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October 27, 2016

UIC Program Supervisor  
WDEQ – Water Quality Division  
Herschler Building – 4W  
122 W. 25<sup>th</sup> Street  
Cheyenne, WY 82002

**RE: Quarterly Report for 3rd Quarter 2016**  
**UIC Class I Permit 13-409**  
**UIC Class V Permit 15-081**  
**Lost Creek ISR Project, Sweetwater County, WY**

Dear Program Supervisor,

The attached Quarterly Report for the Lost Creek ISR Project has been submitted in accordance with the requirements of Class I Underground Injection Control (UIC) Permit 13-409 Section K. The reporting period for this Quarterly Report is the third calendar quarter of 2016.

A quarterly report is also required as per Class V UIC Permit 15-081 Section 9b. However, the Class V system has not yet commenced injection and therefore no report will be submitted with the exception of the online submittal on the agencies GEM website.

If you have any questions regarding this submittal, please contact me at the Casper Office.

Regards,

Michael Gaither  
Manager EHS and Regulatory Affairs  
Ur-Energy USA, Inc.

**Attachments: UIC Class I Quarterly Report**

**Cc: Theresa Horne, Ur-Energy, Littleton Office (via e-mail)**  
**Brian Wood, WDEQ-LQD, Lander (via e-mail)**  
**John Saxton, NRC Project Manager (via e-mail)**

*Lost Creek ISR, LLC is a wholly-owned subsidiary of Ur-Energy Inc.*

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**UIC CLASS I QUARTERLY REPORT  
for the  
LOST CREEK ISR PROJECT  
3rd Quarter 2016**



**LOST CREEK ISR, LLC  
SWEETWATER COUNTY, WY**

**UIC PERMIT 13-409**

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**Prepared by Ur-Energy for  
Wyoming Department of Environmental Quality -  
Water Quality Division – Underground Injection Control**

**October 27, 2016**



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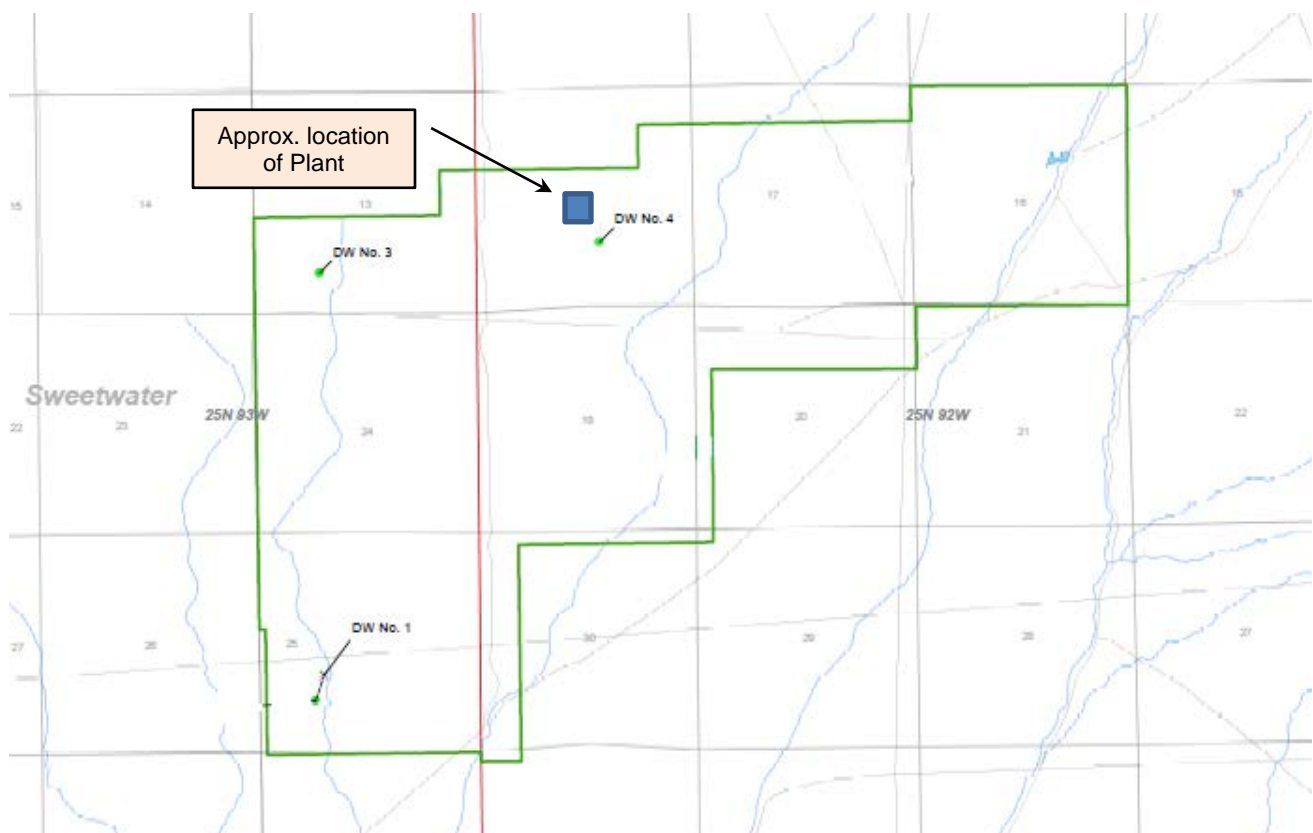


## 1.0 Introduction

The period covered by this report is the third calendar quarter of 2016 from July 1 to September 30, 2016.

Three Class I disposal wells were operational during the reporting period: LC DW No. 1 (“DDW-1”), LC DW No. 3 (“DDW-3”), and LC DW No. 4 (“DDW-4”). Well locations (labeled) are shown below in relation to the Permit to Mine boundary (green line):

**FIGURE 1: Well Locations**



DDW-3 and DDW-4 were operated intermittently during the quarter. DDW-1 was shut in for a portion of the quarter. Operational data was monitored and recorded electronically with redundant data logging.

As per permit requirements, the following elements from Section K(6) of the UIC Permit have been included in this report:

- a.** *Minimum, volume-weighted average, and maximum instantaneous injection rates for each well for each month*



- b. Minimum, average, and maximum daily injection pressures for each well for each month*
- c. Total injection volume in barrels (bbl) for each well for each month, total for the quarter, and cumulative volume of waste injected to date.*
- d. Maximum and minimum annulus pressures for each month with alarm/kill pressure value*
- e. Quarterly analytical results*
- f. Permit exceedances during the quarter*
- g. Any alarms or shutdowns and corrective actions*
- h. Summary of well tests or workovers*

## 2.0 Summary Data

Tables 1A, 1B, 1C, and 2 below provide a data summary for above items **a**, **c**, and **d** above. Data for item **b** above is provided in **Appendix 1** including tables and charts of the daily injection pressure values.

**TABLE 1A: Operational Data Summary for DDW-1**

PARAMETER	UNITS	LC DW No. 1			
		July 2016	August 2016	September 2016	Total or Average
Operation Time	min	11,984	26,305	19,724	19,338
% Run Time	%	27%	59%	46%	0
Injection Rate Minimum Instantaneous	gpm	0	0	0	0
Injection Rate Average (TWA)	gpm	4	4	3	4
Injection Rate Maximum Instantaneous	gpm	14	14	13	14
Injection Rate Maximum Permit Limit	gpm	50			50
Injection Pressure Daily Minimum	psig	0	0	0	0
Injection Pressure Daily Average	psig	306	554	551	471
Injection Pressure Daily Maximum	psig	606	604	608	606
Injection Pressure Permit Limit (LSIP)	psig	609			609
Injection Pressure Automatic Kill	psig	600			600
Injection Volume	gal	51,024	97,264	64,105	212,393
Injection Volume	bbl	1,215	2,316	1,526	5,057
Annulus Pressure Minimum	psig	291	290	292	291
Annulus Pressure Average	psig	295	295	296	295
Annulus Pressure Maximum	psig	300	301	300	300
Annulus Pressure Permit Limit	psig	200-800			200-800
Annulus Pressure Automatic Kill	psig	N/A			N/A



**TABLE 1B: Operational Data Summary for DDW-3**

PARAMETER	UNITS	LC DW No. 3			
		July 2016	August 2016	September 2016	Total or Average
Operation Time	min	33,913	34,233	36,201	104,347
% Run Time	%	76%	77%	84%	79%
Injection Rate Minimum Instantaneous	gpm	0	0	0	0
Injection Rate Average (TWA)	gpm	10	9	8	9
Injection Rate Maximum Instantaneous	gpm	12	41	46	33
Injection Rate Maximum Permit Limit	gpm	50			50
Injection Pressure Daily Minimum	psig	785	0	748	511
Injection Pressure Daily Average	psig	869	840	833	847
Injection Pressure Daily Maximum	psig	925	920	887	911
Injection Pressure Permit Limit (LSIP)	psig	915			915
Injection Pressure Automatic Kill	psig	900			900
Injection Volume	gal	345,789	313,195	285,197	944,182
Injection Volume	bbl	8,233	7,457	6,790	22,481
Annulus Pressure Minimum	psig	261	256	253	257
Annulus Pressure Average	psig	270	266	262	266
Annulus Pressure Maximum	psig	277	273	271	274
Annulus Pressure Permit Limit	psig	200-800			200-800
Annulus Pressure Automatic Kill	psig	N/A			N/A



**TABLE 1C: Operational Data Summary for DDW-4**

PARAMETER	UNITS	LC DW No. 4			
		July 2016	August 2016	September 2016	Total or Average
Operation Time	min	38,796	35,493	34,594	108,883
% Run Time	%	87%	80%	80%	82%
Injection Rate Minimum Instantaneous	gpm	0	0	0	0
Injection Rate Average (TWA)	gpm	11	7	8	9
Injection Rate Maximum Instantaneous	gpm	24	28	20	24
Injection Rate Maximum Permit Limit	gpm	50			50
Injection Pressure Daily Minimum	psig	610	554	573	579
Injection Pressure Daily Average	psig	774	664	679	706
Injection Pressure Daily Maximum	psig	830	751	752	778
Injection Pressure Permit Limit (LSIP)	psig	838			838
Injection Pressure Automatic Kill	psig	810			810
Injection Volume	gal	418,152	235,114	287,848	941,114
Injection Volume	bbl	9,956	5,598	6,854	22,407
Annulus Pressure Minimum	psig	289	287	287	288
Annulus Pressure Average	psig	297	294	293	295
Annulus Pressure Maximum	psig	333	302	301	312
Annulus Pressure Permit Limit	psig	200-800			200-800
Annulus Pressure Automatic Kill	psig	N/A			N/A

**TABLE 2: Cumulative Injection Volumes to Date**

TIME PERIOD	UNITS	LC DW No. 1	LC DW No. 3	LC DW No. 4
2013	bbl	14,625	N/A	6,471
2014	bbl	31,278	8,239	164,694
2015	bbl	14,966	130,113	105,999
2016 1 <sup>st</sup> Quarter	bbl	0	26,819	29,839
2016 2 <sup>nd</sup> Quarter	bbl	0	26,844	32,540
2016 3 <sup>rd</sup> Quarter	bbl	5,057	22,481	22,407
<b>CUMULATIVE TOTAL TO DATE</b>	<b>bbl</b>	<b>65,926</b>	<b>214,496</b>	<b>361,950</b>



### 3.0 Analytical Results

A quarterly grab sample of the injectate was collected from the Plant waste water line upstream of the branch points to each individual well. Sample parameters pH, conductivity, and temperature were measured with a field meter at the sampling site and other applicable parameters were analyzed by Energy Laboratories in Casper, WY. Results of the sample analyses are summarized in **Table 3** below and the associated lab report is included as **Appendix 2**.

**TABLE 3: Analytical Results Summary**

<b>Sample ID:</b> DDW-Injectate			
<b>Sample Date:</b> 9/8/2016			
Lab Analyte or Parameter	Method Used	Results	Units
pH, field	SM4500-H <sup>+</sup> B	5.74	s.u.
Specific Cond. at 25°C, field	120.1	57,700	uS/cm
Temperature, field	SM2550B	20	°C
Specific Gravity	n/a	1.030	---
Total Dissolved Solids	SM2540C	37,300	mg/L
Bicarbonate	SM2320B	321	mg/L
Carbonate	SM2320B	ND(5)	mg/L
Chloride, total	300.0	23,200	mg/L
Sulfate, total	300.0	1,190	mg/L
Sulfide (as hydrogen sulfide)	A4500-S F	ND(1)	mg/L
Arsenic, dissolved	200.8	0.049	mg/L
Selenium, dissolved	200.8	0.796	mg/L
Vanadium, dissolved	200.8	0.05	mg/L
Uranium, total	200.7	18.1	mg/L
Radium-226, total	E903.0	5,300	pCi/L

The only constituent with a defined Permit limit is pH which must have a value between 2.0 and 12.5. The measured value for pH of 5.74 was within the limit.

### 4.0 Permit Exceedances

The following qualified exceedances occurred as shown on **Table 4** below.

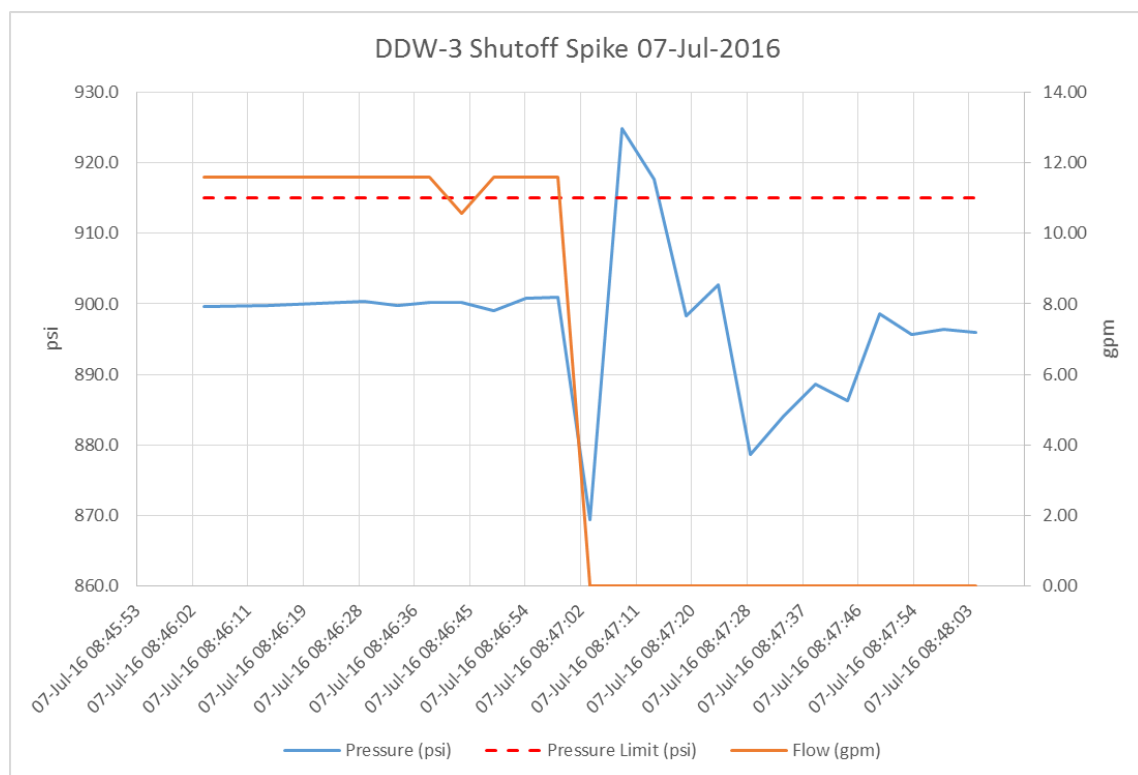




**TABLE 4: Summary of Exceedances**

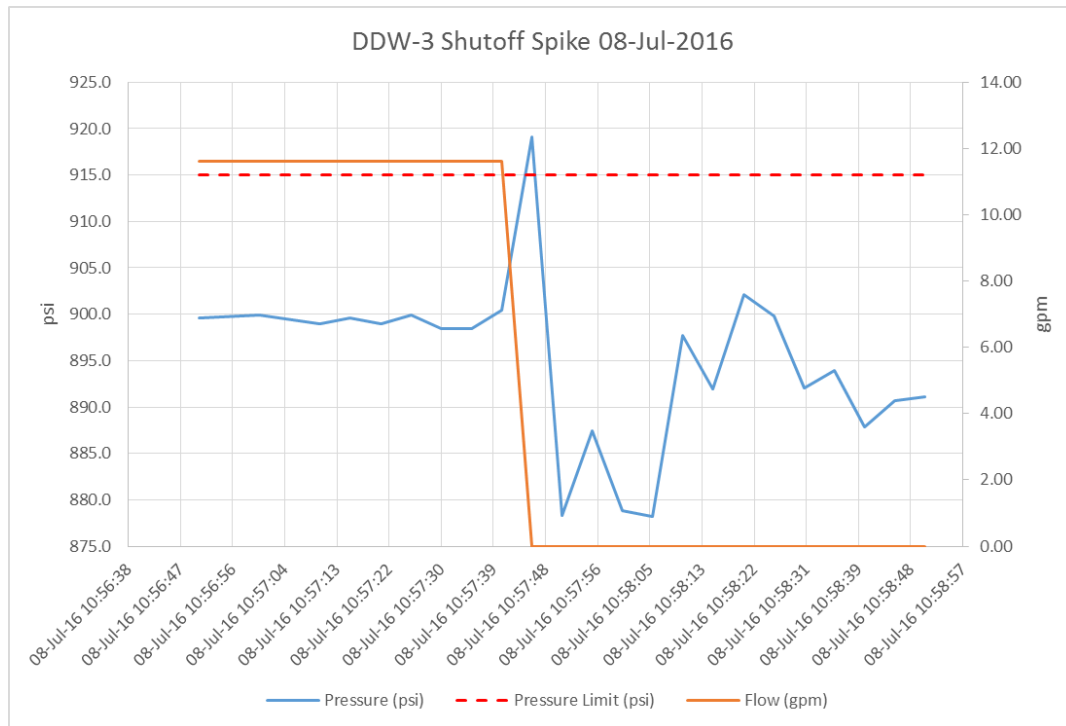
Event	Well	Date	Limit Exceeded	Peak Value	Permit Limit	Comment
1	DDW-3	7/7/2016	Injection Pressure	925	915	Instantaneous pressure spike during shutoff
2	DDW-3	7/8/2016	Injection Pressure	919	915	Instantaneous pressure spike during shutoff
3	DDW-3	7/10/2016	Injection Pressure	919	915	Instantaneous pressure spike during shutoff
4	DDW-3	8/1/2016	Injection Pressure	921	915	Instantaneous pressure spike during shutoff

**Event 1:**

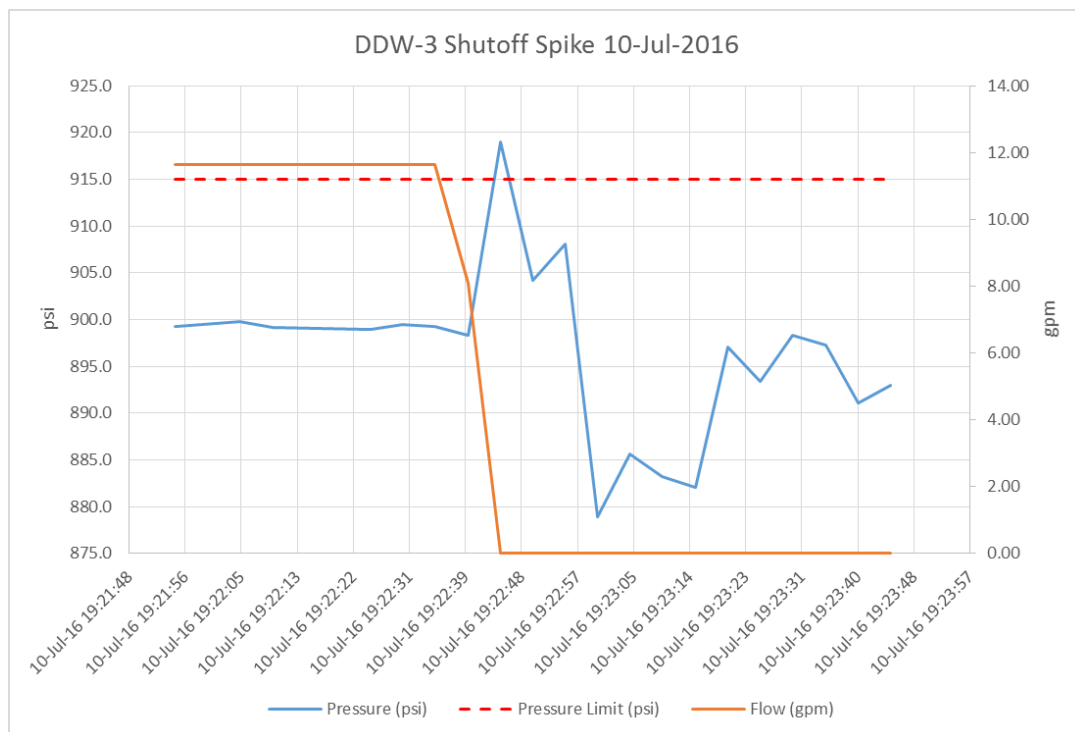




**Event 2:**

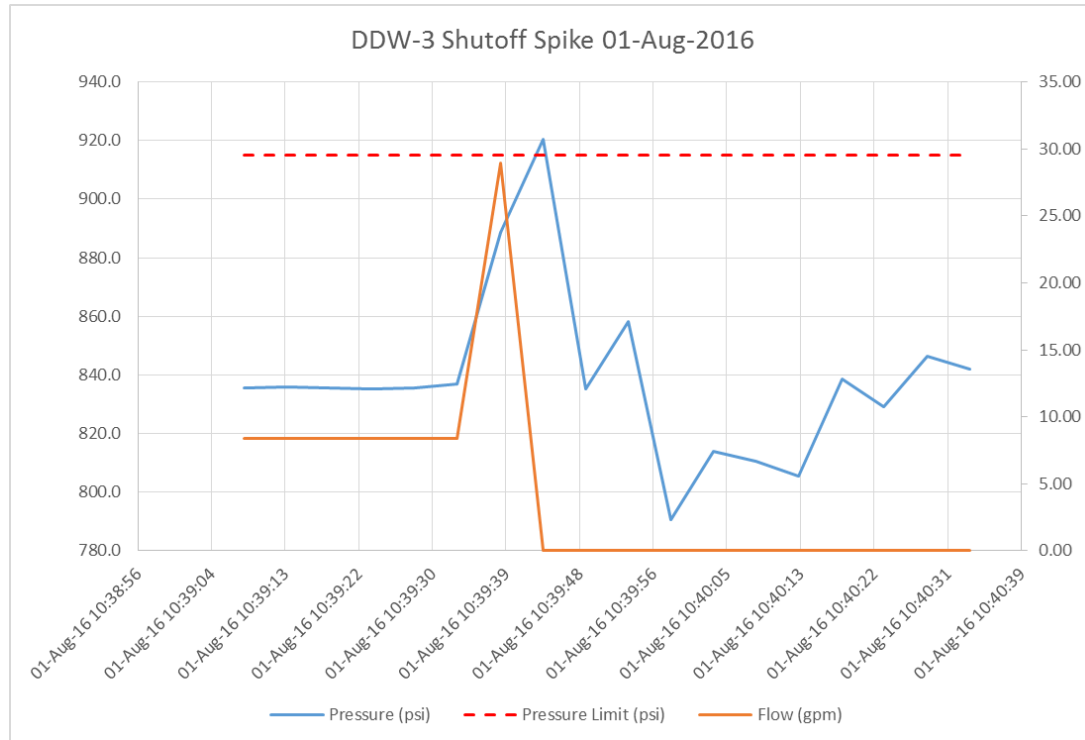


**Event 3:**





#### Event 4:



To help prevent the shutoff spikes, automatic shutdown pressures for DDW-3 and DDW-4 were lowered. Shutdown pressure for DDW-3 was reduced by 10 psi and DDW-4 was reduced by 15 psi. Other options are being considered to prevent shutoff spikes such as adding additional check valves at particular locations in the injection line.



## 5.0 Alarms, Shut-Downs, and Corrective Actions

Voluntary shutdowns occurred during the quarter:

- DDW-1: 7/1/2016 – 7/15/2016. Continued shut in period for pump repairs from previous quarter.

Other shutdowns either automatically or manually occur frequently due to pressure increases or due to maintenance activity such as changing inline filters or program changes. Intermittent operation of the injection systems is typical.

Maintenance activities completed during the quarter included:

- DDW-1 pump replaced. Completed 7/15/2016.
- DDW-1 annulus pressure gauge repaired
- Routine pump oil and filter changes at all wells

Testing of the pressure switches to determine actual automatic shutdown pressures occurred in April and June. Results of the testing are summarized on **Table 5**:

**TABLE 5: Summary of Automatic Pressure Shutoff Testing**

Well	Pressure Limit (psi)	Test Date	Digital Automatic Pressure Shutoff At (psi)	Digital Shutoff Set To (psi)	Analog Pressure Switch Shutoff At (psi)	Analog Shutoff Set To (psi)
DDW-1	609	7/7/2016*	N/A	N/A	N/A	N/A
DDW-3	915	7/7/2016	N/A	900	911	911
DDW-3	915	9/26/2016	N/A	900	911	911
DDW-4	838	7/7/2016	N/A	825	815	815
DDW-4	838	9/26/2016	N/A	810	829	829

\*Well offline

## 6.0 Summary of Well Tests or Workovers

No testing or workovers occurred during the quarter.



## APPENDIX 1

**APPENDIX 1: Daily Injection Pressures**  
**DDW-1 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
7/1/2016	0	0	0	600	609	
7/2/2016	0	0	0	600	609	
7/3/2016	0	0	0	600	609	
7/4/2016	0	0	0	600	609	
7/5/2016	0	0	0	600	609	
7/6/2016	0	0	0	600	609	
7/7/2016	0	0	0	600	609	
7/8/2016	0	0	0	600	609	
7/9/2016	0	0	0	600	609	
7/10/2016	0	0	0	600	609	
7/11/2016	0	0	0	600	609	
7/12/2016	0	0	0	600	609	
7/13/2016	0	0	0	600	609	
7/14/2016	0	0	0	600	609	
7/15/2016	0	51	158	600	609	DDW-1 Restart
7/16/2016	146	146	146	600	609	
7/17/2016	146	146	146	600	609	
7/18/2016	146	146	146	600	609	
7/19/2016	140	238	359	600	609	
7/20/2016	309	391	430	600	609	
7/21/2016	430	442	451	600	609	
7/22/2016	0	498	561	600	609	
7/23/2016	559	560	561	600	609	
7/24/2016	560	560	560	600	609	
7/25/2016	560	571	586	600	609	
7/26/2016	497	577	587	600	609	
7/27/2016	476	576	606	600	609	
7/28/2016	443	505	599	600	609	
7/29/2016	388	413	443	600	609	
7/30/2016	355	370	388	600	609	
7/31/2016	345	369	585	600	609	
8/1/2016	344	580	587	600	609	
8/2/2016	582	585	589	600	609	
8/3/2016	531	583	595	600	609	
8/4/2016	443	516	592	600	609	
8/5/2016	410	458	508	600	609	
8/6/2016	394	459	511	600	609	
8/7/2016	503	544	559	600	609	
8/8/2016	548	575	599	600	609	
8/9/2016	505	555	586	600	609	
8/10/2016	439	511	570	600	609	
8/11/2016	417	508	580	600	609	

**APPENDIX 1: Daily Injection Pressures**  
**DDW-1 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
8/12/2016	535	581	604	600	609	
8/13/2016	489	538	599	600	609	
8/14/2016	451	478	516	600	609	
8/15/2016	417	433	451	600	609	
8/16/2016	410	506	581	600	609	
8/17/2016	520	573	589	600	609	
8/18/2016	0	532	601	600	609	
8/19/2016	502	554	599	600	609	
8/20/2016	481	540	575	600	609	
8/21/2016	451	525	580	600	609	
8/22/2016	386	413	451	600	609	
8/23/2016	378	465	558	600	609	
8/24/2016	549	561	583	600	609	
8/25/2016	492	538	579	600	609	
8/26/2016	514	559	579	600	609	
8/27/2016	510	545	582	600	609	
8/28/2016	485	528	578	600	609	
8/29/2016	468	533	581	600	609	
8/30/2016	484	535	586	600	609	
8/31/2016	462	518	584	600	609	
9/1/2016	500	543	585	600	609	
9/2/2016	505	544	578	600	609	
9/3/2016	477	522	585	600	609	
9/4/2016	424	447	477	600	609	
9/5/2016	422	529	551	600	609	
9/6/2016	473	525	605	600	609	
9/7/2016	437	475	568	600	609	
9/8/2016	511	566	602	600	609	
9/9/2016	531	574	590	600	609	
9/10/2016	529	572	602	600	609	
9/11/2016	533	578	601	600	609	
9/12/2016	502	547	590	600	609	
9/13/2016	452	486	538	600	609	
9/14/2016	0	476	555	600	609	
9/15/2016	451	514	550	600	609	
9/16/2016	528	568	608	600	609	
9/17/2016	511	552	599	600	609	
9/18/2016	523	563	601	600	609	
9/19/2016	493	551	579	600	609	
9/20/2016	475	528	599	600	609	
9/21/2016	0	568	599	600	609	
9/22/2016	486	532	601	600	609	

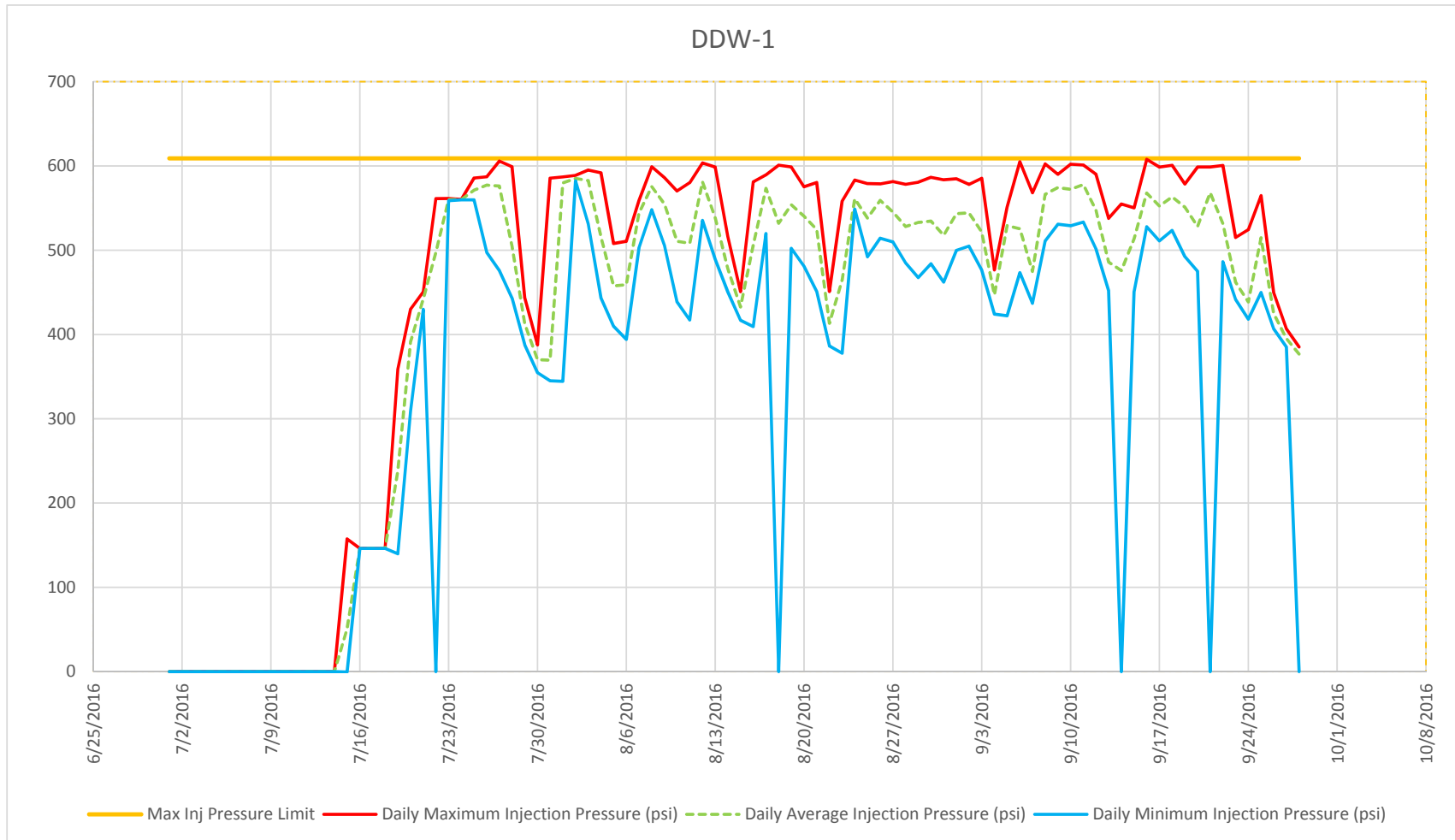
**APPENDIX 1: Daily Injection Pressures**  
**DDW-1 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
9/23/2016	442	462	515	600	609	
9/24/2016	418	439	524	600	609	
9/25/2016	450	515	565	600	609	
9/26/2016	407	425	450	600	609	
9/27/2016	385	395	407	600	609	
9/28/2016	0	377	385	600	609	
9/29/2016	355	363	369	600	609	
9/30/2016	346	351	357	600	609	

*psi: pounds per square inch*



**APPENDIX 1: Daily Injection Pressures**  
**DDW-1 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**



**APPENDIX 1: Daily Injection Pressures**  
**DDW-3 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
7/1/2016	854	883	904	900	915	
7/2/2016	785	875	891	900	915	
7/3/2016	850	878	915	900	915	
7/4/2016	833	858	901	900	915	
7/5/2016	837	849	861	900	915	
7/6/2016	853	878	915	900	915	
7/7/2016	843	872	<b>925</b>	900	915	Shutoff spike
7/8/2016	829	883	<b>919</b>	900	915	Shutoff spike
7/9/2016	852	872	891	900	915	
7/10/2016	856	869	<b>919</b>	900	915	Shutoff spike
7/11/2016	849	867	913	900	915	
7/12/2016	860	874	893	900	915	
7/13/2016	859	865	872	900	915	
7/14/2016	845	880	913	900	915	
7/15/2016	839	860	872	900	915	
7/16/2016	839	845	857	900	915	
7/17/2016	817	867	909	900	915	
7/18/2016	841	859	872	900	915	
7/19/2016	850	871	907	900	915	
7/20/2016	856	870	897	900	915	
7/21/2016	859	885	913	900	915	
7/22/2016	849	863	881	900	915	
7/23/2016	869	895	900	900	915	
7/24/2016	857	890	913	900	915	
7/25/2016	861	879	895	900	915	
7/26/2016	862	866	889	900	915	
7/27/2016	842	875	905	900	915	
7/28/2016	820	832	858	900	915	
7/29/2016	823	858	907	900	915	
7/30/2016	824	841	864	900	915	
7/31/2016	812	834	865	900	915	
8/1/2016	791	818	<b>920</b>	900	915	Shutoff spike
8/2/2016	714	805	831	900	915	
8/3/2016	793	809	830	900	915	
8/4/2016	796	820	871	900	915	
8/5/2016	823	851	879	900	915	
8/6/2016	827	835	849	900	915	
8/7/2016	817	849	873	900	915	
8/8/2016	658	826	869	900	915	
8/9/2016	0	823	870	900	915	
8/10/2016	808	838	874	900	915	
8/11/2016	757	848	875	900	915	

**APPENDIX 1: Daily Injection Pressures**  
**DDW-3 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**

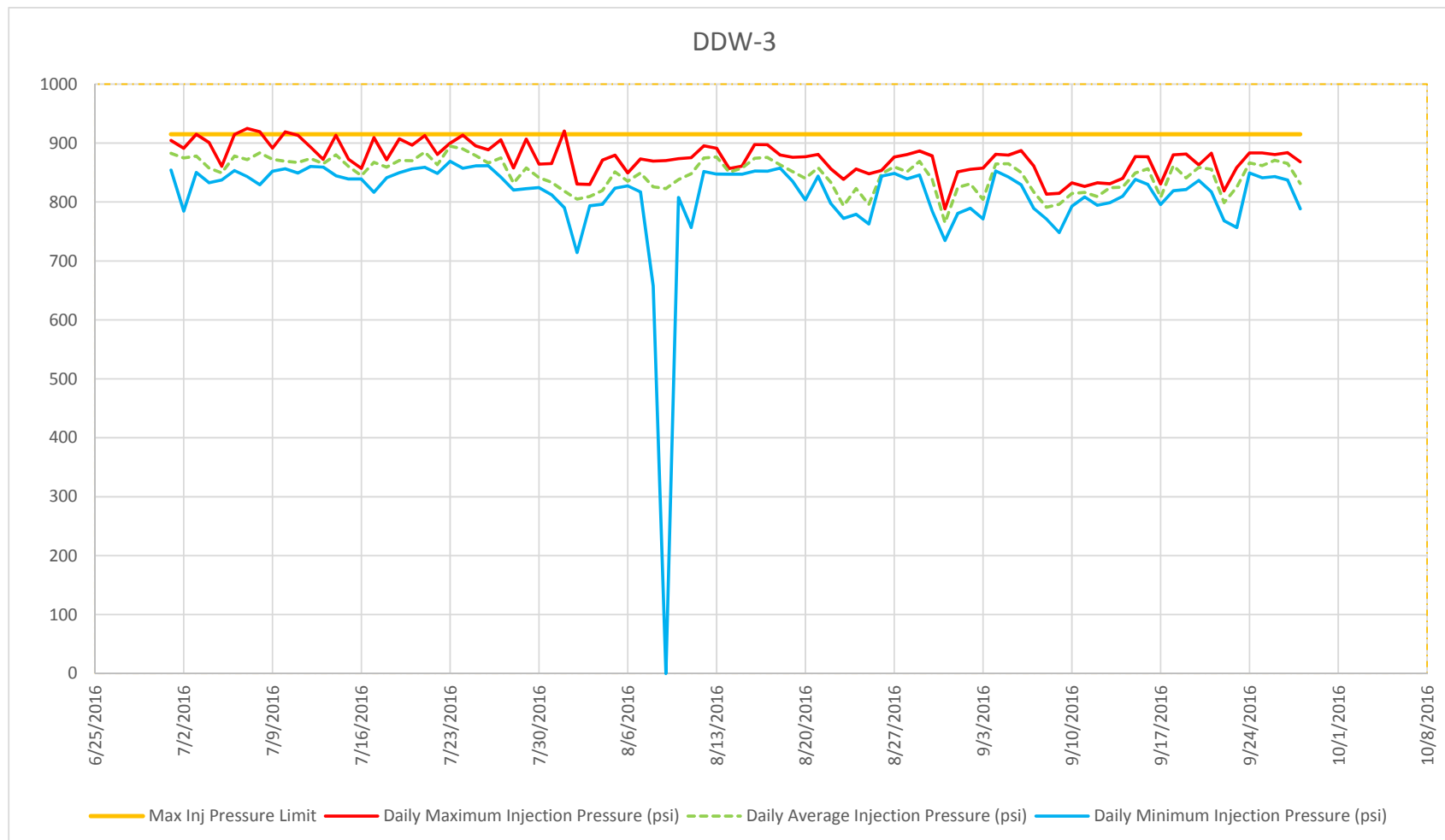
Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
8/12/2016	852	875	895	900	915	
8/13/2016	847	876	891	900	915	
8/14/2016	847	851	857	900	915	
8/15/2016	847	857	861	900	915	
8/16/2016	852	874	898	900	915	
8/17/2016	852	876	897	900	915	
8/18/2016	857	863	880	900	915	
8/19/2016	835	852	876	900	915	
8/20/2016	804	840	877	900	915	
8/21/2016	844	858	881	900	915	
8/22/2016	798	833	856	900	915	
8/23/2016	772	794	839	900	915	
8/24/2016	779	823	856	900	915	
8/25/2016	763	796	848	900	915	
8/26/2016	844	848	854	900	915	
8/27/2016	849	860	876	900	915	
8/28/2016	839	851	881	900	915	
8/29/2016	846	869	887	900	915	
8/30/2016	784	838	878	900	915	
8/31/2016	735	765	788	900	915	
9/1/2016	781	825	851	900	915	
9/2/2016	789	831	855	900	915	
9/3/2016	771	804	858	900	915	
9/4/2016	853	865	881	900	915	
9/5/2016	843	865	880	900	915	
9/6/2016	829	850	887	900	915	
9/7/2016	789	817	861	900	915	
9/8/2016	771	791	813	900	915	
9/9/2016	748	796	815	900	915	
9/10/2016	793	814	833	900	915	
9/11/2016	809	816	826	900	915	
9/12/2016	794	809	833	900	915	
9/13/2016	799	824	831	900	915	
9/14/2016	810	825	840	900	915	
9/15/2016	838	849	877	900	915	
9/16/2016	830	856	877	900	915	
9/17/2016	796	808	831	900	915	
9/18/2016	819	862	880	900	915	
9/19/2016	821	841	882	900	915	
9/20/2016	837	859	863	900	915	
9/21/2016	817	856	883	900	915	
9/22/2016	768	799	819	900	915	

**APPENDIX 1: Daily Injection Pressures**  
**DDW-3 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Automatic Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
9/23/2016	757	825	859	900	915	
9/24/2016	849	866	883	900	915	
9/25/2016	841	862	883	900	915	
9/26/2016	843	871	881	900	915	
9/27/2016	837	865	884	900	915	
9/28/2016	788	831	868	900	915	
9/29/2016	768	802	840	900	915	
9/30/2016	814	828	846	900	915	

*psi: pounds per square inch*

**APPENDIX 1: Daily Injection Pressures**  
**DDW-3 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**



**APPENDIX 1: Daily Injection Pressures**  
**DDW-4 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
7/1/2016	785	795	807	825	838	
7/2/2016	721	783	807	825	838	
7/3/2016	733	793	813	825	838	
7/4/2016	691	751	799	825	838	
7/5/2016	718	756	793	825	838	
7/6/2016	712	782	830	825	838	
7/7/2016	750	783	808	825	838	
7/8/2016	748	785	808	825	838	
7/9/2016	708	758	787	825	838	
7/10/2016	742	773	829	825	838	
7/11/2016	712	789	805	825	838	
7/12/2016	726	769	800	825	838	
7/13/2016	719	758	773	825	838	
7/14/2016	722	778	808	825	838	
7/15/2016	717	769	793	825	838	
7/16/2016	690	750	800	825	838	
7/17/2016	718	766	802	825	838	
7/18/2016	736	764	780	825	838	
7/19/2016	767	795	808	825	838	
7/20/2016	760	771	802	825	838	
7/21/2016	786	791	802	825	838	
7/22/2016	774	780	804	825	838	
7/23/2016	763	800	804	825	838	
7/24/2016	739	797	819	825	838	
7/25/2016	695	762	789	825	838	
7/26/2016	657	691	767	825	838	
7/27/2016	732	763	776	825	838	
7/28/2016	652	706	733	825	838	
7/29/2016	610	650	765	825	838	
7/30/2016	753	761	775	825	838	
7/31/2016	667	726	756	825	838	
8/1/2016	674	722	744	810	838	
8/2/2016	734	745	751	810	838	
8/3/2016	667	714	745	810	838	
8/4/2016	630	666	720	810	838	
8/5/2016	621	687	726	810	838	
8/6/2016	624	683	718	810	838	
8/7/2016	670	721	746	810	838	
8/8/2016	627	679	722	810	838	
8/9/2016	587	625	673	810	838	
8/10/2016	632	655	678	810	838	
8/11/2016	631	650	698	810	838	

**APPENDIX 1: Daily Injection Pressures**  
**DDW-4 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
8/12/2016	626	680	701	810	838	
8/13/2016	635	683	702	810	838	
8/14/2016	661	661	662	810	838	
8/15/2016	661	662	673	810	838	
8/16/2016	673	684	691	810	838	
8/17/2016	657	677	684	810	838	
8/18/2016	653	654	657	810	838	
8/19/2016	577	628	668	810	838	
8/20/2016	563	587	634	810	838	
8/21/2016	610	629	637	810	838	
8/22/2016	629	636	656	810	838	
8/23/2016	610	646	654	810	838	
8/24/2016	571	613	646	810	838	
8/25/2016	554	570	612	810	838	
8/26/2016	581	617	624	810	838	
8/27/2016	623	655	673	810	838	
8/28/2016	669	671	673	810	838	
8/29/2016	669	682	699	810	838	
8/30/2016	631	650	701	810	838	
8/31/2016	643	682	711	810	838	
9/1/2016	676	683	701	810	838	
9/2/2016	669	681	704	810	838	
9/3/2016	669	701	723	810	838	
9/4/2016	704	731	739	810	838	
9/5/2016	669	711	749	810	838	
9/6/2016	661	697	728	810	838	
9/7/2016	644	678	691	810	838	
9/8/2016	612	664	700	810	838	
9/9/2016	670	691	711	810	838	
9/10/2016	671	706	716	810	838	
9/11/2016	655	690	705	810	838	
9/12/2016	647	677	704	810	838	
9/13/2016	601	619	647	810	838	
9/14/2016	590	617	661	810	838	
9/15/2016	594	631	685	810	838	
9/16/2016	628	671	695	810	838	
9/17/2016	629	652	704	810	838	
9/18/2016	646	705	749	810	838	
9/19/2016	628	660	702	810	838	
9/20/2016	662	696	714	810	838	
9/21/2016	643	682	707	810	838	
9/22/2016	623	647	683	810	838	

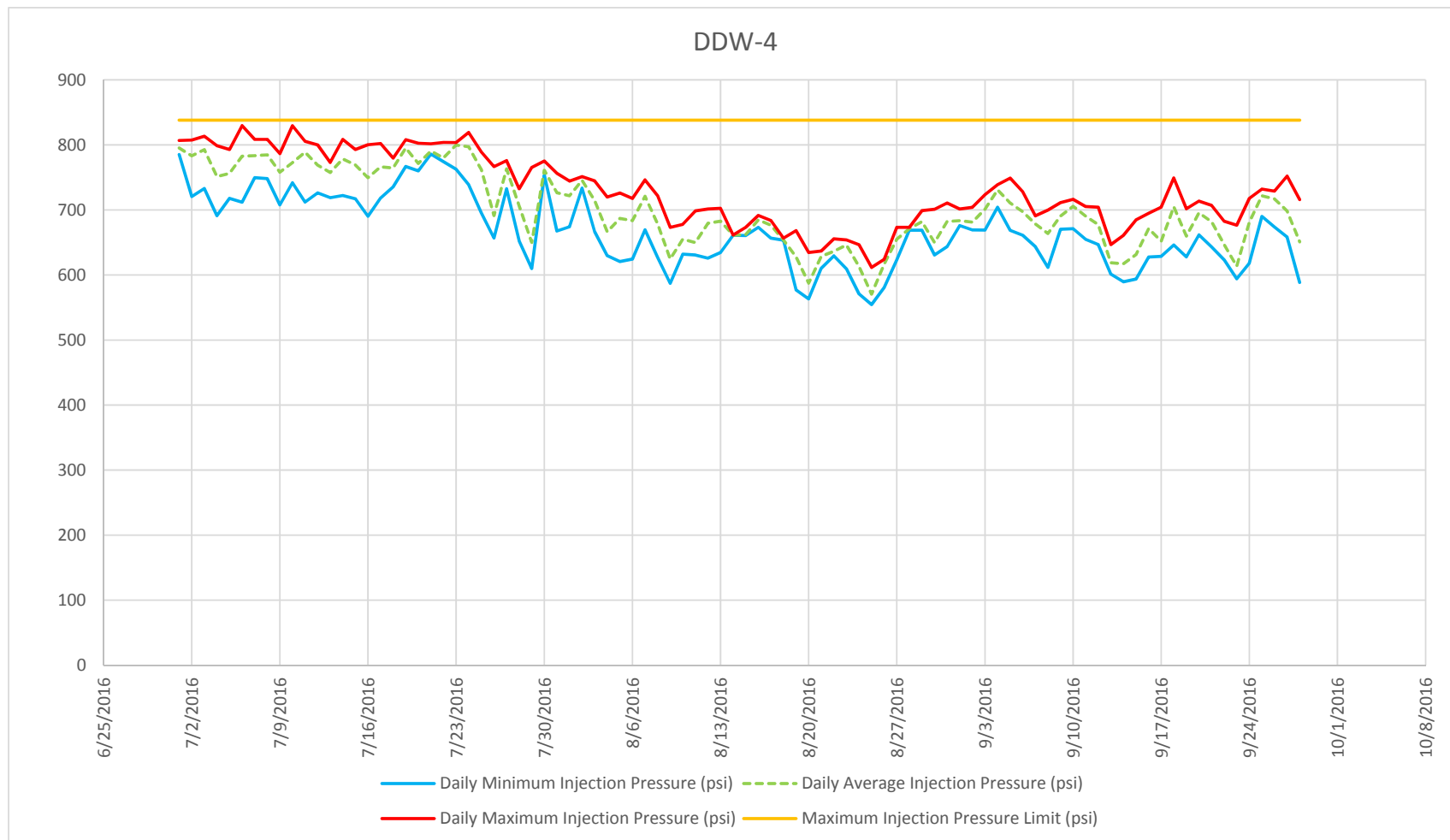
**APPENDIX 1: Daily Injection Pressures**  
**DDW-4 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**

Date	Daily Minimum Injection Pressure (psi)	Daily Average Injection Pressure (psi)	Daily Maximum Injection Pressure (psi)	Shutdown Pressure (psi)	Maximum Injection Pressure Limit (psi)	Comments
9/23/2016	594	613	677	810	838	
9/24/2016	618	681	718	810	838	
9/25/2016	690	722	732	810	838	
9/26/2016	674	717	729	810	838	
9/27/2016	658	698	752	810	838	
9/28/2016	588	651	716	810	838	
9/29/2016	573	644	694	810	838	
9/30/2016	629	678	710	810	838	

*psi: pounds per square inch*



**APPENDIX 1: Daily Injection Pressures**  
**DDW-4 3rd Quarter 2016**  
**Lost Creek ISR Project 13-409**





## APPENDIX 2



## ANALYTICAL SUMMARY REPORT

September 28, 2016

UR Energy USA Inc  
10758 W Centennial Rd Ste 200  
Ken Caryl Ranch, CO 80127

Work Order: C16090307

Project Name: Lost Creek Waste Water

Energy Laboratories, Inc. Casper WY received the following 1 sample for UR Energy USA Inc on 9/9/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16090307-001	DDW-Injectate	09/08/16 13:00	09/09/16	Aqueous	Metals by ICP/ICPMS, Total Alkalinity Conductivity Gravimetric Tests E300.0 Anions pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Radium 226, Total Solids, Total Dissolved Sulfide, Iodine Titrimetric

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:



Trust our People. Trust our Data.  
www.energylab.com

Billings, MT 800.735.4489 • Casper, WY 888.235.0515  
College Station, TX 888.690.2218 • Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

**CLIENT:** UR Energy USA Inc  
**Project:** Lost Creek Waste Water  
**Work Order:** C16090307

**Report Date:** 09/28/16

## CASE NARRATIVE

---

Prep Comments for Sample C16090307-001A, Test PRP-FILT-TDS: The prep hold time was exceeded by 5.96 days.



## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** UR Energy USA Inc  
**Project:** Lost Creek Waste Water  
**Lab ID:** C16090307-001  
**Client Sample ID:** DDW-Injectate

**Report Date:** 09/28/16  
**Collection Date:** 09/08/16 13:00  
**DateReceived:** 09/09/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Carbonate as CO <sub>3</sub>	ND	mg/L		5		A2320 B	09/15/16 20:12 / ljl
Bicarbonate as HCO <sub>3</sub>	321	mg/L		5		A2320 B	09/15/16 20:12 / ljl
Chloride	23200	mg/L	D	50		E300.0	09/13/16 15:45 / ljl
Sulfate	1190	mg/L	D	200		E300.0	09/13/16 15:45 / ljl
<b>NON-METALS</b>							
Sulfide	ND	mg/L		1		A4500-S F	09/15/16 09:08 / ljl
- Sample contains an oxidizer which interferes with the sulfide preservation and detection.							
<b>PHYSICAL PROPERTIES</b>							
Specific Gravity 60/60F	1.030	unitless		0.001		Gravimetric	09/15/16 12:31 / bah
Conductivity @ 25 C	61300	umhos/cm	E	5		A2510 B	09/12/16 15:23 / res
pH	6.03	s.u.	H	0.01		A4500-H B	09/12/16 15:23 / res
Solids, Total Dissolved TDS @ 180 C	37300	mg/L		500		A2540 C	09/13/16 11:44 / bah
<b>METALS, TOTAL</b>							
Arsenic	0.049	mg/L	D	0.002		E200.8	09/14/16 17:01 / sf
Selenium	0.796	mg/L	D	0.002		E200.8	09/14/16 17:01 / sf
Uranium	18.1	mg/L	D	0.0004		E200.8	09/14/16 17:01 / sf
Vanadium	0.05	mg/L		0.01		E200.8	09/14/16 17:01 / sf
<b>RADIONUCLIDES - TOTAL</b>							
Radium 226	5300	pCi/L				E903.0	09/25/16 10:43 / trs
Radium 226 precision (±)	992	pCi/L				E903.0	09/25/16 10:43 / trs
Radium 226 MDC	0.21	pCi/L				E903.0	09/25/16 10:43 / trs

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
E - Estimated value. Result exceeds the instrument upper quantitation limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
H - Analysis performed past recommended holding time.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** UR Energy USA Inc  
**Project:** Lost Creek Waste Water

**Report Date:** 09/28/16  
**Work Order:** C16090307

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2320 B</b>										Batch: R215274
<b>Lab ID: MBLK</b>	3	Method Blank					Run: MANTECH_160915A			09/15/16 15:55
Alkalinity, Total as CaCO <sub>3</sub>		2	mg/L	1						
Carbonate as CO <sub>3</sub>		ND	mg/L	1						
Bicarbonate as HCO <sub>3</sub>		2	mg/L	1						
<b>Lab ID: LCS_160316</b>										Laboratory Control Sample
Alkalinity, Total as CaCO <sub>3</sub>		235	mg/L	5.0	93	90	110			Run: MANTECH_160915A 09/15/16 16:08
<b>Lab ID: C16090268-001ADUP</b>										3 Sample Duplicate
Alkalinity, Total as CaCO <sub>3</sub>		211	mg/L	5.0				3.8	10	Run: MANTECH_160915A 09/15/16 16:24
Carbonate as CO <sub>3</sub>		ND	mg/L	5.0					10	
Bicarbonate as HCO <sub>3</sub>		258	mg/L	5.0				3.8	10	
<b>Lab ID: C16090268-003AMS</b>										Sample Matrix Spike
Alkalinity, Total as CaCO <sub>3</sub>		469	mg/L	5.2	91	80	120			Run: MANTECH_160915A 09/15/16 16:48

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** UR Energy USA Inc  
**Project:** Lost Creek Waste Water

**Report Date:** 09/28/16  
**Work Order:** C16090307

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2510 B</b>										Batch: R215073
<b>Lab ID: SC 100</b>										
Initial Calibration Verification Standard										
Run: PHSC_101-C_160912A										
09/12/16 12:46										
Conductivity @ 25 C	102	umhos/cm	5.0	102	90	110				
<b>Lab ID: SC 2ND 1413</b>										
Laboratory Control Sample										
Run: PHSC_101-C_160912A										
09/12/16 12:59										
Conductivity @ 25 C	1410	umhos/cm	5.0	100	90	110				
<b>Lab ID: MBLK</b>										
Method Blank										
Run: PHSC_101-C_160912A										
09/12/16 15:02										
Conductivity @ 25 C	4	umhos/cm	4							
<b>Lab ID: C16090308-003ADUP</b>										
Sample Duplicate										
Run: PHSC_101-C_160912A										
09/12/16 15:35										
Conductivity @ 25 C	732	umhos/cm	5.0					0.0	10	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** UR Energy USA Inc  
**Project:** Lost Creek Waste Water

**Report Date:** 09/28/16  
**Work Order:** C16090307

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS160913A	
Lab ID: MB-1_160913A	Method Blank					Run: BAL-18_160913B		09/13/16 11:43		
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	8						
Lab ID: LCS-2_160913A	Laboratory Control Sample					Run: BAL-18_160913B		09/13/16 11:43		
Solids, Total Dissolved TDS @ 180 C		1130	mg/L	11	102	90	110			
Lab ID: C16090302-001A DUP	Sample Duplicate					Run: BAL-18_160913B		09/13/16 11:43		
Solids, Total Dissolved TDS @ 180 C		2470	mg/L	39				0.2	5	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration





## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** UR Energy USA Inc  
**Project:** Lost Creek Waste Water

**Report Date:** 09/28/16  
**Work Order:** C16090307

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A4500-H B										
Analytical Run: PHSC_101-C_160912A										
<b>Lab ID:</b> pH 6.86		Initial Calibration Verification Standard								09/12/16 12:43
pH		6.87	s.u.	0.010	100	98	102			
<b>Method:</b> A4500-H B										
Batch: R215073										
<b>Lab ID:</b> C16090308-003ADUP		Sample Duplicate								09/12/16 15:35
pH		8.00	s.u.	0.010				0.2	3	
Run: PHSC_101-C_160912A										

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** UR Energy USA Inc  
**Project:** Lost Creek Waste Water

**Report Date:** 09/28/16  
**Work Order:** C16090307

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A4500-S F Analytical Run: TITRATION_160915A										
<b>Lab ID:</b> ICV		Initial Calibration Verification Standard								09/15/16 09:08
Sulfide		114	mg/L	1.0	100	80	120			
<b>Method:</b> A4500-S F Batch: 160915-SULFIDE-TTR-W										
<b>Lab ID:</b> MBLK7-160915		Method Blank								09/15/16 09:01
Sulfide		ND	mg/L	0.4						
<b>Lab ID:</b> C16090443-001AMS		Sample Matrix Spike								09/15/16 09:54
Sulfide		107	mg/L	1.0	93	80	120			
<b>Lab ID:</b> C16090443-001AMSD		Sample Matrix Spike Duplicate								09/15/16 09:59
Sulfide		110	mg/L	1.0	99	80	120	2.8	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** UR Energy USA Inc  
**Project:** Lost Creek Waste Water

**Report Date:** 09/28/16  
**Work Order:** C16090307

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8						Analytical Run: ICPMS4-C_160914A				
<b>Lab ID:</b> ICV	4	Initial Calibration Verification Standard								09/14/16 15:22
Arsenic		0.0492	mg/L	0.0010	99	90	110			
Selenium		0.0507	mg/L	0.0010	101	90	110			
Uranium		0.0492	mg/L	0.00030	98	90	110			
Vanadium		0.0490	mg/L	0.0010	98	90	110			
<b>Method:</b> E200.8						Batch: 48313				
<b>Lab ID:</b> MB-48313	4	Method Blank								09/14/16 16:37
Arsenic		9E-05	mg/L	4E-05						
Selenium		3E-05	mg/L	2E-05						
Uranium		7E-06	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
<b>Lab ID:</b> LCS3-48313	4	Laboratory Control Sample								09/14/16 16:43
Arsenic		0.492	mg/L	0.0010	98	85	115			
Selenium		0.513	mg/L	0.0010	103	85	115			
Uranium		0.497	mg/L	0.00030	99	85	115			
Vanadium		0.493	mg/L	0.010	99	85	115			
<b>Lab ID:</b> C16090309-001AMS3	4	Sample Matrix Spike								09/14/16 17:38
Arsenic		0.501	mg/L	0.0010	100	70	130			
Selenium		0.490	mg/L	0.0010	98	70	130			
Uranium		0.507	mg/L	0.00030	101	70	130			
Vanadium		0.507	mg/L	0.010	101	70	130			
<b>Lab ID:</b> C16090309-001AMSD	4	Sample Matrix Spike Duplicate								09/14/16 17:44
Arsenic		0.490	mg/L	0.0010	98	70	130	2.4	20	
Selenium		0.511	mg/L	0.0010	102	70	130	4.3	20	
Uranium		0.500	mg/L	0.00030	99	70	130	1.4	20	
Vanadium		0.500	mg/L	0.010	100	70	130	1.4	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** UR Energy USA Inc  
**Project:** Lost Creek Waste Water

**Report Date:** 09/28/16  
**Work Order:** C16090307

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E300.0</b>								Analytical Run: IC1-C_160914A		
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								09/13/16 12:48
Chloride		10.2	mg/L	1.0	102	90	110			
Sulfate		40.9	mg/L	1.0	102	90	110			
<b>Lab ID: CCV091316-1</b>	2	Continuing Calibration Verification Standard								09/13/16 13:43
Chloride		10.2	mg/L	1.0	102	90	110			
Sulfate		40.5	mg/L	1.0	101	90	110			
<b>Method: E300.0</b>								Batch: R215163		
<b>Lab ID: ICB</b>	2	Method Blank								Run: IC1-C_160914A 09/13/16 13:05
Chloride		ND	mg/L	0.01						
Sulfate		0.1	mg/L	0.06						
<b>Lab ID: LFB</b>	2	Laboratory Fortified Blank								Run: IC1-C_160914A 09/13/16 13:23
Chloride		10.2	mg/L	1.0	102	90	110			
Sulfate		40.6	mg/L	1.0	101	90	110			
<b>Lab ID: C16090305-001AMS</b>	2	Sample Matrix Spike								Run: IC1-C_160914A 09/13/16 14:18
Chloride		11.1	mg/L	1.0	106	80	120			
Sulfate		46.8	mg/L	1.0	103	80	120			
<b>Lab ID: C16090305-001AMSD</b>	2	Sample Matrix Spike Duplicate								Run: IC1-C_160914A 09/13/16 14:35
Chloride		11.2	mg/L	1.0	107	80	120	1.0	20	
Sulfate		47.2	mg/L	1.0	104	80	120	1.0	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** UR Energy USA Inc  
**Project:** Lost Creek Waste Water

**Report Date:** 09/28/16  
**Work Order:** C16090307

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: RA226-8248
Lab ID: LCS-RA226-8248		Laboratory Control Sample				Run: G5000W_160916D				09/25/16 10:43
Radium 226		9.0	pCi/L		87	80	120			
Lab ID: MB-RA226-8248	3	Method Blank				Run: G5000W_160916D				09/25/16 10:43
Radium 226		0.05	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
Lab ID: C16090519-001AMS		Sample Matrix Spike				Run: G5000W_160916D				09/25/16 12:22
Radium 226		23	pCi/L		110	70	130			
Lab ID: C16090519-001AMSD		Sample Matrix Spike Duplicate				Run: G5000W_160916D				09/25/16 12:22
Radium 226		22	pCi/L		105	70	130	4.4	49.2	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



## Work Order Receipt Checklist

UR Energy USA Inc

C16090307

Login completed by: Dorian Quis

Date Received: 9/9/2016

Reviewed by: BL2000\dblaida

Received by: tjp

Reviewed Date: 9/13/2016

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 checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	2.7°C On Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

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### Standard Reporting Procedures:

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

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

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### Contact and Corrective Action Comments:

None

