved TDS @ 180 C	4150	mg/L	D	40		A2540 C	09/11/17 09:30 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	1.5	mg/L		0.2		E353.2	09/11/17 15:44 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:07 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 15:29 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 15:29 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 15:29 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 15:29 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 15:29 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 15:29 / eli-b
Manganese	0.19	mg/L		0.05		E200.8	09/14/17 15:29 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 15:29 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 15:29 / eli-b
Selenium	0.047	mg/L		0.005		E200.8	09/14/17 15:29 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 15:29 / eli-b
Uranium	1.06	mg/L		0.001		E200.8	09/14/17 15:29 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.09	pCi/L	U			E903.0	10/03/17 12:05 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 MDC	0.3	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 228	0.4	pCi/L	U			RA-05	09/25/17 11:19 / trs
Radium 228 precision (±)	1.4	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 MDC	2.3	pCi/L				RA-05	09/25/17 11:19 / trs
Thorium 230	0.2	pCi/L	U			E908.0	10/09/17 10:34 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	10/09/17 10:34 / dmf
Thorium 230 MDC	0.3	pCi/L				E908.0	10/09/17 10:34 / dmf

CLIENT PROVIDED FIELD PARAMETERS

Field pH 7.32 s.u.

FIELD 09/07/17 09:27 / ***

*** Field data provided by client

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: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-008
Client Sample ID: JJ-1R

Report Date: 10/13/17
Collection Date: 09/07/17 08:32
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	14	mg/L		1		E300.0	09/12/17 14:03 / jcg
Fluoride	0.5	mg/L		0.1		A4500-F C	09/19/17 10:38 / eli-b
Sulfate	52	mg/L		1		E300.0	09/12/17 14:03 / jcg
PHYSICAL PROPERTIES							
pH	7.35	s.u.	H	0.01		A4500-H B	09/09/17 12:57 / mvr
Solids, Total Dissolved TDS @ 180 C	408	mg/L		10		A2540 C	09/11/17 09:30 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 15:46 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:14 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 15:33 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 15:33 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 15:33 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 15:33 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 15:33 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 15:33 / eli-b
Manganese	0.18	mg/L		0.05		E200.8	09/14/17 15:33 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 15:33 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 15:33 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 15:33 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 15:33 / eli-b
Uranium	0.014	mg/L		0.001		E200.8	09/14/17 15:33 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.3	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 228	2.1	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 precision (±)	1	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 MDC	1.3	pCi/L				RA-05	09/25/17 11:19 / trs
Thorium 230	0.05	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.09	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	7.79	s.u.				FIELD	09/07/17 08:32 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-009
Client Sample ID: SWAB-1R

Report Date: 10/13/17
Collection Date: 09/07/17 14:35
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	23	mg/L		1		E300.0	09/12/17 14:20 / jcg
Fluoride	0.2	mg/L		0.1		A4500-F C	09/19/17 10:41 / eli-b
Sulfate	890	mg/L	D	4		E300.0	09/12/17 14:20 / jcg
PHYSICAL PROPERTIES							
pH	7.33	s.u.	H	0.01		A4500-H B	09/09/17 13:00 / mvr
Solids, Total Dissolved TDS @ 180 C	2390	mg/L	D	20		A2540 C	09/11/17 09:30 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	118	mg/L	D	2		E353.2	09/11/17 15:47 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:18 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 17:32 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 17:32 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 17:32 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 17:32 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 17:32 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 17:32 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 17:32 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 17:32 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 17:32 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 17:32 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 17:32 / eli-b
Uranium	1.60	mg/L		0.001		E200.8	09/14/17 17:32 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 228	1.3	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 precision (±)	0.8	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 MDC	1.3	pCi/L				RA-05	09/25/17 11:19 / trs
Thorium 230	0.09	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	7.45	s.u.				FIELD	09/07/17 14:35 / ***
*** Field data provided by client							

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: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-010
Client Sample ID: SWAB-2

Report Date: 10/13/17
Collection Date: 09/07/17 14:15
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	24	mg/L		1		E300.0	09/12/17 14:38 / jcg
Fluoride	0.7	mg/L		0.1		A4500-F C	09/19/17 10:43 / eli-b
Sulfate	650	mg/L	D	4		E300.0	09/12/17 14:38 / jcg
PHYSICAL PROPERTIES							
pH	7.04	s.u.	H	0.01		A4500-H B	09/09/17 13:05 / mvr
Solids, Total Dissolved TDS @ 180 C	2260	mg/L	D	20		A2540 C	09/11/17 09:31 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	151	mg/L	D	2		E353.2	09/11/17 15:48 / ljl
Nitrogen, Ammonia as N	0.9	mg/L	D	0.1		A4500-NH3 G	09/12/17 10:19 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 17:36 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 17:36 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 17:36 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 17:36 / eli-b
Cadmium	0.001	mg/L		0.001		E200.8	09/14/17 17:36 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 17:36 / eli-b
Manganese	0.21	mg/L		0.05		E200.8	09/14/17 17:36 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 17:36 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 17:36 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 17:36 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 17:36 / eli-b
Uranium	0.740	mg/L		0.001		E200.8	09/14/17 17:36 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 12:05 / arh
Radium 228	0.8	pCi/L	U			RA-05	10/08/17 15:34 / trs
Radium 228 precision (±)	0.7	pCi/L				RA-05	10/08/17 15:34 / trs
Radium 228 MDC	1.2	pCi/L				RA-05	10/08/17 15:34 / trs
Thorium 230	0.2	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	7.18	s.u.				FIELD	09/07/17 14:15 / ***

*** Field data provided by client

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: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-011
Client Sample ID: SWAB-4

Report Date: 10/13/17
Collection Date: 09/07/17 11:05
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	37	mg/L		1		E300.0	09/12/17 14:55 / jcg
Fluoride	0.3	mg/L		0.1		A4500-F C	09/19/17 10:46 / eli-b
Sulfate	520	mg/L	D	2		E300.0	09/12/17 14:55 / jcg
PHYSICAL PROPERTIES							
pH	7.41	s.u.	H	0.01		A4500-H B	09/09/17 13:08 / mvr
Solids, Total Dissolved TDS @ 180 C	1260	mg/L		10		A2540 C	09/11/17 09:31 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	26.3	mg/L	D	0.5		E353.2	09/11/17 15:49 / ljl
Nitrogen, Ammonia as N	0.11	mg/L		0.05		A4500-NH3 G	09/12/17 10:20 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 17:39 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 17:39 / eli-b
Arsenic	0.01	mg/L		0.01		E200.8	09/14/17 17:39 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 17:39 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 17:39 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 17:39 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 17:39 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 17:39 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 17:39 / eli-b
Selenium	0.008	mg/L		0.005		E200.8	09/14/17 17:39 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 17:39 / eli-b
Uranium	0.995	mg/L		0.001		E200.8	09/14/17 17:39 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	1	pCi/L				E903.0	10/03/17 15:16 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	10/03/17 15:16 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 15:16 / arh
Radium 228	1.1	pCi/L	U			RA-05	09/25/17 12:56 / trs
Radium 228 precision (±)	0.9	pCi/L				RA-05	09/25/17 12:56 / trs
Radium 228 MDC	1.7	pCi/L				RA-05	09/25/17 12:56 / trs
Thorium 230	0.05	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	7.70	s.u.				FIELD	09/07/17 11:05 / ***
*** Field data provided by client							

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: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-012
Client Sample ID: SWAB-12R

Report Date: 10/13/17
Collection Date: 09/07/17 13:43
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	22	mg/L		1		E300.0	09/12/17 15:13 / jcg
Fluoride	0.2	mg/L		0.1		A4500-F C	09/19/17 10:49 / eli-b
Sulfate	108	mg/L		1		E300.0	09/12/17 15:13 / jcg
PHYSICAL PROPERTIES							
pH	7.72	s.u.	H	0.01		A4500-H B	09/09/17 13:11 / mvr
Solids, Total Dissolved TDS @ 180 C	405	mg/L		10		A2540 C	09/11/17 09:31 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.6	mg/L		0.2		E353.2	09/11/17 15:50 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:21 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 17:43 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 17:43 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 17:43 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 17:43 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 17:43 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 17:43 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 17:43 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 17:43 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 17:43 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 17:43 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 17:43 / eli-b
Uranium	0.038	mg/L		0.001		E200.8	09/14/17 17:43 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.01	pCi/L	U			E903.0	10/03/17 15:16 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 15:16 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 15:16 / arh
Radium 228	1.9	pCi/L				RA-05	09/25/17 12:56 / trs
Radium 228 precision (±)	0.9	pCi/L				RA-05	09/25/17 12:56 / trs
Radium 228 MDC	1.8	pCi/L				RA-05	09/25/17 12:56 / trs
Thorium 230	0.1	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	7.98	s.u.				FIELD	09/07/17 13:43 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-013
Client Sample ID: SWAB-22

Report Date: 10/13/17
Collection Date: 09/07/17 10:27
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	42	mg/L		1		E300.0	09/12/17 15:30 / jcg
Fluoride	0.4	mg/L		0.1		A4500-F C	09/19/17 10:52 / eli-b
Sulfate	107	mg/L		1		E300.0	09/12/17 15:30 / jcg
PHYSICAL PROPERTIES							
pH	7.49	s.u.	H	0.01		A4500-H B	09/09/17 13:14 / mvr
Solids, Total Dissolved TDS @ 180 C	479	mg/L		10		A2540 C	09/11/17 09:31 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 15:54 / ljl
Nitrogen, Ammonia as N	0.28	mg/L		0.05		A4500-NH3 G	09/12/17 10:23 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 17:46 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 17:46 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 17:46 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 17:46 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 17:46 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 17:46 / eli-b
Manganese	0.14	mg/L		0.05		E200.8	09/14/17 17:46 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 17:46 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 17:46 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 17:46 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 17:46 / eli-b
Uranium	0.019	mg/L		0.001		E200.8	09/14/17 17:46 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.06	pCi/L	U			E903.0	10/03/17 15:16 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 15:16 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 15:16 / arh
Radium 228	0.9	pCi/L	U			RA-05	09/25/17 12:56 / trs
Radium 228 precision (±)	1.2	pCi/L				RA-05	09/25/17 12:56 / trs
Radium 228 MDC	2.0	pCi/L				RA-05	09/25/17 12:56 / trs
Thorium 230	0.1	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf

CLIENT PROVIDED FIELD PARAMETERS

Field pH 7.87 s.u.

FIELD 09/07/17 10:27 / ***

*** Field data provided by client

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-014
Client Sample ID: SWAB-29

Report Date: 10/13/17
Collection Date: 09/07/17 11:50
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	6	mg/L		1		E300.0	09/12/17 15:48 / jcg
Fluoride	0.2	mg/L		0.1		A4500-F C	09/19/17 11:05 / eli-b
Sulfate	38	mg/L		1		E300.0	09/12/17 15:48 / jcg
PHYSICAL PROPERTIES							
pH	7.28	s.u.	H	0.01		A4500-H B	09/09/17 13:17 / mvr
Solids, Total Dissolved TDS @ 180 C	309	mg/L		10		A2540 C	09/11/17 09:32 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 15:58 / ljl
Nitrogen, Ammonia as N	0.21	mg/L		0.05		A4500-NH3 G	09/12/17 10:24 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 17:50 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 17:50 / eli-b
Arsenic	0.01	mg/L		0.01		E200.8	09/14/17 17:50 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 17:50 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 17:50 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 17:50 / eli-b
Manganese	0.30	mg/L		0.05		E200.8	09/14/17 17:50 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 17:50 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 17:50 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 17:50 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 17:50 / eli-b
Uranium	0.024	mg/L		0.001		E200.8	09/14/17 17:50 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.2	pCi/L				E903.0	10/03/17 15:16 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 15:16 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 15:16 / arh
Radium 228	0.8	pCi/L	U			RA-05	09/25/17 12:56 / trs
Radium 228 precision (±)	1.1	pCi/L				RA-05	09/25/17 12:56 / trs
Radium 228 MDC	1.7	pCi/L				RA-05	09/25/17 12:56 / trs
Thorium 230	0.05	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.3	pCi/L				E908.0	10/09/17 10:35 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	7.67	s.u.				FIELD	09/07/17 11:50 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-015
Client Sample ID: SWAB-31

Report Date: 10/13/17
Collection Date: 09/07/17 15:04
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	10	mg/L		1		E300.0	09/12/17 16:40 / jcg
Fluoride	0.3	mg/L		0.1		A4500-F C	09/19/17 11:13 / eli-b
Sulfate	31	mg/L		1		E300.0	09/12/17 16:40 / jcg
PHYSICAL PROPERTIES							
pH	7.35	s.u.	H	0.01		A4500-H B	09/09/17 13:20 / mvr
Solids, Total Dissolved TDS @ 180 C	256	mg/L		10		A2540 C	09/11/17 09:32 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 15:59 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:25 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 18:03 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 18:03 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 18:03 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 18:03 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 18:03 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 18:03 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 18:03 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 18:03 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 18:03 / eli-b
Selenium	0.013	mg/L		0.005		E200.8	09/14/17 18:03 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 18:03 / eli-b
Uranium	0.031	mg/L		0.001		E200.8	09/14/17 18:03 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.2	pCi/L				E903.0	10/03/17 15:40 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 15:40 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 15:40 / arh
Radium 228	1.7	pCi/L	U			RA-05	09/25/17 12:56 / trs
Radium 228 precision (±)	0.9	pCi/L				RA-05	09/25/17 12:56 / trs
Radium 228 MDC	1.9	pCi/L				RA-05	09/25/17 12:56 / trs
Thorium 230	0.2	pCi/L	U			E908.0	10/09/17 10:34 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	10/09/17 10:34 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:34 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	7.70	s.u.				FIELD	09/07/17 15:04 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-016
Client Sample ID: SWAB-32

Report Date: 10/13/17
Collection Date: 09/07/17 15:27
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	12	mg/L		1		E300.0	09/12/17 17:32 / jcg
Fluoride	0.4	mg/L		0.1		A4500-F C	09/19/17 11:16 / eli-b
Sulfate	48	mg/L		1		E300.0	09/12/17 17:32 / jcg
PHYSICAL PROPERTIES							
pH	7.95	s.u.	H	0.01		A4500-H B	09/09/17 13:23 / mvr
Solids, Total Dissolved TDS @ 180 C	320	mg/L		10		A2540 C	09/11/17 09:32 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	1.3	mg/L		0.2		E353.2	09/11/17 16:00 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:26 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 18:17 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 18:17 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 18:17 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 18:17 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 18:17 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 18:17 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 18:17 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 18:17 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 18:17 / eli-b
Selenium	0.008	mg/L		0.005		E200.8	09/14/17 18:17 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 18:17 / eli-b
Uranium	0.121	mg/L		0.001		E200.8	09/14/17 18:17 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.1	pCi/L	U			E903.0	10/03/17 15:40 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/03/17 15:40 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 15:40 / arh
Radium 228	1.0	pCi/L	U			RA-05	09/25/17 11:19 / trs
Radium 228 precision (±)	0.8	pCi/L				RA-05	09/25/17 11:19 / trs
Radium 228 MDC	1.6	pCi/L				RA-05	09/25/17 11:19 / trs
Thorium 230	0.2	pCi/L				E908.0	10/09/17 10:34 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	10/09/17 10:34 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:34 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	8.32	s.u.				FIELD	09/07/17 15:27 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-017
Client Sample ID: SWR-UG

Report Date: 10/13/17
Collection Date: 09/06/17 13:30
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	10	mg/L		1		E300.0	09/12/17 17:50 / jcg
Fluoride	0.2	mg/L		0.1		A4500-F C	09/19/17 11:19 / eli-b
Sulfate	33	mg/L		1		E300.0	09/12/17 17:50 / jcg
PHYSICAL PROPERTIES							
pH	8.30	s.u.	H	0.01		A4500-H B	09/09/17 13:26 / mvr
Solids, Total Dissolved TDS @ 180 C	204	mg/L		10		A2540 C	09/11/17 09:32 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 16:01 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:27 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 18:21 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 18:21 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 18:21 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 18:21 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 18:21 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 18:21 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 18:21 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 18:21 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 18:21 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 18:21 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 18:21 / eli-b
Uranium	0.003	mg/L		0.001		E200.8	09/14/17 18:21 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.2	pCi/L				E903.0	10/03/17 15:40 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	10/03/17 15:40 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/03/17 15:40 / arh
Radium 228	1.3	pCi/L	U			RA-05	09/25/17 12:56 / trs
Radium 228 precision (±)	0.8	pCi/L				RA-05	09/25/17 12:56 / trs
Radium 228 MDC	2.2	pCi/L				RA-05	09/25/17 12:56 / trs
Thorium 230	0.2	pCi/L	U			E908.0	10/09/17 10:34 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	10/09/17 10:34 / dmf
Thorium 230 MDC	0.3	pCi/L				E908.0	10/09/17 10:34 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	8.88	s.u.				FIELD	09/06/17 13:30 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-018
Client Sample ID: SWR-A

Report Date: 10/13/17
Collection Date: 09/06/17 14:01
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	11	mg/L		1		E300.0	09/12/17 18:07 / jcg
Fluoride	0.3	mg/L		0.1		A4500-F C	09/19/17 11:22 / eli-b
Sulfate	34	mg/L		1		E300.0	09/12/17 18:07 / jcg
PHYSICAL PROPERTIES							
pH	8.34	s.u.	H	0.01		A4500-H B	09/09/17 13:28 / mvr
Solids, Total Dissolved TDS @ 180 C	225	mg/L		10		A2540 C	09/11/17 09:32 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 16:02 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:31 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 18:24 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 18:24 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 18:24 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 18:24 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 18:24 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 18:24 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 18:24 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 18:24 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 18:24 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 18:24 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 18:24 / eli-b
Uranium	0.004	mg/L		0.001		E200.8	09/14/17 18:24 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.1	pCi/L	U			E903.0	10/01/17 10:33 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/01/17 10:33 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/01/17 10:33 / arh
Radium 228	0.1	pCi/L	U			RA-05	09/25/17 14:59 / trs
Radium 228 precision (±)	0.9	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 MDC	1.5	pCi/L				RA-05	09/25/17 14:59 / trs
Thorium 230	0.1	pCi/L	U			E908.0	10/09/17 10:34 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/09/17 10:34 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:34 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	8.86	s.u.				FIELD	09/06/17 14:01 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-019
Client Sample ID: SWR-B

Report Date: 10/13/17
Collection Date: 09/06/17 14:14
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	12	mg/L		1		E300.0	09/12/17 18:25 / jcg
Fluoride	0.3	mg/L		0.1		A4500-F C	09/19/17 11:25 / eli-b
Sulfate	36	mg/L		1		E300.0	09/12/17 18:25 / jcg
PHYSICAL PROPERTIES							
pH	8.37	s.u.	H	0.01		A4500-H B	09/09/17 13:40 / mvr
Solids, Total Dissolved TDS @ 180 C	211	mg/L		10		A2540 C	09/11/17 09:33 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 16:03 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:35 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 18:28 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 18:28 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 18:28 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 18:28 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 18:28 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 18:28 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 18:28 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 18:28 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 18:28 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 18:28 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 18:28 / eli-b
Uranium	0.005	mg/L		0.001		E200.8	09/14/17 18:28 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.1	pCi/L	U			E903.0	10/01/17 10:34 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 228	0.5	pCi/L	U			RA-05	09/25/17 14:59 / trs
Radium 228 precision (±)	1	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 MDC	1.6	pCi/L				RA-05	09/25/17 14:59 / trs
Thorium 230	0.1	pCi/L	U			E908.0	10/09/17 10:34 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	10/09/17 10:34 / dmf
Thorium 230 MDC	0.3	pCi/L				E908.0	10/09/17 10:34 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	8.91	s.u.				FIELD	09/06/17 14:14 / ***

*** Field data provided by client

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-020
Client Sample ID: SWR-C

Report Date: 10/13/17
Collection Date: 09/06/17 14:40
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	12	mg/L		1		E300.0	09/12/17 18:43 / jcg
Fluoride	0.3	mg/L		0.1		A4500-F C	09/19/17 11:27 / eli-b
Sulfate	37	mg/L		1		E300.0	09/12/17 18:43 / jcg
PHYSICAL PROPERTIES							
pH	8.21	s.u.	H	0.01		A4500-H B	09/09/17 13:46 / mvr
Solids, Total Dissolved TDS @ 180 C	227	mg/L		10		A2540 C	09/11/17 09:34 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 16:05 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:36 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 18:31 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 18:31 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 18:31 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 18:31 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 18:31 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 18:31 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 18:31 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 18:31 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 18:31 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 18:31 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 18:31 / eli-b
Uranium	0.005	mg/L		0.001		E200.8	09/14/17 18:31 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.2	pCi/L	U			E903.0	10/01/17 10:34 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 228	2.1	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 precision (±)	0.8	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 MDC	1.3	pCi/L				RA-05	09/25/17 14:59 / trs
Thorium 230	0.05	pCi/L	U			E908.0	10/09/17 10:34 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/09/17 10:34 / dmf
Thorium 230 MDC	0.3	pCi/L				E908.0	10/09/17 10:34 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	8.71	s.u.				FIELD	09/06/17 14:40 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-021
Client Sample ID: SWR-DG

Report Date: 10/13/17
Collection Date: 09/06/17 15:17
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	12	mg/L		1		E300.0	09/12/17 19:00 / jcg
Fluoride	0.3	mg/L		0.1		A4500-F C	09/19/17 11:30 / eli-b
Sulfate	37	mg/L		1		E300.0	09/12/17 19:00 / jcg
PHYSICAL PROPERTIES							
pH	8.36	s.u.	H	0.01		A4500-H B	09/09/17 13:49 / mvr
Solids, Total Dissolved TDS @ 180 C	225	mg/L		10		A2540 C	09/11/17 09:34 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 16:06 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:37 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 18:34 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 18:34 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 18:34 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 18:34 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 18:34 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 18:34 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 18:34 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 18:34 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 18:34 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 18:34 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 18:34 / eli-b
Uranium	0.005	mg/L		0.001		E200.8	09/14/17 18:34 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.1	pCi/L	U			E903.0	10/01/17 10:34 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 228	1.1	pCi/L	U			RA-05	09/25/17 14:59 / trs
Radium 228 precision (±)	0.7	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 MDC	1.5	pCi/L				RA-05	09/25/17 14:59 / trs
Thorium 230	0.1	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.3	pCi/L				E908.0	10/09/17 10:35 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	8.91	s.u.				FIELD	09/06/17 15:17 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-022
Client Sample ID: Field Blank

Report Date: 10/13/17
Collection Date: 09/07/17 08:50
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	ND	mg/L		1		E300.0	09/12/17 19:18 / jcg
Fluoride	ND	mg/L		0.1		A4500-F C	09/19/17 11:39 / eli-b
Sulfate	ND	mg/L		1		E300.0	09/12/17 19:18 / jcg
PHYSICAL PROPERTIES							
pH	5.74	s.u.	H	0.01		A4500-H B	09/09/17 13:52 / mvr
Solids, Total Dissolved TDS @ 180 C	30	mg/L		10		A2540 C	09/11/17 09:34 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.2		E353.2	09/11/17 16:07 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:38 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 18:38 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 18:38 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 18:38 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 18:38 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 18:38 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 18:38 / eli-b
Manganese	ND	mg/L		0.05		E200.8	09/14/17 18:38 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 18:38 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 18:38 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/14/17 18:38 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 18:38 / eli-b
Uranium	ND	mg/L		0.001		E200.8	09/14/17 18:38 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.06	pCi/L	U			E903.0	10/01/17 10:34 / arh
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 228	1.1	pCi/L	U			RA-05	09/25/17 14:59 / trs
Radium 228 precision (±)	0.7	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 MDC	1.4	pCi/L				RA-05	09/25/17 14:59 / trs
Thorium 230	0.2	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.3	pCi/L				E908.0	10/09/17 10:35 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	9.17	s.u.				FIELD	09/07/17 08:50 / ***
*** Field data provided by client							

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

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



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-023
Client Sample ID: WN-1R

Report Date: 10/13/17
Collection Date: 09/07/17 11:24
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	7	mg/L		1		E300.0	09/12/17 19:35 / jcg
Fluoride	2.2	mg/L		0.1		A4500-F C	09/19/17 11:41 / eli-b
Sulfate	1850	mg/L	D	4		E300.0	09/12/17 19:35 / jcg
PHYSICAL PROPERTIES							
pH	6.82	s.u.	H	0.01		A4500-H B	09/09/17 13:55 / mvr
Solids, Total Dissolved TDS @ 180 C	2840	mg/L	D	20		A2540 C	09/11/17 09:34 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	13.5	mg/L		0.2		E353.2	09/11/17 16:11 / ljl
Nitrogen, Ammonia as N	113	mg/L	D	5		A4500-NH3 G	09/12/17 10:39 / ljl
METALS, DISSOLVED							
Aluminum	0.3	mg/L		0.1		E200.8	09/14/17 18:41 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 18:41 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 18:41 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 18:41 / eli-b
Cadmium	0.003	mg/L		0.001		E200.8	09/14/17 18:41 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 18:41 / eli-b
Manganese	14.6	mg/L		0.05		E200.8	09/14/17 18:41 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 18:41 / eli-b
Nickel	0.08	mg/L		0.05		E200.8	09/14/17 18:41 / eli-b
Selenium	0.011	mg/L		0.005		E200.8	09/14/17 18:41 / eli-b
Thallium	0.016	mg/L		0.001		E200.8	09/14/17 18:41 / eli-b
Uranium	1.47	mg/L		0.001		E200.8	09/14/17 18:41 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.5	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 228	1.5	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 precision (±)	0.8	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 MDC	1.4	pCi/L				RA-05	09/25/17 14:59 / trs
Thorium 230	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	6.70	s.u.				FIELD	09/07/17 11:24 / ***
*** Field data provided by client							

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: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-024
Client Sample ID: WN-5R

Report Date: 10/13/17
Collection Date: 09/07/17 09:47
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	108	mg/L		1		E300.0	09/12/17 19:53 / jcg
Fluoride	ND	mg/L		0.1		A4500-F C	09/19/17 11:58 / eli-b
Sulfate	1640	mg/L	D	4		E300.0	09/12/17 19:53 / jcg
PHYSICAL PROPERTIES							
pH	6.92	s.u.	H	0.01		A4500-H B	09/09/17 13:58 / mvr
Solids, Total Dissolved TDS @ 180 C	3710	mg/L	D	40		A2540 C	09/11/17 09:34 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	47.8	mg/L	D	0.5		E353.2	09/11/17 16:14 / lji
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:41 / lji
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 18:45 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 18:45 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 18:45 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 18:45 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 18:45 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 18:45 / eli-b
Manganese	0.60	mg/L		0.05		E200.8	09/14/17 18:45 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 18:45 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 18:45 / eli-b
Selenium	0.015	mg/L		0.005		E200.8	09/14/17 18:45 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 18:45 / eli-b
Uranium	1.67	mg/L		0.001		E200.8	09/14/17 18:45 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.2	pCi/L	U			E903.0	10/01/17 10:34 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 228	1.1	pCi/L	U			RA-05	09/25/17 14:59 / trs
Radium 228 precision (±)	0.8	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 MDC	1.5	pCi/L				RA-05	09/25/17 14:59 / trs
Thorium 230	0.1	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf

CLIENT PROVIDED FIELD PARAMETERS

Field pH 7.21 s.u. FIELD 09/07/17 09:47 / ***
*** Field data provided by client

Report	RL - Analyte reporting limit.	MCL - Maximum contaminant level.
Definitions:	QCL - Quality control limit.	ND - Not detected at the reporting limit.
	MDC - Minimum detectable concentration	D - RL increased due to sample matrix.
	H - Analysis performed past recommended holding time.	U - Not detected at minimum detectable concentration



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP
Lab ID: C17090235-025
Client Sample ID: WN-5S

Report Date: 10/13/17
Collection Date: 09/07/17 09:47
Date Received: 09/08/17
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Chloride	109	mg/L		1		E300.0	09/12/17 20:45 / jcg
Fluoride	ND	mg/L		0.1		A4500-F C	09/19/17 12:08 / eli-b
Sulfate	1640	mg/L	D	4		E300.0	09/12/17 20:45 / jcg
PHYSICAL PROPERTIES							
pH	6.91	s.u.	H	0.01		A4500-H B	09/09/17 14:01 / mvr
Solids, Total Dissolved TDS @ 180 C	3560	mg/L	D	40		A2540 C	09/11/17 09:35 / mvr
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	47.4	mg/L	D	0.5		E353.2	09/11/17 16:15 / ljl
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH3 G	09/12/17 10:42 / ljl
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.8	09/14/17 19:09 / eli-b
Antimony	ND	mg/L		0.003		E200.8	09/14/17 19:09 / eli-b
Arsenic	ND	mg/L		0.01		E200.8	09/14/17 19:09 / eli-b
Beryllium	ND	mg/L		0.004		E200.8	09/14/17 19:09 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/14/17 19:09 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/14/17 19:09 / eli-b
Manganese	0.58	mg/L		0.05		E200.8	09/14/17 19:09 / eli-b
Molybdenum	ND	mg/L		0.1		E200.8	09/14/17 19:09 / eli-b
Nickel	ND	mg/L		0.05		E200.8	09/14/17 19:09 / eli-b
Selenium	0.015	mg/L		0.005		E200.8	09/14/17 19:09 / eli-b
Thallium	ND	mg/L		0.001		E200.8	09/14/17 19:09 / eli-b
Uranium	1.59	mg/L		0.001		E200.8	09/14/17 19:09 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.2	pCi/L	U			E903.0	10/01/17 10:34 / arh
Radium 226 precision (±)	0.2	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	10/01/17 10:34 / arh
Radium 228	1.7	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 precision (±)	0.9	pCi/L				RA-05	09/25/17 14:59 / trs
Radium 228 MDC	1.5	pCi/L				RA-05	09/25/17 14:59 / trs
Thorium 230	0.09	pCi/L	U			E908.0	10/09/17 10:35 / dmf
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/09/17 10:35 / dmf
Thorium 230 MDC	0.2	pCi/L				E908.0	10/09/17 10:35 / dmf
CLIENT PROVIDED FIELD PARAMETERS							
Field pH	7.21	s.u.				FIELD	09/07/17 09:47 / ***

*** Field data provided by client

**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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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Western Nuclear Inc

Report Date: 09/21/17

Project: Split Rock Mill GWPP

Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS170911A
Lab ID: MB-1_170911A		Method Blank					Run: BAL-18_170911B			09/11/17 09:27
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-2_170911A		Laboratory Control Sample					Run: BAL-18_170911B			09/11/17 09:28
Solids, Total Dissolved TDS @ 180 C		1100	mg/L	11	99	90	110			
Lab ID: C17090221-001A DUP		Sample Duplicate					Run: BAL-18_170911B			09/11/17 09:28
Solids, Total Dissolved TDS @ 180 C		281	mg/L	10				2.5	5	
Lab ID: C17090235-009A DUP		Sample Duplicate					Run: BAL-18_170911B			09/11/17 09:31
Solids, Total Dissolved TDS @ 180 C		2380	mg/L	20				0.1	5	
Lab ID: MB-25_170911A		Method Blank					Run: BAL-18_170911B			09/11/17 09:33
Solids, Total Dissolved TDS @ 180 C		7	mg/L	7						
Lab ID: LCS-26_170911A		Laboratory Control Sample					Run: BAL-18_170911B			09/11/17 09:33
Solids, Total Dissolved TDS @ 180 C		1090	mg/L	11	98	90	110			
Lab ID: C17090235-019A DUP		Sample Duplicate					Run: BAL-18_170911B			09/11/17 09:33
Solids, Total Dissolved TDS @ 180 C		220	mg/L	10				4.3	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP

Report Date: 09/21/17
Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_170909A
Lab ID: 6.86		Initial Calibration Verification Standard								09/09/17 12:04
pH		6.88	s.u.	0.010	100	98	102			
Method: A4500-H B										Batch: R227058
Lab ID: C17090221-001ADUP		Sample Duplicate					Run: PHSC_101-C_170909A			09/09/17 12:31
pH		7.70	s.u.	0.010				0.0	3	
Lab ID: C17090235-009ADUP		Sample Duplicate					Run: PHSC_101-C_170909A			09/09/17 13:02
pH		7.34	s.u.	0.010				0.1	3	
Lab ID: C17090235-019ADUP		Sample Duplicate					Run: PHSC_101-C_170909A			09/09/17 13:43
pH		8.42	s.u.	0.010				0.6	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Western Nuclear Inc

Report Date: 09/21/17

Project: Split Rock Mill GWPP

Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G										Analytical Run: FIA201-C_170912A
Lab ID: ICV	Initial Calibration Verification Standard									
Nitrogen, Ammonia as N		1.04	mg/L	0.050	104	90	110			09/12/17 09:52
Method: A4500-NH3 G										Batch: R227132
Lab ID: MBLK	Method Blank									
Nitrogen, Ammonia as N		ND	mg/L	0.008						09/12/17 09:50
Lab ID: LFB	Laboratory Fortified Blank									
Nitrogen, Ammonia as N		1.04	mg/L	0.050	105	90	110			09/12/17 09:53
Lab ID: C17090105-001CMS	Sample Matrix Spike									
Nitrogen, Ammonia as N		46.7	mg/L	1.3	103	90	110			09/12/17 10:10
Lab ID: C17090105-001CMSD	Sample Matrix Spike Duplicate									
Nitrogen, Ammonia as N		46.7	mg/L	1.3	103	90	110	0.0	10	09/12/17 10:11
Lab ID: C17090235-008DMS	Sample Matrix Spike									
Nitrogen, Ammonia as N		0.894	mg/L	0.050	88	90	110			09/12/17 10:15
Lab ID: C17090235-008DMSD	Sample Matrix Spike Duplicate									
Nitrogen, Ammonia as N		0.887	mg/L	0.050	87	90	110	0.8	10	09/12/17 10:17
Lab ID: C17090235-018DMS	Sample Matrix Spike									
Nitrogen, Ammonia as N		0.998	mg/L	0.050	98	90	110			09/12/17 10:32
Lab ID: C17090235-018DMSD	Sample Matrix Spike Duplicate									
Nitrogen, Ammonia as N		0.986	mg/L	0.050	96	90	110	1.2	10	09/12/17 10:33

Qualifiers:

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ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP

Report Date: 09/21/17
Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_170910A
Lab ID: ICV	2	Initial Calibration Verification Standard								09/11/17 00:04
Chloride		9.59	mg/L	1.0	96	90	110			
Sulfate		38.7	mg/L	1.0	97	90	110			
Method: E300.0										Batch: R227086
Lab ID: ICB	2	Method Blank								Run: IC2-C_170910A 09/11/17 00:23
Chloride		ND	mg/L	0.03						
Sulfate		ND	mg/L	0.04						
Lab ID: LFB	2	Laboratory Fortified Blank								Run: IC2-C_170910A 09/11/17 00:40
Chloride		9.78	mg/L	1.0	98	90	110			
Sulfate		39.5	mg/L	1.0	99	90	110			
Lab ID: C17090199-003AMS	2	Sample Matrix Spike								Run: IC2-C_170910A 09/11/17 21:52
Chloride		15.9	mg/L	1.0	112	80	120			
Sulfate		80.3	mg/L	1.0	107	80	120			
Lab ID: C17090199-003AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_170910A 09/11/17 22:10
Chloride		16.2	mg/L	1.0	114	80	120	1.8	20	
Sulfate		82.9	mg/L	1.0	114	80	120	3.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Western Nuclear Inc

Report Date: 09/21/17

Project: Split Rock Mill GWPP

Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC3-C_170912A
Lab ID: ICV	2	Initial Calibration Verification Standard								09/12/17 11:26
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.9	mg/L	1.0	102	90	110			
Method: E300.0										Batch: R227166
Lab ID: ICB	2	Method Blank								Run: IC3-C_170912A 09/12/17 11:43
Chloride		ND	mg/L	0.09						
Sulfate		ND	mg/L	0.10						
Lab ID: LFB	2	Laboratory Fortified Blank								Run: IC3-C_170912A 09/12/17 12:00
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.8	mg/L	1.0	102	90	110			
Lab ID: C17090235-007AMS	2	Sample Matrix Spike								Run: IC3-C_170912A 09/12/17 12:53
Chloride		271	mg/L	2.1	105	80	120			
Sulfate		2580	mg/L	8.3	93	80	120			
Lab ID: C17090235-007AMSD	2	Sample Matrix Spike Duplicate								Run: IC3-C_170912A 09/12/17 13:10
Chloride		264	mg/L	2.1	101	80	120	2.8	20	
Sulfate		2510	mg/L	8.3	84	80	120	2.6	20	
Lab ID: C17090235-015AMS	2	Sample Matrix Spike								Run: IC3-C_170912A 09/12/17 16:57
Chloride		20.2	mg/L	1.0	105	80	120			
Sulfate		72.1	mg/L	1.0	103	80	120			
Lab ID: C17090235-015AMSD	2	Sample Matrix Spike Duplicate								Run: IC3-C_170912A 09/12/17 17:15
Chloride		20.3	mg/L	1.0	107	80	120	0.7	20	
Sulfate		72.7	mg/L	1.0	105	80	120	0.8	20	
Lab ID: C17090235-025AMS	2	Sample Matrix Spike								Run: IC3-C_170912A 09/12/17 21:02
Chloride		206	mg/L	1.0	97	80	120			
Sulfate		1970	mg/L	4.2		80	120			A
Lab ID: C17090235-025AMSD	2	Sample Matrix Spike Duplicate								Run: IC3-C_170912A 09/12/17 21:20
Chloride		207	mg/L	1.0	98	80	120	0.5	20	
Sulfate		1990	mg/L	4.2		80	120	0.9	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Western Nuclear Inc

Report Date: 09/21/17

Project: Split Rock Mill GWPP

Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC3-C_170913A
Lab ID: ICV	-2	Initial Calibration Verification Standard								09/13/17 13:21
Chloride		9.83	mg/L	1.0	98	90	110			
Sulfate		39.6	mg/L	1.0	99	90	110			
Method: E300.0										Batch: R227217
Lab ID: ICB	2	Method Blank								Run: IC3-C_170913A 09/13/17 13:39
Chloride		ND	mg/L	0.09						
Sulfate		ND	mg/L	0.10						
Lab ID: LFB	2	Laboratory Fortified Blank								Run: IC3-C_170913A 09/13/17 13:56
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		40.4	mg/L	1.0	101	90	110			
Lab ID: C17090322-001AMS	2	Sample Matrix Spike								Run: IC3-C_170913A 09/13/17 14:48
Chloride		52.9	mg/L	1.0	104	80	120			
Sulfate		664	mg/L	2.1	94	80	120			
Lab ID: C17090322-001AMSD	2	Sample Matrix Spike Duplicate								Run: IC3-C_170913A 09/13/17 15:06
Chloride		55.6	mg/L	1.0	109	80	120	5.0	20	
Sulfate		673	mg/L	2.1	98	80	120	1.4	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Western Nuclear Inc

Report Date: 09/21/17

Project: Split Rock Mill GWPP

Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2 Analytical Run: FIA201-C_170911A										
Lab ID: ICV	Initial Calibration Verification Standard 09/11/17 14:59									
Nitrogen, Nitrate+Nitrite as N		0.987	mg/L	0.010	99	90	110			
Method: E353.2 Batch: R227109										
Lab ID: MBLK	Method Blank Run: FIA201-C_170911A 09/11/17 15:00									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.003						
Lab ID: LFB	Laboratory Fortified Blank Run: FIA201-C_170911A 09/11/17 15:01									
Nitrogen, Nitrate+Nitrite as N		1.02	mg/L	0.010	103	90	110			
Lab ID: C17090235-003DMS	Sample Matrix Spike Run: FIA201-C_170911A 09/11/17 15:38									
Nitrogen, Nitrate+Nitrite as N		75.2	mg/L	0.50	101	90	110			
Lab ID: C17090235-003DMSD	Sample Matrix Spike Duplicate Run: FIA201-C_170911A 09/11/17 15:40									
Nitrogen, Nitrate+Nitrite as N		75.2	mg/L	0.50	101	90	110	0.0	10	
Lab ID: C17090235-013DMS	Sample Matrix Spike Run: FIA201-C_170911A 09/11/17 15:55									
Nitrogen, Nitrate+Nitrite as N		1.20	mg/L	0.010	105	90	110			
Lab ID: C17090235-013DMSD	Sample Matrix Spike Duplicate Run: FIA201-C_170911A 09/11/17 15:56									
Nitrogen, Nitrate+Nitrite as N		1.19	mg/L	0.010	104	90	110	0.8	10	
Lab ID: C17090235-023DMS	Sample Matrix Spike Run: FIA201-C_170911A 09/11/17 16:12									
Nitrogen, Nitrate+Nitrite as N		23.3	mg/L	0.10	99	90	110			
Lab ID: C17090235-023DMSD	Sample Matrix Spike Duplicate Run: FIA201-C_170911A 09/11/17 16:13									
Nitrogen, Nitrate+Nitrite as N		23.5	mg/L	0.10	101	90	110	0.9	10	
Method: E353.2 Analytical Run: FIA201-C_170913B										
Lab ID: ICV	Initial Calibration Verification Standard 09/13/17 12:08									
Nitrogen, Nitrate+Nitrite as N		0.991	mg/L	0.010	99	90	110			
Method: E353.2 Batch: R227178										
Lab ID: MBLK	Method Blank Run: FIA201-C_170913B 09/13/17 12:09									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.003						
Lab ID: LFB	Laboratory Fortified Blank Run: FIA201-C_170913B 09/13/17 12:11									
Nitrogen, Nitrate+Nitrite as N		0.976	mg/L	0.010	99	90	110			
Lab ID: C17090164-002CMS	Sample Matrix Spike Run: FIA201-C_170913B 09/13/17 12:14									
Nitrogen, Nitrate+Nitrite as N		12.9	mg/L	0.050	95	90	110			
Lab ID: C17090164-002CMSD	Sample Matrix Spike Duplicate Run: FIA201-C_170913B 09/13/17 12:15									
Nitrogen, Nitrate+Nitrite as N		12.8	mg/L	0.050	94	90	110	0.4	10	

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QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Western Nuclear Inc

Report Date: 09/19/17

Project: Split Rock Mill GWPP

Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8 Analytical Run: ICPMS206-B_170914A										
Lab ID: QCS	12	Initial Calibration Verification Standard								09/14/17 11:43
Aluminum		0.262	mg/L	0.10	105	90	110			
Antimony		0.0505	mg/L	0.050	101	90	110			
Arsenic		0.0493	mg/L	0.0050	99	90	110			
Beryllium		0.0268	mg/L	0.0010	107	90	110			
Cadmium		0.0257	mg/L	0.0010	103	90	110			
Lead		0.0504	mg/L	0.010	101	90	110			
Manganese		0.270	mg/L	0.010	108	90	110			
Molybdenum		0.0473	mg/L	0.0050	95	90	110			
Nickel		0.0505	mg/L	0.010	101	90	110			
Selenium		0.0489	mg/L	0.0050	98	90	110			
Thallium		0.0546	mg/L	0.10	109	90	110			
Uranium		0.0216	mg/L	0.0010	108	90	110			
Method: E200.8 Batch: R286682										
Lab ID: LRB	12	Method Blank								09/14/17 11:56
Aluminum		0.0008	mg/L	0.0002						
Antimony		ND	mg/L	0.00002						
Arsenic		ND	mg/L	0.0001						
Beryllium		ND	mg/L	0.00003						
Cadmium		ND	mg/L	0.00002						
Lead		ND	mg/L	0.00002						
Manganese		ND	mg/L	0.00004						
Molybdenum		ND	mg/L	0.00004						
Nickel		ND	mg/L	0.00005						
Selenium		ND	mg/L	0.0004						
Thallium		0.00005	mg/L	0.00002						
Uranium		ND	mg/L	0.00003						
Lab ID: LFB	12	Laboratory Fortified Blank								09/14/17 12:03
Aluminum		0.0474	mg/L	0.10	93	85	115			
Antimony		0.0469	mg/L	0.050	94	85	115			
Arsenic		0.0479	mg/L	0.0050	96	85	115			
Beryllium		0.0471	mg/L	0.0010	94	85	115			
Cadmium		0.0476	mg/L	0.0010	95	85	115			
Lead		0.0465	mg/L	0.010	93	85	115			
Manganese		0.0458	mg/L	0.010	92	85	115			
Molybdenum		0.0483	mg/L	0.0050	97	85	115			
Nickel		0.0468	mg/L	0.010	94	85	115			
Selenium		0.0474	mg/L	0.0050	95	85	115			
Thallium		0.0494	mg/L	0.10	99	85	115			
Uranium		0.0476	mg/L	0.0010	95	85	115			
Lab ID: B17090745-001BMS	12	Sample Matrix Spike								09/14/17 14:21
Aluminum		0.0501	mg/L	0.10	90	70	130			
Antimony		0.0475	mg/L	0.050	95	70	130			

Qualifiers:

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QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP

Report Date: 09/19/17
Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: R286682
Lab ID: B17090745-001BMS	12	Sample Matrix Spike		Run: ICPMS206-B_170914A				09/14/17 14:21		
Arsenic		0.0486	mg/L	0.0050	97	70	130			
Beryllium		0.0453	mg/L	0.0010	91	70	130			
Cadmium		0.0465	mg/L	0.0010	93	70	130			
Lead		0.0493	mg/L	0.010	99	70	130			
Manganese		0.0978	mg/L	0.010	98	70	130			
Molybdenum		0.0509	mg/L	0.0050	98	70	130			
Nickel		0.0560	mg/L	0.010	94	70	130			
Selenium		0.0480	mg/L	0.0050	96	70	130			
Thallium		0.0365	mg/L	0.10	72	70	130			
Uranium		1.72	mg/L	0.0010		70	130			A
Lab ID: B17090745-001BMSD	12	Sample Matrix Spike Duplicate		Run: ICPMS206-B_170914A				09/14/17 14:24		
Aluminum		0.0534	mg/L	0.10	96	70	130		20	
Antimony		0.0491	mg/L	0.050	98	70	130		20	
Arsenic		0.0495	mg/L	0.0050	98	70	130	1.7	20	
Beryllium		0.0455	mg/L	0.0010	91	70	130	0.3	20	
Cadmium		0.0477	mg/L	0.0010	95	70	130	2.6	20	
Lead		0.0487	mg/L	0.010	97	70	130	1.1	20	
Manganese		0.0995	mg/L	0.010	101	70	130	1.7	20	
Molybdenum		0.0531	mg/L	0.0050	102	70	130	4.2	20	
Nickel		0.0560	mg/L	0.010	94	70	130	0.1	20	
Selenium		0.0494	mg/L	0.0050	99	70	130	2.9	20	
Thallium		0.0382	mg/L	0.10	76	70	130		20	
Uranium		1.70	mg/L	0.0010		70	130	1.6	20	A
Lab ID: C17090235-004BMS	12	Sample Matrix Spike		Run: ICPMS206-B_170914A				09/14/17 15:12		
Aluminum		0.0482	mg/L	0.030	91	70	130			
Antimony		0.0487	mg/L	0.0010	97	70	130			
Arsenic		0.0516	mg/L	0.0010	97	70	130			
Beryllium		0.0445	mg/L	0.0010	89	70	130			
Cadmium		0.0473	mg/L	0.0010	94	70	130			
Lead		0.0491	mg/L	0.0010	98	70	130			
Manganese		0.234	mg/L	0.0010	99	70	130			
Molybdenum		0.0490	mg/L	0.0010	95	70	130			
Nickel		0.0459	mg/L	0.0050	91	70	130			
Selenium		0.0501	mg/L	0.0010	97	70	130			
Thallium		0.0342	mg/L	0.00050	68	70	130			S
Uranium		0.111	mg/L	0.00030	99	70	130			
Lab ID: C17090235-004BMSD	12	Sample Matrix Spike Duplicate		Run: ICPMS206-B_170914A				09/14/17 15:16		
Aluminum		0.0495	mg/L	0.030	94	70	130	2.6	20	
Antimony		0.0485	mg/L	0.0010	97	70	130	0.4	20	
Arsenic		0.0520	mg/L	0.0010	97	70	130	0.8	20	
Beryllium		0.0463	mg/L	0.0010	93	70	130	4.1	20	
Cadmium		0.0470	mg/L	0.0010	94	70	130	0.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.



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QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP

Report Date: 09/19/17
Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: R286682
Lab ID: C17090235-004BMSD	12	Sample Matrix Spike Duplicate			Run: ICPMS206-B_170914A				09/14/17 15:16	
Lead		0.0491	mg/L	0.0010	98	70	130	0.1	20	
Manganese		0.237	mg/L	0.0010	106	70	130	1.4	20	
Molybdenum		0.0507	mg/L	0.0010	98	70	130	3.3	20	
Nickel		0.0471	mg/L	0.0050	93	70	130	2.5	20	
Selenium		0.0511	mg/L	0.0010	99	70	130	2.0	20	
Thallium		0.0349	mg/L	0.00050	70	70	130	1.9	20	
Uranium		0.111	mg/L	0.00030	99	70	130	0.2	20	
Lab ID: C17090235-014BMS	12	Sample Matrix Spike			Run: ICPMS206-B_170914A				09/14/17 17:53	
Aluminum		0.0478	mg/L	0.030	94	70	130			
Antimony		0.0489	mg/L	0.0010	98	70	130			
Arsenic		0.0575	mg/L	0.0010	93	70	130			
Beryllium		0.0454	mg/L	0.0010	91	70	130			
Cadmium		0.0459	mg/L	0.0010	91	70	130			
Lead		0.0474	mg/L	0.0010	95	70	130			
Manganese		0.364	mg/L	0.0010		70	130			A
Molybdenum		0.0498	mg/L	0.0010	97	70	130			
Nickel		0.0452	mg/L	0.0050	89	70	130			
Selenium		0.0478	mg/L	0.0010	96	70	130			
Thallium		0.0507	mg/L	0.00050	101	70	130			
Uranium		0.0714	mg/L	0.00030	94	70	130			
Lab ID: C17090235-014BMSD	12	Sample Matrix Spike Duplicate			Run: ICPMS206-B_170914A				09/14/17 17:57	
Aluminum		0.0477	mg/L	0.030	94	70	130	0.1	20	
Antimony		0.0492	mg/L	0.0010	98	70	130	0.7	20	
Arsenic		0.0583	mg/L	0.0010	95	70	130	1.4	20	
Beryllium		0.0458	mg/L	0.0010	92	70	130	0.9	20	
Cadmium		0.0478	mg/L	0.0010	95	70	130	4.0	20	
Lead		0.0486	mg/L	0.0010	97	70	130	2.5	20	
Manganese		0.360	mg/L	0.0010		70	130	1.1	20	A
Molybdenum		0.0507	mg/L	0.0010	99	70	130	1.8	20	
Nickel		0.0461	mg/L	0.0050	91	70	130	1.8	20	
Selenium		0.0493	mg/L	0.0010	99	70	130	3.1	20	
Thallium		0.0518	mg/L	0.00050	104	70	130	2.2	20	
Uranium		0.0714	mg/L	0.00030	94	70	130	0.0	20	
Lab ID: C17090235-024BMS	12	Sample Matrix Spike			Run: ICPMS206-B_170914A				09/14/17 18:48	
Aluminum		0.0917	mg/L	0.030	90	70	130			
Antimony		0.0973	mg/L	0.0010	97	70	130			
Arsenic		0.0972	mg/L	0.0010	95	70	130			
Beryllium		0.0844	mg/L	0.0010	84	70	130			
Cadmium		0.0929	mg/L	0.0010	93	70	130			
Lead		0.0957	mg/L	0.0010	96	70	130			
Manganese		0.712	mg/L	0.0010		70	130			A
Molybdenum		0.174	mg/L	0.0010	102	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



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QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Western Nuclear Inc

Report Date: 09/19/17

Project: Split Rock Mill GWPP

Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: R286682
Lab ID: C17090235-024BMS	12	Sample Matrix Spike				Run: ICPMS206-B_170914A			09/14/17 18:48	
Nickel		0.0913	mg/L	0.0050	89	70	130			
Selenium		0.111	mg/L	0.0010	96	70	130			
Thallium		0.105	mg/L	0.00050	105	70	130			
Uranium		1.73	mg/L	0.00030		70	130			A
Lab ID: C17090235-024BMSD	12	Sample Matrix Spike Duplicate				Run: ICPMS206-B_170914A			09/14/17 19:02	
Aluminum		0.0915	mg/L	0.030	90	70	130	0.2	20	
Antimony		0.0971	mg/L	0.0010	97	70	130	0.1	20	
Arsenic		0.0964	mg/L	0.0010	94	70	130	0.8	20	
Beryllium		0.0855	mg/L	0.0010	85	70	130	1.2	20	
Cadmium		0.0936	mg/L	0.0010	93	70	130	0.8	20	
Lead		0.0963	mg/L	0.0010	96	70	130	0.6	20	
Manganese		0.696	mg/L	0.0010		70	130	2.2	20	A
Molybdenum		0.172	mg/L	0.0010	101	70	130	0.9	20	
Nickel		0.0903	mg/L	0.0050	88	70	130	1.1	20	
Selenium		0.114	mg/L	0.0010	98	70	130	2.2	20	
Thallium		0.105	mg/L	0.00050	105	70	130	0.1	20	
Uranium		1.78	mg/L	0.00030		70	130	2.7	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Western Nuclear Inc

Report Date: 10/12/17

Project: Split Rock Mill GWPP

Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0								Batch: RA226-8664		
Lab ID: LCS-RA226-8664		Laboratory Control Sample				Run: G5000W_170920B		10/01/17 10:33		
Radium 226		9.6	pCi/L		95	80	120			
Lab ID: MB-RA226-8664	3	Method Blank				Run: G5000W_170920B		10/01/17 10:33		
Radium 226		0.1	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
Lab ID: C17090320-001AMS		Sample Matrix Spike				Run: G5000W_170920B		10/01/17 10:34		
Radium 226		15	pCi/L		59	70	130			S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD recoveries are acceptable, the response is considered to be matrix related. The batch is approved.										
Lab ID: C17090320-001AMSD		Sample Matrix Spike Duplicate				Run: G5000W_170920B		10/01/17 10:34		
Radium 226		17	pCi/L		68	70	130	15	20	S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD recoveries are acceptable, the response is considered to be matrix related. The batch is approved.										
Method: E903.0								Batch: RA226-8663		
Lab ID: LCS-RA226-8663		Laboratory Control Sample				Run: TENNELEC-3_170920D		10/03/17 12:05		
Radium 226		9.0	pCi/L		90	80	120			
Lab ID: MB-RA226-8663	3	Method Blank				Run: TENNELEC-3_170920D		10/03/17 12:05		
Radium 226		-0.03	pCi/L							U
Radium 226 precision (±)		0.08	pCi/L							
Radium 226 MDC		0.1	pCi/L							
Lab ID: C17090235-006CMS		Sample Matrix Spike				Run: TENNELEC-3_170920D		10/03/17 12:05		
Radium 226		27	pCi/L		110	70	130			
Lab ID: C17090235-006CMSD		Sample Matrix Spike Duplicate				Run: TENNELEC-3_170920D		10/03/17 12:05		
Radium 226		23	pCi/L		92	70	130	18	20	

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP

Report Date: 10/12/17
Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0								Batch: RA-TH-ISO-2620		
Lab ID: LCS-RA-TH-ISO-2620	Laboratory Control Sample					Run: EGG-ORTEC_170925A		09/28/17 11:08		
Thorium 230		6.6	pCi/L		117	80	120			
Lab ID: C17080921-001CMS	Sample Matrix Spike					Run: EGG-ORTEC_170925A		09/28/17 11:08		
Thorium 230		14	pCi/L		121	70	130			
Lab ID: C17080921-001CMSD	Sample Matrix Spike Duplicate					Run: EGG-ORTEC_170925A		09/28/17 11:07		
Thorium 230		12	pCi/L		98	70	130	20	20	R
- For all R qualified analytes the RERs are less than the limit of 2.0. This batch is approved.										
Lab ID: MB-RA-TH-ISO-2620	3	Method Blank					Run: EGG-ORTEC_170925A		09/29/17 12:25	
Thorium 230		0.04	pCi/L							U
Thorium 230 precision (±)		0.09	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
Method: E908.0								Batch: RA-TH-ISO-2622		
Lab ID: LCS-RA-TH-ISO-2622	Laboratory Control Sample					Run: EGG-ORTEC_2_170927A		10/09/17 10:34		
Thorium 230		5.9	pCi/L		105	80	120			
Lab ID: C17090235-023CMS	Sample Matrix Spike					Run: EGG-ORTEC_2_170927A		10/09/17 10:35		
Thorium 230		16	pCi/L		97	70	130			
Lab ID: C17090235-023CMSD	Sample Matrix Spike Duplicate					Run: EGG-ORTEC_2_170927A		10/09/17 10:35		
Thorium 230		17	pCi/L		99	70	130	1.2	20	
Lab ID: MB-RA-TH-ISO-2622	3	Method Blank					Run: EGG-ORTEC_2_170927A		10/09/17 10:35	
Thorium 230		0.04	pCi/L							U
Thorium 230 precision (±)		0.10	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Western Nuclear Inc
Project: Split Rock Mill GWPP

Report Date: 10/12/17
Work Order: C17090235

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05								Batch: RA228-5609		
Lab ID: LCS-228-RA226-8663	Laboratory Control Sample			Run: TENNELEC-3_170920A			09/25/17 11:19			
Radium 228	12	pCi/L		87	80	120				
Lab ID: MB-RA226-8663	3	Method Blank		Run: TENNELEC-3_170920A			09/25/17 11:19			
Radium 228	3	pCi/L								
Radium 228 precision (±)	1	pCi/L								
Radium 228 MDC	1	pCi/L								
Lab ID: C17090235-016CMS	Sample Matrix Spike			Run: TENNELEC-3_170920A			09/25/17 11:19			
Radium 228	25	pCi/L		99	70	130				
Lab ID: C17090235-016CMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_170920A			09/25/17 11:19			
Radium 228	27	pCi/L		105	70	130	6.3	20		
Method: RA-05								Batch: RA228-5610		
Lab ID: LCS-228-RA226-8664	Laboratory Control Sample			Run: TENNELEC-3_170920C			09/25/17 14:59			
Radium 228	9.2	pCi/L		87	80	120				
Lab ID: MB-RA226-8664	3	Method Blank		Run: TENNELEC-3_170920C			09/25/17 14:59			
Radium 228	0.7	pCi/L		U						
Radium 228 precision (±)	0.9	pCi/L								
Radium 228 MDC	1	pCi/L								
Lab ID: C17090320-005AMS	Sample Matrix Spike			Run: TENNELEC-3_170920C			09/25/17 14:59			
Radium 228	26	pCi/L		106	70	130				
Lab ID: C17090320-005AMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_170920C			09/25/17 14:59			
Radium 228	23	pCi/L		93	70	130	12	20		
Method: RA-05								Batch: RA228-5633		
Lab ID: LCS-228-RA228-5633	Laboratory Control Sample			Run: TENNELEC-3_171005B			10/08/17 15:34			
Radium 228	8.0	pCi/L		80	80	120				
Lab ID: MB-228-RA228-5633	3	Method Blank		Run: TENNELEC-3_171005B			10/08/17 15:34			
Radium 228	0.2	pCi/L		U						
Radium 228 precision (±)	0.7	pCi/L								
Radium 228 MDC	1	pCi/L								
Lab ID: C17090442-007CMS	Sample Matrix Spike			Run: TENNELEC-3_171005B			10/08/17 15:34			
Radium 228	26	pCi/L		99	70	130				
Lab ID: C17090442-007CMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_171005B			10/08/17 15:34			
Radium 228	26	pCi/L		102	70	130	2.5	20		

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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Work Order Receipt Checklist

Western Nuclear Inc

C17090235

Login completed by: Corinne Wagner

Date Received: 9/8/2017

Reviewed by: Kasey Vidick

Received by: kmk

Reviewed Date: 9/10/2017

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	4.5°C No Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

See Case Narrative for notes on sample receipt. tla 10/12/2017



Chain of Custody and Analytical Request Record

Page 1 of 3

PLEASE PRINT (Provide as much information as possible.)

Company Name: <u>Western Nuclear, Inc.</u>	Project Name, PWS, Permit, Etc. <u>Split Rock Mill GWPP</u>	Sample Origin State: <u>WY</u>	EPA/State Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Report Mail Address (Required): <u>P.O. Box 630</u> <u>Jeffrey City, WY 82310</u>	Contact Name: <u>Brack DeWard</u>	Phone/Fax: <u>307-349-1217</u>	Cell: <u>307-349-1217</u>
<input type="checkbox"/> No Hard Copy Email: <u>brackd@wbaccess.net</u>	Invoice Contact & Phone: <u>Brack DeWard</u>	Purchase Order: <u>NA</u>	Sample: (Please Print) <u>B.K. DeWard</u> <u>A.E. Raymond</u>
Invoice Address (Required): <u>Same As Above.</u>	Quote/Bottle Order:		

<input checked="" type="checkbox"/> No Hard Copy Email:		
Special Report/Formats: <input type="checkbox"/> DW <input type="checkbox"/> POTW/WWTP <input type="checkbox"/> State: <input checked="" type="checkbox"/> Other: <u>NR0</u> <input type="checkbox"/> EDD/EDT (Electronic Data) Format: _____ <input type="checkbox"/> LEVEL IV <input type="checkbox"/> NELAC		
Number of Containers Sample Type: <input type="checkbox"/> A <input type="checkbox"/> W <input type="checkbox"/> S <input type="checkbox"/> B <input type="checkbox"/> O <input type="checkbox"/> D <input type="checkbox"/> W <input type="checkbox"/> Air <input type="checkbox"/> Water <input type="checkbox"/> Soils/Solids <input type="checkbox"/> Vegetation <input type="checkbox"/> Bioassay <input type="checkbox"/> Other <input type="checkbox"/> DW - Drinking Water		
ANALYSIS REQUESTED		
SEE ATTACHED		
Standard Turnaround (TAT)		
R U S H		
Contact ELI prior to RUSH sample submittal for charges and scheduling - See Instruction Page		
Comments: <u>Field pH</u>		
Shipped by: <u>hand</u>		
Cooler ID(s): <u>client</u>		
Receipt Temp: <u>4.5</u> °C		
On Ice: <u>Y</u> <input checked="" type="checkbox"/> <u>N</u>		
Custody Seal On Bottle <u>Y</u> <input checked="" type="checkbox"/> <u>N</u> On Cooler <u>Y</u> <input checked="" type="checkbox"/> <u>N</u>		
Intact <u>Y</u> <input checked="" type="checkbox"/> <u>N</u>		
Signature Match <u>Y</u> <input checked="" type="checkbox"/> <u>N</u>		
LABORATORY USE ONLY		
C1709035		

Custody Record MUST be Signed	Relinquished by (print): <u>ARNOLD RAYMOND</u>	Date/Time: <u>9/8/17 10:27</u>	Signature: <u>[Signature]</u>	Received by (print):	Date/Time:	Signature:
	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
	Sample Disposal: Return to Client:	Lab Disposal:	Received by Laboratory:	Date/Time:	Signature:	
	<u>9/8/17 10:27</u> <u>[Signature]</u>					

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.



Chain of Custody and Analytical Request Record

Page 2 of 3

PLEASE PRINT (Provide as much information as possible.)

Company Name: <u>Western Nuclear, Inc</u>	Project Name, PWS, Permit, Etc. <u>See pg 1 of 3</u>	Sample Origin State: <u>WV</u>	EPA/State Compliance: Yes <input type="checkbox"/> No <input type="checkbox"/>
Report Mail Address (Required): <u>P.O. Box 630</u> <u>Jeffrey City, WV 82310</u>	Contact Name: <u>See pg 1 of 3</u>	Cell:	Sampler: (Please Print) <u> </u>
<input checked="" type="checkbox"/> No Hard Copy Email: <u>brock@dnwaccess.net</u>	Invoice Contact & Phone:	Purchase Order:	Quote/Bottle Order:

Invoice Address (Required): <u>Same As Above</u>			Number of Containers: Sample Type: A W S V B O DW Air Water Solids/Solids Vegetation Bioassay Other DW - Drinking Water	ANALYSIS REQUESTED										SEE ATTACHED	Standard Turnaround (TAT)	R U S H	Contact ELI prior to RUSH sample submittal for charges and scheduling - See Instruction Page	Shipped by: <u>Hand</u>
<input type="checkbox"/> No Hard Copy Email:																	Comments: <u>Field pH</u>	Receipt Temp: <u>4.5</u> °C On Ice: <u>Y</u>
Special Report/Formats: <input type="checkbox"/> DW <input type="checkbox"/> POTW/MWWTP <input type="checkbox"/> State: <input checked="" type="checkbox"/> Other: <u>NR</u>			<input type="checkbox"/> EDD/EDT (Electronic Data) Format: <input type="checkbox"/> LEVEL IV <input type="checkbox"/> NELAC													Custody Seal On Bottle <u>Y</u> N On Cooler <u>Y</u> N Intact <u>Y</u> N Signature Match <u>Y</u> N		
SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)		Collection Date	Collection Time	MATRIX											LABORATORY USE ONLY			
1 SWAB-Y		9/7/16	1105	W											7.70			
2 SWAB-12R			1343												7.98			
3 SWAB-22			1027												7.87			
4 SWAB-29			11:50												7.67			
5 SWAB-31			1504												7.70			
6 SWAB-32		✓	1527												8.32			
7 SWR-UG		9/6/17	1330												8.88			
8 SWR-A			1401												8.86			
9 SWR-B			1414												8.91			
10 SWR-C		✓	1440	✓											8.71			

Custody Record MUST be Signed	Relinquished by (print): <u>ARNOLD RAYMOND</u>	Date/Time: <u>9/8/17 10:27</u>	Signature: <u>[Signature]</u>	Received by (print):	Date/Time:	Signature:
	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
	Sample Disposal:	Return to Client:	Lab Disposal:	Received by Laboratory:	Date/Time: <u>9-8-17 10:27</u>	Signature: <u>[Signature]</u>

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

