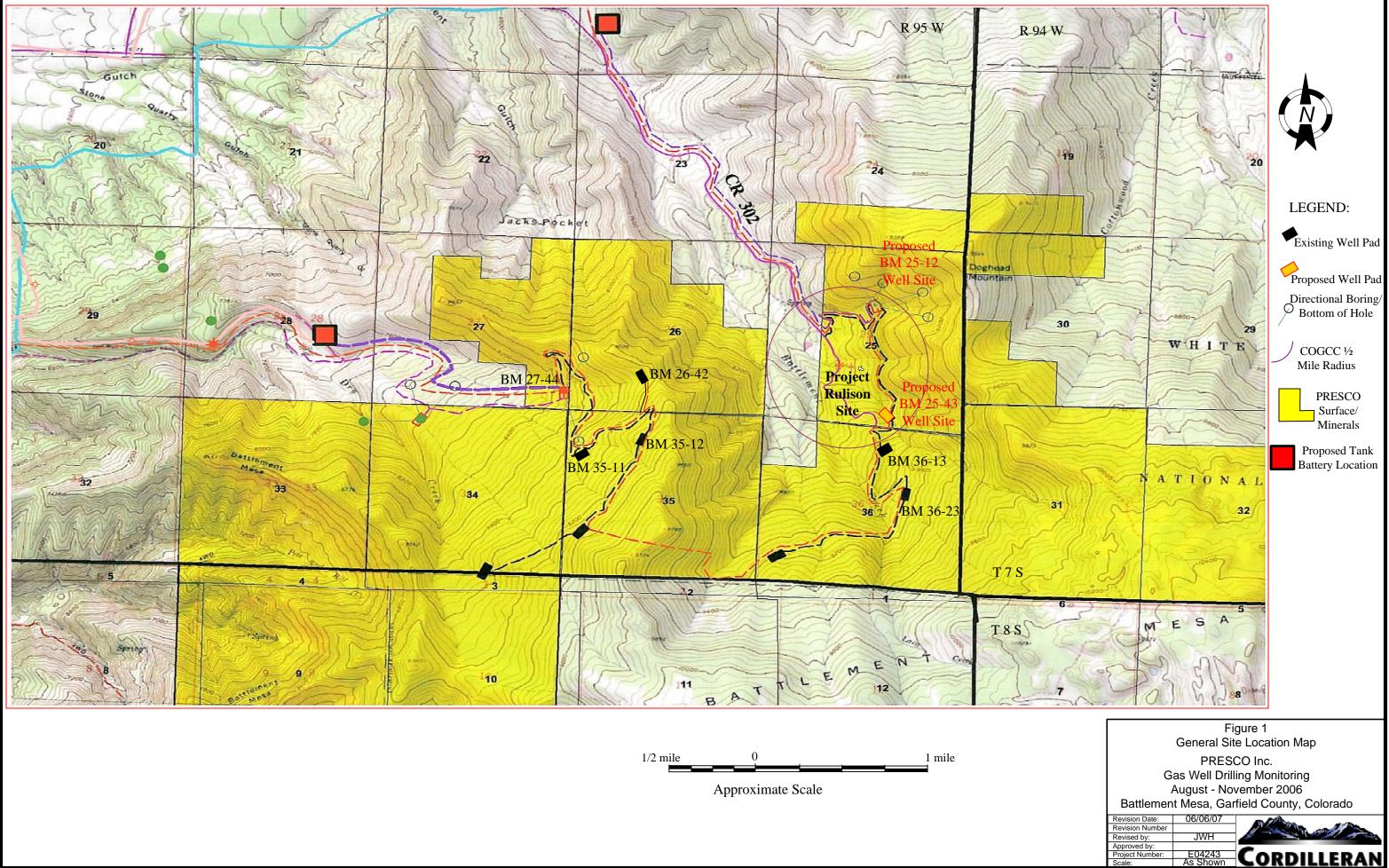
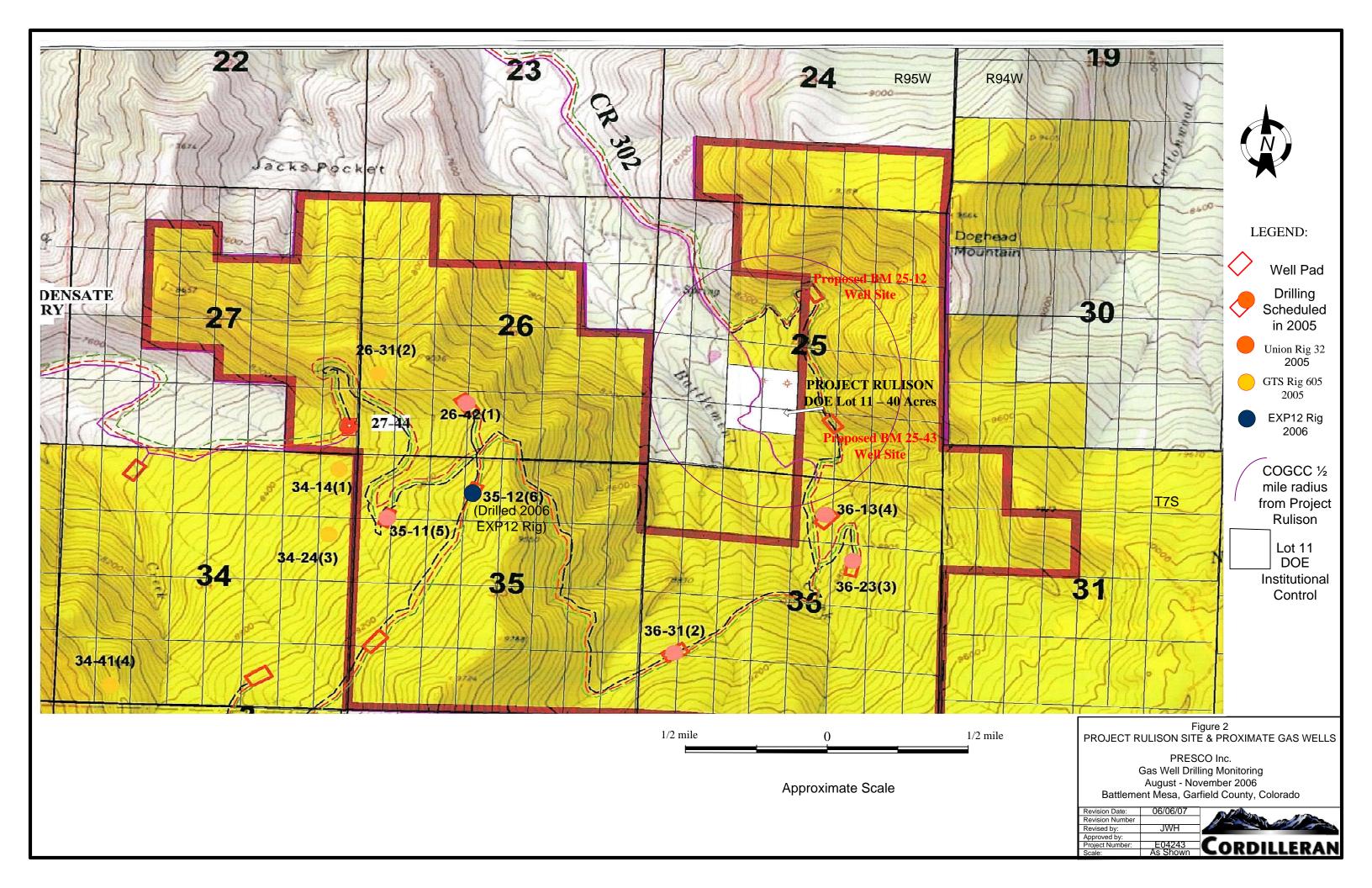
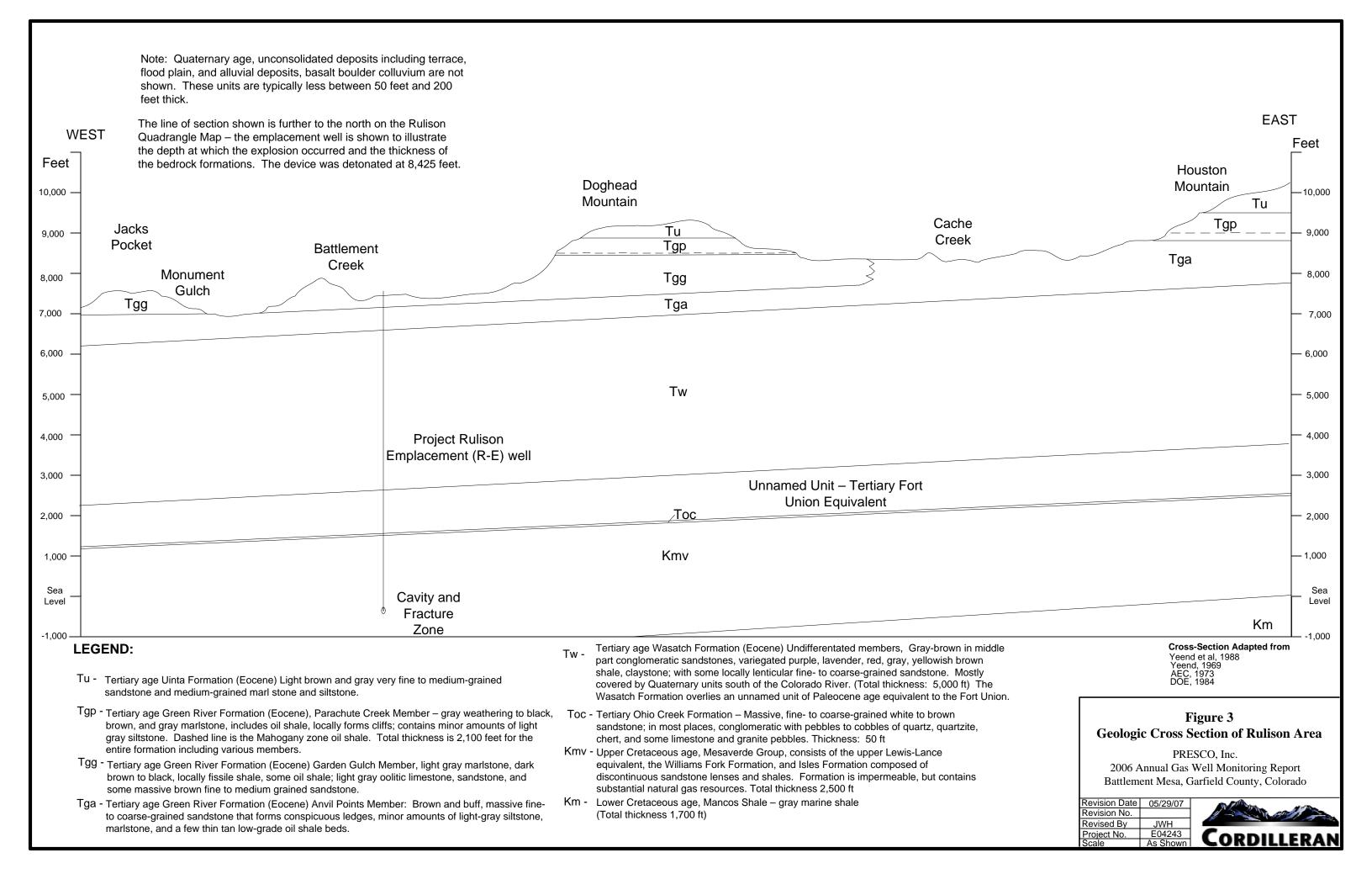
FIGURES AND TABLES









## **Illustrated Glossary**

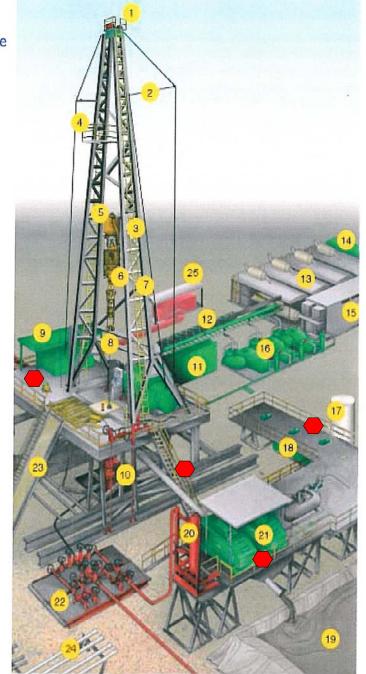
### **Drilling Rig Components**

Click on the name below or a number on the graphic to see a definition and a more detailed photo of the object.

- 1. Crown Block and Water Table
- 2. Catline Boom and Hoist Line
- 3. Drilling Line
- 4. Monkeyboard
- 5. Traveling Block
- 6. Top Drive
- 7. Mast
- 8. Drill Pipe
- 9. Doghouse
- 10. Blowout Preventer
- 11. Water Tank
- 12. Electric Cable Tray
- 13. Engine Generator Sets
- 14. Fuel Tank
- 15. Electrical Control House
- 16. Mud Pumps
- 17. Bulk Mud Component Tanks
- 18. Mud Tanks (Pits)
- 19. <u>Reserve Pit</u>
- 20. Mud-Gas Separator
- 21. Shale Shakers
- 22. Choke Manifold
- 23. Pipe Ramp
- 24. Pipe Racks
- 25. Accumulator

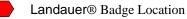
Additional rig components not illustrated at right.

- 26. Annulus
- 27. Brake
- 28. Casing Head
- 29. Cathead
- 30. Catwalk
- 31. Cellar



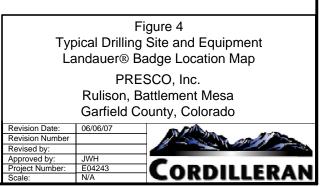
Equipment used in drilling

## LEGEND:

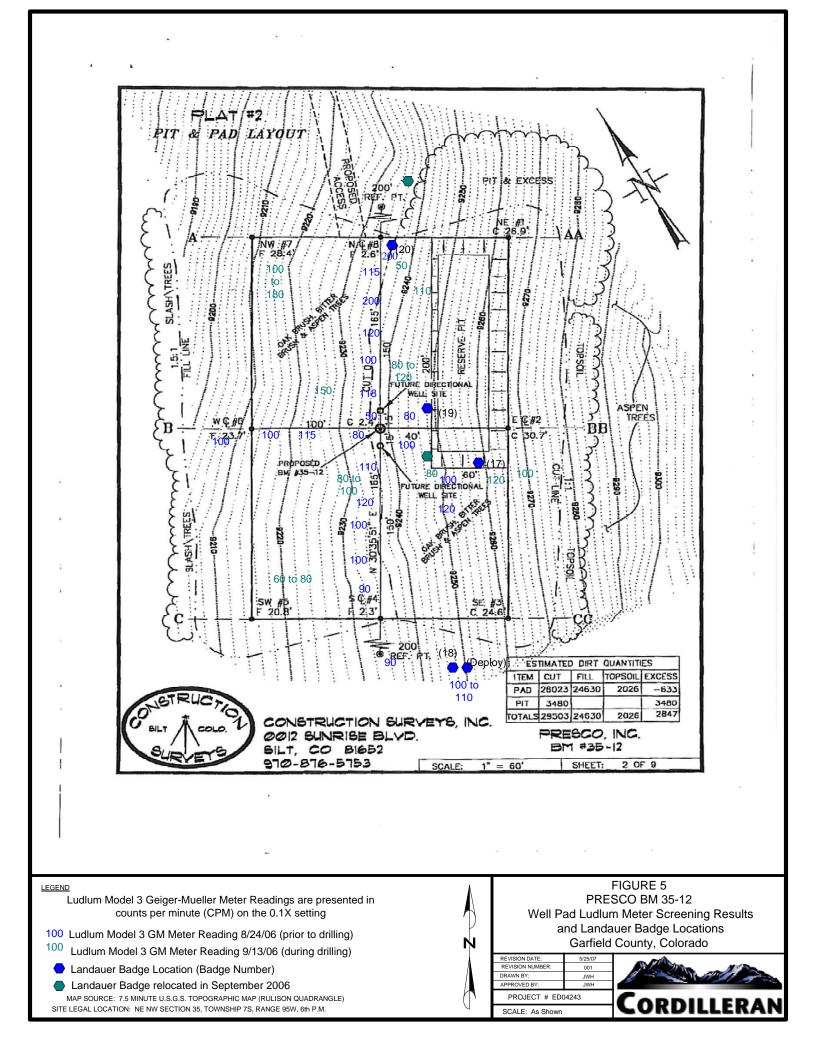


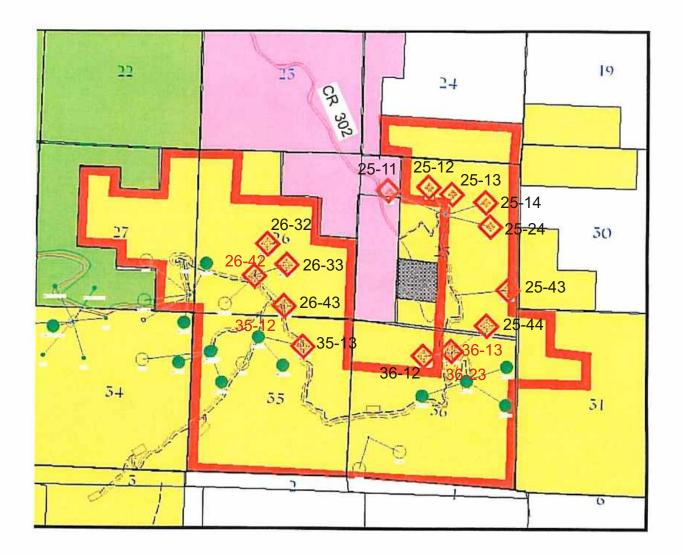
Environmental Thermoluminescent Dosimeter Badges (TLD) were placed on drill equipment as well as being worn by keep site personnel (driller, driller's assistant, company man, mudlogger, tool pusher, etc.)

Adapted from the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) Oil and Gas Well Drilling and Servicing eTool, http://www.osha.gov/SLTC/etools/oilandgas/illustrated\_glossary.html









 $\diamond$ 

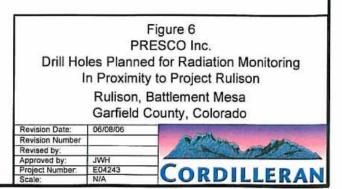
Drill Holes/Gas Wells on which PRESCO Plans to Conduct Radiation Monitoring



Drill Hole/Gas Well - Not Monitored



Designated 40 Acres Surrounding Project Rulison – Set Aside by AEC/DOE Prohibiting Drilling Below 6,000 feet



## BATTLEMENT MESA GEOLOGY AND STRATIGRAPHY

System and Geologic Period	Formation Name	Description of General Lithologies	Hydrogeologic Characteristics	Approximate Thickness in Feet
	"Recent"	Low terrace, flood plane, and alluvial deposits.	Yields water to wells	20 to 40
Quaternary	"Pleistocene"	Terrace and fan, sand and gravel, pediment gravel, colluvium, mudflow, solifluction deposits	Yields water to wells	>100 locally
	Igneous Intrusive Rocks	Basalt flows, dikes, sills underlain by variegated claystones and gravel	Recharge Area - Fractures (9.7 ± 0.49 ma K-Ar dating)	200 to 500
	Uinta Formation	Light brown and gray sandstone marlstone and siltstone	Uinta-Animas Aquifer Does not yield water to wells near Project Rulison	50 to 900
Tertiary	Green River	Members (Evacuation Creek, Parachute Creek, Garden Gulch, Anvil Points and Douglas Creek) Shale, marlstone ('oil shale') with minor sandstone & siltstone	Sandy zones in the lower part may yield minor quantities of water locally. Generally a confining unit. Saline water in Piceance Basin center.	1,700 to 2,100 Evacuation Crk (500') Parachute Crk (600') Lower (1,000')
	Wasatch (undifferentiated)	Bright colored clays and shale with minor sandstone. Variegated shale and clay with some lenticular beds of sandstone and conglomerate, and limestone.	Confining Unit	3,900 to 5,000
	Unnamed unit (Fort Union equivalent)	Brown-gray shale and thin coal seams.	Confining Unit	500 to 1000
	Ohio Creek	Sandstone and Conglomerate	May locally yield quantities of water to wells. Is not known to yield water near Project Rulison site.	37 to 75
Upper Cretaceous	Lewis-Lance Equivalent	Shale and sandstone	Does not yield water near Rulison	
Mesaverde Group	Williams Fork	Shale and lenticular sandstones Members: Paonia Shale, Bowie Shale, Cameo Coal and Wheeler- Fairfield Coal zones lower part, Rollins-Trout Creek Sandstone at base.	Confining Unit. Does not yield water near Rulison Site. Impermeable shale and numerous discontinuous, lenticular sandstone beds. Natural Gas Production	2,000 to 3,300
	Isles	Shale and sandstone Members: Cozzette Sandstone, Corcoran Sandstone, Sego Sandstone Castlegate Sandstone.	Confining Unit Natural Gas Production	
Lower Cretaceous	Mancos Shale	Gray marine shale, base of the aquifer system	Confining Unit	1,700

References:

W.E. Yeend, 1969 Hildebrand et al, 1981 Robson and Banta, 1995

## TABLE 2 Representative Source Term for the Project Rulison - Radionuclide Estimated Inventories

					Primary	Decay		Associated	Energy of Associated
D. F	Isotope	Natural Abundance	Half-Life	Estimated	Decay	Energy	Daughter Dro du sta		Radiation Types
Radionuclide	Symbol H-3		(t1/2 yr) 12.35	Inventory (Ci) <sup>a</sup> 10000 <sup>b</sup>	Mode β	(MeV) 0.019	Products <sup>3</sup> He	Types	(MeV)
Tritium Carbon-14	C-14	Trace Trace	5,730	2.2°	β β	0.019	<sup>14</sup> N		
Aluminum-26	Al-26	Synthetic	730,000	0.000118	β+, é	1.17	<sup>26</sup> Mg	~	1.81
Chlorine-36	Cl-36	Synthetic	301,000	2.82	β+, θ	0.709	$^{36}$ Ar, $^{36}$ S	γ	1.01
Argon-39	Ar-39	Synthetic	269	24.30	β	0.565	<sup>39</sup> K		
Potassium-40	K-40	0.012%	1,280,000,000	6.17	ρ β	1.31	<sup>40</sup> Ca, <sup>40</sup> Ar	γ	1.46
Calcium-41	Ca-41	Synthetic	103,000	21.60	é	1.51	<sup>41</sup> K	r	1.40
Nickle-59	Ni-59	Synthetic	76,000	0.53	é		<sup>59</sup> Co		
Nickle-63	Ni-63	Synthetic	100	55.40	β	0.0069	<sup>63</sup> Cu		
Krypton-85	Kr-85	Synthetic	10.7	1110 <sup>b</sup>	β	0.687	<sup>85</sup> Rb		
Strontium-90	Sr-90	Synthetic	29	15,700	Ρ β	0.2	90Y		$^{90}$ Y: $\beta = 0.94$
Zirconium-93	Zr-93	Synthetic	1,500,000	0.55	β	0.06	<sup>93</sup> Nb		11 p 0001
Niobium-93m	Nb-93m	Synthetic	16	99.9	IT	0.031	<sup>93</sup> Nb		
Niobium-94	Nb-94	Synthetic	20,000	2.28	β	0.471	<sup>94</sup> Mo	γ	0.702; 0.87
Technetium-99	Tc-99	Trace	213,000	4.04	β	0.294	<sup>99</sup> Ru	γ	0.14 Tc99m
Palladium-107	Pd-107	Synthetic	6,500,000	0.021	ß	0.033	$107 \Delta \sigma$	,	
Cadmium-113m	Cd-113m	Synthetic	14	15.3	β	0.019	<sup>113</sup> In		
Tin-121m	Sn-121m	Synthetic	55	56.7	β, IT	0.035		γ	0.005
Tin-126	Sn-126	Synthetic	100,000	0.65	β	0.17	<sup>126</sup> Sb	γ	0.057
Iodine-129	I-129	Synthetic	15,700,000	0.012	β, <b>é</b>	0.194	<sup>129</sup> Xe		
Cesium-135	Cs-135	Trace	2,300,000	0.42	β	0.269	<sup>135</sup> Ba		
Cesium-137	Cs-137	Synthetic	30	19,900	β	1.176	<sup>137</sup> Ba	γ	662 KeV
Samarium-151	Sm-151	Synthetic	90	751	β	0.02		γ	< 0.001
Europium-150	Eu-150	Synthetic	36	14.6	β+, <b>é</b>	2.26	<sup>150</sup> Sm	β, γ	0.044, 1.5
Europium-152	Eu-152	Synthetic	13.5	433	β, <b>é</b>	1.87, 1.82	<sup>152</sup> Sm, <sup>152</sup> Gd	β, γ	0.14, 1.2
Europium-154	Eu-154	Synthetic	8.59	240	β, <b>é</b>	0.29	$^{154}$ Gd	β, γ	0.29, 1.2
Holmium-166m	Hm-166m	Synthetic	1,200	0.59	β	65 KeV	<sup>166m</sup> Er		
Thorium-232	Th-232	100%	14,000,000,000	0.00077	α	4.08	<sup>228</sup> Ra	β, γ	0.012, 0.0013
Uranium-232	U-232	Synthetic	70	3.36	α	5.41	<sup>228</sup> Th	β, γ	0.017, 0.0022
Uranium-233	U-233	Synthetic	159,000	2.25	α	4.91	<sup>229</sup> Th	β, γ	0.0061, 0.0013
Uranium-234	U-234	0.0054%	246,000	1.62	α	4.86	<sup>230</sup> Th	β, γ	0.013, 0.0017
Uranium-235	U-235	0.72%	704,000,000	0.022	α	4.68	<sup>231</sup> Th	β, γ	0.049, 0.16
Uranium-236	U-236	Synthetic	23,400,000	0.062	α	4.57	<sup>232</sup> Th	β, γ	0.011, 0.0016
Uranium-238	U-238	99.30%	4,470,000,000	0.029	α	4.27	<sup>234</sup> Th	β, γ	0.010, 0.0014
Neptunium-237	Np-237	Synthetic	2,140,000	0.48	α	4.96	<sup>233</sup> Pa	β, γ	0.07, 0.035
Plutonium-238	Pu-238	Synthetic	87.7	94.2	α	5.5	<sup>234</sup> U	β, γ	0.011, 0.0018
Plutonium-239	Pu-239	Synthetic	24,100	254	α	5.25	<sup>235</sup> U	β, γ	0.0067, < 0.001
Plutonium-240	Pu-240	Synthetic	6,560	81.6	α	5.2	<sup>240</sup> Am	β, γ	0.011, 0.0017
Plutonium-241	Pu-241	Synthetic	14.4	1,180	β	0.0052	Am	α, γ	< 0.001, < 0.001
Plutonium-242	Pu-242	Synthetic	375,000	0.044	α	4.98	<sup>238</sup> U	β, γ	0.0087, 0.0014
Americium-241	Am-241	Synthetic	433	61.4	α	5.64	<sup>237</sup> Np	β, γ	0.052, 0.033
Americium-243	Am-243	Synthetic	7,370	0.0024	α	5.44	<sup>239</sup> Np	β, γ	0.022, 0.055
Curium-244	Cm-244	Synthetic	18	39.1	α	5.9	<sup>240</sup> Pu	β, γ	0.086, 0.0017

List of radionuclides, Symbol, half-life, and estimated inventory from the DOE Project Rulison End State Document - January 2005 Natural Abundance, Decay Mode, and Decay Energy from http://en.wikipedia.org and Argonne National Laboratory

<sup>a</sup> Except where noted, value is from the mean unclassified radionuclide inventory for 76 nuclear tests detonated below or within 328 ft

of the water table in Areas 19 and 20 of the Nevada Test Site

<sup>b</sup> Value is an unclassified estimate for the Rulison test specifically, from Reynolds (1971)

<sup>c</sup> Value is an unclassified estimate for the Rulison test specifically, and is the total of gaseous species only, from Smith (1971).

t 1/2 yr: half-life is the time required for half the material present to decay Daughter products shown in blue are stable, and those shown in red are radioactive. Ci: curies, unit of measure for radioactivity

α: alpha decayβ: beta decay

 $\beta$ +: positron

**é**: electron capture

IT: Isomeric transition

γ: gamma radiation

#### Battlement Mesa Natural Gas Radionuclides of Interest Occupational Limits

							Inhala	tion			In	gestion
Radionuclide	Class/f1	Half Life (Years)	Radiation Type	Energy (MeV)	ALI (MBq)	ALI (µCi)	ALI (pCi)	DAC (MBq/m <sup>3</sup> )	DAC (µCi/ml)	DAC (pCi/ml)	ALI (MBq)	ALI (pCi)
Hydrogen Tritium (H-3)	Water Vapor Elemental	12.35	Beta (b)	0.019	3,000	80,000	80,000,000,000	0.8	0.00002	20	3,000	80,000,000,000
Carbon-14 (C-14)	Compounds* CO CO <sub>2</sub>	5,730	Beta (b)	0.16	90 60,000 8,000	2,000 2,000,000 200,000	2,000,000,000 2,000,000,000,000 200,000,0	0.04 30 3	1.00E-06 7.00E-04 9.00E-05	1 700 90	90  	2,000,000,000
Krypton-85 (Kr-85)	Submersion	10.72	Beta (b) Gamma (g)	0.25 0.0022				5	0.0001			

ALI - Annual Limits on Intake

DAC - Derived Air Concentrations

MeV - mega electron volt

MBq - mega becquerel

 $\mu$ Ci - microcuries

pCi - picocures

"--" none established

\* Labelled Organic Compounds

ALIs and DACs are not available for other tritiated compounds. Under normal conditions, hydrogen gas may rapidly convert to water vapor form. Submersion denotes situations in which exposure is submersion-limited. Elements in 'vapor' form deposited in lung are assumed to be totally taken up by blood. Since all three are beta emitters, the EPA drinking water standard is 4 mrem/year.

"Submersion" means that values give are for submersion in a hemispherical, semi-infinite cloud of airborne material. For Hydrogen as Tritium in water the DAC includes skin absorption. Gas (HT or  $T_2$ ) Submersion uses above values as tritium oxidizes in the air and in the body.

Sources: U.S. Nuclear Regulatory Commission

Colorado Department of Public Health and Environment

#### Landauer® Environmental Dosimeter Badge - 2006 Results PRESCO, Inc. Battlement Mesa Gas Well Development Garfield County, Colorado

Location ID Number	Identifier (Client Supplied)	Note Code	Exposure of (Millirems Am Equiva	nbient Dose	Net Cum	ulative Tota	als (millirems)	X9 Badge Series No.	Number of Dosimeters Reported	Badge Series Deployment Date	Badge Deployment Date	Badge Retrieval Date	Inception Date of Permanent Total	Dosimeter Badge Location/Personnel I
			Croco (mrom)		Calendar									
Expos	ure Period 8/15/06		Gross (mrem)	Net (mrem)	Quarter	Date	Permanent							
00000	Transit Control		10.6	-2.8				0555296V						Cordilleran Offices - Arvada, CO
000X9	Deploy Control		13.4	0.0				0551427V						BM 35-12 Aspen Tree upslope from south
00017	EXP12		12.4	-1.0	-1.0	-1.0	-1.0	0414231V	1	8/24/2006	8/24/2006	9/13/2006		BM 35-12 Southeast side of reserve pit or
00018	EXP12		11.7	-1.7	-1.7	-1.7	-1.7	0413807V	1	8/24/2006				Aspen Tree upslope from southeast side of
00019	EXP12	А						0607943V		8/24/2006			0,10,2000	West side of fence surrounding reserve pi
00020	EXP12	~	11.4	-2.0	-2.0	-2.0	-2.0	0610376V	1	8/24/2006			8/15/2006	North - northeast corner of well pad adajce
00020	EXP12		11.0	-2.4	-2.4	-2.4	-2.4	0413602V	1	8/24/2006				Inside Trailer - Window for Tool Pusher (J
00022	EXP12		11.2	-2.2	-2.2	-2.2	-2.2	0608568V	1	8/24/2006				Upper doghouse - pipe/space heater at BI
00022	EXP12		9.4	-4.0	-4.0	-4.0	-4.0	0606244V	1	8/24/2006				Shale Shaker - BM 34-4 prior to EXP 12 ri
00023	EXP12	LP	13.8	0.4	0.4	0.4	0.4	0610768V	1	8/24/2006				Mud Mixing Tank - BM 34-4 location prior
	Period 9/15/06	1			1	1								
00000	Transit Control	NC	15.2					0553345V	1					Cordilleran Offices - Arvada, CO
0009X	Deploy Control	А												Aspen tree upslope from southeast corner
00025	EXP12	A						0610693V			9/13/2006			Upper doghouse (replace badge 00022) E
00026	EXP12	NC	15.4					0609030V	1			10/16/2006		Shale Shaker (replace badge 00023) EXP
00027	EXP12	NC	15.9					0607281V	1			10/16/2006		Mud Mixing Tank (replace badge 00024) I
00028	EXP12	A						0608031V			9/13/2006			Tool pusher's trailer (replace badge 00021
00029	EXP12	А						0607184V			9/13/2006			Aspen tree upslope from southeast corner
00030	EXP12	NC	19.6					0610046V	1			10/16/2006		Fence/ T-post on southeast end of reserve
00031	EXP12	NC	17.8					0551056V	1			10/16/2006		Replace August badge # 00019 (missing)
00032	EXP12	NC	16.1					0470069∨	1		9/13/2006	10/16/2006		North side of reserve pit fence/t-post
	Period 10/15/06													
00000	Transit Control		12.8	-1.7				0469902V						Cordilleran Offices - Arvada, CO
000X9	Deploy Control		14.5	0.0				0552965V						September deploy badge missing - aspen
00025	EXP12	A												Fire extinguisher on upper dog house (BN
00026	EXP12		12.8	-1.7	-1.7	-1.7		06077661V	1			11/15/2006		Shale Shaker - replace Sept 15 badge (06
00027	EXP12		13.1	-1.4	-1.4	-1.4		0470542V	1			11/15/2006		Mud Mixing Tank - replace Sept 15 badge
00028	EXP12		13.6	-0.9	-0.9	-0.9		0414378V	1		10/16/2006	11/15/2006	5	Fire extinguisher inside company man's tra
00029	EXP12		14.1	-0.4	-0.4	-0.4		0414266V	1		10/16/2006	11/15/2006	;	Aspen tree upslope from southeast corner
00030	EXP12		15.5	1.0	1.0	1.0		0555224V	1			11/15/2006		Southeast reserve pit corner - replace Ser
00031	EXP12		14.2	-0.3	-0.3	-0.3		0551570V	1			11/15/2006		West side of reserve pit fence (BM 35-12)
00032	EXP12		15.1	0.6	0.6	0.6		0610062V	1		10/16/2006	11/15/2006		Aspen tree on northeast corner upslope fr

Note Code:

A - Absent (Badge was not recovered)

LP - Low Energy Photon ( < 100 KeV effective)

NC - Returned Separately from the Deployment Control

Weather conditions did not allow for badges to be deployed after November 15, 2006 when the October 15, 2006 badges were collected.

#### I Description

butheast side of well pad next to badge 00018 t on "T" post/fence (Prior to drilling) de of well pad next to deploy control badge 000X9 e pit, adjacent to BM 35-12 drilling location lajcent to well sign/piping culverts (prior to drilling) r (Joe Roberts) at BM 34-4 location t BM 34-4 location prior to moving to BM 35-12 2 rig moving to BM 35-12 location rior EXP 12 rig to moving to BM 35-12 location

rner of well pad (BM 35-12) - destroyed 2) EXP 12 rig at the BM 35-12 location EXP 12 rig on the BM 35-12 location (4) EXP 12 rig at the BM 35-12 location (021) at the BM 35-12 location rner of well pad (BM 35-12) - destroyed erve pit (replace badge 00017) ng) on west side of fence

ben tree in proximity to first (BM 35-12 well location) (06090030V) with October badge BM 35-12 dge (0607281V) with October badge at BM 35-12 s trailer inside entry door (trailer at BM 35-12 pad) mer of well pad (BM 35-12) Sept badge missing Sept 15 badge 12) replace Sept 15 badge (0551056V)

from well pad near well sign and culverts

PRESCO, INC - Battlement Mesa Natural Gas Production and Sampling

Garfield	County,	Colorado
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Presco, Inc.														
Pieance Basin														
Production - ITD														
Gas														
	BN	26-42	BN	127-44	BN	A 34-4	BN	/ 34-24	BN	/ 35-12	BM	36-13	BN	1 36-23
	Monthly	Cummulative	Monthly	Cummulative	Monthly	Cummulative	Monthly	Cummulative	Monthly	Cummulative	Monthly	Cummulative	Monthly	Cummulative
	MCF		MCF		MCF		MCF		MCF		MCF		MCF	
Nov-05	6,414	6,414	1,915	1,915										
Dec-05	20,144	26,558	10,885	12,800										
Jan-06	14,909	41,467	8,375	21,175							6,973	6,973		
Feb-06	9,380	50,847	6,455	27,630							16,734	23,707		
Mar-06	9,170	60,017	5,819	33,449							16,160	39,867		
Apr-06	9,920	69,937	6,508	39,957							12,676	52,543		
May-06	8,097	78,035	5,890	45,847							8,219	60,762		
Jun-06	7,449	85,483	5,410	51,257							7,146	67,908		
Jul-06	7,532	93,016	5,232	56,489							6,806	74,714		
Aug-06	7,096	100,112	4,597	61,086							775	75,490		
Sep-06	6,350	106,462	4,458	65,543	751	751					0	75,490		
Oct-06	5,696	112,158	5,893	71,436	28,567	29,318	27,483	27,483			5,978	81,467	14,456	14,456
Nov-06	5,458	117,616	5,251	76,687	14,337	43,655	24,967	52,450			7,626	89,094	5,583	20,039
Dec-06	5,409	123,024	4,242	80,930	11,515	55,171	26,857	79,306	4,773	4,773	5,273	94,367	4,542	24,582
Jan-07	6,230	129,255	4,430	85,360	9,949	65,120	25,981	105,287	25,793	30,566	4,685	99,052	2,435	27,017
Feb-07	5,251	134,506	5,859	91,219	7,569	72,689	21,339	126,626	13,162	43,729	4,327	103,379	6,279	33,296
Mar-07	5,201	139,707	5,942	97,161	7,294	79,983	20,597	147,223	23,169		2,098	105,477	4,748	38,044
Apr-07	3,693	143,400	4,350	101,511	5,476	85,459	13,917	161,140	13,800	80,697	0	105,477	950	38,994
May-07	1,212	144,612	1,600	103,112	1,959	87,418	5,432	166,572	4,765	85,462	10	105,488	548	39,542
Total	144,612		103,112		87,418		166,572		85,462		105,488		39,542	
MCF to produce														
before ordering														
test	34,195		16,848		(27,418)		(46,572)		24,340		11,946		20,458	
					Doesn't		Stop							
					need to be		testing							
					tested due		after 35-12	2						
					to distance		starts							
Gas Samples							producing							
12/7/05 test	(11,804)		(4,514)								(4,421)			
1/27/06 test	(39,734)													
4/5/06 test	(61,774)													
5/17/06 test											(57,434)			
8/24/06 test			(59,960)											
12/7/06 test	(118,807)						(59,114)						(20,402)	
3/7/07 test									(49,802)	)				
				L				l						
	Note:					ed for composition								
						gas produced a				ollected. The	volumes in	green in the al	oove table i	ndicate
		month and pro	duction int	erval when sam	nples were to	be collected be	ased on 60	MMCF of gas p	produced.					

Natural Gas Sample Analysis of PRESCO, Inc. Gas Wells Sorted by Well

			Helium	Hydrogen	Argon	Oxygen	Carbon Dioxide	Nitrogen	Carbon	Hydrogen					lso-butane	N-butane		N-pentane	Hexanes							
Isotech	Sample	e Date		(H <sub>2</sub> ) mol.	(Ar) mol.	$(O_2)$ mol.	(CO <sub>2</sub> ) mol.			Sulfide	Methane	Ethane	Ethylene	Propane			Iso-pentane		$+ (C_6 +)$				Std.	Tritium	Std. Tritium	
Lab No.	Name	Collected	%	%	%	%	%	%	mol. %	mol. %	mol %	mol %	mol %	mol %	%	%	(iC <sub>5</sub> ) mol %	%	mol %	$\delta^{13}C_{1 \text{ per mil}}$	$\delta DC_{1 \text{ per mil}}$	<sup>14</sup> C <sub>1</sub> (pMC)	Dev.	( <sup>3</sup> H) TU	Dev. ( <sup>3</sup> H) pCi/L	Comments:
91785	BM26-42	2 12/7/2005	0.0021	0.0029	0.0265	0.527	5.34	2.33	ND	ND	84.23	4.51	ND	1.9	0.349	0.383	0.158	0.114	0.126	-36.99	-171.5	NA		NA		Insufficient Sample Volume - Tritium & C14 not run
94233	BM26-42	2 1/27/2006	0.0023	0.0032	ND	0.0075	4.69	0.09	ND	ND	87.83	4.65	ND	1.54	0.332	0.365	0.145	0.108	0.239	-37.04	-181.5	< 0.6		< 10	< 32.1	
96760	BM26-42	2 4/5/2006	0.0025	0.0041	ND	0.0307	3.77	0.2	ND	ND	88.65	4.66	ND	1.53	0.334	0.365	0.147	0.106	0.201	-36.97	-173.9	< 0.4		< 12	< 38.5	
107404	BM26-42	2 12/7/2006	0.0023	0.006	ND	0.0718	4.15	0.37	ND	ND	88.82	4.31	ND	1.41	0.303	0.312	0.106	0.0723	0.0685	-36.81	-173.1	< 0.5		< 15	< 48.2	
91786	BM27-44	4 12/7/2005	0.0031	0.0042	0.258	5.78	4.6	24.78	ND	ND	60.22	2.95	ND	0.833	0.165	0.176	0.0658	0.0518	0.109	-36.88	-198.5	< 0.5		< 10	< 32.1	
102870	BM27-44	4 8/27/2006	0.0038	0.0043	0.0083	0.139	0.97	0.72	ND	ND	92.25	4.09	ND	1.1	0.233	0.225	0.083	0.0584	0.112	-36.7	-182.8	< 1.0		< 10	< 32.1	
107405	BM34-24	4 12/7/2006	0.0029	0.0036	ND	0.0261	3.55	0.17	ND	ND	90.28	4.22	ND	1.06	0.225	0.204	0.0801	0.0549	0.125	-36.85	-172.4	< 0.7		< 15	< 48.2	
94234	BM36-13	3 1/27/2006	0.0027	0.0077	ND	0.0077	6.96	0.31	ND	ND	86.14	4.38	ND	1.27	0.265	0.282	0.11	0.0825	0.181	-36.63	-171.6	< 0.5		< 10	< 32.1	
98934	BM36-13	3 5/17/2006	0.0023	0.0058	ND	0.0208	2.24	0.2	ND	ND	90.76	4.59	ND	1.27	0.269	0.276	0.11	0.0807	0.178	-36.68	-172.8	< 0.5		< 10	< 32.1	
107406	BM36-23	3 12/7/2006	0.0022	0.0177	ND	ND	1.5	0.043	ND	ND	89.82	5.74	ND	1.64	0.359	0.364	0.153	0.113	0.245	-36.74	-175.5	< 0.8		< 15.2	< 48.8	
		Average:	0.00262	0.00595	0.0976	0.73451	3.777	2.9213			85.9	4.41		1.3553	0.2834	0.2952	0.11579	0.08416	0.15845	-36.829	-177.36					

mol % - Stoichiometric percentage of element or compound present in the gas sample by molecular weight.

 $\delta^{13}$ C -Difference in carbon-13 isotope per mililiter pMC - percent modern carbon TU - tritium unit. One tritium unit is equal to 3.21 picocuries per liter (pCi/L) ND - element or compound was not detected

## TABLE 7 Produced Water Production Volumes and Sample Collection PRESCO, Inc. - Battlement Mesa, Garfield County, Colorado

Presco, Inc.																	
Pieance Basin																	
Production - ITD																	
Vater																	
Valei																	
	DM	26-42	DM	1 27-44	DM	34-4	DM	34-24	DM	35-12	DM	36-13	DM	1 36-23			
		3BL		BBL		34-4 BL		34-24 BBL		BL		BBL		BBL			
		Cummulative		Cummulative		Cummulative		Cummulative		Cummulative		Cummulative		Cummulative			
	,		,		MONUNY		,		WOTUTY				wonuny				
Nov-05		0	0			0		0		0	-	0		0			
Dec-05	695	695	2,068	2,068	-	0		0		0	0.000	0		0			
Jan-06	53	748	797	2,865	0	0		0		0		2,066		0			
Feb-06	28	776	1,010	3,875	0	0		0		0		6,220		0			
Mar-06	29	805	533	4,407	0	0		0		0	2,483	8,703		0			
Apr-06	32	837	523	4,930	0	0		0		0	1,384	10,087		0			
May-06	22	858	424	5,354	0	0		0		0		11,075		0			
Jun-06	17	875	429	5,784	0	0		0		0		11,826		0			
Jul-06	18	894	482	6,266	0	0		0		0		12,497		0			
Aug-06	14	908	99	6,365	0	0		0		0		12,664		0			
Sep-06	14	922	3		482	482		0		0		12,664		0			
Oct-06	32	953	403	6,771	4,141	4,624	4,301	4,301		0	1,743	14,407	10,505	10,505			
Nov-06	20	973	172	6,943	684	5,308	368	4,669		0	2,030	16,437	3,021	13,526			
Dec-06	25	998	65	7,008	46	5,354	44	4,713	261	261	1,225	17,662	27	13,553			
Jan-07	29	1,026	111	7,119	121	5,475	0	4,713	666	927	1,157	18,818	0	13,553			
Feb-07	10	1,036	2	7,121	222	5,697	0	4,713	4	931	1,002	19,821	0	13,553			
Mar-07	9	1,045	43	7,164	86	5,783	0	4,713	1	931	320	20,141	0	13,553			
Apr-07	5	1,050	0		1	5,785	0	4,713	0	932	0		0	13,553			
May-07	1	1,051	0	7,165	0	5,785	0	4,713	0	932	0	20,141	0	13,553			
otal	1,051		7,165		5,785		4,713		932		20,141		13,553			53,339	
roduced Water	Maximum (	BBLS)															
ample Collected	Ì	,															
12/07/05	(695)																
01/27/06	、 - <i>7</i>																
04/05/06																	
05/17/06												(11,075)					
05/20/06	(858)											( )====/					
08/24/06	(220)			(6,365)													
12/07/06	(998)			(1,100)			(4,713)		(931)				(13,553)				
03/07/07	(000)						( .,. 10)		(001)				(10,000)				
00,01101																	
ates indicate whe	n samples (	of produced wa	ater were co	lected for sub	mittal to Para	agon Analytic	s Laboratori	es in Fort Colli	ns Colorad	n for analysis	of tritium ar	nd gamma emit	ting radion	uclides			
															4	reached a 60 MM	CE throch

#### TABLE 8 RADIONUCLIDES OF INTEREST TRITIUM ANALYTICAL RESULTS Produced Water Sampling Laboratory Analytical Results - Radionuclides Presco, Inc. - Battlement Mesa, Garfield County, Colorado

												DOT Cooler			Tritium	
WELL NAME/	Sample								DATE	TIME		Survey External	Background	Tritium	Result $\pm$ $2\sigma$ TPU	Tritium
Sample ID	Source	Latitude	Longitude	TWP	RNG	SEC	QTR/QTR	P.M.	SAMPLED	SAMPLED	Laboratory	(µR/hr)	(µR/hr)	(pCi/L)	(pCi/L)	MDC
BM 26-42	Pit Dischg	39.40455	-107.9674	7S	95W	26	SE SW	6th	12/7/2005	10:35	PAL	13	12	U	$130 \pm 210$	340
	Prod Tank								5/20/2006	12:15	PAL	14	12	U	$-170 \pm 210$	350
	Separator								12/7/2006	11:55	PAL	17	14	U	$0 \pm 190$	330
BM 27-44 PW	Separator	39.40265	-107.9748	7S	95W	27	SE SE	6th	8/24/2006	11:12	PAL	12	12	U	-60 ± 190	320
BM 34-24	Separator	39.39748	-107.9722	7S	95W	34	NW NW	6th	12/7/2006	12:40	PAL	17	14	U	-110 ± 190	330
BM 36-13 PW	Separator	39.39833	-107.9438	7S	95W	36	NW NE	6th	5/17/2006	8:58	PAL	13	12	U	$-200 \pm 190$	330
BM 36-23	Separator	39.39578	-107.9421	7S	95W	36	SW NE	6th	12/7/2006	13:10	PAL	17	14	U	$-40 \pm 190$	330

#### Abbreviations:

PAL - Paragon Analytics Laboratories in Fort Collins, Colorado

DOT - Department of Transportation. The DOT requires the laboratory perform acceptance screening of the external part of the cooler.

µR/hr - micro roentgens per hour

pCi/L - picocuries per liter

TPU - total propogated uncertainty

MDC - Minimum Detectable Concentration

U - Result is less than the sample specific MDC or less than the associated TPU

The TPU is 2  $\sigma$  or two standard deviations

# TABLE 9 RADIONUCLIDES OF INTEREST GAMMA SPECTROSCOPY RESULTS Produced Water Sampling Laboratory Analytical Results - Radionuclides Presco, Inc. - Battlement Mesa, Garfield County, Colorado

WELL											Gamma	,																																							
NAME/	Sample	Latituda	Longitudo	TWD	NG SEC		DDM	DATE SAMPLED	TIME	-	Radionucli	des Ac-22		PU Ag-110	m 2 s TP			J Am-24 (pCi/L				Bi-212	2 s TPU	Bi-214 (pCi/L)		Ce-139 (pCi/L)			2 s TPU	Co-56 (pCi/L)	2 s TPU	Co-57 (pCi/L)	2 s TPU	Co-58 (pCi/L)	2 s TPU	Co-60 (pCi/L)	2 s TPU	Cr-51 (pCi/L)	2 s TPU	Cs-134 (pCi/L)		Cs-137 (pCi/L)		Eu-152 (pCi/L)		Eu-154 (pCi/L)	2 s TPU				
BM 26-42	Pit Dischg	39.4045	55 -107 967391	75		6 SES					y (pCi/L)	(pen	7) $16 \pm 2$	(pere	/ (-/	(per L	(-)	(pear	9 (-)			U (142)	(=)								(4)		(4)		(-)	(pere)	(-)	(perb)	(-)	(pere)	(-)			(pearly	-5 + 29	(1000)	-11 + 32				
	Prod Tank							5/20/2006			Ŭ	U (40										U (102)																							9 ± 23	U (44)	$-1 \pm 25$				
	Separator							12/7/2006			U	U (34										U (83)																							$15 \pm 18$						
BM 27-44 PW	Separator	39.4026	65 -107.974842	2 7S	95W	7 SE	SE 6th	8/24/2006	11:12	PAL	U	U (21	1) 16 ± 1	13 U (8.0)	) 3.7 ± 4	.9 U (8.7	) 2.9 ± 5	.1 U (87)	-13 ± 5	1 U (85)	15 ± 50	U (112)	-15 ± 63	U,J (28)	6 ± 17	U (7.1)	-3.2 ± 4.1	U (45)	11 ± 27	U (18.8)	-4.8 ± 10	U (5.9)	0.6 ± 3.5	U (11.4)	-9.8 ± 6.1	U (8.1)	6.2 ± 5.2	U (101)	-18 ± 59	U (11.8)	1.5 ± 7.1	U (8.9)	-5.3 ± 4.9	U (42)	-1 ± 24	U (47)	-12 ± 26				
BM 34-24	Senarator	20.2074	48 -107 972211	70	0511	4 NW N		12/7/2006	12.40	) PAL		¥1.40	0. 12.0	NO. 11.77.57		12 11/0.0	12.5	< 11/0.1	10 . 5	< 11 (72)	41 - 44	U (180)	20 . 100	111(22)	10 . 10	11 (5.2)	10.20	11/200	4 - 20	11/17-0	20.00	W.(11)	0.4 - 0.4	11 (10.2)	17.0	11/10/0	07.00	11 (100)	(2) . 54	11/2 0	00.12	11 (2.2)	44 - 47	XI (20)	6 . 22	11 (47)	0				
BM 34-24	Separator	39.3974	48 -107.972211	/5	95 W .	4 NWP	w oth	12/7/2006	12:40	PAL	U	U (49	9) 13±2	29 0 (7.5,	) -0.4 ± 4	U (9.8)	) 1.3 ± 5	.6 0 (9.1	) 4.8 ± 5.	6 0(72)	41 ± 44	U (180)	30 ± 100	0,1 (22)	12 ± 13	U (5.3)	-1.9 ± 3.0	U (54)	-4 ± 20	0 (17.5)	-3.0 ± 9.6	U (4.1)	0.4 ± 2.4	0 (10.3)	-1.7 ± 5.8	U (10.4)	-9.7 ± 5.2	U (100)	-03 ± 50	U (7.4)	0.9 ± 4.3	U (7.7)	4.4 ± 4.7	0 (38)	6 ± 22	U (47)	-9 ± 20				
BM 36-13 PW	Separator	39.3983	33 -107.943831	7S	95W	6 NW	NE 6th	5/17/2006	8:58	PAL	U	U (38	8) 10 ± 2	23 U (7.2)	-3.5 ± 4	1.0 U (9.6)	) -2.8 ± 5	.2 U (42)	2 ± 25	U (62)	10 ± 37	U (95)	29 ± 57	U,J (25)	-4 ± 15	U (4.7)	-1.4 ± 2.7	U (31)	11 ± 19	U (15.4)	-1.0 ± 8.8	U (4.3)	1.2 ± 2.6	U (8.2)	0 ± 4.7	U (8.1)	2.2 ± 4.8	U (68)	15 ± 40	U (7.7)	-3.2 ± 4.3	U (7.1)	1.3 ± 4.2	U (37)	5 ± 22	U (42)	-4 ± 24				
		-									+							_																																	
BM 36-23	Separator	39.3957	78 -107.94206	5 7S	95W .	6 SW	NE 6th	12/7/2006	13:10	) PAL	U	U (38	<ol> <li>2 ± 2</li> </ol>	12 U (8.3)	0 ± 4.	7 U (10.6	) 5.4 ± 5	.4 U (82)	75 ± 52	2 U (92)	21 ± 54	U (115)	78 ± 72	U,J (22)	21 ± 14	U (10.8)	$-4.0\pm 6.2$	U (62)	-6 ± 36	U (15.7)	-8.6 ± 9.7	U (8.6)	-0.4 ± 5.0	U (10.4)	-0.9 ± 5.9	U (8.2)	1.3 ± 4.7	U (121)	-4 ± 70	U (12.8)	$5.2 \pm 7.9$	U (8.8)	$-0.9 \pm 5.0$	U (41)	3 ± 23	U (46)	-11 ± 25				
Table Contin	ued			1		1					Gamma							1	1		-								1			-													1				-		
WELL NAME/	Sample							DATE	TIME	7	Emitting		55 2 e TP	PU Fe-59	2 e TP	U L131	2 e TP	T K-40	2 e TPI	Mp.54	2 e TPU	No. 22	2 e TPU	Nb. 04	2 e TPU	Nb 95	2 e TPU	Pa.234m	2 e TPU	Pb.212	2 e TPU	Pb-214	2 e TDI I	Ru-106	2 e TPU	Sb.124	2 e TPU	Sb. 125	2 e TPU	Sc. 46	2 e TPU	Th-227	2 e TPU	Th-234	2 e TPU	TL208	2 e TPU	U-235	2 e TDU	7n.65	2 e TE
Sample ID	Source	Latituda	Longitude	TWP	NG SEC		D DM	SAMPLED			v (nCi/L)		L) (+)													(pCi/L)				(pCi/L)				(pCi/L)								(pCi/L)			2 S IFU (+)		2 S IFU (+)	(pCi/L)		(nCi/L)	2 5 1 F (
BM 26-42	Pit Dischg	39 4045	55 -107 967 391	75		26 SE S		12/7/2005			K-40	10000	-/ (-/	10.000	/ (-/	(1-2-2	/ (-/	(1-2-2		(1-2-2)	(=/	(1000)																			(=/			(1000)	(=/	(10000)	(=)	U (55)	(=)	(1-2-2)	-8 + 1
	Prod Tank							5/20/2006	12:15	i PAL	U																																					U (38)			
	Separator							12/7/2006	11:55	6 PAL	U	U (27	7) 4 ± 1	6 U (15.1	) 7.4 ± 9	.2 U (43)	-20 ± 2	5 U (121	) 57 ± 74	U (6.5)	-0.7 ± 3.8	U (6.5)	$-2.6 \pm 3.7$	U (6.0)	$1.0 \pm 3.6$	U (6.9)	$4.3 \pm 4.3$	U (1310)	$-610 \pm 760$	U (13.1)	-3.9 ± 7.8	U,J (17)	$8 \pm 11$	U (63)	$-5 \pm 37$	U (12.3)	$-2.8~\pm~7.3$	U (16)	$-1.1 \pm 9.5$	U (6.7)	$2.9\pm4.1$	U (51)	$-6 \pm 31$	U (161)	$36 \pm 93$	U (9.7)	$-1.5 \pm 5.7$	U (65)	4 ± 31	U (14.2)	-3.1 ± 8
BM 27-44 PW	Separator	39.4026	65 -107.974842	2 7S	95W	7 SE	SE 6th	8/24/2006	11:12	PAL	U	U (28	8) -3 ± 1	16 U (24)	-1 ± 1	4 U (73)	-16 ± 4	2 U (190	) 510 ± 14	0 U (9.3)	-1.3 ± 5.3	U (8.8)	$4.1 \pm 5.3$	U (7.8)	$3.0 \pm 4.7$	U (9.6)	$0.2 \pm 5.5$	U (1260)	$650 \pm 770$	U (12.2)	$4.1 \pm 7.4$	U,J (16.3)	$13 \pm 10$	U (77)	6 ± 45	U (9.6)	8.4 ± 6.1	U (21)	5 ± 13	U (9.8)	$-0.9 \pm 5.5$	U (42)	-13 ± 24	U (170)	$0 \pm 100$	U (8.2)	$4.4 \pm 5.0$	U (42)	$12 \pm 25$	U (20)	0 ± 1
BM 34-24	Separator	39.3974	48 -107.972211	7S	95W	4 NWN	W 6th	12/7/2006	12:40	PAL	U	U (15.	.5) 5.2 ± 9	9.3 U (21)	9 ± 13	3 U (51)	-9 ± 2	U (149	) 84 ± 91	U (8.8)	1.4 ± 5.2	U (8.4)	$1.5 \pm 4.9$	U (7.5)	0 ± 4.3	U (9.1)	$-0.1 \pm 5.2$	U (1300)	$420 \pm 780$	U (15.1)	1.0 ± 9.0	U,J (22)	8 ± 13	U (73)	$20 \pm 43$	U (9.3)	-2.9 ± 5.6	U (17.8)	-2.5 ± 10	U (9.2)	-1.7 ± 5.1	U (49)	2 ± 29	U (94)	1 ± 56	U (11.1)	2.5 ± 6.6	U (49)	-11 ± 29	U (18)	0.4 ± 1
	+	-									-			-				_		-		+																													
BM 36-13 PW	Separator	39.3983	33 -107.943831	75	95W	6 NW	NE 6th	5/17/2006	8:58	PAL	U	U (16.	.4) 0.81 ±	9.7 U (16.1	) 7.8 ± 9	.8 U (33)	5 ± 19	U (138	) 112 ± 8	7 U (6.7)	2.4 ± 4.0	U (8.2)	$-1.6\pm4.6$	U (6.8)	2.3 ± 4.1	U (8.4)	$-0.2~\pm~4.9$	U (1230)	$100 \pm 710$	U (15.5)	-2.2 ± 9.2	U,J (11.6)	$10.9 \pm 7.4$	U (63)	40 ± 39	U (9.2)	$-0.1 \pm 5.4$	U (16.3)	4.2 ± 9.7	U (7.8)	$0.8\pm4.5$	U (45)	-24 ± 25	U (146)	-28 ± 87	U (10.0)	1.4 ± 5.9	U (37)	14 ± 22	U (14.6)	11.4 ± 5
BM 36-23	6i	20.2057	78 -107.94206	76	05W	6 CW	NE AL	12/7/2004	12.10	) PAL	T.	11.000	0) 1:2	2 11/22	5.1	11/20	10 - 4	5 U.(120	41.22	11/0.0	52.52	11/0.42	12:52	U (8 1)	24 + 48	U (10.8)	08 : 63	11 (1450)	200 - 870	11(17.2)	1.8 + 10	111(18)	7 - 11	11 (92)	25 + 46	11/12 12	20 . 72	11/22)	7 - 14	U(11.0°	22 - 61	11 (55)	12 . 22	11/15/0	6 . 90	11/10/05	42 . 61	U (84)	19 . 26	11/240	16 :
Div1 30-23	Separator	39.3957	/6 -107.94206	15	93W .	10 SW	NE Oth	12/1/2006	13:10	PAL	U	U (39	9) -1±2	25 U (23)	5 ± 1:	5 U (75)	19 ± 4	5 0 (130	) 41±78	U (8.6)	$5.3 \pm 5.3$	U (9.4)	-1.3 ± 5.2	U (8.1)	2.4 ± 4.8	U (10.8)	υ.8 ± 0.3	U (1450)	300 ± 850	0 (17.2)	1.8 ± 10	0,1(18)	/ ± 11	U (83)	-25 ± 40	U (12.1)	2.9 ± 1.2	0 (23)	/ ± 14	U (11.0)	-3.2 ± 0.1	U (55)	-12 ± 52	U (154)	-0 ± 89	U (10.8)	-4.5 ± 0.1	U (84)	-16 ± 30	U (24)	-10 ± 1
																						1								1														1		1					

pCi/L - picocuries per liter TPU - total propogated uncertainty MDC - Minimum Detectable Concentration The numbers shown in parentheses are the MDC for the individual samples. U - Result is less than the sample specific MDC or less than the associated TPU M - The requested MDC was not met. T1 - Trantiavely Identified J - Estimated value

Paragon Analytics has found there to be a significant low bias to Lead-214 (Pb-214) and Bismuth-214 (Bb-214) results when using a mixed nuclide gamma source for efficiency calibrations. The magnitude of this bias has been determined to be approximately 32% for Bb-214 and 23% for Bb-214. Therefore, any reported results for these radionuclides are flagged with a "J" qualifier, indicating the activities values to bean estimated value. Results are reported without further qualification.

The analytical results for the BM 26-42 sample collected on 12/07/05 indicated that Potassium-40 (K-40) was detected at 152± 96 pCi/L above the MDC of 146 pCi/L. Potassium-40 is a naturally occurring radionuclide common in sedimentary rock.

The analytical results for BM 35-12 sample collected on March 7, 2007 indicate that Antimony-124 (3b-124) was tentatively identified. However, Antimony-124 was also tentatively identified in the laboratory artifact. The requested detection limit of 10 pCi/L for Cesium-137 (Cs-137) was not met for the BM 35-12 sample and huplicate. These samples were counted for the maximum count time of 1000 minutes. The results have been flagged with an "M" qualifier on the final reports. The reported MDC was 10.1 pCi/L.