

Table 2.9-11 Marsland Expansion Area Radiological Analytical Results (November 2011 to August 2012) - Chadron Wells

Location ID: Date Collected: Formation:	NRC LLDs	Monitor 1		Monitor 1		Monitor 1		Monitor 1		Monitor 2		Monitor 2		Monitor 2		Monitor 2		
		11/7/2011		2/13/2012		6/4/2012		8/20/2012		11/7/2011		2/13/2012		6/4/2012		8/20/2012		
		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		
	UNITS		RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL
<b>RADIONUCLIDES-DISSOLVED</b>																		
Lead 210	uCi/mL	1E-9	1.35E-7	8E-10	1.1E-8	1E-9	3.96E-8	1.1E-9	1.97E-8	1E-9	9E-10	8E-10	<1E-9	1E-9	<8E-10	8E-10	2.8E-9	1E-9
Lead 210 precision (±)	uCi/mL		1.1E-9		9E-10		1.2E-9		1.1E-09		5E-10		NA		5E-10		5E-10	
Lead 210 MDC	uCi/mL		8E-10		-		1.1E-9		-		8E-10		-		8E-10		-	
Polonium 210	uCi/mL	1E-9	1.7E-8	9E-10	<1E-9	1E-9	4.9E-9	6E-10	1E-9	1E-9	3.3E-9	9E-10	<1E-9	1E-9	<5E-10	5E-10	<1E-9	1E-9
Polonium 210 precision (±)	uCi/mL		5.7E-9		NA		1.8E-9		8E-10		1.7E-9		NA		3E-10		NA	
Polonium 210 MDC	uCi/mL		9E-10		-		6E-10		-		9E-10		-		5E-10		-	
Radium 226	uCi/mL	2E-10	1.5E-8	1E-10	1.23E-8	2E-10	1.7E-8	1.7E-10	1.29E-8	2E-10	1.7E-9	1E-10	<1.2E-9	2E-10	1E-9	1.6E-10	1.9E-9	2E-10
Radium 226 precision (±)	uCi/mL		7E-10		4E-10		8.3E-10		5E-10		3E-10		1E-10		2.8E-10		1E-10	
Radium 226 MDC	uCi/mL		1E-10		-		1.7E-10		-		1E-10		-		1.6E-10		-	
Thorium 230	uCi/mL	2E-10	6E-10	2E-10	<2E-10	2E-10	4E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10
Thorium 230 precision (±)	uCi/mL		2E-10		NA		2E-10		NA		9E-11		NA		7E-11		NA	
Thorium 230 MDC	uCi/mL		2E-10		-		2E-10		-		2E-10		-		2E-10		-	
<b>METALS, DISSOLVED</b>																		
Uranium	mg/L	0.0003	0.0060	0.0003	0.0064	0.0003	0.0062	0.0003	0.0073	0.0003	0.0023	0.0003	0.0034	0.0003	0.0021	0.0003	0.0017	0.0003
Uranium Activity	uCi/mL	2E-10	4E-9	2E-10	4.3E-10	2E-10	4.2E-9	2E-10	4.9E-10	2E-10	1.6E-9	2E-10	2.3E-10	2E-10	1.4E-9	2E-10	1.2E-10	2E-10
<b>RADIONUCLIDES-SUSPENDED</b>																		
Lead 210	uCi/mL	1E-9	6.5E-8	1.1E-9	6.12E-8	1E-9	4.49E-8	8E-10	5.3E-8	1E-9	1.2E-9	9E-10	1.1E-9	1E-9	<8E-10	8E-10	1.2E-9	1E-9
Lead 210 precision (±)	uCi/mL		1.4E-9		2.1E-9		1E-9		1.5E-9		6E-10		5E-10		5E-10		3E-10	
Lead 210 MDC	uCi/mL		1.1E-9		-		8E-10		-		9E-10		-		8E-10		-	
Polonium 210	uCi/mL	1E-9	2.3E-8	2E-10	8.8E-9	1E-9	1.48E-8	6E-10	2.5E-9	1E-9	3E-10	3E-10	<1E-9	1E-9	<3E-10	3E-10	<1E-9	1E-9
Polonium 210 precision (±)	uCi/mL		5.2E-9		1E-9		5.4E-9		8E-10		2E-10		NA		3E-10		NA	
Polonium 210 MDC	uCi/mL		2E-10		-		6E-10		-		3E-10		-		3E-10		-	
Radium 226	uCi/mL	2E-10	1.8E-8	1E-10	8.8E-9	2E-10	1.7E-8	1.2E-10	7.8E-9	1E-10	9E-10	1E-10	5E-10	2E-10	3.2E-10	1.3E-10	3E-10	1E-10
Radium 226 precision (±)	uCi/mL		6E-10		5E-10		7.2E-10		3E-10		1E-10		1E-10		1.3E-10		1E-10	
Radium 226 MDC	uCi/mL		1E-10		-		1.2E-10		-		1E-10		-		1.3E-10		-	
Thorium 230	uCi/mL	2E-10	1E-8	1E-10	4.3E-9	2E-10	1.01E-8	1E-10	3E-9	2E-10	2E-10	1E-10	<2E-10	2E-10	<1E-10	1.0E-10	<2E-10	2E-10
Thorium 230 precision (±)	uCi/mL		1.2E-9		6E-10		1.5E-9		5E-10		1E-10		NA		9E-11		NA	
Thorium 230 MDC	uCi/mL		1E-10		-		1E-10		-		1E-10		-		1E-10		-	
<b>METALS, SUSPENDED</b>																		
Uranium	mg/L	0.0003	0.0403	0.0003	0.0008	0.0003	0.0295	0.0003	0.0092	0.0003	0.0010	0.0003	<0.0003	0.0003	0.0003	0.0003	<0.0003	0.0003
Uranium Activity	uCi/mL	2E-10	2.7E-8	2E-10	5E-10	2E-10	2E-8	2E-10	6.9E-10	2E-10	6.9E-10	2E-10	<2E-10	2E-10	2.1E-10	2E-10	<2E-10	2E-10

uCi/ml - microcuries per milliliter  
mg/L- milligrams per liter  
MDC - minimum detectable concentration  
LLD - lower limit of detection  
RL - reporting limit

Table 2.9-11 Marsland Expansion Area Radiological Analytical Results (November 2011 to August 2012) - Chadron Wells

Location ID: Date Collected: Formation:	CPW-2010-1		CPW-2010-1		CPW-2010-1		CPW-2010-1		Monitor 4A		Monitor 4A		Monitor 4A		Monitor 4A		Monitor 5		Monitor 5		
	11/7/2011		2/13/2012		6/4/2012		8/20/2012		11/7/2011		2/13/2012		6/4/2012		8/20/2012		11/7/2011		2/13/2012		
	CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		
	UNITS	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL
<b>RADIONUCLIDES-DISSOLVED</b>																					
Lead 210	uCi/mL	1.53E-8	1.3E-9	3.6E-9	1E-9	4.9E-9	1.1E-09	5.8E-9	1E-9	1.13E-6	1.30E-09	5.91E-7	1E-9	6.04E-7	1.1E-9	5.4E-07	1E-9	<8E-10	8E-10	<1E-9	1E-9
Lead 210 precision (±)	uCi/mL	9E-10		5E-10		7E-10		6E-10		4.6E-9		5.3E-9		4.1E-9		5.4E-09		5E-10		NA	
Lead 210 MDC	uCi/mL	1.3E-9		-		1.1E-10		-		1.3E-9		-		1.1E-9		-		8E-10		-	
Polonium 210	uCi/mL	6.6E-9	6E-10	<1E-9	1E-9	<5E-10	5E-10	<1E-9	1E-9	1.65E-7	1.20E-09	6.26E-8	1E-9	1.04E-7	5E-10	1E-07	1E-9	<7E-10	7E-10	<1E-9	1E-9
Polonium 210 precision (±)	uCi/mL	2.2E9		NA		3E-10		NA		5.4E-8		3.2E-9		2.11E-8		4.3E-09		5E-10		NA	
Polonium 210 MDC	uCi/mL	6E-10		-		5E-10		-		1.2E-9		-		5E-10		-		7E-10		-	
Radium 226	uCi/mL	2.3E-08	1E-10	2.75E-8	2E-10	2.4E-8	1.7E-10	1.43E-8	2E-10	2.62E-7	2.00E-10	3.2E-7	2E-10	3.9E-7	1.7E-10	3.48E-07	2E-10	3.5E-9	1E-10	9E-10	2E-10
Radium 226 precision (±)	uCi/mL	8E-10		6E-10		9.8E-10		4E-10		3E-9		2.2E-9		4E-09		2.3E-09		3E-10		1E-10	
Radium 226 MDC	uCi/mL	1E-10		-		1.7E-10		-		1E-10		-		1.7E-10		-		1E-10		-	
Thorium 230	uCi/mL	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2.00E-10	7E-11	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10
Thorium 230 precision (±)	uCi/mL	9E-11		NA		8E-11		NA		1E-10		2E-10		9E-09		NA		1E-10		NA	
Thorium 230 MDC	uCi/mL	2E-10		-		2E-10		-		2E-10		-		2E-10		-		2E-10		-	
<b>METALS, DISSOLVED</b>																					
Uranium	mg/L	0.0142	0.0003	0.0091	0.0003	0.0090	0.0003	0.0037	0.0003	0.0771	0.0003	0.0457	0.0003	0.0475	0.0003	0.0346	0.0003	0.0007	0.0003	<0.0003	0.0003
Uranium Activity	uCi/mL	9.6E-9	2E-10	6.2E-9	2E-10	6.1E-9	2E-10	2.5E-9	2E-10	5.2E-8	2E-10	3.09E-8	2E-10	3.2E-8	2E-10	2.34E-8	2E-10	4.6E-10	2E-10	<2E-10	2E-10
<b>RADIONUCLIDES-SUSPENDED</b>																					
Lead 210	uCi/mL	1.5E-9	9E-10	5.6E-9	1E-9	2.3E-9	9E-10	6.4E-9	1E-9	2.2E-8	9E-10	4.97E-8	1E-9	1.76E-8	8E-10	6.04E-08	1E-9	<9E-10	9E-10	<1E-9	1E-9
Lead 210 precision (±)	uCi/mL	6E-10		6E-10		6E-10		7E-10		9E-10		1.5E-9		7E-10		2.20E-09		6E-10		NA	
Lead 210 MDC	uCi/mL	9E-10		-		9E-10		-		9E-10		-		8E-10		-		9E-10		-	
Polonium 210	uCi/mL	8E-10	2E-10	<1E-9	1E-9	3E-10	3E-10	<1E-9	1E-9	6.2E-9	2E-10	3.97E-8	1E-9	4.5E-9	3E-10	1.72E-8	1E-9	<2E-10	2E-10	<1E-9	1E-9
Polonium 210 precision (±)	uCi/mL	4E-10		NA		3E-10		NA		1.4E-9		2.6E-9		1.6E-9		1.5E-9		1E-10		NA	
Polonium 210 MDC	uCi/mL	2E-10		-		3E-10		-		2E-10		-		3E-10		-		2E-10		-	
Radium 226	uCi/mL	1.6E-9	1E-10	1.7E-9	1E-10	2.2E-9	1.2E-10	3.5E-9	1E-10	9E-10	1E-10	5E-10	2E-10	3.2E-10	1.1E-10	3E-10	1E-10	<1E-10	1E-10	<2E-10	2E-10
Radium 226 precision (±)	uCi/mL	2E-10		2E-10		2.6E-10		2E-10		1E-10		1E-10		1.1E-10		1E-10		5E-11		NA	
Radium 226 MDC	uCi/mL	1E-10		-		1.2E-10		-		1E-10		-		1.1E-10		-		1E-10		-	
Thorium 230	uCi/mL	<1E-10	1E-10	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10	3E-10	1E-10	<2E-10	2E-10	4E-10	1E-10	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10
Thorium 230 precision (±)	uCi/mL	6E-11		NA		6E-11		NA		1E-10		NA		1E-10		NA		6E-11		NA	
Thorium 230 MDC	uCi/mL	1E-10		-		1E-10		-		1E-10		-		1E-10		-		1E-10		-	
<b>METALS, SUSPENDED</b>																					
Uranium	mg/L	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	0.0008	0.0003	<0.0003	0.0003	0.0005	0.0003	0.0004	0.0003	<0.0003	0.0003	<0.0003	0.0003
Uranium Activity	uCi/mL	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	5.6E-10	2E-10	<2E-10	2E-10	3.6E-10	2E-10	3E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10

uCi/ml - microcuries per milliliter  
mg/L- milligrams per liter  
MDC - minimum detectable concentration  
LLD - lower limit of detection  
RL - reporting limit

Table 2.9-11 Marsland Expansion Area Radiological Analytical Results (November 2011 to August 2012) - Chadron Wells

Location ID: Date Collected: Formation:	Monitor 5		Monitor 5		Monitor 6		Monitor 6		Monitor 6		Monitor 6		Monitor 7		Monitor 7		Monitor 7		Monitor 7		
	6/4/2012		8/20/2012		11/7/2011		2/13/2012		6/4/2012		8/20/2012		11/7/2011		2/13/2012		6/4/2012		8/20/2012		
	CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		
	UNITS	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL
<b>RADIONUCLIDES-DISSOLVED</b>																					
Lead 210	uCi/mL	<8E-10	8E-10	1.6E-9	1E-9	<2.2E-9	1.3E-9	1.6E-9	1E-9	<8E-10	8E-10	1.5E-9	1E-9	<8E-10	8E-10	<1E-9	1E-9	<8E-10	8E-10	<1E-9	1.00E-09
Lead 210 precision (±)	uCi/mL	5E-10		4E-10		<8E-10		4E-10		5E-10		4E-10		5E-10		NA		5E-10		NA	
Lead 210 MDC	uCi/mL	8E-10		-		1.3E-09		-		8E-10		-		8E-10		-		8E-10		-	
Polonium 210	uCi/mL	<5E-10	5E-10	<1E-9	1E-9	9E-10	8E-10	<1E-9	1E-9	<9E-10	9.00E-10	<1E-9	1E-9	<7E-10	7E-10	<1E-9	1E-9	1.6E-09	6E-10	<1E-9	1.00E-09
Polonium 210 precision (±)	uCi/mL	3E-10		NA		9E-10		NA		4E-10		NA		4E-10		NA		9E-10		NA	
Polonium 210 MDC	uCi/mL	5E-10		-		8E-10		-		9E-10		-		7E-10		-		6E-10		-	
Radium 226	uCi/mL	3.4E-9	1.7E-10	5.5E-10	2E-10	1.9E-9	1E-10	1.8E-9	2E-10	9E-9	1.7E-10	2.7E-9	2E-10	9E-10	1E-10	3E-10	2E-10	5.3E-10	1.7E-10	9E-10	2.00E-10
Radium 226 precision (±)	uCi/mL	3.9E-10		3E-10		3E-10		2E-10		6.1E-10		2E-10		2E-10		1E-10		1.7E-10		1E-10	
Radium 226 MDC	uCi/mL	1.7E-10		-		1E-10		-		1.7E-10		-		1E-10		-		1.7E-10		-	
Thorium 230	uCi/mL	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	4E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2.00E-10
Thorium 230 precision (±)	uCi/mL	8E-11		NA		9E-11		2E-10		9E-11		NA		1E-10		NA		6E-11		NA	
Thorium 230 MDC	uCi/mL	2E-10		-		2E-10		-		2E-10		-		2E-10		-		2E-10		-	
<b>METALS, DISSOLVED</b>																					
Uranium	mg/L	0.0006	0.0003	0.0004	0.0003	0.0014	0.0003	0.0011	0.0003	0.0011	0.0003	0.0011	0.0003	0.0005	0.0003	0.0004	0.0003	<0.0003	0.0003	<0.0003	0.0003
Uranium Activity	uCi/mL	3.9E-10	2E-10	3E-10	2E-10	9.5E-10	2E-10	7E-10	2E-10	7.3E-10	2E-10	7E-10	2E-10	3.10E-10	2E-10	3E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10
<b>RADIONUCLIDES-SUSPENDED</b>																					
Lead 210	uCi/mL	<8E-10	8E-10	<1E-9	1E-9	<9E-10	9E-10	1.4E-9	1E-9	<8E-10	8E-10	<1E-9	1E-9	<9E-10	9E-10	1.2E-9	1E-9	<8E-10	8E-10	1.5E-9	1E-9
Lead 210 precision (±)	uCi/mL	4E-10		NA		6E-10		4E-10		4E-10		NA		5E-10		4E-10		5E-10		4E-10	
Lead 210 MDC	uCi/mL	8E-10		-		9E-10		-		8E-10		-		9E-10		-		8E-10		-	
Polonium 210	uCi/mL	<3E-10	3E-10	<1E-9	1E-9	<2E-10	2E-10	<1E-9	1E-9	<5E-10	5E-10	<1E-9	1E-9	<2E-10	2E-10	<1E-9	1E-9	<3E-10	3E-10	<1E-9	1E-9
Polonium 210 precision (±)	uCi/mL	2E-10		NA		2E-10		NA		2E-10		NA		2E-10		NA		2E-10		NA	
Polonium 210 MDC	uCi/mL	3E-10		-		2E-10		-		5E-10		-		2E-10		-		3E-10		-	
Radium 226	uCi/mL	<1.3E-10	1.3E-10	<1E-10	1E-10	<1E-10	1E-10	<2E-10	2E-10	<1.2E-10	1.2E-10	<1E-10	1E-10	<1E-10	1E-10	<2E-10	2E-10	<1.3E-10	1.3E-10	<1E-10	1E-10
Radium 226 precision (±)	uCi/mL	7E-9		NA		3E-11		NA		9E-11		NA		5E-11		NA		8E-11		NA	
Radium 226 MDC	uCi/mL	1.3E-10		-		1E-10		-		1.2E-10		-		1E-10		-		1.3E-10		-	
Thorium 230	uCi/mL	<9E-11	9E-11	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10
Thorium 230 precision (±)	uCi/mL	7E-11		NA		7E-11		NA		8E-11		NA		5E-11		NA		9E-11		NA	
Thorium 230 MDC	uCi/mL	9E-11		-		1E-10		-		1E-10		-		1E-10		-		1E-10		-	
<b>METALS, SUSPENDED</b>																					
Uranium	mg/L	<0.0003	0.0003	0.0004	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003
Uranium Activity	uCi/mL	<2E-10	2E-10	3E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10

uCi/ml - microcuries per milliliter  
 mg/L- milligrams per liter  
 MDC - minimum detectable concentration  
 LLD - lower limit of detection  
 RL - reporting limit

Table 2.9-11 Marsland Expansion Area Radiological Analytical Results (November 2011 to August 2012) - Chadron Wells

Location ID: Date Collected: Formation:	Monitor 8		Monitor 8		Monitor 8		Monitor 8		Monitor 9		Monitor 9		Monitor 9		Monitor 9		Monitor 10		Monitor 10		
	11/7/2011		2/13/2012		6/4/2012		8/20/2012		11/7/2011		2/13/2012		6/4/2012		8/20/2012		11/7/2011		2/13/2012		
	CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		
	UNITS	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL
<b>RADIONUCLIDES-DISSOLVED</b>																					
Lead 210	uCi/mL	<8E-10	8E-10	1.1E-9	1E-9	<8E-10	8E-10	1.2E-9	1E-9	1.3E-9	1.3E-9	1.9E-9	1E-9	<8E-10	8E-10	2.9E-9	1E-9	<8E-10	8E-10	<1E-9	1E-9
Lead 210 precision (±)	uCi/mL	5E-10		4E-10		5E-10		4E-10		8E-10		4E-10		5E-10		5E-10		5E-10		NA	
Lead 210 MDC	uCi/mL	8E-10		-		8E-10		-		1.3E-9		-		8E-10		-		8E-10		-	
Polonium 210	uCi/mL	1E-9	5E-10	<E-9	1E-9	<7E-10	7E-10	<1E-9	1E-9	9E-10	7E-10	<1E-9	1E-9	8E-10	5E-10	<1E-9	1E-9	<6E-10	6E-10	<1E-9	1E-9
Polonium 210 precision (±)	uCi/mL	7E-10		NA		4E-10		NA		7E-10		NA		6E-10		NA		3E-10		NA	
Polonium 210 MDC	uCi/mL	5E-10		-		7E-10		-		7E-10		-		5E-10		-		6E-10		-	
Radium 226	uCi/mL	2.3E-9	1E-10	4E-10	2E-10	2.1E-09	1.7E-10	5E-10	2E-10	3E-10	1E-10	3E-10	2E-10	1.5E-9	1.7E-10	8E-10	2E-10	8E-10	1E-10	5E-10	2E-10
Radium 226 precision (±)	uCi/mL	3E-10		1E-10		3.1E-10		1E-10		1E-10		1E-10		2.6E-10		1E-10		2E-10		1E-10	
Radium 226 MDC	uCi/mL	1E-10		-		1.7E-10		-		1E-10		-		1.7E-10		-		1E-10		-	
Thorium 230	uCi/mL	<2E-10	2E-10	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10
Thorium 230 precision (±)	uCi/mL	1E-10		NA		5E-11		NA		9E-11		NA		7E-11		NA		9E-11		NA	
Thorium 230 MDC	uCi/mL	2E-10		-		1E-10		-		2E-10		-		2E-10		-	1E-9	2E-10		-	
<b>METALS, DISSOLVED</b>																					
Uranium	mg/L	0.0006	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	0.0040	0.0003	0.0022	0.0003	0.0021	0.0003	0.0015	0.0003	0.0005	0.0003	<0.0003	0.0003
Uranium Activity	uCi/mL	4.1E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	2.7E-9	2E-10	1.5E-9	2E-10	1.4E-9	2E-10	1E-10	2E-10	3.4E-10	2E-10	<2E-10	2E-10
<b>RADIONUCLIDES-SUSPENDED</b>																					
Lead 210	uCi/mL	<9E-10	9E-10	<1E-9	1E-9	<8E-10	8E-10	1.2E-9	1E-9	<9E-10	9E-10	1.4E-9	1E-9	<7E-10	7E-10	1.43E-8	1E-9	<9E-10	9E-10	<1E-9	1E-9
Lead 210 precision (±)	uCi/mL	5E-10		NA		5E-10		4E-10		6E-10		4E-10		5E-10		1E-9		6E-10		NA	
Lead 210 MDC	uCi/mL	9E-10		-		8E-10		-		9E-10		-		7E-10		-		9E-10		-	
Polonium 210	uCi/mL	2E-10	2E-10	<1E-9	1E-9	<4E-10	4E-10	<1E-9	1E-9	<3E-10	3E-10	<1E-9	1E-9	<3E-10	3E-10	<1E-9	1E-9	<2E-10	2E-10	<1E-9	1E-9
Polonium 210 precision (±)	uCi/mL	2E-10		NA		3E-10		NA		2E-10		NA		2E-10		NA		1E-10		NA	
Polonium 210 MDC	uCi/mL	2E-10		-		4E-10		-		3E-10		-		3E-10		-		2E-10		-	
Radium 226	uCi/mL	2E-10	1E-10	<2E-10	2E-10	<1.3E-10	1.3E-10	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10	<1.1E-10	1.1E-10	<2E-10	2E-10	<1E-10	1E-9	2E-10	2E-10
Radium 226 precision (±)	uCi/mL	7E-11		NA		9E-11		NA		4E-11		NA		7E-11		NA		3E-11		NA	
Radium 226 MDC	uCi/mL	1E-10		-		1.3E-10		-		1E-10		-		1.1E-10		-		1E-10		-	
Thorium 230	uCi/mL	<1E-10	1E-10	1E-10	2E-10	<1E-10	1E-10	3E-10	2E-10	<1E-10	1E-10	1E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10
Thorium 230 precision (±)	uCi/mL	6E-11		1E-10		5E-11		2E-10		6E-11		NA		7E-11		NA		4E-11		NA	
Thorium 230 MDC	uCi/mL	1E-10		-		1E-10		-		1E-10		-		1E-10		-		1E-10		-	
<b>METALS, SUSPENDED</b>																					
Uranium	mg/L	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003
Uranium Activity	uCi/mL	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10

uCi/ml - microcuries per milliliter  
mg/L- milligrams per liter  
MDC - minimum detectable concentration  
LLD - lower limit of detection  
RL - reporting limit

Table 2.9-11 Marsland Expansion Area Radiological Analytical Results (November 2011 to August 2012) - Chadron Wells

Location ID:		Monitor 10		Monitor 10		Monitor 11		Monitor 11		Monitor 11		Monitor 11	
Date Collected:		6/4/2012		8/20/2012		11/7/2011		2/13/2012		6/4/2012		8/20/2012	
Formation:		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON		CHADRON	
	UNITS	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL	RESULTS	RL
<b>RADIONUCLIDES-DISSOLVED</b>													
Lead 210	uCi/mL	<8E-10	8E-10	<1E-9	1E-9	<8E-10	8E-10	<1E-9	1E-9	<8E-10	8E-10	1.3E-9	1E-9
Lead 210 precision (±)	uCi/mL	5E-10		NA		5E-10		NA		5E-10		4E-10	
Lead 210 MDC	uCi/mL	8E-10		-		8E-10		-		8E-10		-	
Polonium 210	uCi/mL	2.1E-9	5E-10	<1E-9	1E-9	<7E-10	7E-10	<1E-9	1E-9	<5E-10	5E-10	<1E-9	1E-9
Polonium 210 precision (±)	uCi/mL	1E-9		NA		4E-10		NA		3E-10		NA	
Polonium 210 MDC	uCi/mL	5E-10		-		7E-10		-		5E-10		-	
Radium 226	uCi/mL	6.6E-9	1.7E-10	6E-10	2E-10	4E-10	1E-10	2E-10	2E-10	2.4E-9	1.7E-10	4E-10	2E-10
Radium 226 precision (±)	uCi/mL	5.3E-10		1E-10		1E-10		1E-10		3.2E-10		1E-10	
Radium 226 MDC	uCi/mL	1.7E-10		-		1E-10		-		1.7E-10		-	
Thorium 230	uCi/mL	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10
Thorium 230 precision (±)	uCi/mL	7E-11		NA		9E-11		NA		6E-11		NA	
Thorium 230 MDC	uCi/mL	2E-10		-		2E-10		-		2E-10		-	
<b>METALS, DISSOLVED</b>													
Uranium	mg/L	<0.0003	0.0003	<0.0003	0.0003	0.0014	0.0003	0.0008	0.0003	0.0007	0.0003	0.0005	0.0003
Uranium Activity	uCi/mL	<2E-10	2E-10	<2E-10	2E-10	9.3E-10	2E-10	5E-10	2E-10	4.8E-10	2E-10	3E-10	2E-10
<b>RADIONUCLIDES-SUSPENDED</b>													
Lead 210	uCi/mL	<8E-10	8E-10	3E-9	1E-9	<9E-10	9E-10	<1E-9	1E-9	<8E-10	8E-10	1.55E-8	1E-09
Lead 210 precision (±)	uCi/mL	5E-10		6E-10		5E-10		NA		5E-10		1E-9	
Lead 210 MDC	uCi/mL	6E-10		-		9E-10		-		8E-10		-	
Polonium 210	uCi/mL	<4E-10	4E-10	<1E-9	1E-9	<2E-10	2E-10	<1E-9	1E-9	<4E-10	4E-10	<1E-9	1E-9
Polonium 210 precision (±)	uCi/mL	2E-10		NA		1E-10		NA		1E-10		NA	
Polonium 210 MDC	uCi/mL	4E-10		-		2E-10		-		4E-10		-	
Radium 226	uCi/mL	1.1E-10	1.1E-10	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10	<1.2E-10	1E-10	<2E-10	2E-10
Radium 226 precision (±)	uCi/mL	8E-11		NA		4E-11		NA		7E-11		NA	
Radium 226 MDC	uCi/mL	1.1E-10		-		1E-10		-		1.2E-10		-	
Thorium 230	uCi/mL	2E-10	8E-11	<2E-10	2E-10	<1E-10	1E-10	<2E-10	2E-10	<9E-11	9E-11	<2E-10	2E-10
Thorium 230 precision (±)	uCi/mL	1E-10		NA		5E-11		NA		6E-11		NA	
Thorium 230 MDC	uCi/mL	8E-11		-		1E-10		-		9E-11		-	
<b>METALS, SUSPENDED</b>													
Uranium	mg/L	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003	<0.0003	0.0003
Uranium Activity	uCi/mL	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10	<2E-10	2E-10

uCi/ml - microcuries per milliliter  
 mg/L- milligrams per liter  
 MDC - minimum detectable concentration  
 LLD - lower limit of detection  
 RL - reporting limit