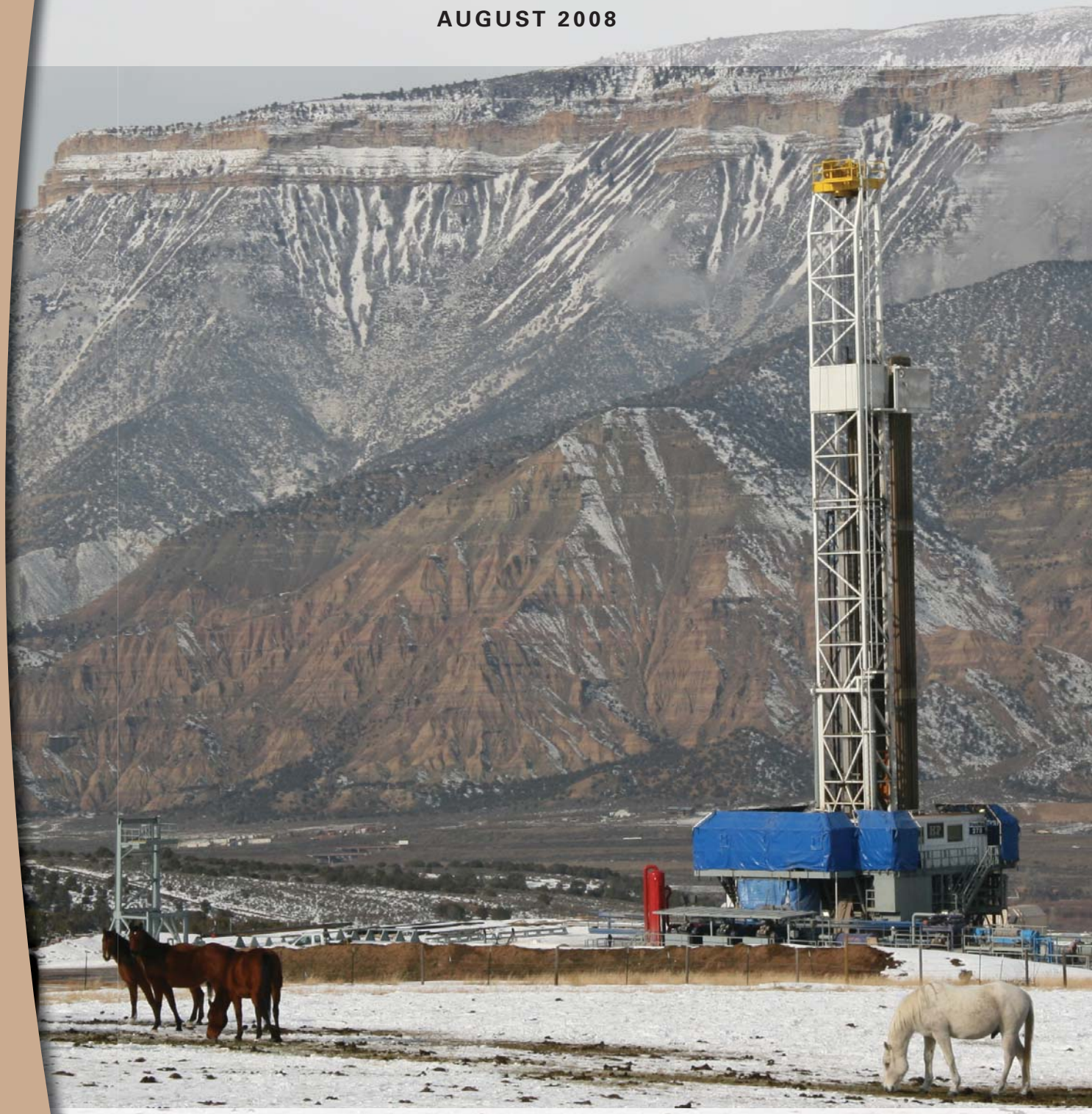
FIRST QUARTER 2008 REPORT

Operational and Environmental Monitoring Within a Three-Mile Radius of Project Rulison

AUGUST 2008



Prepared by:

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Williams

EnCana

EnCana Oil & Gas (USA) Inc.

FIRST QUARTER 2008 REPORT

OPERATIONAL AND ENVIRONMENTAL MONITORING WITHIN A THREE-MILE RADIUS OF PROJECT RULISON

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August 12, 2008

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LIST OF ACRONYMS

Ac-228	actinium-228
Bi-214	bismuth-214
BM	Battlement Mesa
CCR	Code of Colorado Regulations
CDPHE	Colorado Department of Public Health and Environment
Cl-36	chlorine-36
COC	chain-of-custody
COGCC	Colorado Oil and Gas Conservation Commission
Cs-137	cesium-137
GRO	gasoline range organics
J	estimated data qualifier
K-40	potassium-40
mg/L	milligram per liter
Noble	Noble Energy Production, Inc.
Pb-210	lead-210
Pb-214	lead-214
pCi/L	picocuries per liter
Ra-228	radium-228
RSAP	Rulison Sampling and Analysis Plan
Sr-90	strontium-90
Tc-99	technetium-99
TF	total fraction
Th-232	thorium-232
TU	tritium unit
ug/L	microgram per liter
U-238	uranium-238
U	nondetect data qualifier
URS	URS Corporation

FIRST QUARTER 2008 REPORT
Operational and Environmental Monitoring
Within a Three-Mile Radius of Project Rulison

1 Introduction

This quarterly report presents the first quarter, January 1 through March 31, 2008, operational and environmental monitoring results for Noble Energy Production, Inc. (Noble's) natural gas drilling and production operations within a three-mile radius of the former Project Rulison site near Rulison, Colorado. The two Noble wells sampled during the first quarter 2008, BM35-32A (Tier I) and BM35-21D (Tier II), are existing wells (Figure 1) that were drilled and partially fraced in 2007 before the Rulison Sampling and Analysis Plan (RSAP) was developed or approved. Although not required under the RSAP, Noble voluntarily collected and analyzed the fracing and flowback samples following additional fracing conducted in February 2008. The sampling was performed in accordance with the RSAP Revision 1 dated January 14, 2008 (URS 2008a). Williams Production RMT and EnCana Oil & Gas (USA), Inc. did not perform any RSAP-related activities during the first quarter of 2008.

2 Tier I Monitoring

2.1 Tier I Drilling Monitoring

2.1.1 Fracing Water Sampling and Analysis

A composite sample of fracing water was collected on February 12, 2008 prior to its use in Noble's BM35-32A gas well. The fracing water used in this well was produced water (i.e., natural formation water) from Noble's South Grand Valley wells. A composite sample was collected from 22 frac tanks used to store fracing water at the pad. The composite sample was collected by extracting a one (1) liter aliquot of water from each tank and gently discharging it in a decontaminated 5-gallon bucket. Composite sample aliquots were then taken from the 5-gallon bucket and placed in appropriately preserved laboratory-supplied sample bottles. Once filled, the sample bottles were capped, labeled, documented on the chain-of-custody (COC), and placed in an iced cooler.

The iced coolers were shipped by overnight carrier to the analytical laboratories for analysis of the radiological and nonradiological analytes listed in Tables 3 and 4 of the RSAP (URS 2008b).

The analytical laboratories used included GEL Laboratories LLC in Charleston, South Carolina (for radionuclides other than tritium), Paragon Analytics in Fort Collins, Colorado (for non-radionuclides), and Isotech Laboratories, Inc. in Champaign, Illinois (for tritium).

The analytical results are included in the laboratory data packages in Appendix A and are summarized in Tables 1 through 4. The laboratory data were validated by URS. Data validation reports are included in Appendix B. Field sampling records are included in Appendix C.

2.1.2 Flowback Water Sampling and Analysis

Composite samples of comingled flowback water from Noble's BM35-32A and BM35-21D gas wells were collected on February 27, 2008 and March 13, 2008. The flowback waters from these two wells were comingled in the frac tanks used for water storage on the pad. The composite samples collected on February 27 and March 13 were obtained from 9 and 14 frac tanks, respectively.

The composite samples were collected by extracting two (2) liter aliquots of water from each tank and gently discharging it in a decontaminated 5-gallon bucket. Composite sample aliquots were then taken from the 5-gallon bucket and placed in the appropriately preserved laboratory-supplied sample bottles. Once filled, the sample bottles were capped, labeled, documented on the COC, and placed in an iced cooler.

The iced coolers were shipped by overnight carrier to the analytical laboratories for analysis of the radiological and nonradiological analytes listed in Tables 3 and 4 of the RSAP (URS 2008b). The analytical laboratories used included GEL Laboratories LLC in Charleston, South Carolina (for radionuclides other than tritium), Paragon Analytics in Fort Collins, Colorado (for non-radionuclides), and Isotech Laboratories, Inc. in Champaign, Illinois (for tritium).

The analytical results are included in the laboratory data packages in Appendix A and are summarized in Tables 1 through 4. The laboratory data were validated by URS. Data validation reports are included in Appendix B. Field sampling records are included in Appendix C.

2.2 Tier I Production Monitoring

Tier I production monitoring was not performed during the first quarter of 2008. Tier I production monitoring was performed during the second quarter of 2008 and will be reported in the Second Quarter 2008 Report.

2.3 Tier I Baseline Monitoring

Tier I baseline monitoring was not performed during the first quarter of 2008. Tier I baseline monitoring was performed during the second quarter of 2008 and will be reported in the Second Quarter 2008 Report.

3 Tier II Monitoring

3.1 Tier II Drilling Monitoring

3.1.1 Fracing Water Sampling and Analysis

A composite sample of fracing water was collected on February 12, 2008 prior to its use in Noble's BM35-21D gas well. The fracing water used in this well was produced water (i.e., natural formation water) from Noble's South Grand Valley wells. The composite sample was collected from 21 frac tanks used to store fracing water on the pad. The composite sample was collected by extracting a one liter aliquot of water from each tank and gently discharging it in a decontaminated 5-gallon bucket. Composite sample aliquots were then taken from the 5-gallon bucket and placed in the appropriately preserved laboratory-supplied sample bottles. Once filled, the sample bottles were capped, labeled, documented on the COC, and placed in an iced cooler.

The iced coolers were shipped by overnight carrier to the analytical laboratories for analysis of the radiological and nonradiological analytes listed in Tables 3 and 4 of the RSAP (URS 2008b). The analytical laboratories used included GEL Laboratories LLC in Charleston, South Carolina (for radionuclides other than tritium), Paragon Analytics in Fort Collins, Colorado (for non-radionuclides), and Isotech Laboratories, Inc. in Champaign, Illinois (for tritium).

The analytical results are included in the laboratory data packages in Appendix A and are summarized in Tables 1 through 4. The laboratory data were validated by URS. Data validation reports are included in Appendix B. Field sampling records are included in Appendix C.

3.1.2 Flowback Water Sampling and Analysis

Composite samples of comingled flowback water from Noble's BM35-32A and BM35-21D gas wells were collected on February 27, 2008 and March 13, 2008. The sampling analysis procedures for these waters is discussed in Section 2.1.2.

The analytical results are included in the laboratory data packages in Appendix A and are summarized in Tables 1 through 4. The laboratory data were validated by URS. Data validation reports are included in Appendix B. Field sampling records are included in Appendix C.

3.2 Tier II Production Monitoring

Tier II production monitoring was not performed during the first quarter of 2008. Tier II production monitoring was performed during the second quarter of 2008 and will be reported in the Second Quarter 2008 Report.

3.3 Tier II Baseline Monitoring

Tier II baseline monitoring was not performed during the first quarter of 2008. Tier II baseline monitoring was performed during the second quarter of 2008 and will be reported in the Second Quarter 2008 Report.

4 Annual Areal Environmental Monitoring

Annual areal environmental monitoring was not performed during the first quarter of 2008. The annual areal environmental monitoring is scheduled for September 2008.

5 Results

5.1 Tier I Results

5.1.1 Radiological Results

Gross alpha, gross beta, gamma-emitting radionuclides, tritium, chlorine-36 (Cl-36), strontium-90 (Sr-90), and technetium-99 (Tc-99) activities were determined for fracing and flowback waters collected at Noble's BM35-32A gas well during the first quarter of 2008. The results of the radiological analyses are summarized in Table 1. Data validation indicates that most of the laboratory radiological results are usable without qualification. Data that are deemed usable with qualification or unusable are identified in the data validation reports (Appendix B).

Gross alpha was not detected above the reporting activity in fracing or flowback water samples collected on February 12 or March 13. Gross alpha activity was reported at an elevated reporting activity because of the high total dissolved solids (TDS) concentration of the water samples which resulted in the evaporation of a smaller sample volume. The analytical method limits the residue after evaporation to less than 100 milligrams. Gross alpha was detected in the comingled flowback water sample collected on February 27th at an estimated (J qualified) activity of 266 picoCuries per liter (pCi/L). The gross alpha activity detected are related to naturally occurring alpha-emitting radionuclides, primarily uranium-238 (U-238) and thorium-232 (Th-232) and their daughter products (Figures 2 and 3), found in the subsurface rock formations.

Gross beta was detected in all of the fracing and flowback water samples collected from Noble's BM35-32A and BM35-21D gas wells. The gross beta activities ranged between 2300 ± 115 and an estimated (J qualified) activity of 5420 ± 250 pCi/L. The lowest and highest gross beta activities were found in comingled flowback waters collected from Noble's BM35-32A and BM35-21D gas wells on March 13 and February 27, respectively. The gross beta activities of the two fracing water samples collected prior to introduction into the gas wells ranged were 2790 ± 118 and 2840 ± 117 pCi/L.

The elevated gross beta activities are related to naturally occurring potassium-40 (K-40) in these fluids. K-40 is one of the most abundant naturally occurring radionuclides and primarily occurs in the clay and mica minerals that comprise the shales found in the subsurface. K-40 activities in the fracing water prior to introduction into the gas wells ranged between 2920 ± 266 and 4390 ± 304 pCi/L. K-40 activities in the comingled flowback waters returned from the wells ranged between 2860 ± 245 and 4230 ± 301 pCi/L. The highest gross beta and K-40 activities are found in the comingled flowback water sample collected on February 27.

Tritium, the most abundant and mobile radionuclide in the inventory at Project Rulison, was not detected above the reporting concentration in any of the fracing or flowback water samples collected at Noble's BM35-32A and BM35-21D gas wells. The tritium reporting concentrations ranged between less than 10 and less than 12.1 tritium units (TU). A TU is approximately equivalent to a tritium activity of 3.2 pCi/L. Thus, the tritium activities in the water samples were less than 32 to less than 39 pCi/L. The Colorado Department of Public Health and Environment (CDPHE) basic ground water standard for tritium is 20,000 pCi/L (CDPHE 2008).

Cl-36, Sr-90, and Tc-99, other common radionuclides in the inventory at Project Rulison, were also not detected above the reporting activities in any of the fracing or flowback water samples collected at Noble's BM35-32A and BM35-21D gas wells. The Cl-36, Sr-90, and Tc-99 reporting activities ranged between 28 and 88 pCi/L, 0.75 and 1.38 pCi/L, and 32 and 41 pCi/L, respectively.

Most of the gamma-emitting radionuclides analyzed in waters from Noble's BM35-32A and BM35-21D gas wells were not detected above their reporting activities. The only gamma-emitting radionuclides detected are those that naturally occur in the rock formations beneath the Rulison area. Naturally occurring gamma-emitting radionuclides detected included actinium-228 (Ac-228), bismuth-214 (Bi-214), K-40, lead-210 (Pb-210), lead-214 (Pb-214), and radium-228 (Ra-228). All of these radionuclides, except for K-40, are decay products of the thorium (Ra-228 and Ac-228) and uranium (Pb-214, Bi-214, and Pb-210) decay series which naturally occur in

the rock formations beneath the Rulison area. The thorium and uranium series decay chains are shown as Figures 2 and 3.

Project Rulison-related radionuclides, including the most abundant gamma-emitting radionuclide in the Project Rulison inventory (Table 1 in URS 2008), cesium-137 (Cs-137), were not detected above the reporting activity in any of the fracing or flowback water samples analyzed.

5.1.2 Non-Radiological Results

Total metal and inorganic and organic constituent concentrations were determined for fracing and comingled flowback waters collected at Noble's BM35-21D and BM35-32A gas wells during the first quarter. The results of the nonradiological analyses (i.e., total metals and inorganic and organic constituents) are summarized in Tables 2 through 4. Data validation indicates that most of the laboratory non-radiological results are usable without qualification. Data that are deemed usable with qualification or unusable are identified in the data validation reports (Appendix B).

The mean concentrations of the fracing and flowback water samples are included for comparison of the qualitative trends in parameter concentrations prior to (i.e., fracing water) and after introduction (i.e., flowback water) into the gas wells. The apparent increase or decrease in concentration was determined by comparing the mean concentrations of the fracing and flowback waters for detected constituents. The observed increases are termed apparent because of the limited number of samples (2) available for comparison. Two samples are insufficient to determine whether an apparent increase or decrease is statistically significant or not. The apparent concentration change was calculated by dividing the mean concentration difference of the fracing and flowback waters (i.e., fracing mean minus flowback mean) by the mean concentration of the fracing water. Changes greater than 20 percent were considered representative of apparent mean concentration increases or decreases outside of normal sampling and analytical variation.

The mean concentrations of most of the total metals in the fracing water samples exhibited apparent increases in the flowback water. Arsenic, barium, cadmium, calcium, chromium, iron, lead, lithium, sodium, and strontium exhibited a 20 percent or more apparent increase in mean concentration in the flowback waters. Lead showed the most significant apparent increase (589 percent) between the fracing and flowback waters.

For inorganic constituents, bicarbonate, chloride, total alkalinity, total dissolved solids (TDS), and ammonia (as N) exhibited apparent increases in mean concentration between the fracing and flowback waters. These constituents exhibited 20 percent or more apparent increases in mean

concentration in the flowback waters. Ammonia exhibited the highest apparent increase (96 percent) in mean concentration in the flowback waters. Sulfate exhibited an apparent 41 percent decrease in mean concentration between the fracing and flowback waters.

All but two (gasoline range organics [GRO] and benzene) of the organic constituents exhibited apparent increases in mean concentration between the fracing and flowback fluids. The apparent increases for most of the organic constituents exhibited a 20 percent or more increase in mean concentration in the flowback waters. Most of the constituents exhibited a 200 percent or more apparent mean concentration increase between the fracing and flowback waters. The GROs exhibited an apparent 45 percent decrease in mean concentration in the flowback waters. Dissolved methane exhibited the most significant apparent mean concentration increase (approximately 2000 percent) in the flowback waters. Benzene did not exhibit an apparent increase or decrease.

5.2 Tier II Results

5.2.1 Radiological Results

The gross alpha, gross beta, gamma-emitting radionuclides, tritium, Cl-36, Sr-90, and Tc-99 activities were determined for comingled fracing and flowback waters collected at Noble's BM35-21D gas well during the first quarter. The results of the radiological analyses are summarized in Table 1 and discussed in Section 5.1.1.

5.2.2 Non-Radiological Results

Total metal and inorganic and organic constituent concentrations were determined for comingled fracing and flowback waters collected at Noble's BM35-21D gas well during the first quarter. The results of the non-radiological analyses are summarized in Tables 2 through 4 and discussed in Section 5.1.2.

6 References

ANL (Argonne National Laboratory). 2005. Human Health Fact Sheet, Natural Decay Series: Uranium, Radium, and Thorium, http://www.ead.anl.gov/pub/doc/natural-decay-series.pdf.

CDPHE (Colorado Department of Public Health and Environment). 2008. The Basic Standards for Ground Water, Colorado Department of Public Health and Environment Water Quality Control Commission, 5CCR 1002-41, Regulation No. 41, May 31, 2008.

URS Corporation. 2008a. Rulison Sampling and Analysis Plan Operational and Environmental Monitoring Within a Three-Mile Radius of Project Rulison, Revision 1, January 14, 2008.

URS Corporation. 2008b. Rulison Sampling and Analysis Plan Operational and Environmental Monitoring Within a Three-Mile Radius of Project Rulison, Revision 2, March 31, 2008.

Table 1. Summary of Radiological Analyses.

Well No. Medium Date Sampled		BM35-21D Fracing Water 02/12/08			BM35-32A Fracing Water 02/12/08			BM35-21D/BM35-32A Flowback Water 02/27/08			BM35-21D/BM35-32A Flowback Water 03/13/08		
Parameter	**Units**	**Result**	**Uncertainty**	**Qualifier**	**Result**	**Uncertainty**	**Qualifier**	**Result**	**Uncertainty**	**Qualifier**	**Result**	**Uncertainty**	**Qualifier**
Gross	pCi/L	23.8	± 64.1	U	48.8	± 58.7	U	266	± 142	J	-7.79	± 85.2	U
Gross Beta	pCi/L	2790	± 118		2840	± 117		5420	± 250	J	2300	± 115	
Tritium	TU	12.1	-----	U	10	-----	U	12.1	-----	U	11.2	-----	U
Cl-36	pCi/L	32.8	± 34.5	UJ	18.1	± 35.5	UJ	9.07	15.8	U	34	± 50.8	UJ
Sr-90	pCi/L	-0.454	± 0.33	UJ	1.63	± 0.631	J	1.21	± 0.866	UJ	-0.17	± 0.428	UJ
Tc-99	pCi/L	0.427	± 18.3	U	2.42	± 18.3	U	35.3	± 24.5	U	-17.1	± 22.4	U
Gamma-Emitting Radionuclides													
Ac-228	pCi/L	-----	-----	-----	-----	-----	-----	32.8	± 21.3		36.5	± 19.4	
Ag-110m	pCi/L	-0.77	± 2.48	U	1.91	± 2.67	U	-1.54	± 2.56	U	-1.13	± 2.51	U
Am-241	pCi/L	2.48	± 8.43	U	-17.6	± 17.5	U	-1.76	± 12.8	U	-4.58	± 17.2	U
Ba-133	pCi/L	1.46	± 3.41	U	1.63	± 3.78	U	0.755	± 3.34	U	1.95	± 3.96	U
Ba-140	pCi/L	12.7	± 25	U	-3.95	± 26.6	U	2.07	± 8.79	U	-5.11	± 11.1	U
Be-7	pCi/L	9.01	± 25.1	U	23.2	± 29.2	U	3.57	± 19.5	U	-2.68	± 22.1	U
Bi-212	pCi/L	-2.66	± 23.8	U	-1.76	± 24.2	U	16.2	± 23.8	U	6.01	± 21.8	U
Bi-214	pCi/L	19.6	± 9.69		39.4	± 10.5		11.2	± 7.36	U	-----	-----	-----
Ce-139	pCi/L	-0.875	± 2.39	U	-1.24	± 2.82	U	-1.74	± 2.12	U	-0.318	± 2.47	U
Ce-141	pCi/L	2.54	± 5.83	U	0.155	± 6.31	U	-3.07	± 4.39	U	1.17	± 4.68	U
Ce-144	pCi/L	-12	± 16.9	U	14.6	± 20.1	U	3.02	± 17.3	U	-6.85	± 18.5	U
Co-56	pCi/L	-0.119	± 3.15	U	-0.215	± 3.09	U	0.754	± 2.87	U	2.05	± 3.04	U
Co-57	pCi/L	-0.696	± 2.09	U	0.897	± 2.46	U	0.374	± 2.02	U	-1.03	± 2.37	U
Co-58	pCi/L	1.34	± 3.16	U	-1.31	± 3.17	U	-0.266	± 2.45	U	0.621	± 2.74	U
Co-60	pCi/L	-0.00749	± 3.16	U	-1.84	± 3.63	U	0.232	± 3.3	U	1.54	± 3.13	U
Cr-51	pCi/L	13.5	± 31.8	U	46.8	± 39	U	-2.55	± 21.5	U	3.09	± 28	U
Cs-134	pCi/L	0.641	± 3.08	U	2.81	± 3.23	U	2.88	± 3.12	U	0.235	± 3	U
Cs-136	pCi/L	3.62	± 12.3	U	13	± 12	U	-0.56	± 4.74	U	-2.26	± 5.63	U
Cs-137	pCi/L	0.114	± 2.7	U	-2.83	± 2.79	U	-0.998	± 2.85	U	2.5	± 2.8	U
Eu-152	pCi/L	-0.593	± 7.02	U	2.86	± 8.66	U	3.72	± 6.98	U	-0.508	± 8.84	U
Eu-154	pCi/L	-0.0657	± 10.2	U	-4.19	± 11.2	U	-3.89	± 11.8	U	4.69	± 9.4	U
Eu-155	pCi/L	-6.43	± 8.49	U	1.13	± 10.5	U	9.82	± 8.7	U	-0.794	± 10.1	U
Fe-59	pCi/L	6.76	± 10.4	U	-3.54	± 8.47	U	1.01	± 6.62	U	-0.354	± 6.72	U
Hg-203	pCi/L	-0.225	± 3.23	U	-0.016	± 3.75	U	3.29	± 2.58	U	1.06	± 2.93	U
Ir-192	pCi/L	-0.275	± 2.66	U	4.72	± 3.48	U	-1.26	± 2.46	U	0.798	± 3.13	U
K-40	pCi/L	4390	± 304		2920	± 266		4230	± 301		2860	± 245	

Table 1. Summary of Radiological Analyses (continued).

Well No. Medium Date Sampled		BM35-21D Fracing Water 02/12/08			BM35-32A Fracing Water 02/12/08			BM35-21D/BM35-32A Flowback Water 02/27/08			BM35-21D/BM35-32A Flowback Water 03/13/08		
Parameter	**Units**	**Result**	**Uncertainty**	**Qualifier**	**Result**	**Uncertainty**	**Qualifier**	**Result**	**Uncertainty**	**Qualifier**	**Result**	**Uncertainty**	**Qualifier**
Gamma-Emitting Radionuclides (continued)													
Kr-85	pCi/L	-1770	± 770	U	-2600	± 790	U	-4210	± 997	U	-1840	± 862	U
Mn-54	pCi/L	0.0497	± 2.76	U	0.701	± 3.59	U	0.627	± 2.7	U	1.74	± 2.92	U
Na-22	pCi/L	-0.0497	± 3.64	U	-1.47	± 4.03	U	-1.48	± 4.2	U	1.55	± 3.34	U
Nb-94	pCi/L	-0.93	± 2.46	U	1.1	± 2.6	U	-1.87	± 2.6	U	1.19	± 2.85	U
Nb-95	pCi/L	0.26	± 3.88	U	0.124	± 4.39	U	0.468	± 2.59	U	0.251	± 3.26	U
Nd-117	pCi/L	18.4	± 53.2	U	31.4	± 60.3	U	0.135	± 17.1	U	-0.359	± 22.7	U
Np-239	pCi/L	-1.56	± 15.6	U	4.36	± 18.2	U	-0.845	± 15.3	U	11.5	± 18.5	U
Pb-210	pCi/L	387	± 275		-363	± 599	U	-93.5	± 266	U	-58.2	± 487	U
Pb-212	pCi/L	3.96	± 6.07	U	5.55	± 6.95	U	-----	-----	-----	3.6	± 7.1	U
Pb-214	pCi/L	15.2	± 8.1		30.7	± 9.62		2.81	± 8.44	U	-----	-----	-----
Pm-144	pCi/L	-0.166	± 2.58	U	0.663	± 2.64	U	1.36	± 2.64	U	3.59	± 6.92	U
Pm-146	pCi/L	5.74	± 6.19	U	-1.77	± 3.41	U	-1.28	± 3.17	U	-0.411	± 3.51	U
Ra-228	pCi/L	-----	-----	-----	-----	-----	-----	32.8	± 21.3		36.5	± 19.4	
Ru-106	pCi/L	-6.27	± 22.4	U	27.9	± 26.2	U	1.53	± 24.4	U	-10	± 22.1	U
Sb-124	pCi/L	0.431	± 5.16	U	-0.441	± 6.31	U	2.7	± 3.88	U	-0.0731	± 4.05	U
Sb-125	pCi/L	2.44	± 7.07	U	-4.04	± 7.63	U	1.88	± 6.41	U	0.846	± 7.23	U
Sn-113	pCi/L	-0.429	± 3.41	U	5.71	± 3.55	U	1.16	± 2.88	U	2.2	± 3.39	U
Th-230	pCi/L	364	± 2470	U	-44.9	± 1180	U	-171	± 1450	U	1330	± 8580	U
Th-234	pCi/L	-18.4	± 95.6	U	-132	± 152	U	9.05	± 115	U	-1.46	± 167	U
Tl-208	pCi/L	2.6	± 4.49	U	2.14	± 3.77	U	3.21	± 5.66	U			
U-235	pCi/L	-4.44	± 17.7	U	21.1	± 21.2	U	23.3	± 36.8	U	-4.45	± 19.2	U
U-238	pCi/L	-18.4	± 95.6	U	-132	± 152	U	9.05	± 115	U	-1.46	± 167	U
Y-88	pCi/L	-1.08	± 2.04	U	1.44	± 2.63	U	0.937	± 2.38	U	-1.35	± 2.17	U
Zn-65	pCi/L	3.88	± 8.74	U	0.423	± 9.1	U	-5.04	± 7.95	U	0.34	± 7.89	U
Zr-95	pCi/L	-2.49	± 5.11	U	-3.38	± 5.86	U	-3.03	± 4.65	U	2.58	± 5.01	U

Notes:
pCi/L = picoCuries per liter
TU = tritium units
U = the analyte was analyzed for but was not detected
J = the reported result is an estimate
UJ = the analyte was analyzed for but was not detected; the reported result is an estimate

Table 2. Summary of Total Metals Analyses.

Well No. Medium Date Sampled		BM35-21D Fracing Water 02/12/08		BM35-32A Fracing Water 02/12/08		BM35-21D/BM35-32A Flowback Water 02/27/08		BM35-21D/BM35-32A Flowback Water 03/13/08		Mean Concentration	
Parameter	**Units**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Fracing**	**Flowback**
Arsenic	ug/L	2.7		6.4	J	8.1		7.7		4.6	7.9
Barium	mg/L	35		120	J	340		180		78	260
Boron	mg/L	6.3	J	5.2	J	6.1		5.9		5.8	6.0
Cadmium	ug/L	0.55		0.55	J	0.82		0.52		0.55	0.67
Calcium	mg/L	360		370	J	730		670		365	700
Chromium	mg/L	0.0051	J	0.03	J	0.047	J	0.059	J	0.018	0.053
Iron	mg/L	9.3	J	46	J	38		52		27.7	45.0
Lead	ug/L	1.6	UJ	18	J	120		15		9.8	67.5
Lithium	mg/L	4.3	J	4.4	J	4.9		8.6		4.4	6.8
Magnesium	mg/L	52	J	51	J	62		70		52	66
Manganese	ug/L	700		790	J	1400		1.6		745	701
Potassium	mg/L	5000		3700	J	5800		3700		4350	4750
Selenium	ug/L	1	UJ	1	UJ	1.1	UJ	0.95	UJ	1	1
Sodium	mg/L	8700		8900	J	14000		11000		8800	12500
Strontium	mg/L	43		54	J	89		73		49	81

Notes:

mg/L = milligrams per liter

ug/L = micrograms per liter

U = the analyte was analyzed for but was not detected

J = the reported result is an estimate

UJ = the analyte was analyzed for but was not detected; the reported result is an estimate

Table 3. Summary of Inorganic Constituent Analyses.

Well No. Medium Date Sampled		BM35-21D Fracing Water 02/12/08		BM35-32A Fracing Water 02/12/08		BM35-21D/BM35-32A Flowback Water 02/27/08		BM35-21D/BM35-32A Flowback Water 03/13/08		Mean Concentration	
Parameter	**Units**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Fracing**	**Flowback**
Bicarbonate as $CaCO_3$	mg/L	1500		1500		2000		1900		1500	1950
Carbonate as $CaCO_3$	mg/L	100	U	100	U	100	U	100	U	100	100
Chloride	mg/L	18000		17000		29000		23000		17500	26000
Fluoride	mg/L	5	UJ	5	UJ	10	U			5	10
Nitrate as N	mg/L	10		10	U	20	U	2	U	10	11
Nitrite as N	mg/L	5	UJ	5	UJ	10	U	20	U	5	15
Orthophosphate as P	mg/L	25	UJ	25	UJ	50	U	5	UJ	25	27.5
pH	pH	7.77	J	7.60	J	7.08	J	6.99	J	7.69	7.04
Sulfate	mg/L	170		59		100	U	34		114.5	67
Total Alkalinity as $CaCO_3$	mg/L	1500		1500		2000		1900		1500	1950
Total Dissolved Solids	mg/L	37000		34000		51000		41000		35500	46000
Ammonia as N	mg/L	17		33		55		43		25	49

Notes:

mg/L = milligrams per liter

ug/L = micrograms per liter

U = the analyte was analyzed for but was not detected

J = the reported result is an estimate

UJ = the analyte was analyzed for but was not detected; the reported result is an estimate

Table 4. Summary of Organic Constituent Analyses.

Well No. Medium Date Sampled		BM35-21D Fracing Water 02/12/08		BM35-32A Fracing Water 02/12/08		BM35-21D/BM35-32A Flowback Water 02/27/08		BM35-21D/BM35-32A Flowback Water 03/13/08		Mean Concentration	
Parameter	**Units**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Fracing**	**Flowback**
Diesel Range Organics	mg/L	21	H	620	H	2200	H	640	D	321	1420
Gasoline Range Organics	mg/L	270	H	2900	H	1300	H	440	G	1585	870
Motor Oil Range Organics	mg/L	4.7	U	39	L	190	L	95	U	22	143
Benzene	ug/L	600		350		340		700		475	520
Ethylbenzene	ug/L	200	J	40	J	430		820		120	625
M+P-Xylene	ug/L	4200		1900		8200	J	13000	J	3050	10600
O-Xylene	ug/L	890		350		1300		2000		620	1650
Toluene	ug/L	1700		590		1900		3700	J	1145	2800
Methane, Dissolved	ug/L	75.9		56.1		1590		1200	E,B	66	1395

Notes:

mg/L = milligrams per liter

ug/L = micrograms per liter

U = the analyte was analyzed for but was not detected

J = the reported result is an estimate

L = fuel pattern was in the lighter end of the retention time window for the analyte of interest

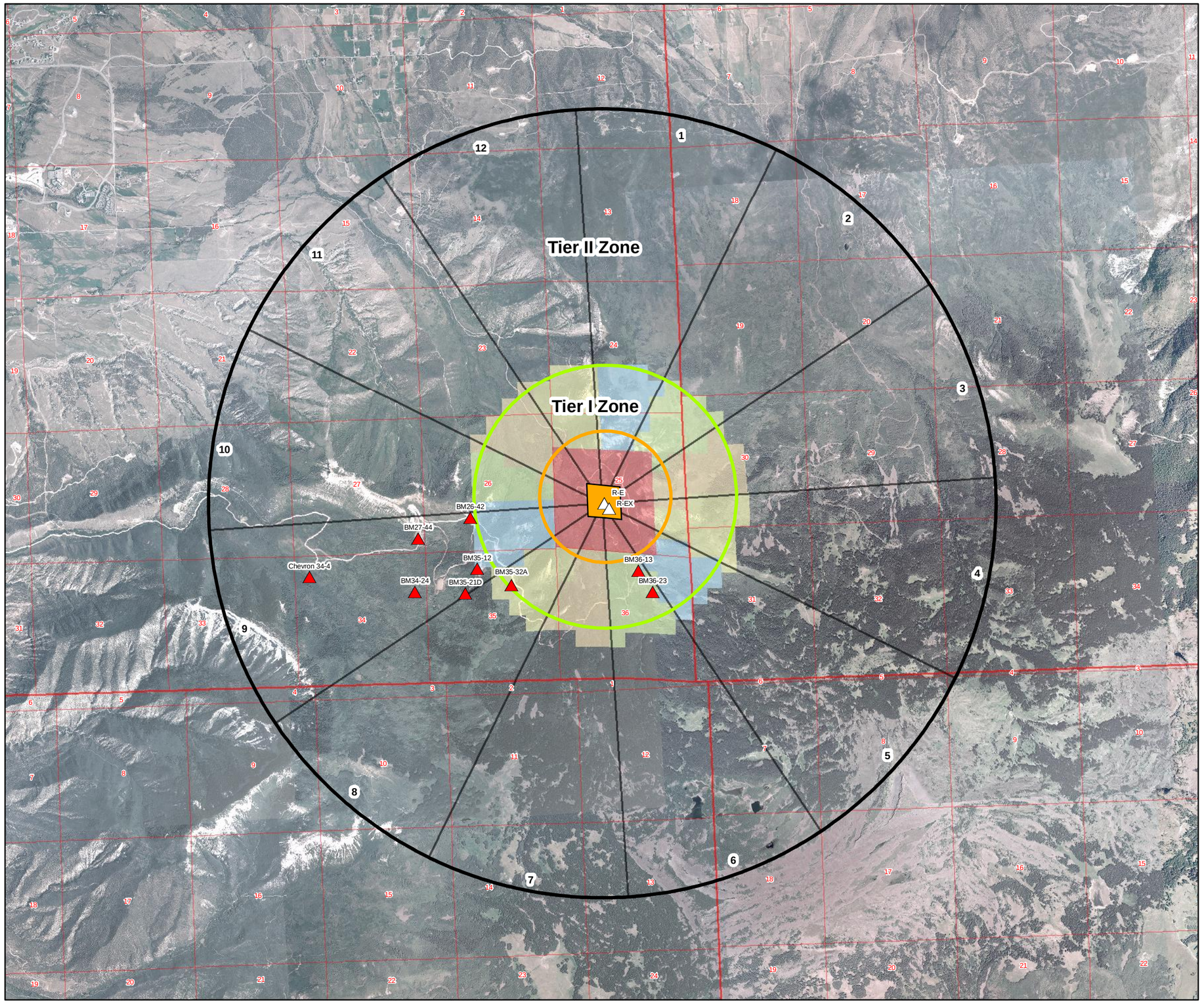
H = fuel pattern was in the heavier end of the retention time window for the analyte of interest

D = a pattern resembling diesel was detected

G = a pattern resembling gasoline was detected

E = concentration exceeds the upper end of the calibration range

B = analyte detected in method blank as well as the sample



Legend

- Existing_Noble_Wells
- Project Rulison Well
- COGCC Half- Mile Radius
- 1 Mile Radius Tier I Zone
- 3 Mile Radius Tier II Zone
- Project Rulison Lot 11
- Monitoring Sectors
- Township-Range-Section

N

0 0.5 1 1.5 2

Miles

Figure 1
Gas Well Locations
Tier I and II Monitoring Zones
Project Rulison Area
Garfield County, Colorado

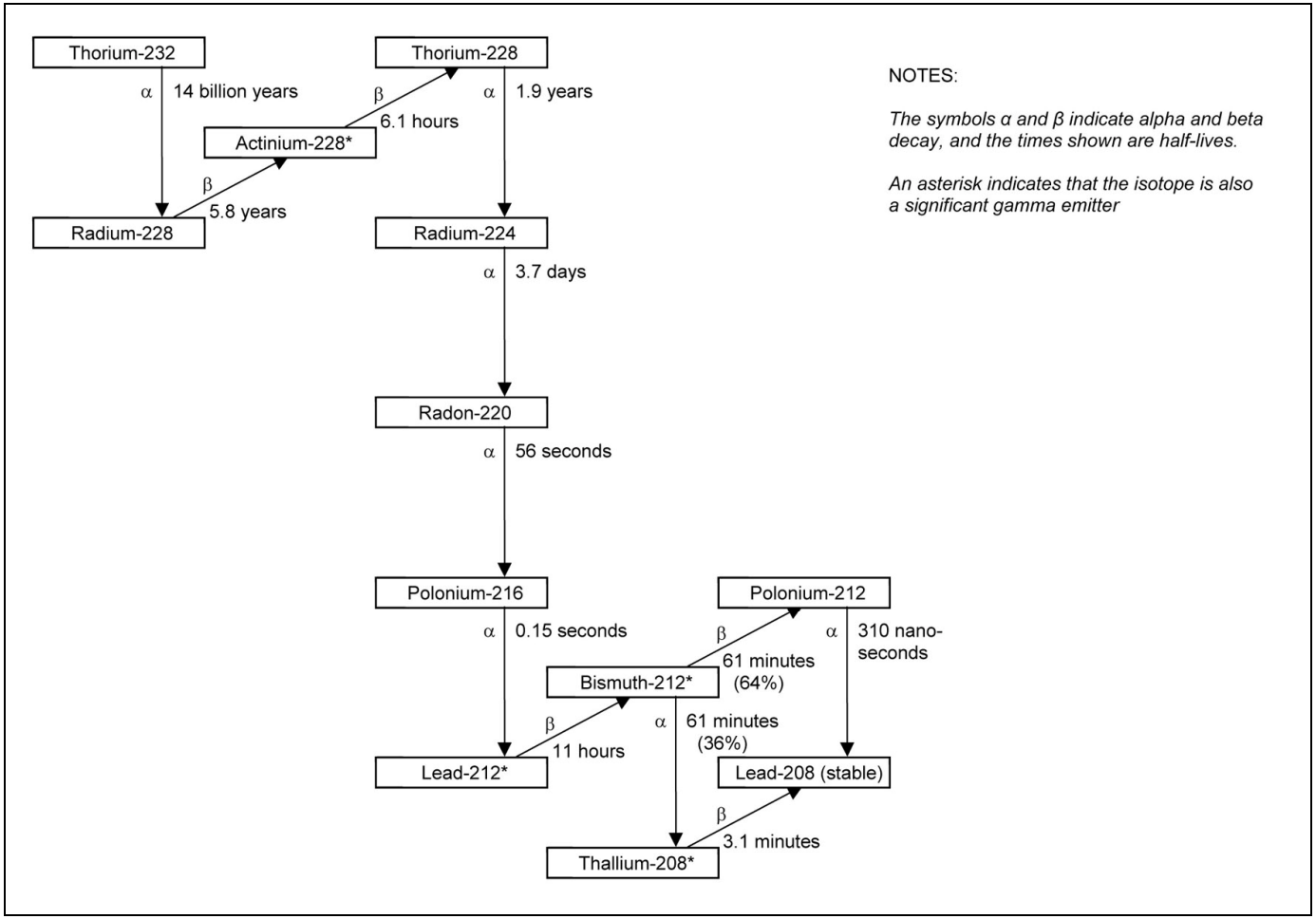


Figure 2. Thorium-232 (Th-232) Decay Series (modified from ANL 2005).

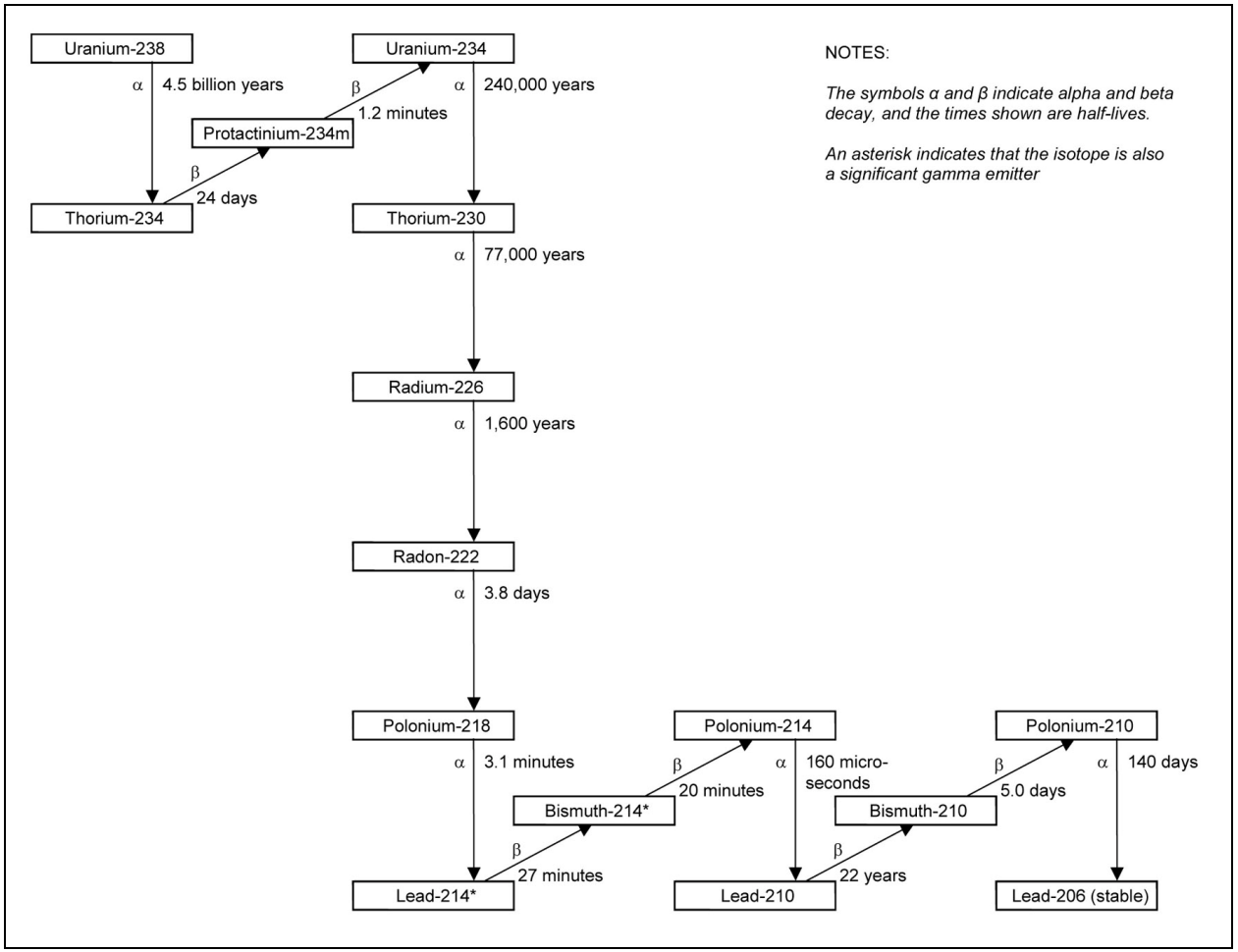


Figure 3. Uranium-238 (U-238) Decay Series (modified from ANL 2005.