



August 26, 2014

CERTIFIED MAIL #7015 0640 0001 4722 7028

ATTN: Document Control Desk, Director  
Office of Nuclear material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-001

**NRC License SUA-1548, Docket No. 40.8964**  
**Semi-Annual Effluent and Environmental Monitoring Report,**  
**January 1 through June 30, 2015**

Dear Document Control Desk, Director:

In accordance with 10 CFR 40.65 and per License Condition No. 12.2 of Source Materials License SUA-1548, please find enclosed the Semi-Annual Effluent and Environmental Monitoring Report for the period January 1 through June 30, 2015. Copies of this report are also being forwarded to Mr. Douglas Mandeville Deputy Director, USNRC Headquarters and Mr. Tony Vogel, Division Director, Division of Nuclear Material Safety, Region IV.

If you have questions regarding the report, please contact me at (307) 333-7665 or by email at [Larry.McGonagle@cameco.com](mailto:Larry.McGonagle@cameco.com).

Sincerely,

A handwritten signature in cursive script that reads 'Larry McGonagle'.

Larry McGonagle  
Manager, SHEQ  
Cameco Resources

Attachments: Semi-Annual Effluent and Environmental Monitoring Report

LM/th

cc: Mr. Douglas Mandeville Deputy Director, NRC w/att CERTIFIED MAIL #7015 0640 0001 4722 7042  
Mr. Tony Vogel, DDNMS w/att CERTIFIED MAIL #7015 0640 0001 4722 7035  
ec: CR-Casper

**CAMECO RESOURCES**  
Smith Ranch-Highland  
Operation  
Mail:  
P.O. Box 1210  
Glenrock, WY  
82637 USA

Tel: (307) 358-6541  
Fax: (307) 358-4533  
[www.cameco.com](http://www.cameco.com)

**POWER RESOURCES, INC.  
D/B/A CAMECO RESOURCES**

**USNRC SOURCE MATERIAL LICENSE  
NO. SUA-1548**

**DOCKET NO. 40-8964**

**SEMI-ANNUAL EFFLUENT AND  
ENVIRONMENTAL MONITORING REPORT**

**FOR THE PERIOD**

**JANUARY 1 THROUGH  
JUNE 30, 2015**

## Table of Contents

<b>1</b>	<b>INJECTION RATES, RECOVERY RATES, AND INJECTION TRUNK-LINE PRESSURES FOR EACH SATELLITE FACILITY</b> .....	<b>3</b>
1.1	SATELLITE NO. 1 .....	3
1.2	SATELLITES AND CENTRAL PROCESSING PLANT .....	3
1.3	NORTH BUTTE SATELLITE FACILITY .....	3
<b>2</b>	<b>RESULTS OF EFFLUENT AND ENVIRONMENTAL MONITORING INCLUDING WATER QUALITY ANALYSES AND MONITORING REQUIRED BY THE WDEQ PERMIT FOR THE OPERATING IRRIGATION SYSTEMS</b> .....	<b>3</b>
2.1	STACK EMISSION SURVEYS .....	4
2.2	AIR PARTICULATE, RADON, AND GAMMA RADIATION MONITORING .....	4
2.2.1	Smith Ranch-Highland.....	4
2.2.2	NB Satellite Facility.....	5
2.3	WATER SAMPLING DATA .....	6
2.3.1	SRH Groundwater and Surface Water Monitoring Stations .....	6
2.3.2	NB Groundwater and Surface Water Monitoring Stations.....	7
2.4	SRH WASTEWATER LAND APPLICATION FACILITIES MONITORING .....	7
2.4.1	Soil and Vegetation Sampling.....	7
2.4.2	Irrigation Fluid .....	7
2.4.3	Radium Treatment Systems .....	7
2.4.4	Soil Water Samples.....	8
2.4.5	Satellite No. 1 Purge Storage Reservoir Monitor Well .....	8
2.4.6	Satellite No. 2 Purge Storage Reservoir Shallow Wells .....	8
<b>3</b>	<b>SAFETY AND ENVIRONMENTAL EVALUATIONS</b> .....	<b>8</b>
<b>4</b>	<b>NRC SEMI-ANNUAL INSPECTION</b> .....	<b>8</b>
<b>5</b>	<b>GAS HILLS AND RUTH ISL PROJECTS</b> .....	<b>9</b>

## **1 INJECTION RATES, RECOVERY RATES, AND INJECTION TRUNK-LINE PRESSURES FOR EACH SATELLITE FACILITY**

Tables 1A through 1C of Attachment A contain rate and pressure data at the satellite facilities for the period of the report.

### **1.1 Satellite No. 1**

Satellite No. 1 did not operate during the report period, as restoration activities in the A and B Wellfield are complete. An alternate concentration limit (ACL) license amendment for the completion of restoration of Mine Unit B was submitted May 22, 2013. On December 3, 2013, a public meeting was held to discuss NRC staff's acceptance review of Cameco Resources' (Cameco's) ACL request for Mine Unit B. Cameco is reviewing the discussion topics from the Mine Unit B ACL public meeting, evaluating NRC staff's comments and is in the process of drafting a proposed path forward. There are no injection or recovery rates for the report period..

### **1.2 Satellites and Central Processing Plant**

The operating information for Satellite No. 2, Satellite No. 3, Satellite SR-1, Satellite SR-2, and the Central Processing Plant (CPP) are contained in Tables 1A, 1B, and 1C. The injection rates listed are the total recovery rates minus the purge flow bleed. The bleed from Satellites No. 2 and No. 3 is treated for uranium, radium and selenium removal and pumped to Purge Storage Reservoir #2 (PSR-2) prior to land application at the Satellite No. 2 Land Application Facility (Irrigator #2). Waste water brine from the reverse osmosis (RO) system at Satellite No. 2 is disposed by either deep well injection through a permitted waste disposal well, or treated and pumped to PSR-2 for further land application at Irrigator #2. Bleed from Satellites SR-1 and SR-2, and the CPP is disposed of by deep well injection through permitted waste disposal wells.

### **1.3 North Butte Satellite Facility**

The operational data for North Butte Satellite is contained in Tables 1A, 1B, and 1C. The injection rates represent the total recovery rates minus the purge flow bleed. The bleed from the satellite is pumped to the deep disposal well for disposal or stored in the storage pond prior to deep well injection.

## **2 RESULTS OF EFFLUENT AND ENVIRONMENTAL MONITORING INCLUDING WATER QUALITY ANALYSES AND MONITORING REQUIRED BY THE WDEQ PERMIT FOR THE OPERATING IRRIGATION SYSTEMS**

## **2.1 Stack Emission Surveys**

All yellowcake processing activities (elution, drying and packaging) were conducted at the Smith Ranch CPP. The dryers at the CPP are zero emission vacuum dryers and do not require stack testing.

The Central Processing Facility (CPF) at the Highland Uranium Project has been refurbished with a zero emission vacuum dryer, which will not require stack testing, and is on stand-by status.

## **2.2 Air Particulate, Radon, and Gamma Radiation Monitoring**

### ***2.2.1 Smith Ranch-Highland***

Smith Ranch-Highland (SRH) maintains an air monitoring program at six locations on and around the licensed area. The air monitoring stations are used to monitor air particulates, passive radon gas, and passive gamma radiation. Due to the completion of construction activities of the Highland CPF, monitoring at air stations AS-4 and AS-5 was discontinued at the end of 2014 and will resume monitoring when the Highland CPF becomes operational.. One additional station (AS-6) will be used to monitor conditions downwind of the Reynolds Ranch Satellite Facility once the facility is constructed and becomes operational.

The air stations are located as follows:

- Air Station No. 1 (AS-1; Dave's Water Well): This station monitors background conditions, upwind of both the Smith Ranch and HUP wellfields and yellowcake processing facilities.
- Air Station No. 2 (AS-2; Smith Ranch Restricted Area): This station monitors conditions downwind of the Smith Ranch CPP Restricted Area Boundary.
- Air Station No. 3 (AS-3; Vollman Ranch): This station monitors the nearest downwind resident to the Smith Ranch CPP Restricted Area.
- Air Station No. 4 (AS-4; HUP Restricted Area): This station monitors conditions downwind of the HUP CPF Restricted Area Boundary.
- Air Station No. 5 (AS-5; Fowler Ranch): This station monitors the nearest downwind resident to the HUP CPF Restricted Area
- Air Station No. 6 (AS-6; Reynolds Ranch Satellite Area): This station will monitor conditions downwind of the Reynolds Ranch Satellite Facility once the facility is constructed and becomes operational.

Monitoring at station AS-6 was not conducted during the report period since the Reynolds Ranch Satellite Facility has not been constructed. Monitoring of conditions at AS-6 will commence during construction of the facility and before it becomes operational.

Table 2 shows the air particulate and radon data collected at stations AS-1 through AS-5 during the report period. Review of data collected during the report period shows that the concentrations of all parameters are significantly less than the 10 CFR 20, Appendix B, Effluent Concentration Limits. Non-detect at the reporting limit (ND) sample results are labeled as such in Table 2.

Table 3 shows the gamma radiation data collected at stations AS-1 through AS-5 during the report period. As stated previously, monitoring at air stations AS-4 and AS-5 was discontinued at the end of 2014 and will resume monitoring when the Highland CPF becomes operational. Review of data collected during the report period shows that gamma radiation levels were within the range of previously reported values and comparable to upwind background values at station AS-1.

### ***2.2.2 NB Satellite Facility***

North Butte maintains an Air Monitoring Station program at six various locations on and around the licensed area. The air monitoring stations are used to monitor air particulates, passive radon gas, and passive gamma radiation. Two additional passive gamma and passive radon gas environmental stations are included in the license area.

The air stations, passive gamma, and passive radon gas monitoring stations are located as follows:

- Air Station NB8 (Phister Ranch): This station monitors the nearest public residence to North Butte Satellite Area.
- Air Station NB9 (West Air Station): This station monitors background conditions, upwind from the North Butte Satellite Area.
- Air Station NB11 (North Butte): This station monitors the north side of the North Butte Licensed Area.
- Air Station NB12 (North East Air Station): This station monitors downwind conditions from North Butte Satellite and Well Fields.
- Air Station NB13 (Anedarko Rd): This Station monitors the south side of the North Butte Licensed Area.
- Air Station SatPad (Satellite pad next to man camp): This station monitors

the exposure to the off-shift operations staff that remain on-site during off shift hours.

- Environmental Station (Fence line near Frac Tanks): This station monitors radon gas and gamma radiation only.
- Environmental station (Fence line on Christensen Rd): This station monitors radon gas and gamma radiation only.

Table 2 shows the air particulate and radon data collected at air stations NB8, NB9, NB11, NB12, NB13, and Satellite Pad. In addition to the six air stations there are two additional environmental stations with gamma and radon data only. Review of data collected during the report period shows that the concentrations of all parameters are significantly less than the 10 CFR 20, Appendix B, Effluent Concentration Limits. Non-detect at the reporting limit (ND) sample results are labeled as such in Table 2.

Table 3 shows the gamma radiation data collected at the six air stations and the two environmental stations for the report period. Review of data collection during the report period shows that gamma radiation levels were comparable to upwind background values at station NB9 and the control badge. Note that Environmental Station Frac Tanks 2<sup>nd</sup> quarter gamma is noted as averaged. During quarterly change out of environmental TLDs it was discovered that the Frac Tanks TLD was missing. Thorough search of the area resulted in not finding the TLD and is recorded as lost. For the purpose of this report the data for this location was reviewed and the readings for seven measured quarters were averaged.

## **2.3 Water Sampling Data**

### ***2.3.1 SRH Groundwater and Surface Water Monitoring Stations***

During the report period, monitoring was completed at 22 water wells and 10 stock ponds throughout the permit area. Water samples are collected from the water wells and stock ponds on a quarterly basis for analysis of uranium and radium-226. Sampling constituents for environmental ground water and surface water monitoring programs is detailed in NRC License Application Section 5.3.5 and 5.3.6, respectively. Table 4 provides the analytical data for samples collected during the report period. A review of data collected during the report period shows 10 water wells (GW-5, GW-6, GW-8, GW-9, GW-11, GW-12, GW-13, GW-17, GW-21 and GW-31) did not run during the report period. A review of data collected from the available water wells and stock ponds show that the concentrations of uranium and radium-226 are well below the 10 CFR 20, Appendix B, Effluent Concentration Limits of 3.0E-07 and 6.0E-08  $\mu\text{Ci/mL}$ , respectively. As shown in Table 4 the acronyms of “ND” denotes levels as “Not Detected at the Reporting Limit” and “NA” denotes levels as “Not Applicable”.

### ***2.3.2 NB Groundwater and Surface Water Monitoring Stations***

During the report period, monitoring was completed at two (2) impoundments and eight (8) surface water sites. Water samples are collected from water wells (within 1 km from active mine unit), impoundments, and surface water sites on a quarterly basis for analysis of uranium and radium-226. Table 4 provides the analytical data for samples collected during the report period. A review of Table 4 shows that during the first quarter of the report period ten (10) Surface Water Sites and two (2) impoundments (NBSWS1, NBSWS2, NBI2, NBI6, NBSU1, NBSU2, NBSD1, NBSD2, NBSD3, and NBSU4 ) ( ) were dry and there was no water available for sampling. During the second quarter of the report period seven (7) Surface Water Sites (NBSWS2, , NBSU1, NBSU2, NBSD1, NBSD2, NBSD3, and NBSU4) were dry and there was no water available for sampling. A review of data collected from the available Surface Water Sites during the report period show that the concentrations of uranium and radium-226 are less than the effluent concentration limits, as shown in 10 CFR 20, Appendix B. As shown in Table 4 the acronyms of “ND” denotes levels as “Not Detected at the Reporting Limit” and “NA” denotes levels as “Not Applicable”.

## **2.4 SRH Wastewater Land Application Facilities Monitoring**

### ***2.4.1 Soil and Vegetation Sampling***

In accordance with License Condition 12.2 for the Satellite No. 1 and Satellite No. 2 Wastewater Land Application Facilities, soil and vegetation sampling of the irrigation areas is conducted in late summer of each year. The soil and vegetation data are collected to monitor and evaluate any adverse effects to the irrigation areas. The 2015 soil and vegetation sampling at the irrigation areas will be conducted in August 2015 and results will be included with the July 1 through December 31, 2015 semi-annual report.

### ***2.4.2 Irrigation Fluid***

Cameco monitors the treated irrigation fluid that is disposed of at both irrigation facilities per the approved license application. Grab samples are collected at the discharge of PSR-2 during each month of operation and analyzed for various parameters. Irrigator No. 1 and Irrigator No. 2 were not operational for the entire reporting period, as noted in Table 5 and Table 6, respectively.

### ***2.4.3 Radium Treatment Systems***

Cameco collects grab samples each month to ensure that the radium-226 treatment systems are adequately treating wastewater from Satellites No. 2 and No. 3 prior to discharge into PSR-2. No samples were collected from the Satellite No. 1 radium treatment system since Satellite No. 1 did not operate during the report period. The monthly radium-226 grab samples for Satellite No. 2 and No. 3 are collected at the discharge point of the selenium treatment plant. Review of the monitoring data provided



in Table 7 shows that radium-226 concentrations were less than the 10 CFR 20, Appendix B, Effluent Concentration Limit of 6.00E-8  $\mu\text{Ci/mL}$ .

#### ***2.4.4 Soil Water Samples***

In accordance with the approved license application, Cameco collects soil water samples at the irrigation areas in June of each year and analyzes them for various parameters, referenced in Tables 8A and 8B. In June 2015, sampling of the lysimeters at Irrigator #2 was attempted per the standard sampling method, however, insufficient water was present to collect and perform an analysis. Irrigator #1 did not operate during the report period.

#### ***2.4.5 Satellite No. 1 Purge Storage Reservoir Monitor Well***

Monitoring for shallow monitor well, located southwest of the Satellite No. 1 Purge Storage Reservoir (PSR-1), has been discontinued as detailed in letter dated September 29, 2014, titled Discontinuation of Monitoring Plan, Purge Storage Reservoir No. 1 (PSR-1) Smith Ranch – Highland Uranium Project, Permit 633, Cameco Resources, as Cameco has fulfilled all requirements of Permit 633.

#### ***2.4.6 Satellite No. 2 Purge Storage Reservoir Shallow Wells***

Shallow Wells No. 1 and No. 2 are located adjacent to the south and east sides of the reservoir, respectively. Water levels are measured on a quarterly basis and ground water samples are required on a semi-annual basis from the two shallow monitoring wells located adjacent to PSR-2. Water levels were taken March 31, 2015 while sampling and water levels were conducted June 26, 2015. Table 9 contains the data for water levels and samples taken during this period.

### **3 SAFETY AND ENVIRONMENTAL EVALUATIONS**

All safety and environmental evaluations made by the Safety and Environmental Review Panel (SERP) and resulting changed pages to the Operations Plan and Reclamation Plan of the approved license must be submitted on an annual basis, along with one of the semi-annual effluent and environmental monitoring reports. All SERP evaluations completed during 2015 will be submitted in the second half 2015 semi-annual report.

### **4 NRC SEMI-ANNUAL INSPECTION**

A routine inspection was conducted April 14-16, 2015. The final report was received on July 21, 2015 which reflects one level IV violation of NRC requirements. The violation is sited as “30 shipping papers associated with byproduct waste shipments identified the total activity of each shipment as 5.85 Becquerel (Bq), when the actual quantities shipped were 5.85 E+10 Bq.” Cameco will submit a written statement or explanation to the NRC within 30 days of July 21, 2015.

## **5 GAS HILLS AND RUTH ISL PROJECTS**

The Gas Hills and Ruth ISL Projects are licensed for commercial ISL uranium recovery activities as satellite facilities to the Smith Ranch-Highland Uranium Project. The projects remained non-operational during the report period. Effluent and environmental monitoring conducted during the report period consisted of baseline gamma, radon and air monitoring at the Gas Hills Site.

Other activities conducted during the report period consisted of quarterly inspections of the Ruth evaporation ponds in accordance with License Condition 10.2.2 of SUA-1548. Inspection of the perimeter fence, pond embankments, and pond liners yielded no deficiencies during the report period.

**ATTACHMENT A**  
**DATA TABLES 1-9**

**TABLE 1  
RATES AND PRESSURES  
SATELLITE FACILITIES  
1st and 2nd Quarters 2015**

**TABLE 1A  
AVERAGE INJECTION RATES (GPM)**

MONTH	Satellite No. 2	Satellite No. 3	Central Processing Plant	Satellite SR-1	Satellite SR-2	North Butte
Jan-15	0	4,084	1,287	3,630	4,343	3,327
Feb-15	0	4,079	881	3,726	4,300	3,404
Mar-15	0	3,374	872	3,506	4,002	3,511
Apr-15	0	1,379	854	3,308	4,178	3,641
May-15	0	1,328	873	3,575	4,201	3,686
Jun-15	0	2,535	821	3,681	4,228	3,646

**TABLE 1B  
AVERAGE RECOVERY RATES (GPM)**

MONTH	Satellite No. 2	Satellite No. 3	Central Processing Plant	Satellite SR-1	Satellite SR-2	North Butte
Jan-15	4	4,148	1,298	3,657	4,366	3,352
Feb-15	0	4,140	888	3,755	4,324	3,431
Mar-15	0	3,500	885	3,520	4,016	3,535
Apr-15	0	1,408	868	3,326	4,200	3,672
May-15	0	1,366	886	3,595	4,223	3,717
Jun-15	0	2,575	833	3,702	4,253	3,676

**TABLE 1C  
INJECTION TRUNK LINE PRESSURES (PSI)**

MONTH	Satellite No. 2	Satellite No. 3	Central Processing Plant	Satellite SR-1	Satellite SR-2	North Butte
Jan-15	0	111	65	98	175	107
Feb-15	0	104	146	101	175	109
Mar-15	0	109	140	100	175	108
Apr-15	0	64	137	101	174	101
May-15	0	60	140	100	175	101
Jun-15	0	61	126	102	175	101

TABLE 2  
AIR SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2015

SAMPLE LOCATION	SAMPLE PERIOD	RADIONUCLIDE (μCi/ml)	CONCENTRATION (μCi/ml)	ERROR EST. +/- (μCi/ml)	L.L.D. (μCi/ml)	EFF. CONC. LIMIT (μCi/ml)	% EFF. CONC. LIMIT %
AS-1 DAVE'S WATER WELL Air Station Background Site	1st Quarter	U-Nat	ND		1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.20E-14	8.90E-16	2.00E-15	6.00E-13	2.0
	2nd Quarter	U-Nat	ND		1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.20E-14	9.40E-16	2.00E-15	6.00E-13	2.0
	All Period	Rn-222	7.00E-10	5.00E-07	3.00E-10	1.00E-08	7.0
	AS-2 FENCE LINE Air Station Restricted Area Boundary (Background not deducted)	1st Quarter	U-Nat	4.40E-16		1.00E-16	9.00E-14
Th-230			ND	NA	1.00E-16	3.00E-14	0.0
Ra-226			ND	NA	1.00E-16	9.00E-13	0.0
Pb-210			1.00E-14	8.30E-16	2.00E-15	6.00E-13	1.7
2nd Quarter		U-Nat	5.10E-16		1.00E-16	9.00E-14	0.6
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	7.20E-16	6.20E-17	1.00E-16	9.00E-13	0.1
		Pb-210	1.10E-14	8.60E-16	2.00E-15	6.00E-13	1.8
All Period		Rn-222	1.10E-09	7.00E-11	3.00E-10	1.00E-08	11.0
AS-3 VOLLMAN RANCH Air Station Downwind Nearest Residence (Background not deducted)		1st Quarter	U-Nat	ND		1.00E-16	9.00E-14
	Th-230		ND	NA	1.00E-16	3.00E-14	0.0
	Ra-226		ND	NA	1.00E-16	9.00E-13	0.0
	Pb-210		1.20E-14	9.10E-16	2.00E-15	6.00E-13	2.0
	2nd Quarter	U-Nat	ND		1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.20E-14	9E-16	2.00E-15	6.00E-13	2.0
	All Period	Rn-222	8.00E-10	6.00E-11	3.00E-10	1.00E-08	8.0
	AS-4 HUP RESTRICTED AREA Air Station HUP Overlook (Background not deducted)	1st Quarter	U-Nat			1.00E-16	9.00E-14
Th-230					1.00E-16	3.00E-14	0.0
Ra-226					1.00E-16	9.00E-13	0.0
Pb-210					2.00E-15	6.00E-13	0.0
2nd Quarter		U-Nat			1.00E-16	9.00E-14	0.0
		Th-230			1.00E-16	3.00E-14	0.0
		Ra-226			1.00E-16	9.00E-13	0.0
		Pb-210			2.00E-15	6.00E-13	0.0
All Period	Rn-222			3.00E-10	1.00E-08	0.0	
AS-5 FOWLER RANCH Air Station Downwind (HUP) Nearest Residence (Background not deducted)	1st Quarter	U-Nat			1.00E-16	9.00E-14	0.0
		Th-230			1.00E-16	3.00E-14	0.0
		Ra-226			1.00E-16	9.00E-13	0.0
		Pb-210			2.00E-15	6.00E-13	0.0
	2nd Quarter	U-Nat			1.00E-16	9.00E-14	0.0
		Th-230			1.00E-16	3.00E-14	0.0
		Ra-226			1.00E-16	9.00E-13	0.0
		Pb-210			2.00E-15	6.00E-13	0.0
All Period	Rn-222			3.00E-10	1.00E-08	0.0	
AS-6 REYNOLDS SATELLITE		NOT CONSTRUCTED					

\*ND = Non-detect at the reporting limit  
\*NA = Not Applicable

TABLE 2  
AIR SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - NB  
1st and 2nd Quarters 2015

SAMPLE LOCATION	SAMPLE PERIOD	RADIONUCLIDE (µCi/ml)	CONCENTRATION (µCi/ml)	ERROR EST. +/- (µCi/ml)	L.L.D. (µCi/ml)	EFF. CONC. LIMIT (µCi/ml)	% EFF. CONC. LIMIT
NB8 Pflister Ranch Air Station Nearest Residence  (Background not deducted)	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	9.00E-15	1.50E-15	2.00E-15	6.00E-13	1.5
		Rn-222	8.00E-10	6.00E-11	3.00E-10	1.00E-08	8.0
	2nd Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.50E-14	1.80E-15	2.00E-15	6.00E-13	2.5
		Rn-222	8.00E-10	6.00E-11	3.00E-10	1.00E-08	8.0
NB9 West Airstation Air Station Upwind  (Background not deducted)	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	9.90E-15	1.50E-15	2.00E-15	6.00E-13	1.7
		Rn-222	5.00E-10	4.00E-11	3.00E-10	1.00E-08	5.0
	2nd Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.50E-14	2.80E-15	2.00E-15	6.00E-13	2.5
		Rn-222	5.00E-10	4.00E-11	3.00E-10	1.00E-08	5.0
NB11 North Butte Air Station North Side of Licenced Area  (Background not deducted)	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.30E-14	1.70E-15	2.00E-15	6.00E-13	2.2
		Rn-222	5.00E-10	4.00E-11	3.00E-10	1.00E-08	5.0
	2nd Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.50E-14	1.90E-15	2.00E-15	6.00E-13	2.5
		Rn-222	5.00E-10	4.00E-11	3.00E-10	1.00E-08	5.0
NB12 North East Airstation Air Station Downwind  (Background not deducted)	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.20E-14	1.70E-15	2.00E-15	6.00E-13	2.0
		Rn-222	5.00E-10	4.00E-11	3.00E-10	1.00E-08	5.0
	2nd Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.40E-14	1.80E-15	2.00E-15	6.00E-13	2.3
		Rn-222	5.00E-10	4.00E-11	3.00E-10	1.00E-08	5.0
NB13 Anedarko Road Air Station Downwind  (Background not deducted)	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.40E-14	1.70E-15	2.00E-15	6.00E-13	2.3
		Rn-222	9.00E-10	6.00E-11	3.00E-10	1.00E-08	9.0
	2nd Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.30E-14	2.00E-15	2.00E-15	6.00E-13	2.2
		Rn-222	9.00E-10	6.00E-11	3.00E-10	1.00E-08	9.0
Satellite Pad Operations Mancamp Air Station Mancamp  (Background not deducted)	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.20E-14	1.30E-15	2.00E-15	6.00E-13	2.0
		Rn-222	7.00E-10	5.00E-11	3.00E-10	1.00E-08	7.0
	2nd Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.50E-14	1.40E-15	2.00E-15	6.00E-13	2.5
		Rn-222	7.00E-10	5.00E-11	3.00E-10	1.00E-08	7.0
Christensen Rd Environmental Station Fence Line	All Period	Rn-222	1.30E-09	8E-11	3.00E-10	1.00E-08	13.0
Frac Tanks Enironmental Station FenceLine	All Period	Rn-222	2.30E-09	1.1E-10	3.00E-10	1.00E-08	23.0

\*ND = Non-detect at the reporting limit  
\*NA = Not Applicable

TABLE 3

DIRECT RADIATION (GAMMA) MEASUREMENT DATA  
 ENVIRONMENTAL MONITORING SITES - SRH  
 1st & 2nd QUARTERS 2015

SAMPLE LOCATION	SAMPLE PERIOD	EXPOSURE RATE (mR/qtr)
<b>AS-1</b>		
<b>DAVE'S WATER WELL</b>		
Air Station	1st Quarter	37
Background Site	2nd Quarter	34
<b>AS-2</b>		
<b>FENCE LINE</b>		
Air Station	1st Quarter	40
Restricted Area Boundary	2nd Quarter	41
<b>AS-3</b>		
<b>VOLLMAN'S RANCH</b>		
Air Station	1st Quarter	37
Downwind Nearest Residence	2nd Quarter	36
<b>AS-4</b>		
<b>HUP RESTRICTED AREA</b>		
Air Station	1st Quarter	MONITORING DISCONTINUED, WILL RESUME MONITORING WHEN THE HIGHLAND CPF BECOMES OPERATIONAL
HUP Overlook	2nd Quarter	
<b>AS-5</b>		
<b>FOWLER RANCH</b>		
Air Station	1st Quarter	MONITORING DISCONTINUED, WILL RESUME MONITORING WHEN THE HIGHLAND CPF BECOMES OPERATIONAL
Downwind of HUP Nearest Residence	2nd Quarter	
<b>AS-6</b>		
<b>REYNOLDS SATELLITE</b>	<b>NOT CONSTRUCTED</b>	
<b>CONTROL</b>		
	1st Quarter	37
	2nd Quarter	39

Background has not been deducted  
 From any readings

TABLE 3

DIRECT RADIATION (GAMMA) MEASUREMENT DATA  
 ENVIRONMENTAL MONITORING SITES - NB  
 1st & 2nd QUARTERS 2015

SAMPLE LOCATION	SAMPLE PERIOD	EXPOSURE RATE (mR/qtr)
<b>NB8</b>		
Phister Ranch		
Air Station	1st Quarter	31
Nearest Residence	2nd Quarter	33
<b>NB9</b>		
West Air Station		
Air Station	1st Quarter	33
Upwind		
Background	2nd Quarter	33
<b>NB11</b>		
North Butte		
Air Station	1st Quarter	36
Downwind		
North Side of Licenced Area	2nd Quarter	36
<b>NB12</b>		
North East Air Station		
Air Station	1st Quarter	37
Downwind	2nd Quarter	37
<b>NB13</b>		
Anedarko Road		
Air Station	1st Quarter	32
Downwind	2nd Quarter	35
Satellite Pad	1st Quarter	35
Air Station	2nd Quarter	34
<b>Environmental Station</b>		
Frac Tanks		
Fence Line	1st Quarter	32
Upwind		
Background	2nd Quarter	40.4 (Averaged)
<b>Environmental Station</b>		
Christensen Rd.		
Fence Line	1st Quarter	36
Downwind	2nd Quarter	38
<b>CONTROL</b>		
	1st Quarter	32
	2nd Quarter	32

Background has not been deducted  
 From any readings



TABLE 4

WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2015

SAMPLE LOCATION	SAMPLE DATE	RADIONUCLIDE	CONCENTRATION (mg/L)	CONCENTRATION (pCi/L)	ERROR EST. +/- (pCi/L)	CONCENTRATION (µCi/ml)	EFF. CONC. LIMIT (µCi/ml)	% EFF. CONC. LIMIT
SW-1 Stock Pond Section 3 T35N, R74W	1st Quarter	U-Nat Ra-226	DRY			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.0215	0.23	1.20E-01	1.5E-08 2.3E-10	3.0E-07 6.0E-08	4.9 0.4
SW-2 Stock Pond Section 2 T35N, R74W	1st Quarter	U-Nat Ra-226	DRY			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.0004	1.10	2.90E-01	2.7E-10 1.1E-09	3.0E-07 6.0E-08	0.1 1.8
SW-3 Stock Pond Section 35 T36N, R74W	1st Quarter	U-Nat Ra-226	DRY			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.0178	0.38	1.80E-01	1.2E-08 3.8E-10	3.0E-07 6.0E-08	4.0 0.6
SW-4 Stock Pond Section 36 T36N, R74W	1st Quarter	U-Nat Ra-226	DRY			0.0E+00 ND	3.0E-07 6.0E-08	0.0 ND
	2nd Quarter	U-Nat Ra-226	0.0004	0.16	1.10E-01	2.7E-10 1.6E-10	3.0E-07 6.0E-08	0.1 0.3
SW-5 Stock Pond Section 21 T36N, R73W	1st Quarter	U-Nat Ra-226	DRY			ND ND	3.0E-07 6.0E-08	ND ND
	2nd Quarter	U-Nat Ra-226	0.0018	2.90	6.10E-01	1.2E-09 2.9E-09	3.0E-07 6.0E-08	0.4 4.8

TABLE 4  
WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2015

SAMPLE LOCATION	SAMPLE DATE	RADIONUCLIDE	CONCENTRATION (mg/L)	CONCENTRATION (pCi/L)	ERROR EST. +/- (pCi/L)	CONCENTRATION (µCi/ml)	EFF. CONC. LIMIT (µCi/ml)	% EFF. CONC. LIMIT
SW-6 Stock Pond Section 22 T36N, R73W	1st Quarter	U-Nat Ra-226	DRY			ND 0.0E+00	3.0E-07 6.0E-08	ND 0.0
	2nd Quarter	U-Nat Ra-226	0.0005	0.12	1.10E-01	3.4E-10 ND	3.0E-07 6.0E-08	0.1 ND
SW-7 Stock Pond Section 22 T36N, R73W	1st Quarter	U-Nat Ra-226	DRY			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	ND	0.21	1.30E-01	ND 2.1E-10	3.0E-07 6.0E-08	ND 0.4
SW-8 Stock Pond Section 18 T36N, R72W	1st Quarter	U-Nat Ra-226	DRY			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.0018	0.27	1.70E-01	1.2E-09 2.7E-10	3.0E-07 6.0E-08	0.4 0.5
SW-9 Stock Pond Section 18 T36N, R72W	1st Quarter	U-Nat Ra-226	DRY			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.0007	0.21	1.40E-01	4.7E-10 2.1E-10	3.0E-07 6.0E-08	0.2 0.4
SW-10 Stock Pond Section 19 T36N, R72W	1st Quarter	U-Nat Ra-226	DRY			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.0010	0.99	2.20E-01	6.8E-10 9.9E-10	3.0E-07 6.0E-08	0.2 1.7

TABLE 4

WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2015

SAMPLE LOCATION	SAMPLE DATE	RADIONUCLIDE	CONCENTRATION (mg/L)	CONCENTRATION (pCi/L)	ERROR EST. +/- (pCi/L)	CONCENTRATION (µCi/ml)	EFF. CONC. LIMIT (µCi/ml)	% EFF. CONC. LIMIT
GW-1 Windmill Section 1 T35N, R74W	1st Quarter	U-Nat Ra-226	0.0702			4.8E-08	3.0E-07	15.8
				4.00	8.40E-01	4.0E-09	6.0E-08	6.7
T35N, R74W	2nd Quarter	U-Nat Ra-226	0.0283			1.9E-08	3.0E-07	6.4
				0.62	1.50E-01	6.2E-10	6.0E-08	1.0
GW-2 Solar Well Section 35 T36N, R74W	1st Quarter	U-Nat Ra-226	0.0405			2.7E-08	3.0E-07	9.1
				1.70	4.40E-01	1.7E-09	6.0E-08	2.8
T36N, R74W	2nd Quarter	U-Nat Ra-226	0.0463			3.1E-08	3.0E-07	10.4
				0.75	1.80E-01	7.5E-10	6.0E-08	1.3
GW-3 Windmill Section 27 T36N, R74W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00	3.0E-07	0.0
						0.0E+00	6.0E-08	0.0
T36N, R74W	2nd Quarter	U-Nat Ra-226	0.1580			1.1E-07	3.0E-07	35.7
				1.50	3.60E-01	1.5E-09	6.0E-08	2.5
GW-4 Windmill Section 23 T36N, R74W	1st Quarter	U-Nat Ra-226	0.0776			5.3E-08	3.0E-07	17.5
				1.30	3.40E-01	1.3E-09	6.0E-08	2.2
T36N, R74W	2nd Quarter	U-Nat Ra-226	0.0723			4.9E-08	3.0E-07	16.3
				1.10	3.00E-01	1.1E-09	6.0E-08	1.8
GW-5 Windmill Section 30 T36N, R73W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00	3.0E-07	0.0
						0.0E+00	6.0E-08	0.0
T36N, R73W	2nd Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00	3.0E-07	0.0
						0.0E+00	6.0E-08	0.0

TABLE 4

WATER SAMPLING DATA  
 ENVIRONMENTAL MONITORING SITES - SRH  
 1st and 2nd Quarters 2015

SAMPLE LOCATION	SAMPLE DATE	RADIONUCLIDE	CONCENTRATION (mg/L)	CONCENTRATION (pCi/L)	ERROR EST. +/- (pCi/L)	CONCENTRATION (µCi/ml)	EFF. CONC. LIMIT (µCi/ml)	% EFF. CONC. LIMIT
GW-6 Windmill Section 28 T36N, R73W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
GW-8 Windmill Section 23 T36N, R73W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
GW-9 Windmill Section 14 T36N, R73W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
GW-10 Water Well Section 14 T36N, R73W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.0203	0.61	1.80E-01	1.4E-08 6.1E-10	3.0E-07 6.0E-08	4.6 1.0
GW-11 Water Well Section 11 T36N, R73W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0

TABLE 4

WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2015

SAMPLE LOCATION	SAMPLE DATE	RADIONUCLIDE	CONCENTRATION (mg/L)	CONCENTRATION (pCi/L)	ERROR EST. +/- (pCi/L)	CONCENTRATION (µCi/ml)	EFF. CONC. LIMIT (µCi/ml)	% EFF. CONC. LIMIT
GW-12 Water Well Section 7 T36N, R72W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
GW-13 Water Well Section 9 T36N, R72W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
GW-14 Water Well Section 10 T36N, R72W	1st Quarter	U-Nat Ra-226	0.0058	1.30	3.20E-01	3.9E-09 1.3E-09	3.0E-07 6.0E-08	1.3 2.2
	2nd Quarter	U-Nat Ra-226	0.0161	0.89	1.80E-01	1.1E-08 8.9E-10	3.0E-07 6.0E-08	3.6 1.5
GW-15 Water Well Section 15 T36N, R72W	1st Quarter	U-Nat Ra-226	0.0236	1.40	3.60E-01	1.6E-08 1.4E-09	3.0E-07 6.0E-08	5.3 2.3
	2nd Quarter	U-Nat Ra-226	0.0202	0.91	1.90E-01	1.4E-08 9.1E-10	3.0E-07 6.0E-08	4.6 1.5
GW-16 Water Well Section 11 T36N, R72W	1st Quarter	U-Nat Ra-226	0.1140	1.80	4.20E-01	7.7E-08 1.8E-09	3.0E-07 6.0E-08	25.7 3.0
	2nd Quarter	U-Nat Ra-226	0.1330	1.60	3.70E-01	9.0E-08 1.6E-09	3.0E-07 6.0E-08	30.0 2.7

TABLE 4

WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2015

SAMPLE LOCATION	SAMPLE DATE	RADIONUCLIDE	CONCENTRATION (mg/L)	CONCENTRATION (pCi/L)	ERROR EST. +/- (pCi/L)	CONCENTRATION (µCi/ml)	EFF. CONG. LIMIT (µCi/ml)	% EFF. CONG. LIMIT
GW-17 Water Well Section 8 T36N, R72W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
GW-18 Water Well Section 2 T36N, R72W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.0193	1.20	3.10E-01	1.3E-08 1.2E-09	3.0E-07 6.0E-08	4.4 2.0
GW-20 Water Well Section 27 T36N, R73W	1st Quarter	U-Nat Ra-226	0.0007	1.30	3.30E-01	4.7E-10 1.3E-09	3.0E-07 6.0E-08	0.2 2.2
	2nd Quarter	U-Nat Ra-226	ND	0.22	1.10E-01	ND 2.2E-10	3.0E-07 6.0E-08	ND 0.4
GW-21 Water Well Section 17 T36N, R73W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	NOT RUNNING			ND 0.0E+00	3.0E-07 6.0E-08	ND 0.0
GW-31 Water Well Section 24 T36N, R74W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	NOT RUNNING			ND 0.0E+00	3.0E-07 6.0E-08	ND 0.0

TABLE 4  
WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2015

SAMPLE LOCATION	SAMPLE DATE	RADIONUCLIDE	CONCENTRATION (mg/L)	CONCENTRATION (pCi/L)	ERROR EST. +/- (pCi/L)	CONCENTRATION (µCi/ml)	EFF. CONC. LIMIT (µCi/ml)	% EFF. CONC. LIMIT
GW-32 Water Well Section 19 T36N, R73W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.1060	3.80	8.10E-01	ND 3.8E-09	3.0E-07 6.0E-08	ND 6.3
GW-33 Water Well Section 21 T36N, R73W	1st Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.0400	0.63	1.80E-01	ND 6.3E-10	3.0E-07 6.0E-08	ND 1.1
Sage Creek Creek Section 12 T35N, R73W	1st Quarter	U-Nat Ra-226	0.1340	1.80	4.20E-01	9.1E-08 1.8E-09	3.0E-07 6.0E-08	30.2 3.0
	2nd Quarter	U-Nat Ra-226	NOT RUNNING			0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0

TABLE 4

WATER SAMPLING DATA  
 ENVIRONMENTAL MONITORING SITES - NB  
 1st and 2nd Quarters 2015

SAMPLE LOCATION	SAMPLE DATE	RADIONUCLIDE	CONCENTRATION (mg/L)	CONCENTRATION (pCi/L)	ERROR EST. +/- (pCi/L)	CONCENTRATION (µCi/ml)	EFF. CONC. LIMIT (µCi/ml)	% EFF. CONC. LIMIT
NBSWS1 Surface Water Section 25 T43N, R76W	1st Quarter	U-Nat	DRY				3.0E-07	NA
		Ra-226					6.0E-08	NA
	2nd Quarter	U-Nat	0.0005			3.4E-10	3.0E-07	0.1
		Ra-226		0.40	1.00E-01	4.0E-10	6.0E-08	0.7
NBSWS2 Surface Water Section 26 T43N, R77W	1st Quarter	U-Nat	DRY				3.0E-07	NA
		Ra-226					6.0E-08	NA
	2nd Quarter	U-Nat	DRY				3.0E-07	NA
		Ra-226					6.0E-08	NA
NBI2 Impoundment Section 25 T43N, R76W	1st Quarter	U-Nat	DRY				3.0E-07	NA
		Ra-226					6.0E-08	NA
	2nd Quarter	U-Nat	0.0004			2.7E-10	3.0E-07	0.1
		Ra-226		0.40	1.00E-01	4.0E-10	6.0E-08	0.7
NBI6 Impoundment Section 24 T44N, R76W	1st Quarter	U-Nat	DRY				3.0E-07	NA
		Ra-226					6.0E-08	NA
	2nd Quarter	U-Nat	0.0021			1.4E-09	3.0E-07	0.5
		Ra-226		0.40	1.00E-01	4.0E-10	6.0E-08	0.7
NBSU1 Upstream Section 18 T45N, R75W	1st Quarter	U-Nat	DRY				3.0E-07	NA
		Ra-226					6.0E-08	NA
	2nd Quarter	U-Nat	DRY				3.0E-07	NA
		Ra-226					6.0E-08	NA



TABLE 4

**WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - NB  
1st and 2nd Quarters 2015**

<b>NBSU2</b> Upstream Section 13 T45N,R76W	1st Quarter	U-Nat Ra-226	DRY	3.0E-07 6.0E-08	NA NA
	2nd Quarter	U-Nat Ra-226	DRY	3.0E-07 6.0E-08	NA NA
<b>NBSD1</b> DownStream Section 19 T44N, R75W	1st Quarter	U-Nat Ra-226	DRY	3.0E-07 6.0E-08	NA NA
	2nd Quarter	U-Nat Ra-226	DRY	3.0E-07 6.0E-08	NA NA
<b>NBSD2</b> Downstream Section 24 T44N, R76W	1st Quarter	U-Nat Ra-226	DRY	3.0E-07 6.0E-08	NA NA
	2nd Quarter	U-Nat Ra-226	DRY	3.0E-07 6.0E-08	NA NA
<b>NBSD3</b> Downstream Section 19 T44N, R75W	1st Quarter	U-Nat Ra-226	DRY	3.0E-07 6.0E-08	NA NA
	2nd Quarter	U-Nat Ra-226	DRY	3.0E-07 6.0E-08	NA NA
<b>NBSU4</b> Upstream Section 24 T44N, R76W	1st Quarter	U-Nat Ra-226	DRY	3.0E-07 6.0E-08	NA NA
	2nd Quarter	U-Nat Ra-226	DRY	3.0E-07 6.0E-08	NA NA

TABLE 5

SATELLITE NO. 1  
 LAND APPLICATION FACILITY (IRRIGATOR NO. 1)  
 MONTHLY IRRIGATION FLUID DATA  
 1st and 2nd Quarters 2015

## IRRIGATION CYCLE

DATE SAMPLED	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
--------------	--------	--------	--------	--------	--------	--------

## VOLUME (AF)

## MAJOR IONS (mg/L)

Reporting  
Limit

Calcium	1.0
Magnesium	1.0
Sodium	1.0
Potassium	1.0
Bicarbonate	1.0
Sulfate	1.0
Chloride	1.0

**IRRIGATOR DID NOT OPERATE ALL REPORTING PERIOD**

## NON-METALS

TDS @ 180° C (mg/L)	10.0
pH (standard units)	0.010
SAR	0.01

## TRACE METALS (mg/L)

Arsenic	0.001
Barium	0.10
Boron	0.10
Selenium	0.001

## RADIOMETRIC

U-nat (uCi/mL)	2.03E-10
Ra-226 (uCi/mL)	2.00E-10
Ra Err. Est. +/-	

TABLE 6

SATELLITE NO. 2  
 LAND APPLICATION FACILITY (IRRIGATOR NO. 2)  
 MONTHLY IRRIGATION FLUID DATA  
 1st and 2nd Quarters 2015

## IRRIGATION CYCLE

DATE SAMPLED

Jan-15

Feb-15

Mar-15

Apr-15

May-15

Jun-15

## VOLUME (AF)

## MAJOR IONS (mg/L)

Reporting

Limit

Calcium	1.0
Magnesium	1.0
Sodium	1.0
Potassium	1.0
Bicarbonate	5.0
Sulfate	2.0
Chloride	1.0

IRRIGATOR DID NOT OPERATE ALL REPORTING PERIOD

## NON-METALS

TDS @ 180° C (mg/L)	17.0
pH (standard units)	0.010
SAR	0.1

## TRACE METALS (mg/L)

Arsenic	0.001
Barium	0.1
Boron	0.1
Selenium	0.001

## RADIOMETRIC

U-nat (uCi/mL)	2.03E-10
Ra-226 (uCi/mL)	2.00E-10
Ra Err. Est. +/-	

TABLE 7

SELENIUM PLANT  
 RADIUM TREATMENT SYSTEM DISCHARGE - SRH  
 MONTHLY RADIUM GRAB SAMPLES  
 1st and 2nd Quarters 2015

SAMPLE DATE	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
<b>RADIOMETRIC</b>						
Ra-226 ( $\mu\text{Ci/mL}$ )	1.90E-09	1.40E-09	7.10E-09	1.60E-09	1.20E-09	5.20E-09
Ra Err. Est. +/-	4.50E-10	3.50E-10	1.40E-09	3.80E-10	3.10E-10	1.10E-09
<b>Eff. Con. Limit</b>	<b>6.00E-08</b>					

TABLE 8A

SATELLITE NO. 1  
 LAND APPLICATION FACILITY (IRRIGATOR NO. 1)  
 ANNUAL SOIL WATER DATA  
 1st and 2nd Quarters 2015

SAMPLE SITE	2'	4'	6'
	NW <sup>1</sup> / <sub>4</sub>	NW <sup>1</sup> / <sub>4</sub>	NW <sup>1</sup> / <sub>4</sub>
NE <sup>1</sup> / <sub>4</sub>	NE <sup>1</sup> / <sub>4</sub>	NE <sup>1</sup> / <sub>4</sub>	
SW <sup>1</sup> / <sub>4</sub>	SW <sup>1</sup> / <sub>4</sub>	SW <sup>1</sup> / <sub>4</sub>	
SE <sup>1</sup> / <sub>4</sub>	SE <sup>1</sup> / <sub>4</sub>	SE <sup>1</sup> / <sub>4</sub>	
	Lysimeter Composite	Lysimeter Composite	Lysimeter Composite

SAMPLE DATE

MAJOR IONS (mg/L)	LABORATORY REP. LIMIT
Bicarbonate	1.0
Sulfate	1.0
Chloride	1.0

Irrigator did not run  
 No sample water available to  
 report

NON-METALS	LABORATORY REP. LIMIT
Cond (umho/cm)	1.0
pH (standard units)	0.010

TRACE METALS (mg/L)	LABORATORY REP. LIMIT
Boron	0.10
Selenium	0.001

RADIOMETRIC	LABORATORY REP. LIMIT
U-nat: (mg/L)	0.0003
Ra-226: (pCi/L)	0.2
Ra Err. Est. +/-	
U-nat: (uCi/mL)	2.03E-10
Ra-226: (uCi/mL)	2.00E-10
Ra Err. Est. +/-	

TABLE 8B

SATELLITE NO. 2  
 LAND APPLICATION FACILITY (IRRIGATOR NO. 2)  
 ANNUAL SOIL WATER DATA  
 1st and 2nd Quarters 2015

SAMPLE SITE	2'	4'	6'
	NW <sup>1</sup> / <sub>4</sub>	NW <sup>1</sup> / <sub>4</sub>	NW <sup>1</sup> / <sub>4</sub>
	NE <sup>1</sup> / <sub>4</sub>	NE <sup>1</sup> / <sub>4</sub>	NE <sup>1</sup> / <sub>4</sub>
	SW <sup>1</sup> / <sub>4</sub>	SW <sup>1</sup> / <sub>4</sub>	SW <sup>1</sup> / <sub>4</sub>
	SE <sup>1</sup> / <sub>4</sub>	SE <sup>1</sup> / <sub>4</sub>	SE <sup>1</sup> / <sub>4</sub>
	Lysimeter Composite	Lysimeter Composite	Lysimeter Composite

SAMPLE DATE

MAJOR IONS (mg/L)	LABORATORY REP. LIMIT
Bicarbonate	1.0
Sulfate	1.0
Chloride	1.0

Lysimeter replaced May 2014  
 No sample water available to report

NON-METALS	LABORATORY REP. LIMIT
Cond (umho/cm)	1.0
pH (standard units)	0.010

TRACE METALS (mg/L)	LABORATORY REP. LIMIT
Boron	0.10
Selenium	0.001

RADIOMETRIC	LABORATORY REP. LIMIT
U-nat: (mg/L)	0.0003
Ra-226: (pCi/L)	0.2
Ra Err. Est. +/-	
U-nat: (uCi/mL)	2.03E-10
Ra-226: (uCi/mL)	2.00E-10
Ra Err. Est. +/-	

TABLE 9

SATELLITE NO. 2  
 PURGE STORAGE RESERVOIR (PSR-2)  
 SHALLOW MONITORING WELLS  
 WATER LEVEL AND WATER QUALITY DATA  
 1st and 2nd Quarters 2015

SAMPLE SITE		Shallow Well		Shallow Well	
		(No. 1 South)		(No. 2 East)	
<b>SAMPLE DATE</b>		3/31/15	6/26/15	3/31/15	6/26/15
<b>WATER LEVEL (DTW)</b>	Laboratory Reporting Limit	13.3	13.4	11.4	10.4
<b>MAJOR IONS (mg/L)</b>					
Bicarbonate	5.0		408		400
Sulfate	8.0		1980		2330
Chloride	2.0		527		532
<b>NON-METALS</b>					
Cond (µmho/cm)	5.0		4900		5650
pH (standard units)	0.01		7.55		7.20
<b>TRACE METALS (mg/L)</b>					
Boron	0.050		ND		ND
Selenium	0.001		1.24		0.058
<b>RADIOMETRIC</b>					
U-nat (uCi/mL)	6.77E-10		3.51E-07		5.60E-08
Ra-226 (uCi/mL)	2.00E-10		4.00E-09		3.90E-09
Ra-226 Err. Est. +/- (uCi/mL)			8.40E-10		8.20E-10