



August 29, 2014

CERTIFIED MAIL #7012 1640 0000 2326 6660

Document Control Desk, Deputy Director  
Decommissioning and Uranium Recovery Licensing Directorate  
Division of Waste Management and Environmental Protection  
Office of Federal and State Materials and Environmental Management Programs  
U.S. Nuclear Regulatory Commission  
Mailstop T8-F5  
Washington, DC 20555-0001

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)

**NRC License SUA-1548, Docket No. 40.8964**  
**Semi-Annual Effluent and Environmental Monitoring Report,**  
**January 1 through June 30, 2014**

Dear Deputy 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, 2014. Copies of this report are also being forwarded to Mr. Douglas Mandeville, 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 black ink, appearing to read "Larry McGonagle", written over a horizontal line.

Larry McGonagle  
Manager, SHEQ  
Cameco Resources

Attachments: Semi-Annual Effluent and Environmental Monitoring Report

KG/th

cc: Mr. Doug Mandeville, NRC w/att CERTIFIED MAIL #7012 1640 0000 2326 6677  
Mr. Tony Vogel, DDNMS w/att CERTIFIED MAIL #7012 1640 0000 2326 6684  
ec: CR-Casper

FSMEZ1

**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, 2014**

## **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 .....	8
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>9</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. Therefore, no injection or recovery rates are available for the report period, as shown in Table 1A.

### **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. Two of these stations (AS-4 and AS-5) were previously used to monitor downwind conditions of the Highland CPF and were operated only when yellowcake processing operations are active at the Highland CPF. The stations were re-activated in January of 2012 to monitor conditions during construction activities at the Highland CPF. 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. 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 onsite during off

shift hours.

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

Table 2 shows the air particulate and radon data collected at stations NB8, NB9, NB11, NB12, NB13, and Satellite Pad. In addition to the six air stations there are two additional environmental stations with 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 levels recorded in the second quarter of 2014 are recorded as averaged. Environmental TLD badges were sent to an offsite laboratory for analysis on July 1, 2014 and were lost in transit. For the purpose of this report the gamma levels for each location were averaged over the last five quarters and recorded in Table 3. Once the analysis of the lost TLDs are completed, a separate report will be sent to NRC with the second quarter 2014 observed gamma levels.

## 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. The number of water wells increased to 22 wells as compared to 18 reported in the last semi-annual report. Four wells were added to the quarterly water well sampling requirements since they are located within 1km of operating wellfields as per the license. These wells are designated as GW-21, GW-31, GW-32 and GW-33. 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 11 water wells (GW-5, GW-6, GW-8, GW-9, GW-10, GW-12, GW-13, GW-16, GW-21, GW-31 and GW-33) 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. Two (2) water wells, one (1) operating domestic well (Beck Well) and one (1) operating stock well (Brown #5) were removed from the sampling schedule due to the well locations are outside the one kilometer (1km) area of any operating wellfield as written in Chapter 5, 5.3.5 Environmental Ground Water Monitoring Program of the NRC License No. SUA-1548 Smith Ranch-Highland Uranium project. 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 four (4) Surface Water Sites (NBSU1, NBSU2, NBSD2, and NBSD3) were dry and there was no water available for sampling. During the second quarter of the report period all eight (8) Surface Water Sites (NBSWS1, NBSWS2, NBI2, NBI6, 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 acronym 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 2014 soil and vegetation sampling at the irrigation areas will be conducted in August 2014 and results will be included with the July 1 through December 31, 2014 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 was not operational for the entire reporting period, as noted in Table 5. Irrigation fluid data was collected at Irrigator No. 2 when it became operational beginning June, 2014. Results of the sample is provided in Table 6. A review of the data indicates that the concentration of uranium in the monthly grab sample was less than the 10 CFR 20, Appendix B, Effluent Concentration Limit of  $3.0 \text{ E-7 } \mu\text{Ci/ml}$  provided in the original



license application for the facility. The concentration of radium-226 was below the 10 CFR 20, Appendix B, Effluent Concentration Limit of  $6.0\text{E-}8$   $\mu\text{Ci/ml}$ .

#### *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  $6.00\text{E-}8$   $\mu\text{Ci/mL}$ .

#### *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. Cameco employed a contractor to evaluate the lysimeters and it was determined that they will need to be replaced. Replacement of the lysimeters at Irrigator #2 was completed in May 2014. In June 2014, 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*

A shallow monitor well, located southwest of the Satellite No. 1 Purge Storage Reservoir (PSR-1) is monitored at least weekly for potential seepage from the reservoir. There was no evidence of seepage during the report period. PSR-1 was dry for the entire period and it is not anticipated that water will be diverted to PSR-1 in the near future. It is unlikely there will be any seepage from PSR-1 in the following reporting periods.

#### *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 28, 2014 while sampling and water levels were conducted June 18, 2014. Table 9 contains the data for water levels and samples taken during this period.

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

Per License Conditions 9.4(e) and 12.2, 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 2014 will be submitted in the second half 2014 semi-annual report.

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

A Semi-annual inspection was conducted May 20-22, 2014 and resulted in no level IV violations.

#### **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 2014**

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

<b>MONTH</b>	<b>Satellite No. 2</b>	<b>Satellite No. 3</b>	<b>Central Processing Plant</b>	<b>Satellite SR-1</b>	<b>Satellite SR-2</b>	<b>North Butte</b>
Jan-14	822	4,609	3,023	3,107	3,309	1,898
Feb-14	824	4,666	2,952	3,062	3,626	2,169
Mar-14	733	4,765	2,841	3,024	3,789	2,181
Apr-14	722	4,737	2,282	3,369	3,676	2,179
May-14	670	4,574	2,179	3,799	3,997	2,286
Jun-14	559	4,515	1,976	3,534	4,186	2,626

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

<b>MONTH</b>	<b>Satellite No. 2</b>	<b>Satellite No. 3</b>	<b>Central Processing Plant</b>	<b>Satellite SR-1</b>	<b>Satellite SR-2</b>	<b>North Butte</b>
Jan-14	847	4,671	3,045	3,129	3,333	1,909
Feb-14	842	4,729	2,986	3,090	3,651	2,181
Mar-14	750	4,823	2,882	3,049	3,825	2,194
Apr-14	747	4,791	2,307	3,405	3,700	2,192
May-14	694	4,628	2,202	3,839	4,021	2,299
Jun-14	581	4,570	1,993	3,564	4,211	2,641

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

<b>MONTH</b>	<b>Satellite No. 2</b>	<b>Satellite No. 3</b>	<b>Central Processing Plant</b>	<b>Satellite SR-1</b>	<b>Satellite SR-2</b>	<b>North Butte</b>
Jan-14	104	139	154	79	175	106
Feb-14	111	137	153	80	177	105
Mar-14	100	119	137	63	180	107
Apr-14	108	116	148	68	180	107
May-14	105	112	145	52	177	107
Jun-14	96	109	106	34	174	106

**TABLE 2**  
**AIR SAMPLING DATA**  
**ENVIRONMENTAL MONITORING SITES - SRH**  
**1st and 2nd Quarters 2014**

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	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
Air Station		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
Background		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
Site		Pb-210	1.00E-14	9.70E-16	2.00E-15	6.00E-13	1.7
	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	ND	NA	2.00E-15	6.00E-13	0.0
	All Period	Rn-222	8.00E-10	5.00E-11	3.00E-10	1.00E-08	8.0
AS-2							
FENCE LINE	1st Quarter	U-Nat	6.40E-16	3.50E+00	1.00E-16	9.00E-14	0.7
Air Station		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
Restricted Area		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
Boundary (Background not deducted)		Pb-210	9.2E-15	9.70E-16	2.00E-15	6.00E-13	0.0
	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	ND	NA	2.00E-15	6.00E-13	0.0
	All Period	Rn-222	7.00E-10	5.00E-11	3.00E-10	1.00E-08	7.0
AS-3							
VOLLMAN RANCH	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
Air Station		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
Downwind Nearest		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
Residence (Background not deducted)		Pb-210	8.30E-15	8.90E-16	2.00E-15	6.00E-13	1.4
	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	ND	NA	2.00E-15	6.00E-13	0.0
	All Period	Rn-222	5.00E-10	4.00E-11	3.00E-10	1.00E-08	5.0
AS-4							
HUP RESTRICTED AREA	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
Air Station		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
HUP Overlook (Background not deducted)		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
		Pb-210	1.20E-14	1.00E-15	2.00E-15	6.00E-13	2.0
	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	ND	NA	2.00E-15	6.00E-13	0.0
	All Period	Rn-222	1.30E-09	7.00E-11	3.00E-10	1.00E-08	13.0
AS-5							
FOWLER RANCH	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
Air Station		Th-230	ND	NA	1.00E-16	3.00E-14	0.0
Downwind (HUP)		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0
Nearest Residence (Background not deducted)		Pb-210	9.50E-15	9.20E-16	2.00E-15	6.00E-13	1.6
	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	ND	NA	2.00E-15	6.00E-13	0.0
	All Period	Rn-222	5.00E-10	4.00E-11	3.00E-10	1.00E-08	5.0
AS-6							
REYNOLDS SATELLITE		NOT CONSTRUCTED					

**TABLE 2**  
**AIR SAMPLING DATA**  
**ENVIRONMENTAL MONITORING SITES - NB**  
**1st and 2nd Quarters 2014**

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								
Pfister Ranch	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0	
Air Station		Th-230	ND	NA	1.00E-16	3.00E-14	0.0	
Nearest Residence		Ra-226	1.00E-16	3.1E-17	1.00E-16	9.00E-13	0.0	
		Pb-210	1.20E-14	1.40E-15	2.00E-15	6.00E-13	2.0	
(Background not deducted)								
	2nd Quarter	U-Nat	1.00E-16	NA	1.00E-16	9.00E-14	0.1	
		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	1.60E-15	2.00E-15	6.00E-13	2.0	
	All Period	Rn-222	6.00E-10	4.00E-11	3.00E-10	1.00E-08	6.0	
	NB9							
	West Airstation	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
Air Station	Th-230		ND	NA	1.00E-16	3.00E-14	0.0	
Upwind	Ra-226		ND	NA	1.00E-16	9.00E-13	0.0	
	Pb-210		1.30E-14	1.40E-15	2.00E-15	6.00E-13	2.2	
	2nd Quarter	U-Nat	1.20E-16	NA	1.00E-16	9.00E-14	0.1	
		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	1.40E-15	2.00E-15	6.00E-13	2.2	
	All Period	Rn-222	3.00E-10	2.00E-11	3.00E-10	1.00E-08	3.0	
	NB11							
	North Butte	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
Air Station	Th-230		ND	NA	1.00E-16	3.00E-14	0.0	
North Side of Licenced Area	Ra-226		ND	NA	1.00E-16	9.00E-13	0.00	
	Pb-210		1.30E-14	1.20E-15	2.00E-15	6.00E-13	2.2	
(Background not deducted)								
	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	9.90E-16	2.00E-15	6.00E-13	2.3	
	All Period	Rn-222	6.00E-10	4.00E-11	3.00E-10	1.00E-08	6.0	
	NB12							
	North East Airstation	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
Air Station	Th-230		ND	NA	1.00E-16	3.00E-14	0.0	
Downwind	Ra-226		ND	NA	1.00E-16	9.00E-13	0.0	
	Pb-210		1.30E-14	1.50E-15	2.00E-15	6.00E-13	2.2	
(Background not deducted)								
	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	1.00E-14	1.10E-15	2.00E-15	6.00E-13	1.7	
	All Period	Rn-222	3.00E-10	3.00E-11	3.00E-10	1.00E-08	3.0	
	NB13							
	Anedarko Road	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
Air Station	Th-230		ND	NA	1.00E-16	3.00E-14	0.0	
Downwind	Ra-226		ND	NA	1.00E-16	9.00E-13	0.0	
	Pb-210		1.40E-14	1.30E-15	2.00E-15	6.00E-13	2.3	
(Background not deducted)								
	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	1.20E-15	2.00E-15	6.00E-13	2.2	
	All Period	Rn-222	4.00E-10	3.00E-11	3.00E-10	1.00E-08	4.0	
	Satellite Pad							
	Operations Mancamp	1st Quarter	U-Nat	ND	NA	1.00E-16	9.00E-14	0.0
Air Station	Th-230		ND	NA	1.00E-16	3.00E-14	0.0	
Mancamp	Ra-226		ND	NA	1.00E-16	9.00E-13	0.0	
	Pb-210		1.30E-14	1.20E-15	2.00E-15	6.00E-13	2.2	
(Background not deducted)								
	2nd Quarter	U-Nat	1.10E-16	NA	1.00E-16	9.00E-14	0.1	
		Th-230	1.30E-16	6.9E-17	1.00E-16	3.00E-14	0.4	
		Ra-226	ND	NA	1.00E-16	9.00E-13	0.0	
		Pb-210	7.80E-15	8.30E-16	2.00E-15	6.00E-13	1.3	
	All Period	Rn-222	2.00E-10	2.00E-11	3.00E-10	1.00E-08	2.0	
	Christensen Rd							
	Environmental Station Fence Line	All Period	Rn-222	4.00E-10	3E-11	3.00E-10	1.00E-08	4.0
Frac Tanks								
Enironmental Station FenceLine	All Period	Rn-222	4.00E-10	3E+11	3.00E-10	1.00E-08	4.0	

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

**TABLE 3**

**DIRECT RADIATION (GAMMA) MEASUREMENT DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st & 2nd QUARTERS 2014**

<b>SAMPLE LOCATION</b>	<b>SAMPLE PERIOD</b>	<b>EXPOSURE RATE (mR/qtr)</b>
<b>AS-1</b>		
<b>DAVE'S WATER WELL</b>		
Air Station	1st Quarter	36
Background		
Site	2nd Quarter	34
<b>AS-2</b>		
<b>FENCE LINE</b>		
Air Station	1st Quarter	43
Restricted Area		
Boundary	2nd Quarter	38
<b>AS-3</b>		
<b>VOLLMAN'S RANCH</b>		
Air Station	1st Quarter	37
Downwind		
Nearest Residence	2nd Quarter	34
<b>AS-4</b>		
<b>HUP RESTRICTED AREA</b>		
Air Station	1st Quarter	40
HUP Overlook		
	2nd Quarter	35
<b>AS-5</b>		
<b>FOWLER RANCH</b>		
Air Station	1st Quarter	41
Downwind of HUP		
Nearest Residence	2nd Quarter	33
<b>AS-6</b>	<b>NOT</b>	
<b>REYNOLDS SATELLITE</b>	<b>CONSTRUCTED</b>	
<b>CONTROL</b>	1st Quarter	35
	2nd Quarter	34

Background has not been deducted  
From any readings

**TABLE 3**  
**DIRECT RADIATION (GAMMA) MEASUREMENT DATA**  
**ENVIRONMENTAL MONITORING SITES - NB**  
**1st & 2nd QUARTERS 2014**

<b>SAMPLE LOCATION</b>	<b>SAMPLE PERIOD</b>	<b>EXPOSURE RATE (mR/qtr)</b>
<b>NB8</b>		
<b>Phister Ranch</b>		
Air Station	1st Quarter	42
Nearest Residence	2nd Quarter	42.4 (Averaged)
<b>NB9</b>		
<b>West Air Station</b>		
Air Station	1st Quarter	36
Upwind	2nd Quarter	41 (Averaged)
Background		
<b>NB11</b>		
<b>North Butte</b>		
Air Station	1st Quarter	37
Downwind	2nd Quarter	39.2 (Averaged)
North Side of Licenced Area		
<b>NB12</b>		
<b>North East Air Station</b>		
Air Station	1st Quarter	36
Downwind	2nd Quarter	41.2 (Averaged)
<b>NB13</b>		
<b>Anedarko Road</b>		
Air Station	1st Quarter	35
Downwind	2nd Quarter	39.4 (Averaged)
<b>Satellite Pad</b>		
Air Station	1st Quarter	36
	2nd Quarter	36 (Averaged)
<b>Environmental Station</b>		
<b>Frac Tanks</b>		
Fence Line	1st Quarter	43.0
Upwind	2nd Quarter	42.2 (Averaged)
Background		
<b>Environmental Station</b>		
<b>Christensen Rd.</b>		
Fence Line	1st Quarter	38
Downwind	2nd Quarter	42.8 (Averaged)
<b>CONTROL</b>		
	1st Quarter	29
	2nd Quarter	34 (Averaged)

Background has not been deducted  
From any readings



**TABLE 4**  
**WATER SAMPLING DATA**  
**ENVIRONMENTAL MONITORING SITES - SRH**  
**1st and 2nd Quarters 2014**

<b>SAMPLE LOCATION</b>	<b>SAMPLE DATE</b>	<b>RADIONUCLIDE</b>	<b>CONCENTRATION (mg/L)</b>	<b>CONCENTRATION (pCi/L)</b>	<b>ERROR EST. +/- (pCi/L)</b>	<b>CONCENTRATION (pCi/ml)</b>	<b>EFF. CONC. LIMIT (pCi/ml)</b>	<b>% EFF. CONC. LIMIT</b>
<b>SW-1</b> Stock Pond Section 3 T35N, R74W	1st Quarter	U-Nat Ra-226				0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
	2nd Quarter	U-Nat Ra-226	0.0147	0.20	1.00E-01	1.0E-08 2.0E-10	3.0E-07 6.0E-08	3.3 0.3
<b>SW-2</b> Stock Pond Section 2 T35N, R74W	1st Quarter	U-Nat Ra-226	0.0022	1.20	2.70E-01	1.5E-09 1.2E-09	3.0E-07 6.0E-08	0.5 2.0
	2nd Quarter	U-Nat Ra-226	0.0075	0.85	1.70E-01	5.1E-09 8.5E-10	3.0E-07 6.0E-08	1.7 1.4
<b>SW-3</b> Stock Pond Section 35 T36N, R74W	1st Quarter	U-Nat Ra-226	0.0042	0.39	1.80E-01	2.8E-09 3.9E-10	3.0E-07 6.0E-08	0.9 0.7
	2nd Quarter	U-Nat Ra-226				0.0E+00 0.0E+00	3.0E-07 6.0E-08	0.0 0.0
<b>SW-4</b> Stock Pond Section 36 T36N, R74W	1st Quarter	U-Nat Ra-226	0.00040	ND	1.20E-01	2.7E-10 ND	3.0E-07 6.0E-08	0.1 ND
	2nd Quarter	U-Nat Ra-226	0.001	0.96	1.80E-01	6.8E-10 9.6E-10	3.0E-07 6.0E-08	0.2 1.6
<b>SW-5</b> Stock Pond Section 21 T36N, R73W	1st Quarter	U-Nat Ra-226	ND	ND	1.20E-01	ND ND	3.0E-07 6.0E-08	ND ND
	2nd Quarter	U-Nat Ra-226	0.001	0.16	1.10E-01	6.8E-10 1.6E-10	3.0E-07 6.0E-08	0.2 0.3
<b>SW-6</b> Stock Pond Section 22 T36N, R73W	1st Quarter	U-Nat Ra-226	ND	0.08	1.20E-01	ND 8.0E-11	3.0E-07 6.0E-08	ND 0.1
	2nd Quarter	U-Nat Ra-226	0.0004	ND	7.00E-02	2.7E-10 ND	3.0E-07 6.0E-08	0.1 ND
<b>SW-7</b>	1st Quarter	U-Nat	0.0014			9.5E-10	3.0E-07	0.3

**TABLE 4**  
**WATER SAMPLING DATA**  
**ENVIRONMENTAL MONITORING SITES - SRH**  
**1st and 2nd Quarters 2014**

<b>SAMPLE LOCATION</b>	<b>SAMPLE DATE</b>	<b>RADIONUCLIDE</b>	<b>CONCENTRATION (mg/L)</b>	<b>CONCENTRATION (pCi/L)</b>	<b>ERROR EST. +/- (pCi/L)</b>	<b>CONCENTRATION (pCi/ml)</b>	<b>EFF. CONC. LIMIT (pCi/ml)</b>	<b>% EFF. CONC. LIMIT</b>
Stock Pond Section 22 T36N, R73W	2nd Quarter	Ra-226		0.39	1.70E-01	3.9E-10	6.0E-08	0.7
		U-Nat	0.0014			9.5E-10	3.0E-07	0.3
		Ra-226		0.39	1.70E-01	3.9E-10	6.0E-08	0.7
<b>SW-8</b> Stock Pond Section 18 T36N, R72W	1st Quarter	U-Nat	0.0008			5.4E-10	3.0E-07	0.2
		Ra-226		0.08	1.20E-01	8.0E-11	6.0E-08	0.1
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>SW-9</b> Stock Pond Section 18 T36N, R72W	1st Quarter	U-Nat	0.0009			6.1E-10	3.0E-07	0.2
		Ra-226		0.34	1.00E-01	3.4E-10	6.0E-08	0.6
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>SW-10</b> Stock Pond Section 19 T36N, R72W	1st Quarter	U-Nat	0.0006			4.1E-10	3.0E-07	0.1
		Ra-226		0.22	1.40E-01	2.2E-10	6.0E-08	0.4
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-1</b> Windmill Section 1 T35N, R74W	1st Quarter	U-Nat	0.0280			1.9E-08	3.0E-07	6.3
		Ra-226		0.81	2.00E-01	8.1E-10	6.0E-08	1.4
	2nd Quarter	U-Nat	0.0273			1.8E-08	3.0E-07	6.2
		Ra-226		1.20	2.00E-01	1.2E-09	6.0E-08	2.0
<b>GW-2</b> Solar Well Section 35 T36N, R74W	1st Quarter	U-Nat	0.0380			2.6E-08	3.0E-07	8.6
		Ra-226		0.70	2.10E-01	7.0E-10	6.0E-08	1.2
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0

TABLE 4

**WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2014**

<b>SAMPLE LOCATION</b>	<b>SAMPLE DATE</b>	<b>RADIONUCLIDE</b>	<b>CONCENTRATION (mg/L)</b>	<b>CONCENTRATION (pCi/L)</b>	<b>ERROR EST. +/- (pCi/L)</b>	<b>CONCENTRATION (pCi/ml)</b>	<b>EFF. CONC. LIMIT (pCi/ml)</b>	<b>% EFF. CONC. LIMIT</b>
<b>GW-3</b> Windmill Section 27 T36N, R74W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat	0.1400			9.5E-08	3.0E-07	31.6
		Ra-226		1.70	2.30E-01	1.7E-09	6.0E-08	2.8
<b>GW-4</b> Windmill Section 23 T36N, R74W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat	0.0907			6.1E-08	3.0E-07	20.5
		Ra-226		0.89	1.70E-01	8.9E-10	6.0E-08	1.5
<b>GW-5</b> Windmill Section 30 T36N, R73W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-6</b> Windmill Section 28 T36N, R73W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-8</b> Windmill Section 23 T36N, R73W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-9</b> Windmill Section 14 T36N, R73W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0

TABLE 4

**WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2014**

<b>SAMPLE LOCATION</b>	<b>SAMPLE DATE</b>	<b>RADIONUCLIDE</b>	<b>CONCENTRATION (mg/L)</b>	<b>CONCENTRATION (pCi/L)</b>	<b>ERROR EST. +/- (pCi/L)</b>	<b>CONCENTRATION (pCi/ml)</b>	<b>EFF. CONC. LIMIT (pCi/ml)</b>	<b>% EFF. CONC. LIMIT</b>
<b>GW-10</b> Water Well Section 14 T36N, R73W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-11</b> Water Well Section 11 T36N, R73W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat	0.0006			4.1E-10	3.0E-07	0.1
		Ra-226		0.71	1.30E-01	7.1E-10	6.0E-08	1.2
<b>GW-12</b> Water Well Section 7 T36N, R72W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-13</b> Water Well Section 9 T36N, R72W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-14</b> Water Well Section 10 T36N, R72W	1st Quarter	U-Nat	0.0077			5.2E-09	3.0E-07	1.7
		Ra-226		0.97	2.20E-01	9.7E-10	6.0E-08	1.6
	2nd Quarter	U-Nat	0.0170			1.2E-08	3.0E-07	3.8
		Ra-226		1.40	2.10E-01	1.4E-09	6.0E-08	2.3
<b>GW-15</b> Water Well Section 15 T36N, R72W	1st Quarter	U-Nat	0.0203			1.4E-08	3.0E-07	4.6
		Ra-226		1.10	2.40E-01	1.1E-09	6.0E-08	1.8
	2nd Quarter	U-Nat	0.0182			1.2E-08	3.0E-07	4.1
		Ra-226		1.30	2.00E-01	1.3E-09	6.0E-08	2.2

TABLE 4

**WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2014**

<b>SAMPLE LOCATION</b>	<b>SAMPLE DATE</b>	<b>RADIONUCLIDE</b>	<b>CONCENTRATION (mg/L)</b>	<b>CONCENTRATION (pCi/L)</b>	<b>ERROR EST. +/- (pCi/L)</b>	<b>CONCENTRATION (µCi/ml)</b>	<b>EFF. CONC. LIMIT (µCi/ml)</b>	<b>% EFF. CONC. LIMIT</b>
<b>GW-16</b> Water Well Section 11 T36N, R72W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-17</b> Water Well Section 8 T36N, R72W	1st Quarter	U-Nat	0.0033			2.2E-09	3.0E-07	0.7
		Ra-226		0.54	1.50E-01	5.4E-10	6.0E-08	0.9
	2nd Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-18</b> Water Well Section 2 T36N, R72W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat	0.0172			1.2E-08	3.0E-07	3.9
		Ra-226		1.50	2.20E-01	1.5E-09	6.0E-08	2.5
<b>GW-20</b> Water Well Section 27 T36N, R73W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat	ND			ND	3.0E-07	ND
		Ra-226		0.22	1.20E-01	2.2E-10	6.0E-08	0.4
<b>GW-21</b> Water Well Section 17 T36N, R73W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				ND	3.0E-07	ND
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-31</b> Water Well Section 24 T36N, R74W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				ND	3.0E-07	ND
		Ra-226				0.0E+00	6.0E-08	0.0
<b>GW-32</b>	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0

TABLE 4

**WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - SRH  
1st and 2nd Quarters 2014**

<b>SAMPLE LOCATION</b>	<b>SAMPLE DATE</b>	<b>RADIONUCLIDE</b>	<b>CONCENTRATION (mg/L)</b>	<b>CONCENTRATION (pCi/L)</b>	<b>ERROR EST. +/- (pCi/L)</b>	<b>CONCENTRATION (μCi/ml)</b>	<b>EFF. CONC. LIMIT (μCi/ml)</b>	<b>% EFF. CONC. LIMIT</b>
Water Well Section 19 T36N, R73W	2nd Quarter	Ra-226				0.0E+00	6.0E-08	0.0
		U-Nat	0.1110			ND	3.0E-07	ND
		Ra-226		1.60	2.80E-01	1.6E-09	6.0E-08	2.7
<b>GW-33</b> Water Well Section 21 T36N, R73W	1st Quarter	U-Nat				0.0E+00	3.0E-07	0.0
		Ra-226				0.0E+00	6.0E-08	0.0
	2nd Quarter	U-Nat				ND	3.0E-07	ND
		Ra-226				0.0E+00	6.0E-08	0.0

TABLE 4

**WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - NB  
1st and 2nd Quarters 2014**

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
<b>NBSWS1</b> Surface Water Section 25 T43N, R76W	1st Quarter	U-Nat	0.0033			2.2E-09	3.0E-07	0.7
		Ra-226		0.90	1.00E-01	9.0E-10	6.0E-08	1.5
	2nd Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
<b>NBSWS2</b> Surface Water Section 26 T43N, R77W	1st Quarter	U-Nat	0.0015			1.0E-09	3.0E-07	0.3
		Ra-226		ND	NA	ND	6.0E-08	0.0
	2nd Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
<b>NBI2</b> Impoundment Section 25 T43N, R76W	1st Quarter	U-Nat	0.0012			8.1E-10	3.0E-07	0.0
		Ra-226		0.40	2.00E-01	4.0E-10	6.0E-08	0.7
	2nd Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
<b>NBI6</b> Impoundment Section 24 T44N,R76W	1st Quarter	U-Nat	0.0009			6.1E-10	3.0E-07	0.2
		Ra-226		0.80	1.00E-01	8.0E-10	6.0E-08	1.3
	2nd Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
<b>NBSU1</b> Upstream Section 18 T45N,R75W	1st Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
	2nd Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
<b>NBSU2</b> Upstream Section 13 T45N,R76W	1st Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
	2nd Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA

TABLE 4

**WATER SAMPLING DATA  
ENVIRONMENTAL MONITORING SITES - NB  
1st and 2nd Quarters 2014**

<b>NBSD1</b> DownStream Section 19 T44N, R75W	1st Quarter	U-Nat	0.0029			2.0E-09	3.0E-07	0.7
		Ra-226		0.40	2.00E-01	4.0E-10	6.0E-08	0.7
	2nd Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
<b>NBSD2</b> Downstream Section 24 T44N, R76W	1st Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
	2nd Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
<b>NBSD3</b> Downstream Section 19 T44N, R75W	1st Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
	2nd Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA
<b>NBSU4</b> Upstream Section 24 T44N, R76W	1st Quarter	U-Nat	0.0049			3.3E-09	3.0E-07	1.1
		Ra-226		ND	NA	ND	6.0E-08	0.0
	2nd Quarter	U-Nat					3.0E-07	NA
		Ra-226					6.0E-08	NA



TABLE 5

**SATELLITE NO. 1**  
**LAND APPLICATION FACILITY (IRRIGATOR NO. 1)**  
**MONTHLY IRRIGATION FLUID DATA**  
**1st and 2nd Quarters 2014**

**IRRIGATION CYCLE**

DATE SAMPLED	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14
--------------	--------	--------	--------	--------	--------	--------

**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 2014**

**IRRIGATION CYCLE**

DATE SAMPLED	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14
--------------	--------	--------	--------	--------	--------	--------

VOLUME (AF)						16.7
-------------	--	--	--	--	--	------

MAJOR IONS (mg/L)	Reporting Limit	
Calcium	1.0	271
Magnesium	1.0	110
Sodium	1.0	77
Potassium	1.0	27
Bicarbonate	5.0	263
Sulfate	2.0	767
Chloride	1.0	223

**IRRIGATOR DID NOT OPERATOR FROM JANUARY TO MAY**

NON-METALS		
TDS @ 180° C (mg/L)	17.0	1780
pH (standard units)	0.010	8.03
SAR	0.1	1

TRACE METALS (mg/L)		
Arsenic	0.001	0.001
Barium	0.1	ND
Boron	0.1	0.2
Selenium	0.001	0.028

RADIOMETRIC		
U-nat (uCi/mL)	2.03E-10	3.55E-07
Ra-226 (uCi/mL)	2.00E-10	1.20E-09
Ra Err. Est. +/-		2.20E-01

**TABLE 7**

**SELENIUM PLANT  
RADIUM TREATMENT SYSTEM DISCHARGE - SRH  
MONTHLY RADIUM GRAB SAMPLES  
1st and 2nd Quarters 2014**

<b>SAMPLE DATE</b>	<b>Jan-14</b>	<b>Feb-14</b>	<b>Mar-14</b>	<b>Apr-14</b>	<b>May-14</b>	<b>Jun-14</b>
<b>RADIOMETRIC</b>						
Ra-226 (μCi/mL)	1.10E-09	6.10E-09	1.40E-09	1.50E-08	1.20E-10	9.30E-09
Ra Err. Est. +/-	2.30E-10	5.30E-10	1.80E-10	7.60E-10	1.10E-10	6.10E-10
<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 2014**

SAMPLE SITE	2'	4'	6'
	NW¼	NW¼	NW¼
	NE¼	NE¼	NE¼
	SW¼	SW¼	SW¼
	SE¼	SE¼	SE¼
	Lysimeter Composite	Lysimeter Composite	Lysimeter Composite

**SAMPLE DATE**

LABORATORY		Lysimeters under evaluation for repair or replacement
MAJOR IONS (mg/L)	REP. LIMIT	
Bicarbonate	1.0	
Sulfate	1.0	
Chloride	1.0	
<b>NON-METALS</b>		
Cond (umho/cm)	1.0	
pH (standard units)	0.010	
<b>TRACE METALS (mg/L)</b>		
Boron	0.10	
Selenium	0.001	
<b>RADIOMETRIC</b>		
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 2014**

SAMPLE SITE	2'	4'	6'
	NW¼ NE¼ SW¼ SE¼ Lysimeter Composite	NW¼ NE¼ SW¼ SE¼ Lysimeter Composite	NW¼ NE¼ SW¼ SE¼ Lysimeter Composite

**SAMPLE DATE**

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

Lysimeter replaced May 2014

NON-METALS	
Cond (umho/cm)	1.0
pH (standard units)	0.010

TRACE METALS (mg/L)	
Boron	0.10
Selenium	0.001

RADIOMETRIC	
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 2014**

SAMPLE SITE		Shallow Well		Shallow Well	
		(No. 1 South)		(No. 2 East)	
SAMPLE DATE		3/28/14	6/18/14	3/28/14	6/18/14
WATER LEVEL (DTW)	Laboratory Reporting	12.52	11.59	7.86	8.02
MAJOR IONS (mg/L)	Limit				
Bicarbonate	5.0		357		430
Sulfate	8.0		2130		2340
Chloride	2.0		572		561
NON-METALS					
Cond (µmho/cm)	5.0		5050		5510
pH (standard units)	0.01		7.65		7.22
TRACE METALS (mg/L)					
Barium	0.001				
Selenium	0.001		1.73		0.047
RADIOMETRIC					
U-nat (uCi/mL)	6.77E-10		7.11E-07		6.20E-07
Ra-226 (uCi/mL)	2.00E-10		1.80E-09		1.20E-09
Ra-226 Err. Est. +/- (uCi/mL)			2.90E-10		1.80E-10