BUREAU OF LAND MANAGEMENT

PLAN OF OPERATIONS

SHEEP MOUNTAIN

Prepared for:

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June 2011

Book 2 of 2

APPENDIX D1
ADDENDUM 2011

Sheep Mountain Project – Mine Permit 381C

APPENDIX D-1 – LAND USE
2011 ADDENDUM

Appendix D-1 Land Use

The Sheep Mountain Project is situated in steep terrain at an average elevation in excess of 7,000 feet. The elevation and terrain limit land limit the agricultural use to stock grazing, traditionally cattle. Some production of alfalfa hay exists in the lowland areas of Crooks Creek north of the Project. However, these areas lie outside the permit and outside the area of planned disturbance.

The area is inhabited by a variety of wildlife. However, as document in Appendix D9-Addendum 2011, the area is not within the sage grouse core area, is not within critical winter range for big game, nor were threatened or endangered species identified during the various seasonal wildlife surveys completed on the Project.

As documented in Appendix D-2 History – Addendum 2011, since the 1950's uranium mining and exploration has been a dominant use of the land. Mining was active for a 30 year period from the early to mid 1950's through the 1980's. Mineral interests and the Permit to Mine 381C have been maintained since the cessation of active mine operations and remain valid. In addition to mining, oil and gas development is prevalent in the vicinity both along Crooks Creek and Sheep Creek. Only one oil well exists within the mine permit but it is recorded as dry and abandoned.

In summary, the Sheep Mountain Project will not be in conflict with present land uses. The mine reclamation plan seeks to return the mined lands to approximate original contours and re-establish native vegetation. Post-mine land uses as expected to be similar to present land use. The only exception will be the disposal area for the heap leach facility. Estimated at 80 acres, when all operations are completed and the site fully restored, these lands will be reclaimed and deeded to the Department of Energy for long term care and maintenance. The reclaimed configuration of the heap leach area will be entire on private lands established under the Stock Raising Homestead Act of 1916.

APPENDIX D2
ADDENDUM 2011

Appendix D-2

Brief History of Crooks Gap and Sheep Mountain Area

The early history of the Crooks Gap -Sheep Mountain area is typical of other portions of Wyoming along the Oregon Trail.

Sioux Indians originally inhabited the country containing Crooks Gap and the Sweetwater River. Trappers and cavalry units first visited the region in the period between 1830 and 1860. The Oregon Trail which passes about 10 miles north of the Crooks Gap -Sheep Mountain Area became a heavily used route for settlers heading to points west during the mid to late l800's. The stage route from Rawlins to Lander passed through Crooks Gap and the ruins of the old station and corrals still exist about 1 mile south of the southern portions of Crooks Gap and about 3 miles from the proposed Congo Pit Project. The first permanent settlements in the Sheep Mountain area were established in the early 1900's.

Homesteaders taking advantage of the Homestead Act or the 1916 Stock Entry Homestead originally occupied the Crooks Gap Area and tried to make a living farming. Crooks Gap's climate was not conducive to farming, however, and by the 1940's almost all of the original homesteaders had sold out to ranching families. Ranching was better suited to central Wyoming.

Many of the original ranching families still operate cattle ranches along the Sweetwater River on Crooks Mountain in the Red Desert country south of Crooks Gap. The McIntosh's, Jamerman's and Kirk's (Claytor's by marriage), are original families still operating ranches in the Crooks Gap-Sweetwater area.

Oil was discovered in Crooks Gap and on Sheep Mountain north of Western Nuclear, Inc. permit area in the 1930's with oil fields constructed in the 1940's. At this point in time, the' Crooks Gap-Sheep Mountain area was still a largely ranch based economy.

In 1953, ore grade uranium was discovered in the "Crooks" Gap Area. Development and claim staking rapidly followed and application was made with the Atomic Energy Commission for construction of the Split Rock Mill by Western Nuclear, Inc. Construction of the mill was completed in July of 1957.

Several mining firms have owned and operated mines on Sheep Mountain since the start of commercial production in 1957. Continental Materials, Inc. operated the Seismic Open Pit and Reserve shaft during the late 1950's and early 1960's, but sold their holdings to Western Nuclear in 1972. Phelps Dodge Corporation developed and operated the Ravine and Congo Inclines during the early 1960's. Western Nuclear, Inc. developed and operated the Paydirt Open Pit, Golden Goose I Shaft, and Heald Open Pit during the 1960's.

In 1971 Western Nuclear, Inc. was purchased by Phelps Dodge Corporation and from that point on, mining on Sheep Mountain was carried out solely by Western Nuclear, Inc. a wholly owned subsidiary of Phelps-Dodge Corporation.

Development projects on Sheep Mountain since 1972 include the-Sheep Mountain I and II shafts, Golden Goose II shaft, Sun Heald and McIntosh N.E. underground mines and the McIntosh Open Pits.

Pathfinder Corporation established an Open Pit uranium mine on Green Mountain within 3 miles of Western Nuclear's property in 1977. The local economy of the Jeffrey City-Sheep Mountain-Sweetwater Valley region was based heavily on uranium mining with ranching still playing a substantial but reduced role.

Production from the area by Western Nuclear ceased in 1982. In 1987 Pathfinder mines held an option on the property and produced limited tonnage from the Sheep I shaft. U.S. Energy-Crested Corp (USECC) acquired the properties from Western Nuclear in 1988 and completed some mine development through 2000. Subsequently, dewatering was discontinued and the mines allowed to flood.

In December 2004, Uranium Power Corp (UPC) (then known as Bell Coast Capital) entered into a Purchase and Sales Agreement with USECC to acquire a 50% interest in the Sheep Mountain property. The acquisition was completed in late 2007. USECC sold all of its uranium assets, including its 50% interest in Sheep Mountain, to Uranium One Ventures (USA) Inc (U1) in April 2007.

Titan Uranium Inc. acquired UPC's 50% interest in the property when it acquired UPC by a Plan of Arrangement in July 2009. The ownership was subsequently transferred to Titan's wholly-owned subsidiary, Titan Uranium USA (Titan) and the remaining 50% interest was purchased from U1 on October 1, 2009 giving Titan 100% ownership of the project. Since acquiring 100% ownership of the project Titan has been pursuing a mine development strategy which would employ conventional open pit and underground mining with on-site processing of the ores via a heap leach facility.

Historical facts for this brief summary of local history were collected from Reminiscing Along the Sweetwater, by Ruth Beebe, Johnson Publishing Company, Boulder, Colorado, 1973, and from a paper presented in Contributions to Geology, Wyoming Uranium Issue.

APPENDIX D3
ADDENDUM 2011

Sheep Mountain Project – Mine Permit 381C

APPENDIX D-3 – CULTURAL RESOURCES
2011 ADDENDUM

Cultural Resource surveys for the Sheep Mountain Project have been completed and/or are in progress within all areas of proposed disturbance.

Refer to Cultural Resource Area Map.

Due to their sensitive nature cultural resource surveys have been submitted directly to the BLM and SHPO for review and comment and are not included in this document. However, cultural resource surveys completed to date have not identified any eligible sites within the project area.

APPENDIX D4
ADDENDUM 2011

Sheep Mountain Project – Mine Permit 381C

APPENDIX D-4 – CLIMATOLOGY
2011 ADDENDUM

Appendix D10 - Climatology

The Sheep Mountain Project falls within the intermountain semi-desert weather province. The following is a summary of the climatic conditions.

JEFFREY CITY, WYOMING (NWS station 484925)

Period of Record Monthly Climate Summary

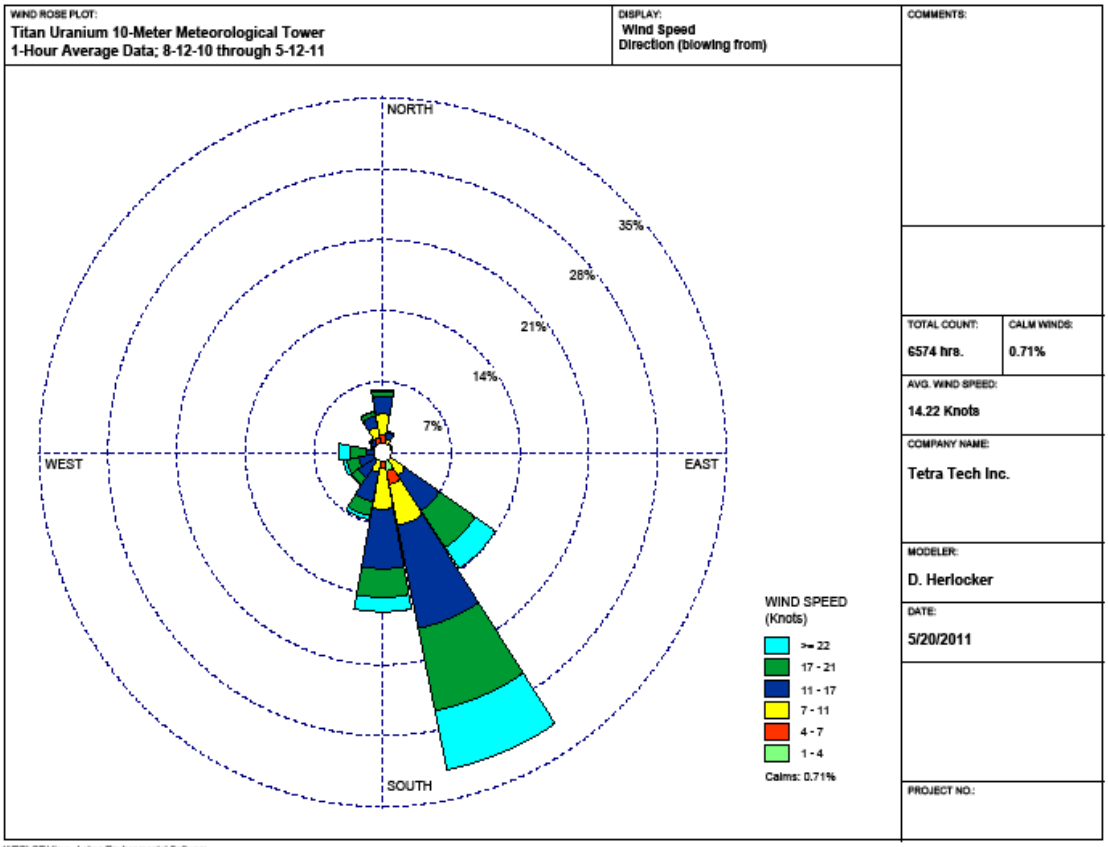
2.9.1.1.1 Period of Record : 4/10/1964 to 12/31/2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	31.1	34.0	43.5	54.7	64.5	75.1	84.9	82.8	71.8	59.4	40.1	31.1	56.1
Average Min. Temperature (F)	9.1	10.3	18.5	26.4	34.8	42.5	49.2	48.1	38.2	28.7	16.6	9.5	27.7
Average Total Precipitation (in.)	0.36	0.42	0.79	1.28	2.04	1.07	0.89	0.64	0.78	0.83	0.62	0.40	10.12
Average Total Snow Fall (in.)	5.1	6.6	8.3	9.7	4.0	0.3	0.0	0.0	1.1	5.4	9.7	6.2	56.5
Average Snow Depth (in.)	2	2	1	0	0	0	0	0	0	0	1	2	1

Titan has established an on-site remote weather station which has been recording temperature, precipitation (rain and snow), barometric pressure, wind speed at 1 and 10 meter heights, and other data. Wind speed, direction and shear are critical data input for MILDO monitoring required for the USNRC licensing of the site to predict offsite dispersion of air particulates and radon. The mill site at the Sheep Mountain Project sits in the valley of Crooks Gap. Local topography affects the wind direction. The following is a summary of current data.

- Wind at Sheep Mt. Predominantly from South and South-east.
- Wind Prone to Extreme Gusts and Sustained Wind Speeds in Excess of 18 m/s (40 mph)
- Maximum Recorded Wind Gust of 32.08 m/s (71.7 mph); Recorded at 12:00AM on January 17, 2011
- Max. 15-minute Avg. Wind Speed = 19.7 m/s (44.1 mph)
- Max. 60-minute Avg. Wind Speed = 18.3 m/s (40.9 mph)

A wind rose from the onsite weather station follows.


WIND ROSE PLOT:
Titan Uranium 10-Meter Meteorological Tower
1-Hour Average Data; 8-12-10 through 5-12-11
DISPLAY:
Wind Speed
Direction (blowing from)
COMMENTS:
NORTH
SOUTH
WEST
EAST
35%
28%
21%
14%
7%
WIND SPEED
(Knots)
>= 22
17 - 21
11 - 17
7 - 11
4 - 7
1 - 4
Calms: 0.71%
TOTAL COUNT:
6574 hrs.
CALM WINDS:
0.71%
AVG. WIND SPEED:
14.22 Knots
COMPANY NAME:
Tetra Tech Inc.
MODELER:
D. Herlocker
DATE:
5/20/2011
PROJECT NO.:
WRPLOT View - Lakes Environmental Software

APPENDIX D5
ADDENDUM 2011

Sheep Mountain Project – Mine Permit 381C

APPENDIX D-5 – GEOLGY AND OVERBRUDEN
2011 ADDENDUM

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Laboratory Analysis ..... Attachment B

Appendix D5 - Geology and Overburden

D5.1 Introduction

This report summarizes the geologic setting and overburden characteristics for the Sheep Mountain Project, WDEQ/LQD Mine Permit 381C and was developed on behalf of Titan Uranium USA.

Previous overburden analysis has been completed and approved for Mine Permit 381C. This addendum provides additional data with respect to overburden characterization, defines material types, and proposes selective handling methods to be employed during mining and reclamation.

D5.2 Regional Geology

Surface geology and regional geologic cross sections are shown on Figure 1 from Stephens, 1964. Within the project area surficial geologic exposures include:

- Quaternary alluvial and colluvial deposits mapped as;
  - Qal - Quaternary Alluvium
  - Qf –Quaternary Floodplain
- Tertiary Battle Spring Formation Tbs (Eocene);
  - Tbs Member B (Upper)
  - Tbs Member A (Lower)
- Tf - Tertiary Fort Union (Paleocene)
- Kc – Cretaceous Cody Shale

The permit area and the area immediately proximal to it are underlain by sedimentary formations ranging from recent to Cambrian in age. Cretaceous to recent age rocks outcrop in the general area. Uranium has been mined from the lower member of the Eocene Battle Spring Formation. It and overlying Quaternary sediments are the only formations that are expected to be disturbed by proposed mining operations.

In Early Eocene time, the Granite Mountain structural block, including overlying Paleozoic, Mesozoic, and Paleocene sedimentary rocks, was thrust southerly along the Emmigrant Trail Thrust Fault over extensions of those same sedimentary formations. Rapid erosion of the developing early Eocene Highland removed sedimentary as well as granite detritus, resulting in deposition southward in an unconformable manner across folded and eroded rocks of Cambrian to Paleocene age. The resulting debris is classified locally as the Battle Spring Formation and rests on either the Cody Shale or Fort Union Formation in the Crooks Gap area.

Pre-existing folds in the Paleozoic and Mesozoic rocks were modified in an asymmetrical manner by early-Eocene over-thrusting. The presence of similar, although generally not as intense, folds in overlying lower Eocene rocks suggests that over-thrusting continued as Battle Spring Formation deposition was active.

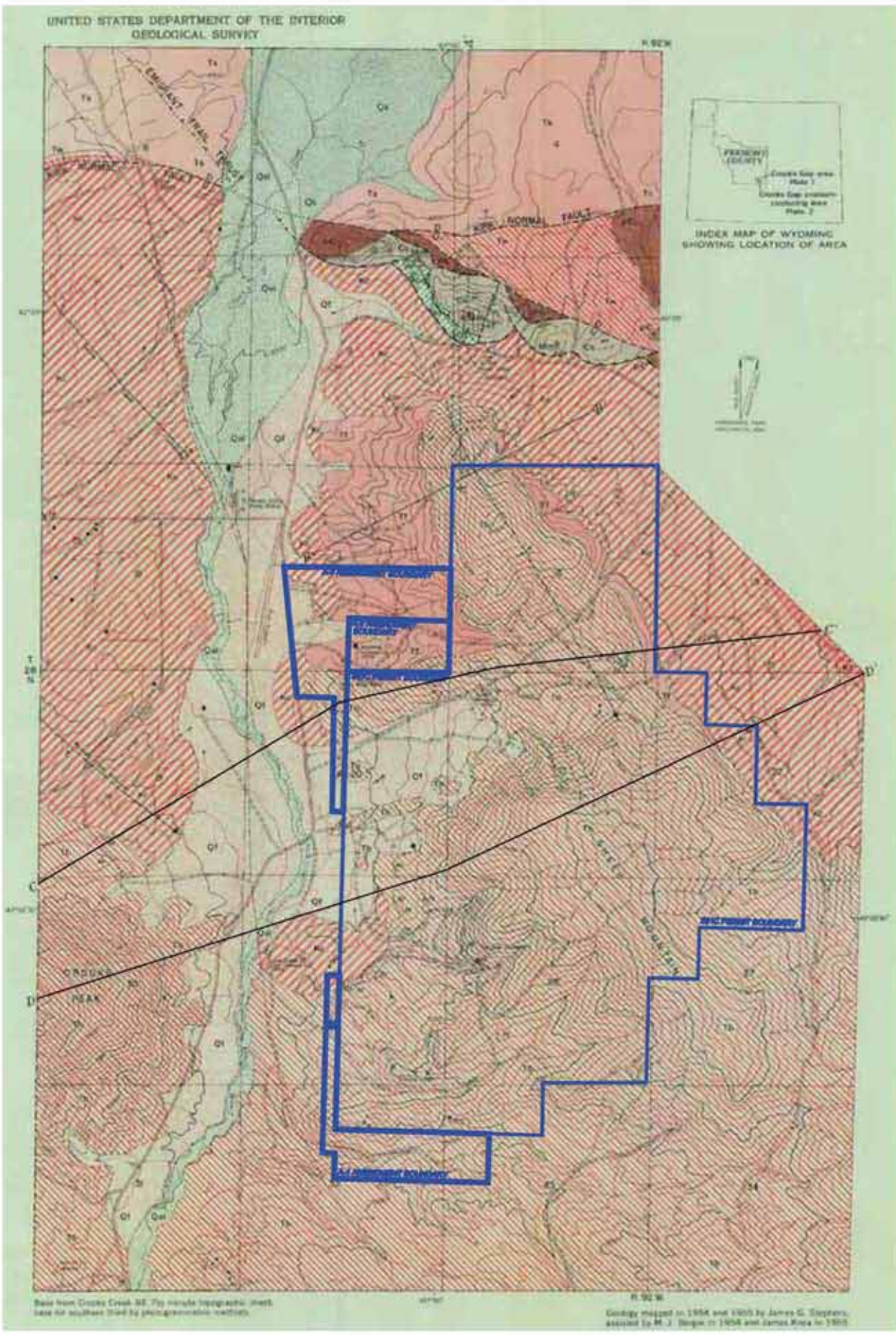
Within the Battle Spring Formation in the project area limited faulting has been observed and where present, displacement is minor. The largest reported displacement from the historic mining is four feet. The Battle Spring Formation is folded with a series of southeast plunging anticline/syncline features. Folding is reported to be more extensive in the lower Battle Spring Formation or A Member than in the upper or B Member. The nature of the folding and faulting in the Battle Spring Formation suggests that it was either contemporaneous with deposition of the sediments or occurred shortly after deposition. Post-Miocene erosion has exhumed portions of the Granite Mountains regionally and has exposed the Battle Spring Formation.

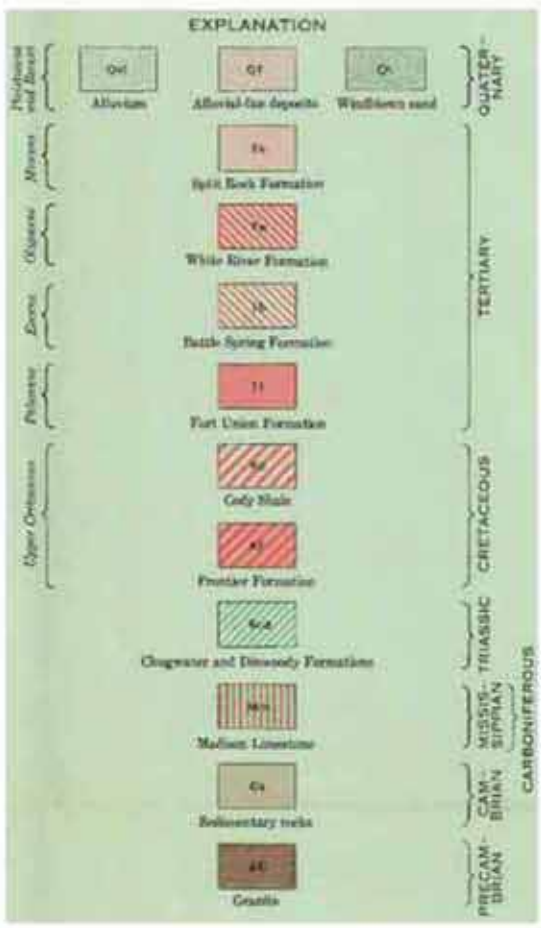
The Battle Spring Formation as a result of topography and structure ranges from 0 to 2000 feet in thickness within the study area. The average thickness in the area of the proposed Congo pit mine is about 800 feet. To the south under Sheep Mountain the Battle Spring Formation reaches 2,000 feet thick.

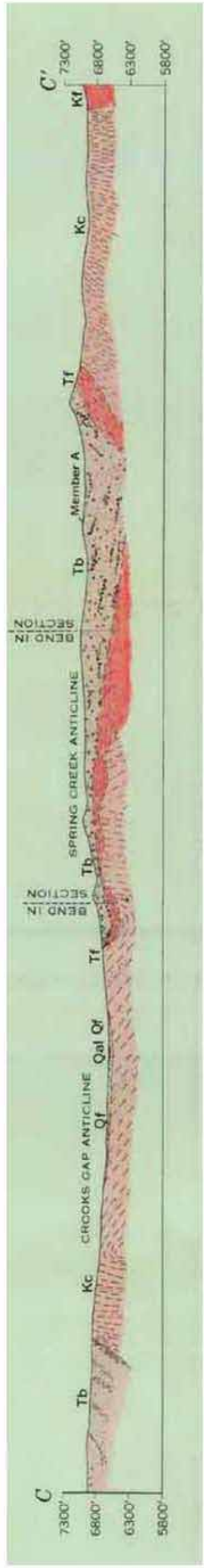
As shown on Figure 1 the Battle Spring Formation and associated mineralization at Sheep Mountain is bounded to the east by the western flank of the Sheep Mountain Syncline and to the west by the Spring Creek Anticline. To the north the system is exposed by erosion. To the south the Battle Spring Formation is continues into the northern portions of the Great Divide Basin. In cross section (Figure 1) the Battle Spring Formation within the project area is underlain and bounded on three sides by the Fort Union and/or Cody Shale in areas where the Fort Union was removed by erosion prior to deposition of the Battle Spring Formation.

The Battle Spring Formation is characterized as a high energy fluvial deposit. Both members consist of discontinuous interbeds of conglomerate, arkosic sandstone, siltstone and mudstone. There is a marked coarsening northward in the lower member, with conglomerates becoming the dominate rock type. The remaining upper member consists primarily of conglomerate and arkosic sandstone. The entirety of the formation functions as an aquifer, containing scattered discontinuous aquitards. The lower member contains increasingly large amounts of sedimentary detritus, derived from Mesozoic and Paleozoic rocks. The upper member of the Battle Spring Formation consists primarily of granitic detritus. The upper member no longer exists in the northern portion of the study area. The underlying Cody Shale and Fort Union Formation contain abundant argillaceous sediments and siltstone, providing a low vertical permeability.

The geologic setting of the project is important in that it controlled uranium mineralization by focusing the movement of the ground waters which emplaced the uranium into the stream channels which had developed on the pre-tertiary landscape. In a similar manner the geologic setting influences the current hydrologic setting by limiting the available recharge and discharge areas and therein bounding the hydrologic environment.







LEGEND

- ORIGINAL PERMIT BOUNDARY
- PERMIT BOUNDARY AMENDMENT
- CROSS-SECTION

REGIONAL GEOLOGY

SCALE: 1"=1500'	DATE	DWG. NO.	REV.
DRAWN BY: LAS	10/4/10	1	
CHECKED:			
APPROVED:			

SHEEP MOUNTAIN MINES
FREMONT COUNTY, WYOMING

NO.	REVISION DATE: None	DATE	BY	ISSUED FOR	DATE	BY

LAST PLOT DATE: 10/4/10
CAD FILENAME: Sheep Mountain Total Resource Area.dwg

TITAN URANIUM CORP.
BRS ENGINEERING

D5.3 Overburden characteristics

The majority of the overburden will be generated during the mining of the Congo Pit. Limited amounts of overburden will be generated from the Sheep Underground Mine. These materials will be backfilled in the existing Paydirt pit. Surficial geologic units exposed in the Congo pit area consist of Quaternary Alluvial deposits and weathered Battle Spring Formation. The Battle Spring Formation is the uranium host and is mineralized at or near the surface in some locations. Stratigraphic zones within the boreholes were defined as unclassified, marginal or unsuitable based on WDEQ/LQD guidelines, where unclassified material did not contain any deleterious properties with respect to radiological or metal concentrations and was not acid forming.

Mine overburden may contain metals and other constituents which are potentially acid forming and/or exhibit elevated levels of radionuclides. As discussed in the Addendum to Appendix D10, the principal radiological parameters of concern, based on potential health effects, are Radium 226 and its immediate daughter product Radon 222. Based on the available data, recommended clean-up criteria for Radium 226 (20 pCi/gm), and applicable standards and/or criteria, mine spoil has been subdivided into the following categories:

> Topsoil/Coversoil - Coversoil consists of native topsoil and subsoil but also includes buried alluvial soils, salvageable mine reclamation soils, and other material which is suitable as a plant growth medium. Coversoil is reasonably free from, clay, rocks, and other chemical or physical properties which inhibit the germination of seeds or growth of cover crops.
>
> Unclassified - Material which does not meet criteria as coversoil yet is not radioactive, is not acid forming, and does not contain concentrations of metals or other constituents in excess of WDEQ criteria. This material can be used for most construction purposes.
>
> Marginal - Material which is not radioactive or only slightly elevated in radionuclides but does have the potential to be acid forming and/or contains metals in excess of WDEQ criteria. This material can be used for most construction purposes. When placed near the surface a lime amendment may be necessary.
>
> Unsuitable - Material which is radioactive (exceeds 20 pCi/gm), acid forming, and/or exceeds WDEQ criteria for metals. This material will be isolated below the rooting zone.

Table D5-1 – Overburden Suitability Characteristics summarizes the overburden analysis for the boreholes. Without exception the upper oxidized portions of the boreholes, whether collared in Battle Spring or Quaternary Alluvium, where unclassified

Table D5-1 – Overburden Suitability Characteristics

2009 DRILLING
CONGO#1 THROUGH CONGO #5
OVERBURDEN SUITABILITY CHARACTERISTICS

TABLE D5-1 OVERBURDEN SUITABILITY CHARACTERISTICS

	Drill Hole Interval		Ra 226 pCi/gm	Ra 226* pCi/gm	Gamma cps	GRADE	pH	Acid / Base Potential	As mg/kg	Se mg/kg	Mo mg/kg	CLASSIFICATION
CONGO 1	0	5	11.1		296.7	0.0033	8.3	3.88	<0.05	<0.02	0.08	Unclassified
	5	20	10.4		277.8	0.0031	8.3	2.38	<0.05	<0.02	<0.05	Unclassified
	20	26	54.8		685.0	0.0163	4.4	2.4	0.21	0.02	<0.05	Unsuitable
	25	30	106.2		3072.2	0.0316	3.9	-0.25	0.22	<0.02	0.22	Ore Zone
	30	40	16.0		511.8	0.0048	4.6	1.55	<0.05	<0.02	<0.05	Marginal
	40	45	22.2		789.9	0.0066	7.1	1.77	<0.05	<0.02	<0.05	Unsuitable
	45	55	17.8		534	0.0053	8.1	1.1	0.07	0.05	0.08	Marginal
	55	65	57.6		1510.8	0.0172	7.6	1.95	<0.05	0.32	0.08	Unsuitable
	80	95	61.5	23.0	1492.1	0.0183	3.8	-2.79	0.28	<0.02	0.13	Unsuitable
	95	110	20.3		487.3	0.0060	6.6	-1.2	0.07	<0.02	0.16	Unsuitable
	110	120	86.7		2009.6	0.0258	4.1	-0.75	0.34	0.21	0.15	Unsuitable
	120	130	13.8		378.7	0.0041	7.2	1.98	<0.05	<0.02	0.11	Unclassified
	130	140	12.6		301.4	0.0038	7.4	-0.12	<0.05	<0.02	0.09	Unclassified
	140	150	13.4		316.6	0.0040	7.5	1.21	<0.05	<0.02	<0.05	Unclassified
	150	155	10.8		265.6	0.0032	8.5	1.91	<0.05	<0.02	<0.05	Unclassified
	155	180	11.4		274.3	0.0034	8.4	2.59	<0.05	<0.02	<0.05	Unclassified
	180	200	10.2	5.8	249.4	0.0031	8.7	2.37	<0.05	<0.02	<0.05	Unclassified
	200	210	10.2		248.1	0.0031	8.8	14.8	<0.05	<0.02	<0.05	Unclassified
	210	220	13.3		310.7	0.0040	8.7	2.59	<0.05	<0.02	0.05	Unclassified
	220	230	10.1	19.7	231.3	0.0030	8.9	2.75	<0.05	<0.02	0.08	Unclassified
	230	240	35.6		845.3	0.0106	8.2	5.21	0.06	0.6	0.44	Unsuitable
	240	260	10.7		248.6	0.0032	8.2	0.27	<0.05	<0.02	0.18	Marginal
	260	285	19.0		528.5	0.0056	8.1	0.72	0.09	0.4	0.66	Marginal
	285	300	9.3		226.9	0.0028	8.5	11.4	<0.05	<0.02	0.14	Unclassified
	300	310	11.3		250.6	0.0034	8.6	7.74	<0.05	<0.02	0.14	Unclassified
	310	315	16.1		352.8	0.0048	8.7	6.11	<0.05	<0.02	0.15	Unclassified
	315	325	13.7		455.9	0.0041	8.4	1.86	0.1	0.03	0.22	Unclassified
	325	345	16.1		391.6	0.0048	8.3	3.38	0.07	0.02	0.3	Unclassified
	CRITERIA					>0.006	5.5-8.5	>-5	<2	<.3	<1	
	AVERAGE						7.4	2.74	0.15	0.21	0.18	
CONGO 2	0	20	0.0		219		8.3	3.06	<0.05	<0.02	<0.05	Unclassified
	20	45	0.0	28.5	288.3		8.2	2.79	<0.05	<0.02	0.06	Unclassified
	45	55	0.0		106.5		8.0	2.7	<0.05	<0.02	<0.05	Unclassified
	62	70	0.0		563.6		7.1	0.65	<0.05	<0.02	0.15	Unclassified
	80	95	0.0		351		8.3	2.43	0.12	0.08	0.48	Unclassified
	95	110	162.6	311.0	2314.8	0.0484	7.7	3.05	0.11	0.04	3.39	Ore Zone
	110	130	216.7		1611.5	0.0645	8.0	3.03	0.13	0.14	0.54	Ore Zone
	130	150	0.0		323.9		8.4	2.13	<0.05	0.03	0.09	Unclassified
	150	170	0.0		228		8.3	3.69	<0.05	<0.02	0.06	Unclassified
	170	190	0.0	209.0	296.4		8.6	10.5	<0.05	0.6	0.06	Marginal
	190	198	0.0		194.1		8.7	7.94	<0.05	<0.02	0.05	Unclassified
	198	210	0.0		336.8		8.7	8.73	<0.05	<0.02	<0.05	Unclassified
	218	225	0.0		6592		8.1	1.85	0.19	0.55	0.59	Marginal
	225	236	0.0		543.6		8.3	4.03	0.21	0.35	0.8	Marginal
	CRITERIA					>0.006	5.5-8.5	>-5	<2	<.3	<1	
	AVERAGE						8.2	4.0	0.2	0.3	0.6	
CONGO 3	20	40	0.0		415.4		8.4	1.66	<0.05	<0.02	<0.05	Unclassified
	40	50	0.0		1030.3		8.2	1.49	<0.05	<0.02	0.06	Unclassified
	50	55	215.5		4126.6	0.0641	8.2	1.4	<0.05	<0.02	<0.05	Ore Zone
	55	65	248.6	1500**	6492.3	0.0740	4.3	0.08	0.72	<0.02	0.9	Ore Zone
	65	80	0.0		909.4		4.6	0.09	0.09	<0.02	0.08	Marginal
	80	85	0.0		861.8		7.1	2.71	0.24	0.49	0.18	Marginal
	85	90	0.0		659		7.6	0.83	0.05	0.02	<0.05	Unclassified
	90	105	420.0		5880.2	0.1250	5.1	0	0.27	0.11	0.66	Ore Zone
	105	115	0.0		431.2		6.5	4.44	<0.05	0.02	0.06	Unclassified
	115	120	196.4		5001.8	0.0584	6.0	1.49	0.32	0.4	0.18	Ore Zone
	120	135	0.0		1918.1		4.5	-1.55	0.52	0.04	0.79	Marginal
	135	150	0.0		439		4.4	-4.46	0.56	<0.02	0.71	Marginal
	150	160	224.4		4038.5	0.0668	5.3	0.15	0.96	0.13	12	Ore Zone
	165	170	0.0		417.2		7.4	2.62	<0.05	<0.02	0.25	Unclassified
	170	180	126.7	324.0	2564.4	0.0377	4.3	-2.28	0.52	0.21	1.91	Ore Zone
	185	200	0.0		649.3		3.5	-7.59	0.53	<0.02	1.46	Unsuitable
	200	218	0.0		440.1		7.6	-2.94	0.07	<0.02	0.42	Unclassified
	CRITERIA					>0.006	5.5-8.5	>-5	<2	<.3	<1	
	AVERAGE						6.1	-0.1	0.4	0.2	1.4	

***Note:** Laboratory testing was performed by Inter-Mountain Laboratories, refer to _____.

***Note:** This sample is associated with high grade material, and is not correlatable with the other samples.

Exceeds Criteria
Marginal
Alkaline

Table D5-1 – Overburden Suitability Characteristics (continued)

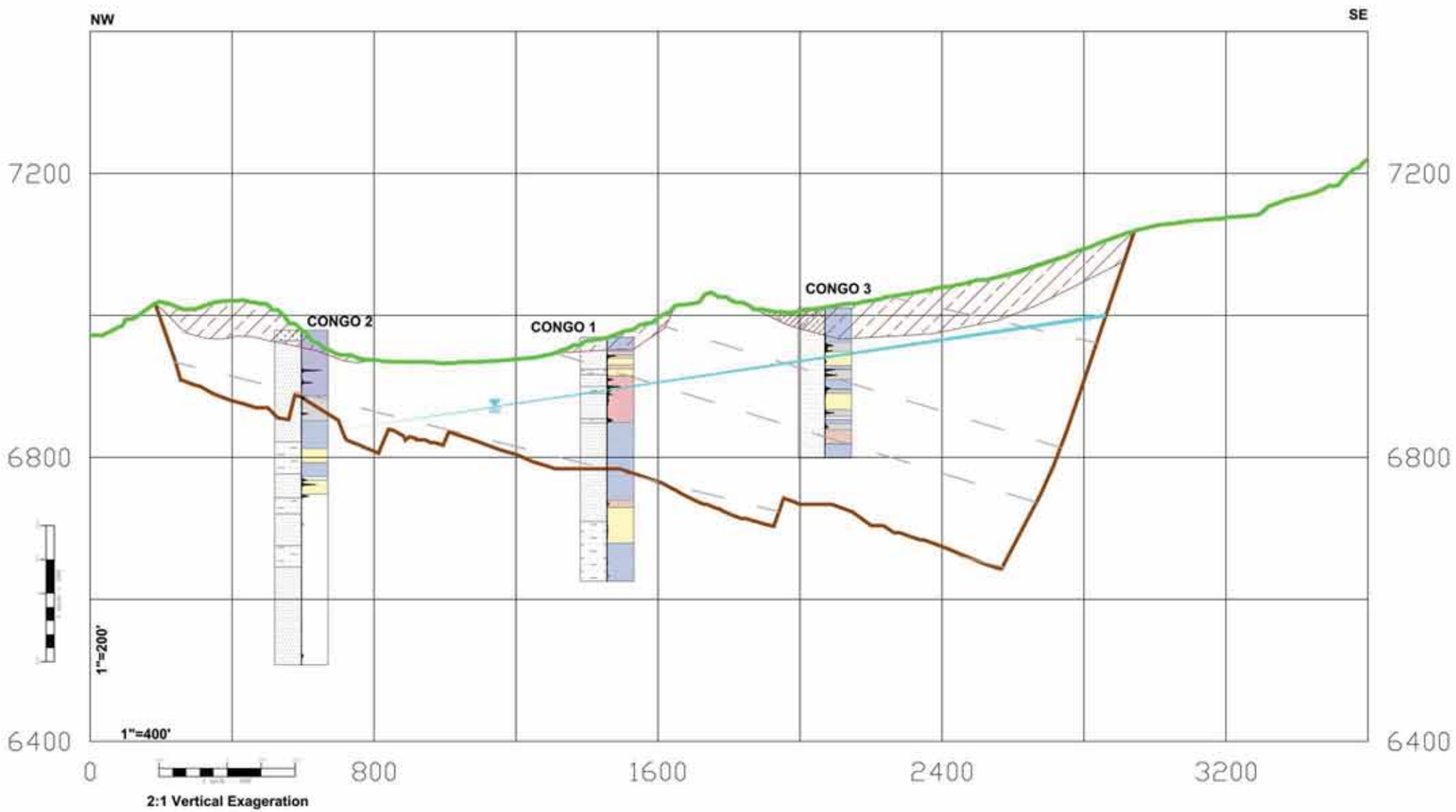
	Drill Hole Interval		Ra 226 pCi/gm	Ra 226* pCi/gm	Gamma cps	GRADE	pH	Acid / Base Potential	As mg/kg	Se mg/kg	Mo mg/kg	CLASSIFICATION
CONGO 4	0	5	0.0				7.7	2.78	0.09	<0.02	<0.05	Unclassified
	5	20	0.0		299.9		8.5	3.14	<0.05	<0.02	<0.05	Unclassified
	20	40	0.0	20.7	368.0		7.8	1.33	<0.05	<0.02	<0.05	Unclassified
	60	80	0.0		360.2		7.3	0.95	<0.05	0.04	<0.05	Unclassified
	80	90	0.0		1446.7		7.2	-0.51	0.11	0.15	0.1	Unclassified
	94	110	0.0		4347.0		7.8	0.39	0.13	0.31	0.47	Marginal
	110	135	0.0	468.0	2107.6		5.3	0.26	0.57	0.15	1.16	Marginal
	135	145	0.0		507.2		8.3	1.29	0.12	0.45	0.57	Marginal
	145	150	0.0		553.4		8.6	1.98	0.06	0.56	0.22	Marginal
	150	163	0.0		381.9		8.5	2.34	<0.05	0.3	0.13	Marginal
	163	175	402.4		2530.8	0.1198	6.7	1	0.37	0.98	0.18	Ore Zone
	175	195	0.0		461.0		8.3	2.85	0.13	0.7	0.1	Marginal
	195	215	173.4	292.0	2722.7	0.0516	8.5	0.04	0.14	0.59	0.16	Ore Zone
	215	230	0.0		456.7		8.7	8.8	<0.05	0.13	0.06	Unclassified
	230	245	44.9		1051.0	0.0134	8.5	4.76	0.1	0.16	0.1	Unsuitable
	245	260	0.0		523.0		8.0	6.62	0.1	0.08	0.21	Marginal
	260	280	0.0		316.3		8.2	0.31	0.05	0.05	0.23	Marginal
	280	300	0.0		359.8		8.1	5.71	0.05	<0.02	0.6	Marginal
	CRITERIA					0.006	5.5-8.5	>-5	<2	<.3	<1	
	AVERAGE						7.9	2.4	0.2	0.3	0.3	
CONGO 5	0	5	0.0		224.1		7.4	2.93	<0.05	<0.02	<0.05	Unclassified
	5	25	0.0		238.8		8.3	1.18	<0.05	<0.02	<0.05	Unclassified
	35	40	0.0		428.3		7.4	0.16	0.07	<0.02	<0.05	Unclassified
	40	45	0.0		254.3		7.8	2.9	0.05	<0.02	<0.05	Unclassified
	45	50	0.0		734.0		6.9	2.7	0.08	0.1	<0.05	Unclassified
	50	65	0.0	39.2	336.1		7.4	2.53	<0.05	<0.02	<0.05	Unclassified
	65	75	0.0		297.2		7.8	1.4	<0.05	<0.02	<0.05	Unclassified
	75	85	0.0		198.8		8.2	2.74	<0.05	<0.02	<0.05	Marginal
	85	105	0.0		595.4		8.1	0.27	0.21	0.37	<0.05	Marginal
	105	120	0.0	26.2	315.0		8.0	1.76	0.7	0.7	<0.05	Marginal
	120	133	0.0		911.1		7.7	2.24	0.18	1.53	0.05	Marginal
	133	151	0.0		914.5		6.0	0.81	1.06	0.69	0.25	Marginal
	155	160	225.5		4660.0	0.0671	6.0	-0.13	0.93	0.03	27.3	Ore Zone
	165	175	0.0		2206.0		6.1	0.28	1.05	0.04	12.6	Marginal
	179	195	0.0		1497.3		8.2	1.32	0.12	0.42	0.87	Marginal
	195	220	118.3		1895.2	0.0352	8.0	2.03	0.2	0.37	1.07	Ore Zone
	220	245	75.6		1195.3	0.0225	8.7	2.86	0.08	0.16	0.26	Unsuitable
	245	260	0.0	20.1	338.0		8.5	2.56	<0.05	0.26	0.06	Unclassified
	260	274	141.4		1748.4	0.0421	6.6	-0.43	0.51	0.37	0.91	Ore Zone
	274	290	73.1		991.7	0.0218	8.4	0.57	0.21	0.07	0.12	Unsuitable
	290	306	160.9		2286.4	0.0479	8.7	5.4	0.08	0.15	0.11	Ore Zone
	306	320	158.3		2235.2	0.0471	8.5	3.57	0.09	0.42	0.09	Ore Zone
	320	335	292.0		6682.2	0.0869	7.4	-4.85	0.31	0.05	3.5	Ore Zone
	335	350	82.9		942.0	0.0247	5.3	-2.87	1.29	0.02	1.05	Unsuitable
	CRITERIA					0.006	5.5-8.5	>-5	<2	<.3	<1	
	AVERAGE						7.6	1.3	0.4	0.3	3.4	

*Note: Laboratory testing was performed by Inter-Mountain Laboratories, refer to _____.

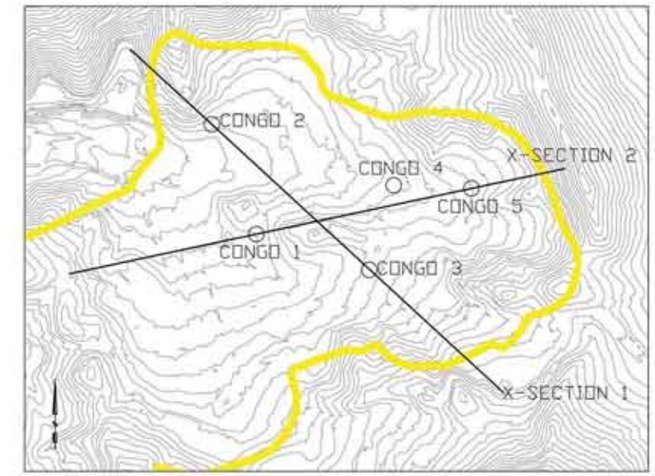
Exceeds Criteria
Marginal
Alkaline

Figures D5-2 and D5-3 provide representative cross sections through the Congo Pit area. Borehole logs and laboratory analysis are provided included in Attachments A and B, respectively.

The cross sections show that in a general sense the near surface material is suitable when non-mineralized and the majority of unsuitable material is commonly associated with the ore zones. Numerous mineralized zones (up to 16) exist within portions of the Congo Pit. Based on the formational dip the elevation that the various mineralized zones are encountered in the pit will vary.



Vicinity Map



Not to Scale

Cross Section Legend

- Ground Elevation
- Proposed Congo Pit
- Potentiometric Surface
- Qal / Weathered Tbs

Mineralized Sands

80's	89, 86, 83
70's	79, 77, 75
60's	67, 66, 63
50's	59, 54-56, 52
40's	48, 41, 41a

Overburden and Lithology Legend

- Unclassified
- Marginal
- Unsuitable
- Potential Ore Zone
- No Recovery
- Gamma Relog
- Clayey Sand
- Sandstone
- Shale

TITAN URANIUM USA INC

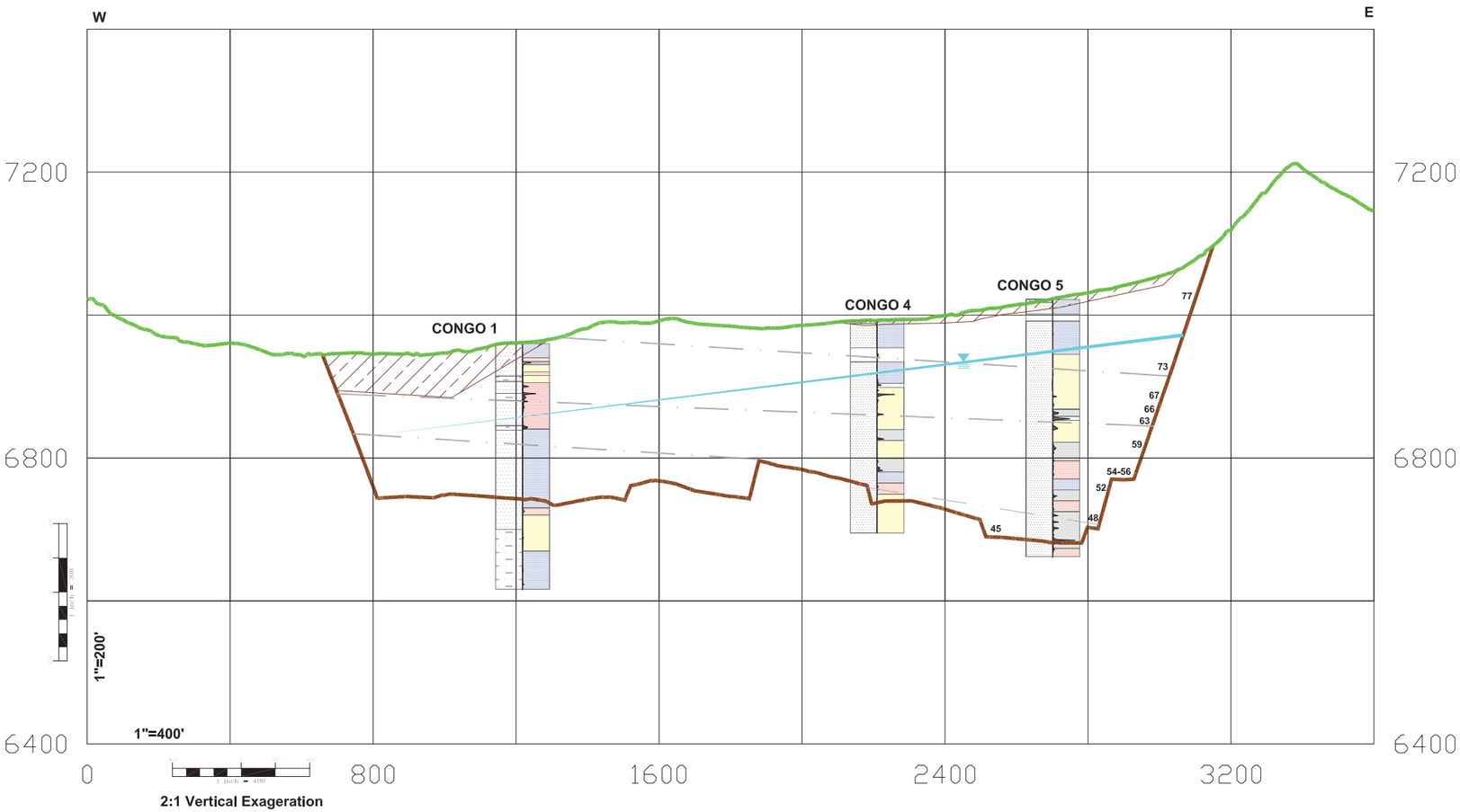
REVISION DATE: 06/10/11
CAD FILENAME:
DWG. NUMBER:

SHEEP MOUNTAIN MINES
FREMONT COUNTY, WYOMING

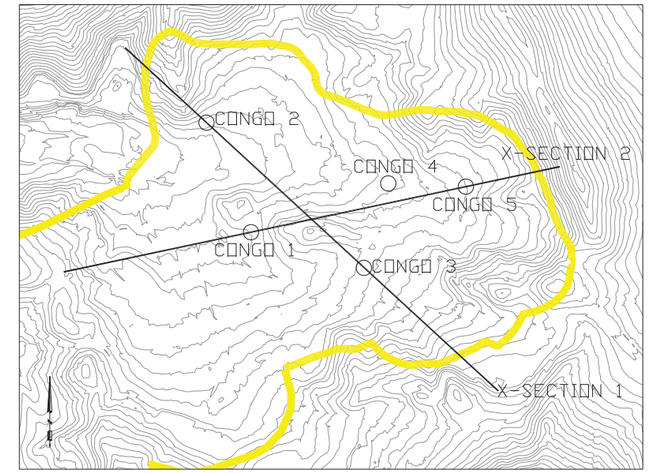
Cross Section 1

SCALE: Variable
DATE: 5/20/11
DRAWN BY: RJB

BRS ENGINEERING



Vicinity Map



Not to Scale

Cross Section Legend

- Ground Elevation
- Proposed Congo Pit
- Potentiometric Surface
- Qal / Weathered Tbs

Mineralized Sands

80's	89
	86
	83
70's	79
	77
	75
60's	67
	66
	63
50's	59
	54-56
	52
40's	48
	41
	41a

Overburden and Lithology Legend

- Unclassified
- Marginal
- Unsuitable
- No Recovery
- Gamma Relog
- Clayey Sand
- Sandstone

TITAN URANIUM USA INC

REVISION DATE: 06/10/11
CAD FILENAME: P2008/PERMITS/OVERBURDEN X-SECTIONS
DWG. NUMBER: MAP 2.1

SHEEP MOUNTAIN MINES
FREMONT COUNTY, WYOMING

Cross Section 2

SCALE: Variable
DATE: 5/20/11
DRAWN BY: RJB

BRS ENGINEERING

D5. 4 Selective Handling

Selective Handling/Construction Control

The mining plan will segregate both available topsoil and oxidized surficial mine overburden with low radiological levels for final cover of the mine and heap areas during reclamation. During construction, unsuitable materials can be identified and selectively excavated and placed based on radiological levels, visual identification, and sampling. Radiological levels in excess of 70 MicroR/Hr would indicate unsuitable material and can be readily identified in the field with hand held scintilometers (refer to Appendix D10 for gamma/Radium 226 correlation).

Materials with non-radiological parameters of concern are generally correlated with elevated radiological parameters. The majority of unsuitable material is represented by or closely associated with the ore which will be mined and processed and thus will not be of concern in the mine reclamation. Control of radiological parameters during construction by field methods will thus generally serve to control non-radiological parameters of concern as well. Visual identification in combination with field monitoring of radiological levels will provide for reasonable classification and control of unsuitable materials during construction which exceed radiological suitability criteria, have visual sulphide minerals, and/or have a high acid forming potential based on regraded spoil sampling. Marginal materials will also be controlled by both visual identification and radiological levels as discussed above, and sampling of the regraded surface prior to topsoil placement will determine acid/base potential and required levels of lime as an amendment.

A formal in-pit grade control will be utilized for this project which includes.

<u>Radiometric Scanning:</u> Field personnel equipped with calibrated hand-held gamma meters will be assigned to both the stripping and mining crews. Grade control personnel along with mine supervisory personnel will continually monitor excavations for radiometric and/or visual indications of uranium mineralization and will identify materials for selective handling and excavation.

<u>In-Pit Assay:</u> In-pit there will be a portable sample trailer equipped with a portable x-ray fluorescence (XRF) assay instrument and appropriate sample preparation equipment. All mine trucks working within identified mineralized zones will be sampled with with an auger system and the samples prepared and assayed. The individual trucks will then be directed to deliver the material to the heap leach facility or mine waste area depending on the results of the assay. Grade control and supervisory personnel will also have the ability to collect spot samples for immediate assay to field calibrate their gamma meters for variations in radiometric equilibrium conditions. The XRF can assay for uranium and heavy metals which may be present if needed for determination of overburden suitability.

Quality Control: Daily ore conrol samples will be blended and split to provide representative samples which will in turn be assayed at the plant laboratory. The plant lab will assay both solid and liquid samples and will be subject to an outside and/or third party quality control system.

These grade control procedures will also be used to segregate material for final reclamation cover. The procedure would be the same except rather than segregating the material with concentrated the scanning and assaying would be used to identify material which do not contain deleterious metals and/or radionuclides.

D5.5 Mine Reclamation Goals

WDEQ guidelines and regulations and standards for metals, acid forming potential, pH and other parameters will be employed in the salvage and utililization of topoil and other suitable coversoil material. While there are not specific numeric standards for mine reclamation with respect to surficial radiological concentrations, it is proposed that the guidance developed by the Wyoming Department of Environmental Quality, Abandoned Mine Lands Division (AML) be employed for future mining and reclamation activities at the Sheep Mountain Project under WDEQ Mine Permit 381C. Current AML practice is reclaim mine lands for unrestricted use based on an assessment of radiological health risks. Based on the findings of "Radiological Risk Assessment for Various Abandoned Mine Lands Clean-Up Criteria", Hersloff and Johnson, et al, 1988, prepared for the State of Wyoming, Abandoned Mine Lands Program, a surface clean up criteria of 20 pCi/g Radium 226 has been employed by AML. For the Sheep Mountain Project, as discussed in Appendix D10, Radiology, a near surface soils/overburden concentration of 20 pCi/g Radium 226 would equate to approximately 70 μR/hr. Where local conditions and such factors as availability of cover and topsoil affect the ability to meet this goal, principals of ALARA will be employed.

APPENDIX D6
ADDENDUM 2011

Sheep Mountain Project – Mine Permit 381C

ADDENDUM D6-1 - HYDROLOGY UPDATE
2011 ADDENDUM

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Addendum D6 – Hydrology Update

D6.1 Introduction

The purposes of this addendum are to 1) report the most recent project site ground water quality and elevation data for comparison to historically collected ground water data, and 2) report current surface water conditions and expand on the previous limited surface water hydrology evaluation. Ground water and surface water baseline data were submitted to the Wyoming Department of Environmental Quality (DEQ), Land Quality Division (LQD) with the original 1979 Permit Application and subsequent revisions (Permit 381C).

Titan Uranium USA, Inc. (Titan) has updated the DEQ permit document so that the format matches LQD Guideline 4, and to ensure it is in compliance with Chapter 11 of the LQD Rules and Regulations. As part of the LQD Chapter 11 Update, in 2010 and 2011 Titan drilled additional background monitoring wells and collected four sets of ground water quality data from a representative set of wells to verify that current ground water quality is consistent with historical baseline ground water quality. In 2010, Titan surveyed the site surface water drainages and collected surface water samples to better define geomorphic characteristics and water quality in the permit area and to bring the permit up to date with DEQ, LQD Guideline 8. Surface water hydrology data were modeled to design mine site surface water conveyance and erosion controls, and to establish background conditions for post mining reclamation. Water rights information has been updated to reflect permitted water rights recorded in the Wyoming State Engineer's database in 2011.

The original permit to mine was issued to Western Nuclear in 1978, although the area had been mined since the 1950's. At the time the original permit was submitted, the Paydirt Pit was an open impoundment. That pit has subsequently been reclaimed by the Wyoming AML Program. Western Nuclear began dewatering the Sheep Underground mine in the late 1970's and discharging the treated water to Hank's Draw to the north. From 1990 through October, 2000 dewatering continued with discharge to the McIntosh Pit. Water levels were drawn down to an elevation of 5800 feet in the Sheep Mountain I Shaft and 6105 feet in the Sheep Mountain II Shaft. Water levels have recovered approximately 1000 feet in the Sheep Mountain I Shaft, and 715 feet in the Sheep Mountain II Shaft, although they have not recovered to pre-mining levels.

D6.2 Ground Water

Ground Water Monitoring

Appendix D5 and Appendix D6 of the original permit document contain regional geology and hydrogeology information for the project site. The baseline water quality data and aquifer characterization for the project site are also included in Appendix D6. Water level and water quality data from 10 monitoring wells (PZ1-10) were included in the original permit application along with limited aquifer testing of the Battle Spring Aquifer. Subsequent owners of the property have continued to collect water quality data from the monitoring wells.

In 2010 and 2011, Titan installed additional monitoring wells to document conditions in the uppermost aquifer in the vicinity of the proposed Congo Pit and the proposed heap leach site near the existing McIntosh Pit. Monitor wells (MW 6,7,9, and 10) were paired with the existing PZ wells but completed 50 feet above and 50 feet below the anticipated bottom of the Congo Pit. Wells G3,4,5, and 6 were completed across the uppermost saturated zone of the Battle Spring or undifferentiated Battle Spring/Fort Union Aquifer downgradient from the proposed heap leach, and south of the McIntosh Pit. The locations of the monitor wells are shown on **Figure D6.1**. Completion information is included in **Table D6.1**. Well logs for the G wells are included in **Attachment A** to this addendum.

Ground Water Sampling

A Ground Water Sampling and Analysis Plan was submitted to DEQ/LQD in Lander in 2010. Before sampling, the static water level is measured in each well utilizing an electronic well sounder. The total depth of each well is also measured utilizing a geophysical probe or a weighted measuring tape. The volume of water standing in each well is calculated, and a minimum of three casing volumes are evacuated from each well using a submersible pump. The pumping rate varies depending on the characteristics of the well. During evacuation, the temperature, pH, and conductivity of the water are measured and recorded on field sampling forms. The water samples are collected directly from the pump hose into laboratory supplied bottles. Radon samples are collected in glass VOA bottles. Each bottle is labeled with a permanent marker denoting sample number, date, and time of sample collection. The samples are cooled in accordance with Environmental Protection Agency (EPA) protocol and shipped to IML laboratories in Sheridan, Wyoming for filtration, preservation, and analysis. Chain of Custody documentation accompanies the samples to the lab. Duplicate samples are collected for quality assurance/quality control purposes. All samples are analyzed for the LQD Guideline 8 list of constituents.

Ground Water Flow

Annual water levels have been measured in site monitoring wells since 1990. Titan began quarterly monitoring of static water levels in monitoring wells at the Sheep Mountain Project site in June, 2010. Water levels were measured in existing monitoring wells constructed by previous owners of the mining Project and compared to the baseline data presented in the 1979 and 1980 permit amendments. Completion information and static water levels for the wells that were sampled in 2010 and 2011 are summarized in **Table D6.1**. Using static water levels measured in June, 2011, a potentiometric map of the Battle Spring Aquifer beneath the Project site has been drawn (**Figure D6.2**). Downgradient from the project site towards the west, the Battle Spring unconformably overlies the Fort Union Formation. The contact is gradational and cannot be identified from drill cuttings or geophysical logs. Water levels in wells completed in the two aquifers indicate that they are connected hydraulically and likely behave as a single hydrostratigraphic unit.

Water levels measured in June, 2011 indicate that this aquifer is unconfined, and ground water flow is generally towards the west/northwest beneath the site. This flow

orientation correlates well with the 1979/1980 potentiometric surface determined by Western Nuclear. The ground water gradient varies across the site ranging from 0.066 ft/ft upgradient from the McIntosh Pit to 0.023 across the center of the site where the potentiometric surface is still showing residual drawdown from historic dewatering in the Sheep Mountain underground mine. Water levels are generally lower in elevation when compared to the 1979/1980 values ranging from 8 to 72 feet lower than those reported in the original permit. Plots of annual static water levels in wells around the McIntosh Pit indicate that since 1990 water levels have remained relatively stable through 10 years of dewatering and another 10 years after dewatering. Water level data plotted for wells PZ 1-5 are included in **Attachment B**.

Ground Water Quality

Between 1979 and 1980, Western Nuclear established baseline ground water quality concentrations for 10 wells located across the Sheep Mountain Project site. Eight wells were completed within the Battle Spring Aquifer (ore zone) and two wells were completed in the Fort Union Formation (PZ-7 and PZ-8). Monitoring wells sampled in 2010 were selected to provide representative spatial and stratigraphic distribution within the proposed mining area. They include wells PZ-1 through PZ-10. Five additional wells were drilled, completed in the vicinity of the proposed Congo Pit, and sampled by Titan in 2010 and 2011. These include wells MW-6N, MW-6S, MW-7, MW-9, and MW-10. Four more wells (G-3 through G-6) were completed in May 2011 to characterize ground water in the vicinity of the proposed heap leach pad adjacent to the McIntosh Pit. Samples were collected in June, 2011 but analytical results from these samples have not yet been received. The locations of all the wells are shown on **Figure D6.1**.

Three rounds of water quality samples were collected from the wells in June/July, September, and November of 2010 to analyze for additional constituents currently required by recent updates to DEQ guidelines. A fourth quarterly sample was collected in March 2011, but those analytical results have not been received from the laboratory. A summary of historical water quality results is presented in **Table D6.2** and includes the average, standard deviation, minimum and maximum values for all constituents. Battle Spring and Fort Union Aquifer water quality data have been evaluated separately from the summary table and are presented in **Tables D6.3** and **D6.4,** respectively.

Water quality varies within the Battle Spring Aquifer depending on where the well has been completed relative to mineralized zones. Overall, the Battle Spring water quality is dominated by calcium-sodium bicarbonate-sulfate water. The Fort Union water quality is dominated by sodium-bicarbonate-sulfate water with lower amounts of calcium. A trilinear diagram of water quality samples collected from area monitor wells in June and November 2010 is presented as **Figure D6.3**. This figure illustrates the variability in water quality for the different monitoring wells completed across the site. Water in both the Battle Spring and Fort Union Aquifer exceed DEQ/Water Quality Division Class III standards due to elevated radium 226 and gross alpha concentrations.

Various owners of the property have continued to collect annual water quality samples from the monitoring wells completed in the vicinity of the McIntosh Pit. Despite the dewatering that occurred from the late 1970's through 2000, concentrations of major

cations and anions have remained remarkably stable. Graphs of water quality from Wells PZ1 through PZ5 are included in **Attachment B**.

Ground Water Rights

All ground water rights located within a 3-mile radius of the Permit Area are presented on **Figure D6.4** and in **Table D6.5**. The water rights data were downloaded from the Wyoming State Engineer's Office (SEO) e-permit database. The table includes the following information (if reported): water rights number, priority date, water rights status, owner, facility name, uses, location, yield, well depth, static water level, chemical analysis, latitude and longitude.

Water Use

According to the SEO e-permit database, there are 68 ground water rights within a 3-mile radius of the project area. Since these wells are installed in clusters and are only located to the nearest quarter section, the symbols on **Figure D6.4** indicate the quarter sections where the locations of the wells are reported in the SEO database. The majority of water wells are primarily used for livestock watering, monitoring, and industrial purposes. The industrial use consists of water for exploration drilling, and environmental wells for water quality monitoring and hydrologic studies for proposed uranium mining. There are five domestic wells located within 3 miles of the permit site. Three domestic/stock wells are located approximately 2 miles northwest of the project and two additional domestic/industrial wells are located on the site. There are also two municipal/miscellaneous wells located 1.5 miles east of the site at the Sheep Creek Oil Field.

Nearest Municipal Water Source/Public Water System

There is one Public Water Systems (PWS) in the vicinity of the project: Jeffrey City Water & Sewer District (PWS # 56000106) is located approximately 6 miles north of the Sheep Mountain Project site.

Ground Water Impacts

Both the underground and open pit will require dewatering for mine operations. Mine dewatering from the underground mine will be required in advance of re-opening the mine. Mine dewatering from the open pit mine will not be necessary until the 4th or 5th year of operations as the open pit mine does not reach the ground water level until that time. Initiation of underground mine dewatering is scheduled to begin in 2011. This activity is permitted under the active Mine Permit 381C. Waters from the mine will be pumped from the existing Sheep I Shaft and discharged into the McIntosh Pit. In line treatment of the mine waters with barium chloride to reduce the expected levels of Radium 226 will be completed prior to discharge into the pit. Additional barium chloride will be added to the discharge waters to gradually lower the levels of Radium 226 in the pit. No waters will be discharged to the surface.

Once the Project begins construction and operation, water will be needed for consumptive use for pollution and dust control and mineral processing. These consumptive uses may exceed the volume of water produced from mine dewatering. Additional, permitted water sources for the

Project include the McIntosh Pit which is permitted as the McIntosh No. 1 Reservoir, Permit 7714 Reservoir, which will be utilized as needed for operations.

Despite over 50 years of mining history at the site, some of which preceded modern regulations, existing ground water quality does not show significant degradation from mining. In the vicinity of the McIntosh Pit, the pit and five surrounding wells have been monitored for water level and water quality since 1988. This included the period of time from 1990 to October, 2000 when the Sheep underground mine was being dewatered and discharged into the McIntosh Pit. The principal impact has been to water levels in the vicinity of and downgradient from the underground mine workings, and upgradient from the McIntosh Pit. Compared to baseline water levels documented in the approved DEQ permit, water levels between the underground mine workings and in the pit remain lowered between 8 and 72 feet. Water quality in both the pit and monitor wells has remained stable and consistent. The only exceptions are slightly elevated levels of calcium and sulfate likely due to dissolution of gypsum, and a slight but general rise in Radium 226 and uranium concentrations in the McIntosh Pit. These changes do not impact the DEQ class of use for the aquifer.

D6.3 Introduction to Surface Water

As discussed in the general introduction to this addendum, Titan collected baseline surface water quality and quantity data, as well as geomorphology data and morphometric measurements to supplement data which are presented in the original permit (Permit 381C). These data were collected in 2010-2011 in accordance with the most recent EPA, NRC and LQD guidance and protocol. The surface water information collected during this monitoring period adequately supplements the historical data and provide important information to allow Titan to develop a Storm Water Management Plan, Mine Plan Hydrology and a final Reclamation Plan.

D6.4 Surface Water Hydrology and Geomorphology

Crooks Creek is located in the Sweetwater River drainage which is a tributary to the North Platte River. Crooks Creek, in the vicinity of the Sheep Mountain Project, oscillates between a sinuous single-thread meandering channel and sections of braiding where during low flow water moves as both surface and subsurface flow (**Figure D6.5**). Average channel sinuosity is 1.4 through the meandering portions of Crooks Creek from upstream to downstream of the Sheep Mountain Project boundary. In general, rivers with a sinuosity value of greater than 1.3 are considered meandering.

Titan surveyed eight cross sections along Crooks Creek in the vicinity of the Sheep Mountain Project. All surveyed cross sections can be found in **Attachment C**. In general channel banks range from steep and incised along meander bends to more gradual along straight sections. Where the channel is not incised, bank and overbank areas are moderately well vegetated with a sagebrush-grassland vegetation community.

Attachment C1 includes a second survey completed at the downstream Crooks Creek gaging station (CROOKS DS) completed on May 18, 2011. Titan observed channel aggradation at this location and the resurvey confirms that an average of 2 feet of sediment have been deposited at this location since it was originally surveyed on June 16, 2010. In addition site investigators observed that the aggradation occurred sometime between the most recent flow measurements on March 30, 2011 and the resurvey in May-less than 50 days later. The comparison of the 2010 and

2011 section is also presented in **Attachment C2**. Cattle have been present in and around the gaging site during previous sampling visits. A combination of spring flooding, additional sediment inputs from upstream tributaries and streambank instability in the immediate vicinity of the gaging site all likely contributed to aggradation.

Crooks Creek Hydrology

The U.S. Geological Survey operated a surface water gaging (#06638300) and water quality station on the West Fork of Crooks Creek upstream of the Titan permit area. The site is approximately 3 miles south (upstream) of the Sheep Mountain Project at Latitude 42°20'56" N, Longitude 107°51'45" W. At the location of the gaging station, the West Fork of Crooks Creek drains approximately 11.6 mi^2. The gage was in operation and collected peak discharge via a crest gage from 1961-1981. This methodology provides a physical measurement of peak river stage height over each respective monitoring period. Typically the gage technician will periodically check (monthly more or less) the crest stage gage, complete a measured cross section at that stage height and estimate the flow. Occasionally the gage technician will be present during a flow event and will perform on-site measurements. Peak discharge values range from 2 cubic feet per second (cfs) measured on May 19, 1976 to a maximum measured flow of 255 cfs on July 10, 1975 (**Table D6.6**).

Titan measured discharge at two locations (CCDS and CCUS, **Figure D6.5** on the mainstem of Crooks Creek near the Sheep Mountain Project from May 2010-March 2011. A third gaging site was added approximately 1.5 miles upstream of CCUS in May of 2011 to ensure that it measured flow from a watershed that would be essentially undisturbed by any proposed Titan operation Gaging station sites were located on a straight, hydraulically uniform section of the creek and surveyed using level and stadia rod (**Attachment C**). Discharge measurements necessitate recording streamflow velocities at a minimum of ten different locations across the section. Titan measured velocities with a Marsh-McBirney Flo-Mate portable velocity meter attached to a top-setting wading rod. Measurements were made at 0.6 times the depth of flow. Channel velocity was multiplied by the stream cross sectional area (Discharge (ft3/s) = Velocity (ft/s) * Area (ft^2)). The discharge values calculated at each of the ten locations were summed yielding a total streamflow value. Measured streamflow at the Crooks Creek Upstream (CCUS) gaging station, Crooks Creek Downstream (CCDS) and the recently added station upstream of the Macintosh Pit (CCMU) ranged from 3.3 cfs in October 2010 to 6.8 cfs in May 2010 (**Table D6.7**). Discharge measurements coincided with stream flow water quality measurements and samples.

Tributary Geomorphology

Tributary flow off the Titan permit area is ephemeral. The drainage divide between Sheep Creek (to the east) and Crooks Creek (to the West) runs north-south through the eastern portion of the Sheep Mountain Project. **Figure D6.6** shows the area in and around the Sheep Mountain Project divided up into twelve sub-watersheds, each of which is either tributary to Crooks Creek or to Sheep Creek. In all cases where channelized flow could be present, a cross section was measured along the ephemeral drainage. Titan surveyed eight cross sections along the stretch of Crooks Creek in the vicinity of the Sheep Mountain Project. All Crooks Creek surveyed cross sections can be found in **Attachment D**.

In general, drainages are steep and well defined in the upper sub-watersheds within the Sheep Mountain Project. Ephemeral tributary channels, while often dry, exhibit almost step-pool

structure with large boulders and areas of deposited sands in between. Step pool morphology is most likely due to the ephemeral nature of the summer thunderstorm events and headcut migration towards the drainage divide (**Figure D6.7a**). Manning's n values in upper basin drainages range from 0.04 to 0.07. As watershed area increases (in a downstream direction), channel substrate transitions from large boulder material to sand bed and the depth of incision increases. This section of the channel profile is typified by deeply incised meandering channels (**Figure D6.7b**).

As watershed area increases (in a downstream direction), topography flattens, discharge disperses and channelized flow is no longer present. On a small (project) scale, the site's watershed morphology is typical of a desert bahada landform, where alluvial fans coalesce. This is pronounced on the western edge of the Sheep Mountain Project between the north-south road leading to the MacIntosh Pit and Crooks Creek. In most cases, flow disperses from its channelized condition to more unchannelized flow and then is collected again by a roadside ditch before it enters Crooks Creek.

Precipitation Distribution

Precipitation depths were obtained from the National Oceanic and Atmospheric Administration Precipitation Frequency Atlas of the Western United States (Miller et al, 1973). Because of the rainfall intensity of typical storms in the area, Titan determined that the 6-hour storm duration was the most applicable design storm duration for the Sheep Mountain Project. **Table D6.8** presents the 2, 5, 10, 25, 50 and 100-year recurrence interval storm events along with the probable maximum precipitation event.

Surface Water Quality

Titan has collected four quarters of surface water quality samples from Crooks Creek since May of 2010 (**Figure D6.5**). These new data are intended to supplement existing data that were collected in the 1970's. While Titan has attempted to collect ephemeral stream flow water quality samples, no such events have presented the opportunity while Titan personnel were present. In addition to sampling surface water quality on Crooks Creek, Titan was able to sample temporarily impounded water at three sites: (SW-1, SW-2 and SW-3). These surface water impoundments were sampled and analyzed in April and May, 2010. No water was present at these sites during later sampling efforts.

The surface water quality in Crooks Creek in general meets DEQ Chapter VIII Class III or Livestock Standard Radionuclide levels are slightly elevated and exceed Class III standards on a periodic basis. Surface water quality is slightly alkaline (pH averages 8.3 and ranges from 8.1 to 8.4) and exhibits low concentrations of either dissolved or suspended solids (**Table D6.9**). Electrical conductivity (EC) estimates the amount of total dissolved salts or dissolved ions in the water by measuring the ability of a water sample to conduct electrical current. Typical EC range for freshwater streams is 100 to 2000 µmhos/cm (CASWRCB, 2004). The average value measured in Crooks Creek is 344 µmhos/cm with a range of 318 to 375 µmhos/cm. Turbidity is a measure of the "cloudiness" of a sample as it relates to suspended solids. Turbidity levels are also low averaging 5.4 NTUs and range from 1.4 to 17.3 NTUs. Turbidity changes seasonally and in response to thunderstorm events. It is a direct reflection of runoff conditions and will change rapidly during the rising limb of the surface stream hydrograph. Summer base flow turbidity is generally low.

Alkalinity is a measure of the substances dissolved in the water that "buffer" or resist a change in pH when acid is added. Stable pH is important to fish and other aquatic life in the river. Alkalinity of 100 to 200 mg/L is sufficient to "buffer" or neutralize incoming acids and provide for stable pH and values over 150 are considered “good”. The average total alkalinity (as CaCO3) is 148.5 mg/L and the average alkalinity (as HCO_3) is 178.5 mg/L (**Table D6.10**). Dissolved metals are generally below method detection limits (MDL) with very limited concentrations of arsenic (average 0.0016 mg/L), iron (average 0.07 mg/L), manganese (average 0.02 mg/L) and uranium (average 0.0174 mg/L) (boron, selenium and zinc are detected in less than 50% of the samples at low concentrations. Dissolved metals concentrations from the Titan permit area are presented in **Table D6.11**.

Dissolved and suspended Radium 226 is present in Crooks Creek. Dissolved Radium 226 averages 1.0 pCi/L; suspended Radium 226 averages 1.3 pCi/L (**Table D6.11**). In order to address NRC baseline sampling standards, Titan collected samples for dissolved and suspended lead 210, polonium 210 and thorium 230. Lead 210 is present in less than half of the samples at an average concentration of 1.7 pCi/L. Dissolved polonium and thorium 230 are below MDL. In its suspended form, these radionuclides are present in 2 of 15 samples. Suspended Uranium is present in 5 of 15 samples with an average concentration of 0.08 mg/L. **Table D6.12** presents radionuclide data. All water quality laboratory datasheets can be found in **Attachment E**.

In general, the impounded surface water sampling sites (SW-1 through SW-3) show impaired water quality as compared to Crooks Creek. Not only is the water stagnant but the SW sites are surrounded by previous mine disturbance. There is very little land within the Sheep Mountain Project boundary that is undisturbed. The impounded water quality sites show higher concentrations of both dissolved and suspended radionuclides (**Table D6.12**). Radionuclide levels within these upper basin stagnant water impoundments exhibit an order of magnitude increase in dissolved Lead 210, suspended Lead 210, Radium 226 and Uranium. Concentrations of Barium, Lead, Molybdenum and Selenium were also markedly higher (**Table D6.11**). Concentrations of Calcium, Magnesium, Chloride, Sodium, Sulfate, TDS and EC were generally lower with the exception of site SW-1 (**Tables D6.9 and D6.10**).

D6.5 Water Rights

A list of all surface water rights within the permit area and on adjacent lands, as of June 2011 is included in **Table D6.13**. The locations of the surface water rights within 3 miles of the project boundary are shown on **Figure D6.4**. The majority of surface water rights are for irrigation ditch diversions and domestic or stock pipe lines. The Union Oil Company of California has rights to three pipelines coming out of Sheep Creek for drilling and oil production use and the Atlantic Richfield Co. has a the rights to a similar pipeline from Crooks Creek.

D6.6 Surface Water Impacts

Both the underground and surface mining will result in surficial disturbances within the permit area. The area has been historically disturbed and much of it remains in an unreclaimed state. The current condition of the site includes steep watersheds delivering water and sediment from the upper basin to Crooks Creek. The proposed mine plan will include a Storm Water Pollution Protection Plan multiple stream diversions and sedimentation control. The underground mine will be dewatered, but nearly all of the dewatering will be stored and utilized in the mine processing operations or for dust control. The Mining Hydrology effort, which will include storm

water control, will prevent disturbed land runoff from entering the relatively undisturbed Crooks Creek. Runoff from out-of-pit stockpiles will be controlled and treated by berms and ditches. The Titan reclamation plan will include an increased drainage density, a stable geomorphically sound backfill plan, topsoil replacement and revegetation. As revegetation efforts become successful, runoff water quality will be vastly improved over its historic condition.

References

1. Miller, J.F., R.H. Frederick, R.J. Tracey, 1973. NOAA Atlas 2: Precipitation-Frequency Atlas of the Western United States. U.S. Department of Commerce, National Oceanic and Atmospheric Administration and National Weather Service. Stock Number 0317-00156.

TABLES

Table D6.1 Well Completion Details

Well Name	Northing	Easting	Ground Elevation	Measuring Point Elevation	Depth to Water (ft below top of casing)	Total Depth (ft)	Screen Interval (ft below ground surface)	Screen Elevation	Static Water Level Elevation	Casing Diameter
PZ-1	682638.9	2215821.4	6890.7	6891.14	113.0	192	118-198	6773-6693	6778.1	4.5" ID
PZ-2	682570.6	2217630.6	7223.4	7223.64	288.2	740	649-729	6574-6494	6935.4	4.5" ID
PZ-3	680847.0	2215915.8	6993.2	6993.56	151.5	274	194-279	6799-6714	6842.1	4.5" ID
PZ-4	679268.3	2217066.7	7005.2	7005.48	88.5	202	133-218	6872-6787	6917.0	4.5" ID
PZ-5	680534.2	2216233.7	7035.8	7036.45	202.0	445	357-437	6679-6599	6834.5	4.5" ID
PZ-6	not found		6842.0	6842.9	121.0	240	150-240	6692-6602	6721.9	4.3
MW-6N	687906.35	2213406.12	6697.8	6699.5	39.0	300	200-300	6499-6399	6660.5	5"
MW-6S	687889.48	2213396.58	6696.5	6699.4	85.1	400	300-400	6399-6299	6614.3	5"
PZ-7	691267.25	2217107.29	6884.0	6886.6	123.0	240	70-240	6814-6644	6763.6	4.3
MW-7	691502.54	2217167.24	6871.1	6873.3	79.3	360	260-360	6613-6513	6794.0	5"
PZ-8	688682.27	2217964.76	7099.2	7101.6	325.7	420	330-420	6771-6681	6775.9	4.3
PZ-9	692374.07	2219450.2	7067.0	7070.2	218.0	840	510-840	6557-6227	6852.2	4.3
MW-9	691966.43	2219470.08	7023.8	7026.3	192.0	480	380-480	6646-6546	6834.3	5"
PZ-10	690353.52	2221183.3	7100	7103.7	70.0	400	60-400	7040-6700	7033.7	4.3
MW-10	690454.88	2220881.46	7139.8	7141.3	361.6	600	500-600	6641-6541	6779.7	5"
Alluvium PZ	691532.8	217191.5	6872.4	6874.3	dry	60	40-60	6832-6812	dry	2"
G-3	684087.448	2213326.89	6714.5	6715.6	31.6	50	15-45	6701-6670	6684.0	4"
G-4	680716.827	2211768.91	6696.7	6697.8	12.7	45	10-40	6687-6657	6685.1	4"
G-5	677745.15	2214570.31	6900.1	6901.2	87.2	100	0-30	6900-6870	6814.0	4"
G-6	681614.763	681614.763	6762.3	6763.4	34.5	65	30-60	6732-6702	6728.9	4"

Table D6.2 Water Quality Summary

		Major Ions (mg/l)												Non-Metals (mg/L)				Trace Metals (mg/l) DISSOLVED																		Trace Metals (mg/l) TOTALS		Trace Metals (mg/l) SUSPENDED	Radiometrics (pCi/L) DISSOLVED					Radiometrics (pCi/L) SUSPENDED				Radiometrics (pCi/L) TOTALS	
		Calcium	Magnesium	Sodium	Potassium	Carbonate	Bicarbonate	Sulfate	Chloride	Ammonium as N	Nitrite + Nitrate as N	Fluoride	Silica	Total Dissolved Solids @ 180°C	Conductivity (umho/cm)	Alkalinity as CaCO3	pH (std units)	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Lead 210	Manganese	Mercury	Molybdenum	Nickel	Selenium	Vanadium	Zinc	Iron	Manganese	Lead 210	Uranium (mg/L)	Radium 226	Radium 228	Thorium 230	Polonium 210	Uranium (mg/L)	Radium 226	Thorium 230	Polonium 210	Gross Alpha	Gross Beta
Well Number	Sample Date	Ca	Mg	Na	K	CO3	HCO3	SO4	Cl	NH4	NO2+NO3	F	SiO2	TDS	Cond.	Alk.	pH	Al	As	Ba		B	Cd	Cr	Cu	Fe	Pb	Pb	Mn	Hg	Mo	Ni	Se	V	Zn	Fe	Mn	Pb	NatU	226Ra	228Ra		-	NatU	226Ra		-		
MW-6N	7/1/2010	4.0	1.0	299.0	2.0	14.0	459	187	15.0	0.30	ND	0.70	8.7	820	1200	399	8.6	0.30	ND	ND	ND	0.10	ND	ND	ND	0.17	ND	ND	0.01	ND	ND	ND	ND	ND	ND	3.73	0.04	ND	0.002	0.40	ND	ND	ND	0.00	0.80	0.20	ND	13.30	7.30
MW-6N	9/21/2010	4.0	1.0	287.0	2.0	24.0	453	184	14.0	0.10	ND	0.60	6.7	820	1220	412	8.8	ND	ND	ND	ND	ND	ND	ND	ND	0.12	ND	ND	0.01	ND	ND	ND	ND	ND	ND	1.88	0.03	ND	0.003	0.50	2.30	ND	ND	0.00	0.60	ND	ND	21.60	16.60
MW-6N	11/16/2010	4.0	1.0	284.0	2.0	19.0	448	229	8.0	ND	ND	0.70	7.0	910	1240	399	8.7	ND	0.001	ND	ND	ND	ND	ND	ND	0.10	ND	3.50	0.01	ND	ND	ND	0.001	ND	ND	0.81	0.02	3.50	0.002	0.80	ND	ND	ND	ND	ND	0.20	ND	8.90	ND
MW-6S	7/1/2010	7.0	2.0	404.0	3.0	16.0	547	8	255.0	0.40	ND	0.40	9.3	980	1690	475	8.6	0.30	0.002	ND	ND	0.30	ND	ND	ND	0.15	ND	ND	0.02	ND	ND	ND	0.002	ND	ND	4.06	0.06	ND	0.001	0.30	ND	ND	ND	0.00	0.50	ND	ND	ND	ND
MW-6S	9/21/2010	6.0	2.0	393.0	3.0	26.0	548	2	267.0	0.40	ND	0.30	7.5	1030	1730	492	8.7	0.20	ND	ND	ND	0.30	ND	ND	ND	0.14	ND	ND	0.02	ND	ND	ND	0.002	ND	ND	2.29	0.04	ND	0.001	0.30	ND	ND	ND	ND	0.20	ND	ND	7.40	3.70
MW-6S	11/16/2010	6.0	2.0	371.0	3.0	28.0	537	6	244.0	0.30	ND	0.40	7.0	1060	1680	487	8.7	ND	0.001	ND	ND	0.30	ND	ND	ND	ND	ND	3.60	0.02	ND	ND	ND	0.003	ND	ND	0.41	0.02	3.60	0.001	0.40	ND	ND	ND	ND	0.30	ND	ND	ND	ND
MW-7	7/1/2010	41.0	17.0	47.0	6.0	ND	280	42	7.0	0.70	ND	0.20	8.7	310	514	229	8.2	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	2.47	0.04	ND	ND	ND	0.001	ND	ND	3.32	0.08	4.29	0.010	8.70	ND	ND	ND	0.00	3.85	1.80	ND	46.90	25.60
MW-7	9/20/2010	42.0	18.0	35.0	5.0	6.0	275	26	3.0	0.90	ND	ND	7.9	250	464	236	8.5	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	ND	ND	0.55	0.02	2.80	0.007	10.60	ND	ND	ND	ND	0.40	ND	ND	18.80	9.40
MW-7	11/17/2010	42.0	18.0	36.0	5.0	ND	286	27	3.0	0.30	ND	0.20	8.0	260	469	235	8.0	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	1.61	0.05	4.20	0.007	11.30	ND	ND	ND	0.00	11.30	0.60	ND	30.50	11.30
MW-9	7/1/2010	7.0	1.0	194.0	4.0	ND	233	164	28.0	0.20	ND	0.40	10.0	580	865	198	8.4	0.20	ND	ND	ND	ND	ND	ND	ND	0.09	ND	1.30	ND	ND	0.04	ND	0.001	ND	ND	1.22	0.02	4.46	0.006	4.00	ND	0.50	ND	0.01	3.99	3.40	1.47	54.60	27.60
MW-9	9/21/2010	5.0	1.0	185.0	4.0	5.0	241	185	28.0	ND	ND	0.20	7.9	610	921	206	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.10	0.01	ND	0.02	ND	0.002	ND	0.01	0.37	0.01	2.60	0.007	4.00	ND	ND	ND	0.00	1.10	1.00	ND	26.00	14.10
MW-9	12/10/2010	4.0	1.0	190.0	3.0	41.0	168	185	28.0	ND	0.20	0.30	7.7	520	892	205	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	0.02	ND	ND	ND	0.01	0.15	0.01	1.80	0.002	3.00	ND	ND	ND	0.00	0.30	0.20	2.50	14.00	6.10
MW-10	7/1/2010	3.0	ND	91.0	2.0	ND	177	39	9.0	0.20	ND	0.20	12.2	91	410	145	7.7	0.20	ND	ND	ND	ND	ND	ND	ND	0.07	ND	ND	ND	ND	0.01	ND	0.001	ND	ND	5.20	0.06	22.70	0.009	3.60	ND	ND	ND	0.05	45.90	13.60	10.60	334.00	120.00
MW-10	9/21/2010	2.0	ND	84.0	2.0	ND	181	36	3.0	0.10	ND	ND	10.6	84	382	153	8.5	ND	ND	ND	ND	ND	ND	ND	ND	0.07	ND	3.50	ND	ND	0.01	ND	ND	ND	ND	8.08	0.10	20.50	0.008	4.10	3.20	ND	ND	0.03	13.40	9.10	13.30	315.00	110.00
MW-10	11/17/2010	8.0	8.0	83.0	20.0	57.0	162	35	3.0	ND	ND	0.10	25.0	83	372	228	8.9	3.60	0.001	ND	ND	ND	ND	ND	0.02	1.01	ND	ND	ND	ND	0.01	0.14	ND	ND	0.03	11.00	0.13	20.10	0.023	4.60	ND	1.80	ND	0.04	115.00	3.90	3.70	463.00	174.00
PZ-1	1979	37.1	7.6	31.9	1.7	0	140	88	0.4	0.65	2.50	0.20	-	313	325	130	7.0	0.96	ND	0.80	-	-	ND	0.04	0.03	0.60	ND	-	ND	ND	0.02	0.03	0.002	ND	0.23	-	-	-	0.26	4.90	-	-	-	-	-	-	-	-	-
PZ-1	6/30/2010	52.0	7.0	45.0	2.0	ND	204	69	8.0	ND	0.40	0.10	20.0	350	494	167	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.95	0.07	ND	ND	ND	0.004	ND	0.02	ND	0.08	1.27	0.642	3.79	ND	ND	ND	ND	0.26	ND	ND	420.00	140.00
PZ-1	9/14/2010	54.0	7.0	47.0	2.0	ND	204	65	7.0	ND	0.30	0.10	20.0	390	475	167	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.50	0.09	ND	ND	ND	0.003	ND	0.01	0.12	0.09	1.60	0.589	2.70	3.60	ND	ND	ND	0.40	ND	ND	285.00	127.00
PZ-1	11/16/2010	55.0	7.0	44.0	2.0	ND	215	73	8.0	ND	0.60	0.10	19.0	410	504	177	8.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.60	0.04	ND	ND	ND	0.006	ND	0.01	1.74	0.10	6.80	0.906	3.40	2.80	ND	ND	0.00	10.90	ND	ND	418.00	135.00
PZ-2	1979	12.1	1.2	30.5	1.4	0	117	14	1.0	0.31	ND	0.20	-	182	140	96	8.7	1.52	ND	0.83	-	-	ND	0.20	0.03	1.50	0.01	-	ND	0.003	0.03	0.25	ND	ND	0.06	-	-	-	0.19	3.30	-	-	-	-	-	-	-	-	-
PZ-2	6/30/2010	16.0	2.0	29.0	2.0	ND	119	8	3.0	ND	ND	0.10	15.0	140	203	98	8.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.79	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.83	0.003	10.59	ND	ND	2.09	0.00	0.26	0.28	4.25	22.20	8.60
PZ-2	9/15/2010	17.0	2.0	29.0	2.0	ND	119	8	3.0	ND	ND	0.10	15.5	140	200	98	8.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.80	0.005	9.50	2.40	ND	1.30	ND	0.30	ND	2.10	19.00	8.40
PZ-2	11/16/2010	17.0	2.0	29.0	2.0	ND	109	8	3.0	ND	ND	0.10	14.0	190	201	89	8.2	ND	ND	ND	ND	ND	ND	ND	ND	0.16	ND	2.40	ND	ND	ND	ND	0.001	ND	ND	0.19	ND	4.60	0.003	9.30	ND	ND	ND	ND	3.10	ND	ND	20.30	10.80
PZ-3	1979	19.9	2.5	47.3	1.3	0	137	73	1.0	0.27	1.30	0.10	-	290	260	123	8.7	1.42	ND	0.72	-	-	ND	0.58	0.03	2.60	ND	-	ND	0.001	0.01	0.46	ND	ND	0.10	-	-	-	0.74	1.30	-	-	-	-	-	-	-	-	-
PZ-3	6/29/2010	68.0	5.0	61.0	3.0	ND	174	165	3.0	ND	ND	ND	16.6	450	638	142	8.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	ND	ND	0.09	0.07	1.63	0.004	2.57	ND	ND	ND	ND	0.77	ND	1.52	11.90	10.70
PZ-3	9/14/2010	70.0	6.0	62.0	2.0	ND	170	162	3.0	ND	ND	ND	16.9	490	603	139	8.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.06	ND	0.003	1.80	8.80	ND	ND	ND	ND	ND	3.00	8.70	9.00
PZ-3	11/17/2010	66.0	5.0	62.0	2.0	ND	172	165	3.0	ND	ND	ND	16.0	410	627	141	8.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.03	ND	0.06	ND	0.004	3.00	4.70	ND	ND	ND	0.60	ND	ND	8.69	8.22
PZ-4	1979	40.8	6.1	28.4	1.8	0	153	29	0.8	0.21	0.90	0.20	-	263	260	137	8.1	0.68	ND	0.48	-	-	ND	0.05	0.03	0.50	ND	-	ND	0.001	0.02	0.07	ND	ND	0.24	-	-	-	0.15	3.60	-	-	-	-	-	-	-	-	-
PZ-4	7/1/2010	50.0	7.0	16.0	2.0	ND	199	19	5.0	ND	0.20	0.20	12.0	210	350	163	8.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.50	ND	ND	ND	ND	0.001	ND	ND	1.81	0.04	46.00	0.299	2.50	ND	ND	ND	0.00	3.50	ND	45.80	253.90	140.40
PZ-4	9/20/2010	48.0	7.0	21.0	2.0	ND	194	17	4.0	ND	0.20	ND	11.2	210	344	165	8.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.10	ND	ND	ND	ND	0.002	ND	ND	0.22	ND	4.00	0.270	2.20	4.70	ND	ND	ND	ND	ND	2.30	163.00	49.80
PZ-4	11/16/2010	48.0	6.0	19.0	2.0	ND	205	18	5.0	ND	0.20	0.10	11.0	230	343	168	8.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.10	ND	ND	ND	ND	0.002	ND	ND	0.11	0.01	2.80	0.250	2.70	3.70	ND	ND	ND	0.30	ND	ND	172.00	52.00
PZ-5	1979	39.0	3.1	52.2	2.2	0	172	114	0.8	0.25	ND	0.10	-	-	330	154	8.4	0.21	ND	0.66	-	-	ND	0.36	0.05	1.40	ND	-	ND	0.001	0.01	0.22	ND	ND	0.09	-	-	-	0.07	7.00	-	-	-	-	-	-	-	-	-
PZ-5	6/30/2010	11.0	1.0	52.0	1.0	ND	125	32	3.0	ND	ND	ND	11.0	190	286	104	8.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.32	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	0.004	1.87	ND	ND	ND	ND	ND	ND	ND	11.60	6.30
PZ-5	9/15/2010	12.0	1.0	54.0	ND	ND	128	36	4.0	ND	ND	ND	11.1	170	279	105	8.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.60	0.01	ND	ND	ND	ND	ND	ND	ND	0.01	1.90	0.004	1.60	4.10	ND	ND	ND	1.10	ND	1.60	10.60	7.60
PZ-5	11/16/2010	10.0	ND	49.0	ND	25.0	64	31	3.0	ND	ND	ND	10.0	260	274	94	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.00	0.003	1.70	1.40	ND	ND	ND	0.60	ND	1.30	7.30	4.70
PZ-6	8/16/1988	57.0	19.0	61.0	4.0	0	215	147	10.0	ND	0.02	1.14	-	462	660	177	7.7	ND	ND	ND	-	0.02	ND	ND	ND	0.02	ND	-	0.05	ND	ND	ND	ND	ND	0.06	-	-	-	0.007	4.80	-	-	-	-	-	-	-	-	-
PZ-6	8/16/1989	-	-	-	-	-	244	184	11.0	-	0.22	-	-	563	790	-	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	3.40	-	-	-	-	-	-	-	-	-
PZ-6	9/12/1990	-	-	-	-	-	139	4	9.0	-	0.51	-	-	216	250	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.013	1.20	-	-	-	-	-	-	-	-	-
PZ-6	7/23/1991	75.0	16.0	16.0	4.0	0	273	185	19.0	ND	1.48	0.18	-	547	690	224	7.4	ND	ND	ND	-	0.06	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	0.001	ND	ND	-	-	-	0.003	3.80	-	-	-	-	-	-	-	-	-
PZ-6	8/18/1992	-	-	-	-	-	239	176	8.0	-	0.27	-	-	486	570	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	3.50	-	-	-	-	-	-	-	-	-
PZ-6	7/13/1993	-	-	-	-	-	239	176	8.0	-	0.27	-	-	486	570	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.005	3.10	-	-	-	-	-	-	-	-	-
PZ-6	6/28/1994	-	-	-	-	0	259	132	10.0	-	1.30	-	-	441	760	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.042	3.40	-	-	-	-	-	-	-	-	-
PZ-6	7/3/1995	72.0	14.0	60.0	5.0	0	251	175	4.8	ND	ND	0.19	-	475	772	206	8.2	ND	ND	ND	-	0.07	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	0.002	4.90	-	-	-	-	-	-	-	-	-
PZ-6	7/2/1996	-	-	-	-	-	246	177	5.0	-	ND	-	-	510	726	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	1.90	-	-	-	-	-	-	-	-	-
PZ-6	7/21/1997	70.2	18.4	62.0	6.1	0	246	179	6.6	1.31	ND	0.10	11.6	459	734	202	8.1	ND	ND	ND	-	ND	ND	ND	ND	0.07	ND	-	0.04	ND	ND	ND	ND	ND	0.06	-	-	-	0.001	3.80	-	-	-	-	-	-	-	-	-
PZ-6	7/1/1998	-	-	-	-	-	200	184	2.1	-	0.49	-	-	447	686	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.010	2.80	-	-	-	-	-	-	-	-	-
PZ-6	6/8/1999	72.0	19.0	51.1	5.5	ND	197	181	6.0	0.69	2.17	0.13	14.0	468	684	162	8.0	ND	ND	ND	-	ND	ND	ND	0.01	ND	ND	-	0.19	ND	ND	ND	0.007	ND	0.51	-	-	-	0.009	3.10	-	-	-	-	-	-	-	-	-
PZ-6	7/7/2000	67.2	18.3	53.5	4.8	ND	218	156	6.9	0.59	2.31	0.10	12.8	444	700	180	7.4	ND	ND	ND	-	ND	ND	ND	0.03	ND	ND	-	0.14	ND	ND	ND	0.002	ND	0.45	-	-	-	0.009	4.50	-	-	-	-	-	-	-	-	-
PZ-6	7/6/2001	61.3	17.4	58.7	4.5	ND	233	145	7.8	1.03	0.14	ND	12.4	403	675	191	8.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.07	ND	ND	ND	0.002	ND	0.63	-	-	-	0.004	3.70	-	-	-	-	-	-	-	-	-
PZ-6	8/13/2002	64.1	17.5	58.0	4.7	ND	220	144	7.2	0.74	0.92	ND	12.2	434	670	181	8.0	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.08	ND	ND	ND	0.004	ND	0.59	-	-	-	0.004	4.40	-	-	-	-	-	-	-	-	-
PZ-7	1/9/1980	186.0	28.8	39.8	4.7	0	219	290	18.6	0.47	ND	0.52	-	694	550	-	7.0	ND	0.016	ND	-	0.16	ND	ND	ND	1.40	0.10	-	0.19	ND	ND	ND	ND	ND	0.29	1.83	-	-	3.90	23.00	-	-	-	-	-	-	-	-	-
PZ-7	7/8/1980	109.0	20.0	36.0	7.0	0	214	233	27.0	0.10	0.07	0.13	-	574	800	-	7.4	ND	ND	ND	-	ND	ND	ND	ND		ND	-	0.23	ND	ND	ND	ND	ND	0.01	ND	-	-	3.84	-	-	-	-	-	-	-	-	-	-
PZ-7	11/24/1980	118.0	26.0	51.0	6.0	0	249	244	25.0	244.00	0.32	0.11	-	603	950	-	7.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.07	ND	ND	ND	ND	ND	ND	-	-	-	3.78	-	-	-	-	-	-	-	-	-	-
PZ-7	8/16/1988	108.0	19.0	73.0	3.0	0	242	239	38.0	ND	0.48	1.25	-	712	940	199	7.6	ND	ND	ND	-	0.13	ND	ND	ND	0.07	ND	-	0.11	ND	ND	ND	ND	ND	0.11	-	-	-	5.199	21.20	-	-	-	-	-	-	-	-	-
PZ-7	8/16/1989	-	-	-	-	-	288	269	18.0	-	0.59	-	-	750	1800	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.410	44.00	-	-	-	-	-	-	-	-	-
PZ-7	9/11/1990	-	-	-	-	-	264	200	30.0	-	0.35	-	-	730	850	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.820	1.50	-	-	-	-	-	-	-	-	-
PZ-7	7/23/1991	125.0	28.0	63.0	3.0	0	337	210	35.0	ND	0.27	0.17	-	686	900	427	7.7	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	0.003	ND	ND	-	-	-	2.130	8.50	-	-	-	-	-	-	-	-	-
PZ-7	8/19/1992	-	-	-	-	-	327	271	30.0	-	ND	-	-	756	1060	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.590	41.80	-	-	-	-	-	-	-	-	-
PZ-7	7/12/1993	-	-	-	-	-	327	271	30.0	-	ND	-	-	756	1060	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.030	30.90	-	-	-	-	-	-	-	-	-
PZ-7	6/28/1994	117.0	25.0	78.0	4.0	0	288	248	34.0	ND	2.05	0.25	-	701	1150	247	6.7	ND	ND	ND	-	0.10	ND	ND	ND	0.02	ND	-	0.04	ND	ND	ND	ND	ND	0.01	-	-	-	1.017	59.30	-	-	-	-	-	-	-	-	-
PZ-7	7/3/1995	-	-	-	-	0	306	351	27.3	-	ND	-	-	794	1127	-	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.563	84.50	-	-	-	-	-	-	-	-	-
PZ-7	7/2/1996	-	-	-	-	-	288	321	21.3	-	ND	-	-	773	1046	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.306	62.20	-	-	-	-	-	-	-	-	-
PZ-7	7/21/1997	140.0	26.2	59.3	4.3	0	301	275	24.8	0.21	ND	0.11	15.7	724	1040	-	7.7	ND	ND	ND	-	ND	ND	ND	ND	0.50	ND	-	0.14	ND	ND	ND	ND	ND	0.08	-	-	-	0.387	40.30	-	-	-	-	-	-	-	-	-
PZ-7	7/1/1998	-	-	-	-	-	264	248	19.9	-	ND	-	-	630	929	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.685	29.10	-	-	-	-	-	-	-	-	-
PZ-7	6/8/1999	128.0	24.2	80.0	4.3	ND	281	306	23.0	0.07	0.24	0.11	15.0	734	1040	231	8.0	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.04	ND	ND	ND	ND	ND	0.38	-	-	-	0.774	48.90	-	-	-	-	-	-	-	-	-
PZ-7	7/6/2000	127.0	24.4	84.3	4.2	ND	247	332	23.9	0.06	ND	0.12	13.9	757	1075	202	7.8	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.16	ND	ND	ND	ND	ND	0.35	-	-	-	3.930	55.20	-	-	-	-	-	-	-	-	-
PZ-7	7/5/2001	123.0	24.1	85.1	3.9	ND	295	313	24.8	0.06	0.26	0.12	14.3	748	1110	242	7.6	ND	ND	ND	-	ND	ND	ND	ND	0.05	ND	-	0.01	ND	ND	ND	ND	ND	0.16	-	-	-	3.080	57.90	-	-	-	-	-	-	-	-	-
PZ-7	8/13/2002	120.0	23.1	73.2	4.0	ND	277	259	12.0	ND	0.08	0.10	12.4	685	989	227	7.8	ND	ND	ND	-	ND	ND	ND	ND	0.05	ND	-	0.12	ND	ND	ND	ND	ND	0.08	-	-	-	1.040	34.00	-	-	-	-	-	-	-	-	-
PZ-8	1/10/1980	12.3	2.4	37.0	2.0	8.3	105	26	3.2	0.12	ND	0.15	-	152	149	-	8.7	ND	0.01	ND	-	0.38	ND	ND	ND	0.18	0.06	-	0.03	0.012	ND	ND	ND	ND	0.02	35.80	-	-	0.14	3.70	-	-	-	-	-	-	-	-	-
PZ-8	11/24/1980	12.0	4.0	39.0	3.0	0	132	18	7.0	ND	0.51	0.09	-	159	279	-	7.5	1.42	ND	ND	-	ND	ND	ND	ND	0.77	ND	-	0.02	ND	ND	ND	ND	ND	0.04	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-
PZ-8	8/16/1988	16.0	2.0	33.0	1.0	0	142	-	6.0	ND	0.34	1.04	-	148	290	117	7.9	ND	ND	ND	-	0.02	ND	ND	ND	0.03	ND	-	0.02	ND	ND	ND	ND	ND	0.04	-	-	-	0.028	2.30	-	-	-	-	-	-	-	-	-
PZ-8	8/16/1989	-	-	-	-	-	132	18	11.0	-	0.43	-	-	210	320	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.187	1.80	-	-	-	-	-	-	-	-	-
PZ-8	9/11/1990	-	-	-	-	-	242	134	11.0	-	1.23	-	-	570	680	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	4.80	-	-	-	-	-	-	-	-	-
PZ-8	7/23/1991	15.0	8.0	27.0	1.0	0	146	11	7.0	ND	0.27	0.21	-	187	250	120	8.0	ND	0.003	ND	-	ND	ND	ND	ND	ND	ND	-	0.01	ND	ND	ND	0.002	ND	ND	-	-	-	0.018	2.60	-	-	-	-	-	-	-	-	-
PZ-8	8/19/1992	-	-	-	-	-	127	19	5.0	-	0.11	-	-	157	270	-	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.009	1.50	-	-	-	-	-	-	-	-	-
PZ-8	7/12/1993	-	-	-	-	-	127	19	5.0	-	0.11	-	-	157	270	-	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.025	1.00	-	-	-	-	-	-	-	-	-
PZ-8	6/28/1994	-	-	-	-	0	146	45	8.0	-	2.79	-	-	202	280	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.027	9.30	-	-	-	-	-	-	-	-	-
PZ-8	7/3/1995	21.0	9.0	40.0	2.0	0	128	43	2.0	ND	ND	0.25	-	160	256	105	8.3	ND	ND	ND	-	ND	0.01	ND	ND	0.45	ND	-	0.10	ND	ND	ND	ND	ND	0.01	-	-	-	0.049	12.30	-	-	-	-	-	-	-	-	-
PZ-8	7/2/1996	-	-	-	-	-	122	23	3.6	-	0.22	-	-	205	243	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.027	3.50	-	-	-	-	-	-	-	-	-
PZ-8	7/21/1997	17.4	3.1	38.2	2.7	0	127	18	3.9	0.07	0.13	0.30	14.6	159	243	104	8.1	0.59	ND	ND	-	ND	ND	ND	ND	0.57	ND	-	0.10	ND	ND	ND	ND	ND	0.06	-	-	-	0.021	4.50	-	-	-	-	-	-	-	-	-
PZ-8	7/1/1998	-	-	-	-	-	113	18	1.4	-	0.16	-	-	160	235	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.016	2.00	-	-	-	-	-	-	-	-	-
PZ-8	6/14/1999	21.2	3.8	17.8	1.8	ND	104	15	4.2	0.07	0.29	0.17	17.0	149	215	86	8.1	ND	0.002	ND	-	ND	ND	ND	0.01	0.05	ND	-	ND	ND	ND	ND	ND	ND	0.20	-	-	-	0.033	3.60	-	-	-	-	-	-	-	-	-
PZ-8	7/7/2000	14.3	2.7	37.3	1.5	ND	122	19	3.0	ND	ND	0.13	10.6	140	250	100	8.0	ND	ND	0.10	-	ND	ND	ND	ND	0.05	ND	-	ND	ND	ND	ND	ND	ND	0.23	-	-	-	0.063	0.90	-	-	-	-	-	-	-	-	-
PZ-8	7/5/2001	13.2	2.5	39.1	1.7	ND	125	22	3.3	ND	ND	0.13	9.5	130	254	103	8.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	0.21	-	-	-	0.096	1.80	-	-	-	-	-	-	-	-	-
PZ-8	8/13/2002	13.5	2.4	40.3	1.9	1.3	117	21	ND	ND	0.08	0.10	8.3	169	252	98	8.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	0.42	-	-	-	0.083	2.00	-	-	-	-	-	-	-	-	-
PZ-9	1/7/1980	11.8	2.9	202.0	2.4	0	213	305	25.0	0.58	ND	0.50	-	694	720	-	8.0	ND	0.01	ND	-	0.20	ND	ND	ND	0.14	ND	-	0.04	ND	ND	ND	ND	ND	0.10	-	-	-	0.03	0.40	-	-	-	-	-	-	-	-	-
PZ-9	9/11/1990	-	-	-	-	-	264	170	29.0	-	ND	-	-	578	860	-	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.012	0.90	-	-	-	-	-	-	-	-	-
PZ-9	7/23/1991	37.0	13.0	156.0	3.0	0	322	195	29.0	ND	0.88	0.19	-	619	820	264	7.8	ND	0.005	ND	-	ND	ND	ND	ND	ND	ND	-	0.11	ND	ND	ND	0.006	ND	0.19	-	-	-	0.006	0.40	-	-	-	-	-	-	-	-	-
PZ-9	8/19/1992	-	-	-	-	-	288	218	26.0	-	0.07	-	-	577	800	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.085	1.60	-	-	-	-	-	-	-	-	-
PZ-9	7/12/1993	-	-	-	-	-	288	218	26.0	-	0.07	-	-	577	800	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.087	1.80	-	-	-	-	-	-	-	-	-
PZ-9	6/27/1994	50.0	7.0	132.0	4.0	0	254	168	32.0	0.27	4.75	0.22	-	539	1000	-	7.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.01	ND	ND	ND	0.001	ND	0.11	-	-	-	0.029	2.80	-	-	-	-	-	-	-	-	-
PZ-9	7/3/1995	-	-	-	-	0	276	254	25.6	-	0.47	-	-	858	1014	-	8.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.151	3.90	-	-	-	-	-	-	-	-	-
PZ-9	7/2/1996	-	-	-	-	-	267	252	28.4	-	0.13	-	-	661	984	-	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.261	0.90	-	-	-	-	-	-	-	-	-
PZ-9	7/30/1997	47.9	11.0	152.0	4.7	0	273	252	27.9	0.13	ND	ND	8.9	635	987	224	8.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	0.18	-	-	-	0.176	0.90	-	-	-	-	-	-	-	-	-
PZ-9	7/1/1998	-	-	-	-	-	270	242	28.4	-	ND	-	-	646	1010	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.221	ND	-	-	-	-	-	-	-	-	-
PZ-9	6/8/1999	52.0	12.0	159.0	4.3	ND	272	253	31.4	ND	ND	ND	8.2	655	1010	223	8.2	ND	ND	ND	-	ND	ND	ND	0.01	ND	ND	-	ND	ND	ND	ND	0.001	ND	0.38	-	-	-	0.309	0.70	-	-	-	-	-	-	-	-	-
PZ-9	7/6/2000	50.1	12.0	156.0	3.9	ND	265	243	33.2	ND	ND	ND	9.3	647	1008	218	8.1	ND	ND	ND	-	ND	ND	ND	0.01	ND	ND	-	0.09	ND	ND	ND	ND	ND	0.51	-	-	-	0.316	ND	-	-	-	-	-	-	-	-	-
PZ-9	7/9/2001	43.5	11.0	168.0	3.6	ND	273	229	31.8	ND	0.15	ND	8.9	618	1010	225	8.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	0.002	ND	0.56	-	-	-	0.256	0.30	-	-	-	-	-	-	-	-	-
PZ-10	1/6/1980	26.0	4.3	47.5	2.0	22.9	129	68	4.2	1.33	ND	0.30	-	266	220	-	9.2	0.60	0.01	ND	-	0.22	ND	ND	ND	0.67	ND	-	0.01	ND	ND	ND	ND	ND	0.02	14.40	-	-	0.10	1.20	-	-	-	-	-	-	-	-	-
PZ-10	11/24/1980	36.0	10.0	21.0	3.0	0	137	54	11.0	ND	1.32	0.18	-	214	400	-	7.3	ND	ND	ND	-	ND	ND	ND	ND	0.07	ND	-	0.03	ND	ND	ND	ND	ND	0.01	-	-	-	0.69	-	-	-	-	-	-	-	-	-	-
PZ-10	8/16/1988	50.0	11.0	22.0	2.0	0	197	52	8.0	ND	0.19	0.88	-	268	450	162	7.9	ND	ND	ND	-	0.10	ND	ND	ND	0.03	ND	-	0.06	ND	ND	ND	ND	ND	0.08	-	-	-	0.038	3.70	-	-	-	-	-	-	-	-	-
PZ-10	8/16/1989	-	-	-	-	-	205	58	11.0	-	0.14	-	-	330	540	-	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.075	3.60	-	-	-	-	-	-	-	-	-
PZ-10	9/11/1990	-	-	-	-	-	190	72	7.0	-	0.51	-	-	277	420	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	0.009	2.90	-	-	-	-	-	-	-	-	-
PZ-10	7/24/1991	51.0	14.0	15.0	2.0	0	210	42	10.0	ND	0.77	0.20	-	267	450	172	7.9	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.01	ND	ND	ND	ND	ND	ND	-	-	-	0.016	0.60	-	-	-	-	-	-	-	-	-

Table D6.2 Water Quality Summary

		Major Ions (mg/l)												Non-Metals (mg/L)			
		Calcium	Magnesium	Sodium	Potassium	Carbonate	Bicarbonate	Sulfate	Chloride	Ammonium as N	Nitrite + Nitrate as N	Fluoride	Silica	Total Dissolved Solids @ 180°C	Conductivity (umho/cm)	Alkalinity as CaCO3	pH (std units)
Well Number	Sample Date	Ca	Mg	Na	K	CO3	HCO3	SO4	Cl	NH4	NO2+NO3	F	SiO2	TDS	Cond.	Alk.	pH
PZ-10	8/18/1992	-	-	-	-	-	190	55	7.0	-	0.22	-	-	269	450	-	7.6
PZ-10	7/12/1993	-	-	-	-	-	190	55	7.0	-	0.22	-	-	269	450	-	7.6
PZ-10	6/28/1994	45.0	7.0	21.0	2.0	0	176	33	6.0	0.13	7.45	0.32	-	220	430	-	7.0
PZ-10	7/3/1995	-	-	-	-	0	177	43	ND	-	ND	-	-	180	370	145	7.7
PZ-10	7/2/1996	-	-	-	-	-	143	57	3.6	-	ND	-	-	252	363	-	7.5
PZ-10	7/21/1997	46.9	12.7	16.5	1.6	0	172	53	4.3	ND	0.59	0.28	25.5	222	363	141	7.8
PZ-10	7/1/1998	-	-	-	-	-	163	56	2.1	-	0.14	-	-	268	382	-	7.5
PZ-10	6/8/1999	50.0	18.0	11.0	1.0	ND	207	44	3.0	ND	0.18	0.48	33.0	260	380	170	7.9
PZ-10	7/5/2000	50.8	14.9	21.1	2.4	ND	150	95	5.7	0.39	ND	ND	24.8	279	457	123	7.9
PZ-10	7/9/2001	52.4	13.9	18.8	1.6	ND	151	85	5.6	0.12	0.41	0.17	25.0	268	439	124	7.9
PZ-10	8/12/2002	58.0	14.2	21.1	2.0	ND	160	90	11.3	0.37	0.05	ND	22.9	300	456	-	-
n=		81	78	81	79	49	115	114	113	39	65	64	54	114	115	70	114
Average		46.7	10.2	81.8	3.2	6.0	220	125	18.9	6.63	0.72	0.27	13.4	432	638	193	7.9
Standard Deviation		39.2	8.1	87.6	2.4	12.3	91	99	40.6	39.01	1.18	0.26	5.7	242	366	97	0.4
Minimum		2.0	1.0	11.0	1.0	0.0	64	2	0.4	0.06	0.02	0.09	6.7	83	140	86	6.7
Maximum		186	29	404	20	57	548	351	267	244	7.45	1.25	33.0	1060	1800	492	9.2

		Trace Metals (mg/l) DISSOLVED																				Trace Metals (mg/l) TOTALS		Trace Metals (mg/l) SUSPENDED
		Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Lead 210	Manganese	Mercury	Molybdenum	Nickel	Selenium	Vanadium	Zinc	Iron	Manganese	Lead 210
Well Number	Sample Date	Al	As	Ba		B	Cd	Cr	Cu	Fe	Pb	Pb	Mn	Hg	Mo	Ni	Se	V	Zn	Fe	Mn	Pb
PZ-10	8/18/1992	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
PZ-10	7/12/1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
PZ-10	6/28/1994	ND	ND	ND	-	0.02	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	0.02	-	-	-
PZ-10	7/3/1995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
PZ-10	7/2/1996	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
PZ-10	7/21/1997	ND	ND	ND	-	ND	ND	ND	ND	0.09	ND	-	0.01	ND	ND	ND	0.001	ND	0.08	-	-	-
PZ-10	7/1/1998	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
PZ-10	6/8/1999	ND	ND	ND	-	ND	ND	ND	0.02	0.08	ND	-	ND	ND	ND	ND	0.003	ND	0.26	-	-	-
PZ-10	7/5/2000	ND	ND	0.16	-	ND	ND	ND	0.01	ND	ND	-	0.07	ND	ND	ND	ND	ND	0.34	-	-	-
PZ-10	7/9/2001	ND	ND	0.20	-	ND	ND	ND	ND	0.03	ND	-	0.05	ND	ND	ND	0.001	ND	0.41	-	-	-
PZ-10	8/12/2002	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	-	0.08	ND	ND	ND	ND	ND	0.55	-	-	-
n=		14	11	11	0	16	1	5	13	37	3	17	48	5	11	6	32	0	53	25	24	23
Average		0.87	0.006	0.39	-	0.16	0.01	-	0.02	0.38	-	2.92	0.06	-	0.02	0.20	0.002	-	0.18	4.04	0.05	7.34
Standard Deviation		0.92	0.006	0.31	-	0.12	-	-	0.01	0.56	-	2.50	0.06	-	0.01	-	0.002	-	0.19	7.53	0.03	10.53
Minimum		0.20	0.001	0.10	ND	0.02	0.01	0.04	0.01	0.02	0.01	1.10	0.01	0.001	0.01	0.03	0.001	ND	0.01	0.09	0.01	1.00
Maximum		3.60	0.016	0.83	ND	0.38	0.01	0.6	0.05	2.60	0.10	11.60	0.23	0.012	0.04	0.46	0.007	ND	0.63	35.80	0.13	46.00

		Radiometrics (pCi/L) DISSOLVED					Radiometrics (pCi/L) SUSPENDED				Radiometrics (pCi/L) TOTALS	
		Uranium (mg/L)	Radium 226	Radium 228	Thorium 230	Polonium 210	Uranium (mg/L)	Radium 226	Thorium 230	Polonium 210	Gross Alpha	Gross Beta
Well Number	Sample Date	NatU	226Ra	228Ra		-	NatU	226Ra		-		
PZ-10	8/18/1992	0.012	4.00	-	-	-	-	-	-	-	-	-
PZ-10	7/12/1993	0.021	1.90	-	-	-	-	-	-	-	-	-
PZ-10	6/28/1994	0.424	1.10	-	-	-	-	-	-	-	-	-
PZ-10	7/3/1995	0.473	7.20	-	-	-	-	-	-	-	-	-
PZ-10	7/2/1996	0.023	5.00	-	-	-	-	-	-	-	-	-
PZ-10	7/21/1997	0.162	2.20	-	-	-	-	-	-	-	-	-
PZ-10	7/1/1998	0.287	3.60	-	-	-	-	-	-	-	-	-
PZ-10	6/8/1999	0.418	4.20	-	-	-	-	-	-	-	-	-
PZ-10	7/5/2000	0.016	4.40	-	-	-	-	-	-	-	-	-
PZ-10	7/9/2001	0.054	5.60	-	-	-	-	-	-	-	-	-
PZ-10	8/12/2002	0.017	7.50	-	-	-	-	-	-	-	-	-
n=		115	109	11	2	2	14	26	11	13	28	27
Average		0.46	8.82	3.79	1.15	1.70	0.01	8.5	3.1	7.2	113.8	46.1
Standard Deviation		1.00	15.48	1.95	0.92	0.56	0.02	23.6	4.4	12.2	152.2	55.9
Minimum		0.001	0.30	1.40	0.50	1.30	0.0003	0.2	0.2	1.3	7.3	3.7
Maximum		5.20	84.50	8.80	1.80	2.09	0.05	115.0	13.6	45.8	463.0	174.0

Notes: 1980 data have been interpreted from a poor original cop
Ammonium - MW-7, PZ-1, PZ-6, PZ-7, PZ-9, and PZ-10 exceed Class I suitabilit
Cadmium - PZ-8 exceeds Class II suitabilit
Chloride - MW-6S exceeds Class II suitabilit
Chromium - PZ-2, PZ-3, and PZ-5 exceed Class I and II suitability; PZ-4 exceed Class III suitabili
Iron - MW-10, PZ-1, PZ-2, PZ-3, PZ-4, PZ-5, PZ-7, PZ-8, PZ-9, and PZ-10 exceed Class I suitabilit
Lead - PZ-8 exceeds Class I suitability; PZ-7 exceeds Class III suitabilit
Manganese - PZ-1, PZ-6, PZ-7, PZ-8, PZ-9, and PZ-10 meet or exceed Class I suitability; PZ-7 exceed Class II suitabil
Mercury - PZ-2, PZ-3, PZ-4, PZ-5, and PZ-8 exceed Class III suitabilit
Nickel - PZ-2, PZ-3, and PZ-5 exceed Class II suitabilit
Sulfate - PZ-7 and PZ-9 exceed Class I and II suitability; MW-6N exceedS Class II suitabil
TDS - MW-6N, MW-6S, MW-9, PZ-6, PZ-7, PZ-8, and PZ-9 exceed Class I suitability
Ph - MW-6N, MW-6S, MW-7, MW-9, MW-10, PZ-2, PZ-3, PZ-5, and PZ-8 exceed Class I and III suitability; PZ-10 excoeeds Class II suitabilit
Radium 226 + Radium 228 - MW-7, MW-10, PZ-1, PZ-2, PZ-3, PZ-4, PZ-5, PZ-7, PZ-8; and PZ-10 exceed Class I, II and III suitabil
Gross Alpha - MW-6N, MW-7, MW-9, MW-10, PZ-1, PZ-2, and PZ-4, exceed Class I, II and III suitability

Table D6.5 Ground Water Rights (within 3 mile radius)

WR Number	Priority Date	Water Right Status	Owner	Facility Name	Uses	T	R	S	Qtr Qtr	Yield	Total Depth (Ft)	Static Water Level (Ft)	Chemical Analysis (Y/N)	Longitude	Latitude
CR UW03/438	04/15/1977		KENNETH L.MARBLE	ZENITH #1	MIS	027N	092W	01	NW1/4SW1/4	60				-107.77268	42.33928
CR UW04/134	05/18/1976		WILLIAM MCINTOSH	MCINTOSH WELL #2	MIS	028N	092W	29	NE1/4SE1/4	5				-107.83571	42.36854
CR UW04/135	06/14/1978		WILLIAM MCINTOSH	MCINTOSH WELL #3	MIS	028N	092W	29	NE1/4SE1/4	25				-107.83571	42.36854
CR UW04/136	08/27/1974		U.S. ENERGY- CRESTED CORPORATION	GOLDEN GOOSE II WATER	MIS	028N	092W	20	NE1/4SE1/4	7				-107.83562	42.38277
CR UW05/075	09/28/1977		KENNETH L.MARBLE	DOMINO #1	MIS	027N	092W	11	SE1/4NE1/4	15				-107.77773	42.32855
P100621.0W	09/14/1995	Incomplete		GOLDEN GOOSE #1 SHAFT	MIS	028N	092W	21	SW1/4NE1/4	60	860	859	N	-107.82109	42.38647
P102900.0W	07/05/1996		GREEN MOUNTAIN MINING VENTURE	JP-40	MON	027N	092W	10	NE1/4NE1/4	0	38	10.5	N	-107.7971	42.33222
P12423.0P	03/31/1967	Complete		MILLIE WELL #0774	STK	029N	091W	31	NE1/4NW1/4	1	250	200	N	-107.76958	42.44769
P12975.0P	07/05/1962	Complete		KIRK SPRINGS #0638 (A)	STK	028N	093W	13	SE1/4SW1/4	5	3	-1.00	N	-107.88431	42.39358
P12976.0P	07/05/1962	Complete		KIRK SPRINGS #0638 (B)	STK	028N	093W	12	NE1/4NE1/4	3	6	-1.00	N	-107.87449	42.4189
P145360.0W	05/08/2002			PAY DIRT PIT	MIS	028N	092W	20	NE1/4NE1/4	2500				-107.83563	42.38992
P147542.0W	10/21/2002	Complete		BEMW-001	MON	027N	092W	02	SE1/4SE1/4	0	98	56	N	-107.77763	42.33569
P147588.0W	10/22/2002	Complete		BEMW-002	MON	027N	092W	02	SE1/4SE1/4	0	80	51.6	N		
P147589.0W	10/22/2002	Complete		BEMW-003	MON	027N	092W	02	SE1/4SE1/4	0	95	73.25	N		
P147590.0W	10/22/2002	Complete	Kennecott Uranium Co.	BEMW-004	MON	027N	092W	02	SE1/4SE1/4	0	100	73.2	N		
P147591.0W	10/22/2002	Complete	Kennecott Uranium Co.	BEMW-005	MON	027N	092W	02	SE1/4SE1/4	0	120	90.06	N		
P147592.0W	10/22/2002	Complete		BEMW-006	MON	027N	092W	02	NW1/4SE1/4	0	170	148.99	N		
P148684.0W	12/03/2002	Complete		RIGBY PASTURE NO. 1	DOM_GW; STK	028N	092W	05	SW1/4NE1/4	25	100	40	N	-107.84048	42.42967
P1490.0W	05/06/1965	Incomplete	TITAN URANIUM USA INC	GOLDEN GOOSE WATER WELL #1	DOM_GW; IND_GW	028N	092W	21	SW1/4NE1/4	5	800	-1.00	N	-107.82109	42.38647
P16758.0W	11/29/1972	Complete		BOULDER SPRING #4039	STK	028N	092W	12	NW1/4NE1/4	10	8	-1.00	N	-107.76303	42.41883
P170167.0W	08/24/2005		Wyo. State Lands & Investments	PZ7	STK	028N	092W	16	SW1/4SW1/4	25				-107.83082	42.39357
P172609.0W	12/14/2005		U.S. ENERGY CORP. / CREST CORP.	CONGO PIT NO. 1 WELL	MIS	028N	092W	16	SE1/4SW1/4	25				-107.82597	42.39365
P181596.0W	06/05/2007	Incomplete	KENNECUTT URANIUM COMPANY	BE-005	TST	028N	091W	31	SW1/4SE1/4	0				-107.74414	42.34905
P181597.0W	06/05/2007	Incomplete	KENNECUTT URANIUM COMPANY	BE-006	TST	028N	091W	31	NW1/4SE1/4	0				-107.74416	42.35267
P181598.0W	06/05/2007	Incomplete	KENNECUTT URANIUM COMPANY	BE-002	TST	027N	091W	06	NW1/4NE1/4	0				-107.74412	42.34625
P181642.0W	06/08/2007		GREEN MOUNTAIN MINING VENTURE	ENL. ZENITH #1 WELL	MIS	027N	092W	01	NW1/4SW1/4	0	850	210	N	-107.77268	42.33928
P181753.0W	06/05/2007	Incomplete	KENNECUTT URANIUM COMPANY	BE-001	MIS	027N	091W	06	NW1/4NE1/4	150				-107.74412	42.34625
P189722.0W	02/25/2009	Complete	KENNECOTT URANIUM CO.	BE-007/P-10	MON	028N	091W	31	SE1/4SW1/4	0	2310	1112.6	N	-107.746992	42.348769
P192610.0W	01/19/2010	Incomplete	TITAN URANIUM USA	CONGO MW 1	MON	028N	092W	16	SW1/4SW1/4	0				-107.830858	42.393103
P192611.0W	01/19/2010	Incomplete	TITAN URANIUM USA	CONGO MW 2	MON	028N	092W	16	NW1/4SE1/4	0				-107.820861	42.396836
P192612.0W	01/19/2010	Incomplete	TITAN URANIUM USA	CONGO MW 3	MON	028N	092W	21	NE1/4NE1/4	0				-107.816128	42.389728
P192613.0W	01/19/2010	Incomplete	TITAN URANIUM USA	CONGO MW 4	MON	028N	092W	20	NE1/4NE1/4	0				-107.835631	42.389428
P21884.0W	06/08/1973	Complete		WWPP TEST HOLE #1	MON	029N	093W	36	NW1/4SE1/4	0	1000	220	Y	-107.90174	42.44068
P21885.0W	06/08/1973			WWPP TEST HOLE #2	MIS	029N	093W	36	NW1/4SE1/4	0	360	187	N	-107.90174	42.44068
P28674.0W	08/27/1974	Unadjudicated	TITAN URANIUM USA INC	SHEEP MOUNTAIN #1 WATER	IND_GW	028N	092W	21	NE1/4SE1/4	10	1360	-1.00	N	-107.81621	42.38291
P28675.0W	08/27/1974	Fully Adjudicated	TITAN URANIUM USA INC	GOLDEN GOOSE II WATER	IND_GW	028N	092W	20	SE1/4SE1/4	7	500	-1.00	N	-107.83561	42.37925
P33910.0W	05/18/1976	Fully Adjudicated	U.S. ENERGY-CRESTED CORPORATION	MCINTOSH WELL #2	MIS	028N	092W	29	NE1/4SE1/4	5	250	160	Y	-107.83571	42.36854
P34440.0W	08/19/1976	Incomplete	GREEN MOUNTAIN MINING VENTURE	ROCK WELL #1	MIS	027N	092W	11	NW1/4NW1/4	0	358	16.7	Y	-107.79228	42.33222
P35444.0W	10/29/1976	Complete	GREEN MOUNTAIN MINING VENTURE	ROCK WELL #2	MON	027N	092W	11	NW1/4NW1/4	-1.00	99.6	11	Y	-107.79228	42.33222
P409.0C	07/31/1945	Incomplete	SINCLAIR REFINING CO.	CROOKS GAP STATION WATER	IND_GW	028N	092W	18	NE1/4NE1/4	15	215	10		-107.85499	42.4045
P41033.0W	04/15/1977	Fully Adjudicated	GREEN MOUNTAIN MINING VENTURE	ZENITH #1	MIS	027N	092W	01	NW1/4SW1/4	60	850	210	N	-107.77268	42.33928
P4158.0W	01/12/1970	Unadjudicated	TITAN URANIUM USA INC	YELLOWSANDS #1	DOM_GW; IND_GW	028N	092W	20	SE1/4SE1/4	12	500	200	N	-107.83561	42.37925
P42150.0W	09/28/1977	Fully Adjudicated	GREEN MOUNTAIN MINING VENTURE	DOMINO #1	MIS	027N	092W	11	SE1/4NE1/4	15	190	20	N	-107.77773	42.32855
P43197.0W	05/09/1978	Complete		BORDENS WELL #101	DOM_GW; STK	028N	092W	05	NW1/4SE1/4	12	235	140	N	-107.84046	42.42609
P43954.0W	06/14/1978	Fully Adjudicated	U.S. ENERGY-CRESTED CORPORATION	MCINTOSH WELL #3	MIS	028N	092W	29	NE1/4SE1/4	25	300	1207	N	-107.83571	42.36854
P44469.0W	07/17/1978	Unadjudicated	TITAN URANIUM USA INC	SD 18 16	MIS	028N	092W	28	SW1/4NE1/4	20	1410	757	Y	-107.82113	42.37213
P44886.0W	08/21/1978	Unadjudicated	U.S. ENERGY-CRESTED CORPORATION	PL 21A	MIS	028N	092W	22	NE1/4SW1/4	35	1410	675	Y	-107.8065	42.38296
P49786.0W	07/25/1979	Complete	TITAN URANIUM USA INC	PIEZO #1	MON	028N	092W	29	NE1/4SE1/4	0	200	101	N	-107.83571	42.36854
P49787.0W	07/25/1979	Complete	TITAN URANIUM USA INC	PIEZO #2	MON	028N	092W	08	NE1/4SW1/4	0	730	236	Y	-107.84519	42.4117
P49788.0W	07/25/1979	Complete	TITAN URANIUM USA INC	PIEZO #3	MON	028N	092W	29	SE1/4SE1/4	0	280	129	Y	-107.83574	42.36493
P49789.0W	07/25/1979	Complete	TITAN URANIUM USA INC	PIEZO #4	MON	028N	092W	33	NW1/4NW1/4	0	220	168	Y	-107.83092	42.36133
P49790.0W	07/25/1979	Complete	TITAN URANIUM USA INC	PIEZO #5	MON	028N	092W	32	SE1/4NE1/4	0	440	134.5	Y	-107.83578	42.35781
P52287.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 6A	MON	028N	092W	20	NE1/4NE1/4	0	240	123	Y	-107.83563	42.38992
P52288.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 6B	MON	028N	092W	20	NE1/4NW1/4	0	241	124	N	-107.84526	42.38995
P52289.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 6C	MON	028N	092W	20	NW1/4NE1/4	0	240	123	N	-107.8404	42.38992
P52291.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 8	MON	028N	092W	21	SE1/4NW1/4	0	420	304	N	-107.82596	42.38641
P52292.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 9	MON	028N	092W	16	NE1/4SE1/4	0	840	205	Y	-107.81619	42.39742
P52293.0W	05/30/1980	Complete	TITAN URANIUM USA INC	PZ 10	MON	028N	092W	21	NE1/4NE1/4	0	400	31.55	N	-107.81619	42.39017
P64607.0W	07/11/1983	Complete	Pathfinder Mines Corp.	GREEN MOUNTAIN OBSERVATION #1	MON	028N	091W	31	SW1/4SE1/4	0	2515	847	N	-107.74414	42.34905
P64608.0W	07/11/1983	Complete	Pathfinder Mines Corp.	GREEN MOUNTAIN OBSERVATION #2	MON	028N	091W	31	SW1/4SE1/4	0	2686	667	N	-107.74414	42.34905
P70389.0W	03/28/1985	Complete		IME #JC 1	MON	028N	092W	17	SE1/4NW1/4	0	39	35.7	N	-107.84522	42.40083
P70390.0W	03/28/1985	Complete		IME #JC 3	MON	028N	092W	17	SE1/4NW1/4	0	61.5	28.2	N	-107.84522	42.40083
P70391.0W	03/28/1985	Complete		IME #JC 4	MON	028N	092W	17	SE1/4NW1/4	0	13	-1.00	N	-107.84522	42.40083
P74066.0W	02/23/1987	Incomplete	TITAN URANIUM USA INC	MCINTOSH PIT #1	MIS; STK	028N	092W	32	SE1/4NE1/4	15				-107.83578	42.35781
P7439.0P	05/15/1929	Complete	BESSIE A.MCINTOSH	LAZY C S #1	DOM_GW; STK	029N	092W	33	SW1/4SE1/4	10	280	20	N	-107.84302	42.43697
P94242.0W	11/17/1993	Incomplete		SUN HEALD "A" PORTAL	MIS	028N	092W	29	NE1/4SE1/4	5	33	20	N	-107.83571	42.36854
P94243.0W	11/17/1993	Incomplete		BIG SHEEP DECLINE #1	MIS	028N	092W	29	NE1/4SE1/4	10	39	31	N	-107.83571	42.36854
P98528.0W	09/12/1994	Complete	JAMES L.MCINTOSH	BUTTE SPRINGS #2	STK	028N	092W	01	SE1/4SE1/4	3	50	0	N	-107.75822	42.42246

Table D6.6 Historic Discharge Measurement

Date	Peak Flow (cfs)	Gage Height (ft)
1961*	22	*
1962-03	128	6.27
1963*	26	*
1964*	26	*
1965-04	67	5.1
1966*	13	*
1967*	13	*
1968*	13	*
1969*	13	*
4/24/1970	12	3.7
1971-04	108	5.89
1972-04	51	4.76
5/20/1973	97	5.67
4/20/1974	3	2.91
7/10/1975	255	8.98
5/19/1976	2	2.8
7/25/1977	37	4.43
7/21/1978	29	4.2
4/20/1979	3	2.93
4/23/1980	49	4.71
5/24/1981	17	4.18

*Discharge is less than the the indicated value which is the minimum recordable discharge at this site.

Table D6.7 Titan Discharge Measurements

Location	Date	Discharge (cfs)
CCUS	5/24/2010	6.8
CCUS	6/16/2010	4.6
CCUS	8/17/2010	5.5
CCUS	10/6/2010	3.3
CCUS	3/30/2011	3.8
CCUS	5/18/2011	3.8
CCDS	6/16/2010	5.4
CCDS	8/17/2010	5.7
CCDS	10/6/2010	3.3
CCDS	3/30/2011	4.1
CCDS	5/18/2011	3.7
CCMU	5/18/2011	3.3

Table D6.8 Precipitation Frequency

Storm RI, Duration	Precipitation Depth (in)
2-yr, 6-hr	0.9
5-yr, 6-hr	1.2
10-yr, 6-hr	1.4
25-yr, 6-hr	1.7
50-yr, 6-hr	1.9
100-yr, 6-hr	2.1
PMP	24

Table D6.9 Water Quality Field Parameters

			Field Parameters				
Site	Date	pH	EC (µmhos/cm)	TDS (mg/L)	TSS (mg/L)	SiO_2 (mg/L)	Turbidity (NTU)
SW-01	4/13/2010	7.7	566	412	-	-	-
SW-02	4/13/2010	6.7	45	62	-	-	-
SW-03	4/13/2010	7.1	72	126	-	-	-
SW-01	5/25/2010	8.3	590	430	588	13	226
SW-02	5/25/2010	8.0	194	160	260	12	295
CROOKS US	5/25/2010	8.4	318	220	6	20.0	2.7
CROOKS DS	5/25/2010	8.4	338	240	22	21.0	5.1
CROOKS US	6/28/2010	8.3	346	300	10	22.0	1.4
CROOKS DS	6/29/2010	8.3	375	270	6	22.1	2.2
CROOKS US	7/22/2010	8.2	325	240	ND	22.5	2.1
CROOKS DS	7/22/2010	8.3	338	240	41	22.2	17.3
CROOKS US	8/18/2010	8.3	352	260	6	18.5	4.7
CROOKS DS	8/18/2010	8.2	372	270	46	21.0	16.5
CROOKS US	9/14/2010	8.2	332	230	ND	20.4	2.1
CROOKS DS	9/21/2010	8.4	358	240	ND	20.4	-
CROOKS US	10/7/2010	8.4	347	290	ND	22.1	4.6
CROOKS DS	10/7/2010	8.4	359	260	12	22.0	5.9
CROOKS US	11/15/2010	8.1	325	170	ND	22.4	2.4
CROOKS DS	11/15/2010	8.1	342	150	20	22.3	3.3
CROOKS DS	12/10/2010	8.3	337	200	10	21.5	5.7

ND = Non-Detect.

Table D6.10 Water Quality Major Anions and Cations*

Site	Date	Calcium	Alkalinity (HCO_3)	Alkalinity (CO_3)	Magnesium	Potassium	Chloride	Sodium	Flouride	Nitrate-Nitrite	Sulfate	Alkalinity ($CaCO_3$)	Ammonia
SW-01	4/13/2010	41	158	ND	10	5	8	53	0.2	ND	154	-	-
SW-02	4/13/2010	4	27	ND	ND	4	ND	ND	ND	ND	1	-	-
SW-03	4/13/2010	8	36	ND	1	3	ND	ND	ND	ND	8	-	-
SW-01	5/25/2010	50	223	ND	13	7	8	50	0.2	ND	102	183	ND
SW-02	5/25/2010	27	114	ND	4	4	1	3	0.1	ND	5	94	ND
CROOKS US	5/25/2010	38	167	ND	4	2	2	22	0.2	ND	21	140	ND
CROOKS DS	5/25/2010	42	174	ND	5	2	3	25	0.2	ND	26	146	ND
CROOKS US	6/28/2010	48	187	ND	5	2	2	20	0.2	ND	27	156	ND
CROOKS DS	6/29/2010	49	194	ND	6	2	3	28	0.2	ND	35	161	ND
CROOKS US	7/22/2010	46	181	ND	5	2	2	18	0.2	ND	27	148	ND
CROOKS DS	7/22/2010	46	185	ND	5	2	3	20	0.2	ND	29	152	ND
CROOKS US	8/18/2010	49	190	ND	5	2	2	24	0.2	ND	37	158	ND
CROOKS DS	8/18/2010	49	193	ND	6	2	4	27	0.2	ND	46	158	ND
CROOKS US	9/14/2010	45	179	ND	5	2	2	24	0.2	ND	33	146	ND
CROOKS DS	9/21/2010	47	178	ND	5	2	3	26	ND	ND	36	152	ND
CROOKS US	10/7/2010	47	173	ND	5	3	3	19	0.2	ND	32	149	ND
CROOKS DS	10/7/2010	48	179	ND	5	2	3	21	0.2	ND	36	154	ND
CROOKS US	11/15/2010	46	153	ND	5	2	2	19	ND	ND	36	126	ND
CROOKS DS	11/15/2010	47	166	ND	5	2	3	22	ND	ND	39	136	ND
CROOKS DS	12/10/2010	45	178	ND	5	2	3	27	0.2	ND	37	146	ND

ND = Non-Detect.

* All units are in mg/L

Table D6.11 Water Quality Dissolved Metals

Site	Date	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Uranium	Vanadium	Zinc
SW-01	4/13/2010	0.1	0.001	0.2	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	0.007	1.56	ND	ND
SW-02	4/13/2010	0.1	ND	ND	ND	ND	ND	ND	ND	0.10	ND	ND	ND	ND	ND	ND	0.0029	ND	ND
SW-03	4/13/2010	0.1	ND	ND	ND	ND	ND	ND	ND	0.08	0.001	ND	ND	ND	ND	ND	0.0133	ND	ND
SW-01	5/25/2010	ND	0.002	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.02	ND	0.007	2.79	ND	ND
SW-02	5/25/2010	0.2	ND	ND	ND	ND	ND	ND	ND	0.27	ND	ND	ND	ND	ND	ND	0.0148	ND	0.02
CROOKS US	5/25/2010	ND	ND	ND	ND	ND	ND	ND	ND	0.08	ND	0.01	ND	ND	ND	ND	0.0165	ND	ND
CROOKS DS	5/25/2010	ND	0.001	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	0.0185	ND	ND
CROOKS US	6/28/2010	ND	0.002	ND	ND	ND	ND	ND	ND	0.06	ND	0.02	ND	ND	ND	0.001	0.0123	ND	ND
CROOKS DS	6/29/2010	ND	0.002	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	0.002	0.0197	ND	ND
CROOKS US	7/22/2010	ND	0.002	ND	ND	ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	ND	0.0137	ND	0.01
CROOKS DS	7/22/2010	ND	0.002	ND	ND	ND	ND	ND	ND	0.07	ND	ND	ND	ND	ND	ND	0.0172	ND	0.02
CROOKS US	8/18/2010	ND	0.002	ND	ND	0.2	ND	ND	ND	ND	ND	0.02	ND	ND	ND	ND	0.0152	ND	ND
CROOKS DS	8/18/2010	ND	0.002	ND	ND	0.2	ND	ND	ND	0.09	ND	ND	ND	ND	ND	ND	0.0232	ND	ND
CROOKS US	9/14/2010	ND	0.001	ND	ND	ND	ND	ND	ND	0.05	ND	0.03	ND	ND	ND	ND	0.0150	ND	ND
CROOKS DS	9/21/2010	ND	0.001	ND	ND	ND	ND	ND	ND	0.06	ND	0.01	ND	ND	ND	ND	0.0208	ND	ND
CROOKS US	10/7/2010	ND	ND	ND	ND	ND	ND	ND	ND	0.10	ND	0.03	ND	ND	ND	ND	0.0140	ND	ND
CROOKS DS	10/7/2010	ND	ND	ND	ND	ND	ND	ND	ND	0.08	ND	0.01	ND	ND	ND	0.001	0.0199	ND	ND
CROOKS US	11/15/2010	ND	ND	ND	ND	ND	ND	ND	ND	0.06	ND	0.05	ND	ND	ND	ND	0.0137	ND	ND
CROOKS DS	11/15/2010	ND	ND	ND	ND	ND	ND	ND	ND	0.05	ND	0.01	ND	ND	ND	ND	0.0188	ND	ND
CROOKS DS	12/10/2010	ND	0.001	ND	ND	ND	ND	ND	ND	0.06	ND	0.01	ND	ND	ND	ND	0.0215	ND	ND

ND = Non-Detect.
* All units are mg/L

Table D6.12 Water Quality Radionuclides

		Dissolved Radionuclides (all units are pCi/L)					Suspended Radionuclides (all units are pCi/L)				
Site	Date	Lead 210	Polonium 210	Radium 228	Radium 226	Thorium 230	Lead 210	Polonium 210	Radium 226	Thorium 230	Uranium
SW-01	4/13/2010	-	-	1.9	4.3	-	-	-	-	-	-
SW-02	4/13/2010	-	-	0.9	0.52	-	-	-	-	-	-
SW-03	4/13/2010	-	-	1.5	9.8	-	-	-	-	-	-
SW-01	5/25/2010	13.0	ND	ND	4.33	ND	50.4	9.51	30.48	ND	38.5
SW-02	5/25/2010	ND	ND	2.09	1.29	ND	4.46	ND	6.56	ND	16.0
CROOKS US	5/25/2010	ND	ND	ND	0.77	ND	ND	ND	0.31	ND	0.118
CROOKS DS	5/25/2010	ND	ND	ND	0.82	ND	ND	ND	0.42	ND	0.287
CROOKS US	6/28/2010	ND	ND	ND	1.13	ND	ND	ND	0.25	ND	ND
CROOKS DS	6/29/2010	ND	ND	ND	1.13	ND	ND	ND	ND	ND	ND
CROOKS US	7/22/2010	ND	ND	ND	1.00	ND	ND	ND	ND	ND	ND
CROOKS DS	7/22/2010	ND	ND	ND	0.90	ND	ND	ND	0.78	ND	0.0007
CROOKS US	8/18/2010	ND	ND	ND	1.30	ND	ND	ND	0.3	ND	ND
CROOKS DS	8/18/2010	ND	ND	ND	1.30	ND	ND	ND	0.9	ND	0.001
CROOKS US	9/14/2010	1.2	ND	1.90	2.1	ND	ND	4.0	ND	ND	ND
CROOKS DS	9/21/2010	2.0	ND	ND	1.0	ND	ND	ND	ND	ND	ND
CROOKS US	10/7/2010	1.5	ND	ND	0.9	ND	ND	ND	3.6	0.3	ND
CROOKS DS	10/7/2010	ND	ND	ND	1.0	ND	ND	ND	6.3	2.2	ND
CROOKS US	11/15/2010	1.6	ND	ND	0.7	ND	1.0	ND	ND	ND	ND
CROOKS DS	11/15/2010	2.4	ND	ND	0.8	ND	1.9	ND	0.3	ND	ND
CROOKS DS	12/10/2010	ND	ND	ND	0.80	ND	2.2	2.3	0.3	ND	0.0003

ND = Non-Detect.

Table D6.13 Surface Water Rights

Permit Number	Notes	Type	Comment	Longitude	Latitude
P5600.0D	Spring Creek Ditch	IRR_SW	SPARHAWK	-107.86424	42.34654
P16964.0D	Burnt Gulch 2" Water Line Pipeline	DOM_SW; MIS_SW; OIL; STO	PRODUCERS & REFINERS CORP.	-107.8849	42.39437
P20128.0D	Crooks Gap Unit Water Pipe Line	DOM_SW; IND_SW	Atlantic Richfield Co.	-107.88431	42.39358
P3193.0D	Stevens Ditch No. 1	IRR_SW	STEVENS	-107.88431	42.39719
P3194.0D	Stevens Ditch No. 2	IRR_SW	STEVENS	-107.87962	42.38656
P1565.0D	Rigby Reservoir Supply Ditch	RES	Rigby	-107.82742	42.44908
P17410.0D	Kirk Pipe Line	DOM_SW; STO	KIRK	-107.84767	42.428
P17411.0D	J. M. Ditch	DOM_SW; IRR_SW; RES; STO	KIRK	-107.85	42.43337
P17412.0D	Garden Ditch	IRR_SW	KIRK	-107.84765	42.42802
P22281.0D	Sheehan Spring Diversion	DOM_SW; MIN	Heald Project #2	-107.83084	42.37212
P34183.0D	CROOKS GAP WATER HAUL	TEM; TEM	CROOKS GAP WATER HAUL	-107.84689	42.38
P34470.0D	CROOKS GAP WATER HAUL	TEM	CROOKS GAP WATER HAUL	-107.84689	42.38
P1275.0D	Crooks Creek Ditch	IRR_SW	FISHER	-107.85767	42.35753
P15549.0D	Harris Ditch	DOM_SW; IRR_SW; STO	MARRIS	-107.86153	42.35083
P15570.0D	Kirk Ditch No. 1	IRR_SW	Claytor	-107.85506	42.40831
P15571.0D	Kirk Ditch No. 2	IRR_SW	Claytor	-107.85461	42.41342
P17019.0D	Sheep Creek Pipe Line No. 1	DOM_SW; DRI; MIS_SW; OIL; STO	UNION OIL COMPANY OF CALIFORNIA	-107.80746	42.40466
P17020.0D	Sheep Creek Pipe Line No. 2	DOM_SW; DRI; MIS_SW; OIL; STO	UNION OIL COMPANY OF CALIFORNIA	-107.80642	42.40466
P17021.0D	Sheep Creek Pipe Line No. 3	DOM_SW; DRI; MIS_SW; OIL; STO	UNION OIL COMPANY OF CALIFORNIA	-107.79668	42.40824
P17025.0D	Crooks Creek 2" Water Line Pipeline	DOM_SW; DRI; MIS_SW; OIL; STO	Atlantic Richfield Co.	-107.85489	42.39708
P17409.0D	Supply Ditch No. 4 (as Changed to Kirk No. 1 Ditch)	DOM_SW; IRR_SW; RES; STO	Claytor	0	0
P3195.0D	Stevens Ditch No. 3	IRR_SW	STEVENS	-107.85392	42.39047
P3197.0D	Sheep Creek Ditch No. 2	IRR_SW	MCLAUGHLIN	-107.80361	42.39057
P5453.0D	Butte Springs Ditch	IRR_SW	Johnson	-107.76334	42.41909
P7774.0D	Crook's Creek Ditch	IRR_SW	Lemmon	-107.84661	42.37966
P7817.0D	Sheep Creek Ditch No. 1	IRR_SW	Rushton	-107.81574	42.42275
P7823.0D	Sheep Creek Ditch No. 2	IRR_SW	Rushton	-107.81576	42.42276
P8994.0D	Sheep Creek Ditch No. 4	DOM_SW; IRR_SW; STO	JOHNSON	-107.81744	42.42623
P9136.0D	Sheep Creek Ditch No. 3	DOM_SW; IRR_SW; STO	JOHNSON	-107.81742	42.42621
P25671.0D	Green Mountain Mine Diversion Ditch	RES	Kennecott Uranium Co.	-107.78073	42.35271
P7714.0R	McIntosh No. 1 Reservoir	MIN; MIS_SW; COMBBU	U.S. ENERGY/CRESTED CORPORATION	-107.83567	42.37213

FIGURES

S17

S16

MAXIMUM EXTENT OF MINING

PZ-9

MW-9

MW-7

PZ-7

CONGO PIT

MW-10

PZ-10

SPOILS 2

ORE STOCKPILE AREA

PZ-6(NOT FOUND)

MAXIMUM EXTENT OF MINING

PZ-8

CROOKS GAP ROAD

S20

S21

MW-6N

MW-6

MW-6S

OFFICE

SHOP

PROPOSED OFFICE / SHOP AREA

SHEEP I

SPOILS 1

G3

SHEEP II

EVAP POND

COLLECTION

RAFFINATE

HEAP / PLANT AREA

S29

S28

PLANT

SX

PZ-2

PZ-1

G6

SHOP WELL

HEAP PAD

PZ-3

G4

PZ-5

PZ-4

G5

S33

S32

LEGEND

SECTION LINE

FOREST BOUNDARY

EXISTING ROAD / ACCESS ROUTE

EXISTING ROAD TO BE REMOVED - RECLAIMED

EXISTING GROUND CONTOURS (1'C.I.)

DESIGN CONTOURS (1'C.I.)

RADIATION CONCRETE BOUNDARY

EIGHT-STORY PIPELINE ALIGNMENT

PROPOSED DECLINE TO UNDERGROUND MINE WORKINGS

PROPOSED ROAD - ACCESS ROUTE

PROPOSED CONVEYOR ALIGNMENT

PROPOSED OVERHEAD POWER LINE

EXISTING MINE SHAFT

MONITOR WELL LOCATION

OLD MONITOR WELL LOCATION

T. 28 N., R. 92 W.

BRS ENGINEERING

FIGURE D6.1 - MONITOR WELL LOCATIONS

SCALE: 1"=600'

DRAWN BY: CDS

DATE: 5/20/11

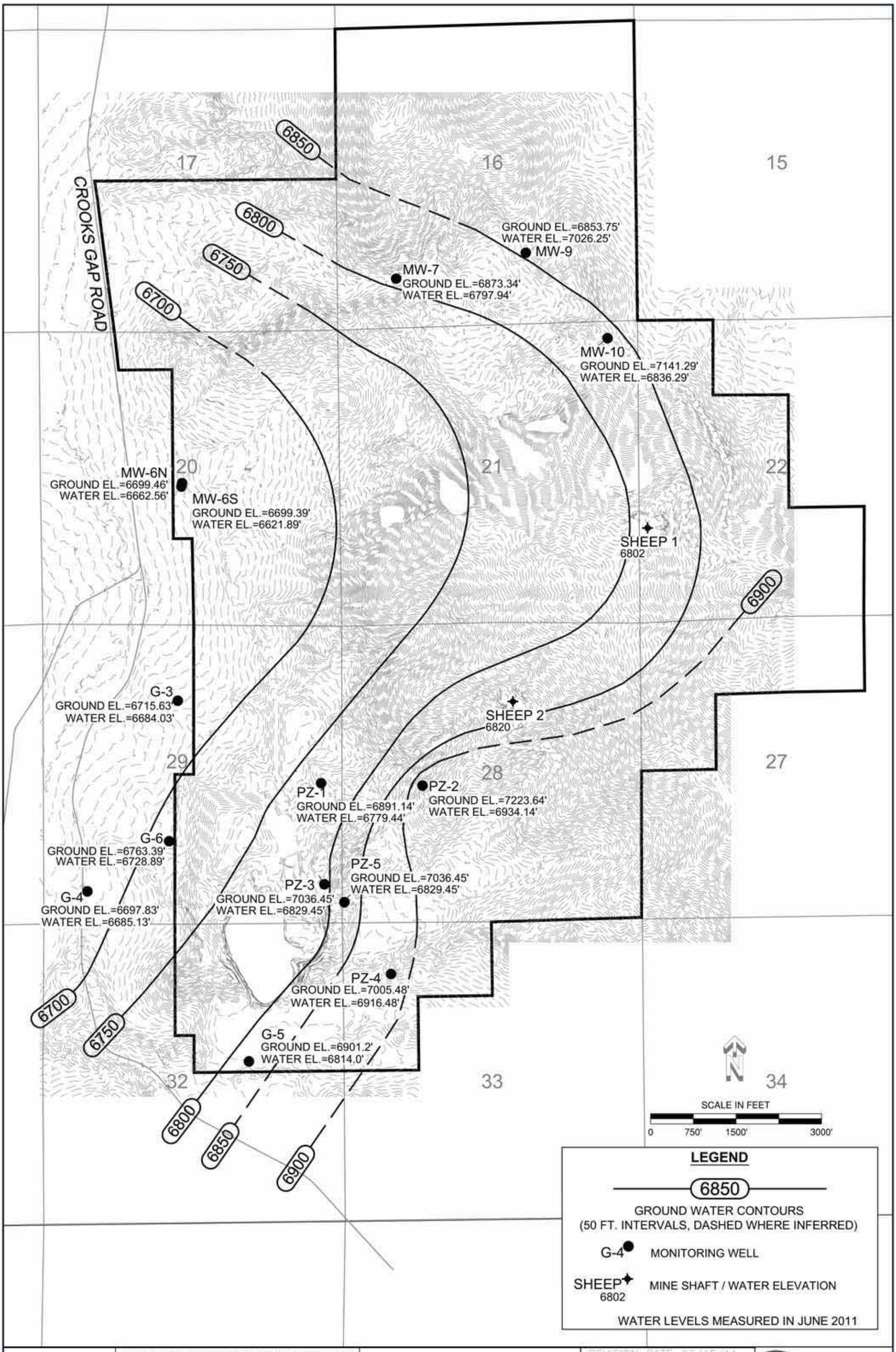
SHEEP MOUNTAIN MINES
FREMONT COUNTY, WYOMING

REVISION DATE: 06/15/11

CAD FILENAME:

DWG.:

TITAN URANIUM USA INC



Lidstone and Associates, Inc.	FIGURE D6.2 POTENTIOMETRIC SURFACE MAP	SHEEP MOUNTAIN MINES FREMONT COUNTY, WYOMING	REVISION DATE: 06/15/11
	SCALE: 1"=1500'		CAD FILENAME:
	DRAWN BY: SOM / DATE: JUNE 12, 2011		DWG. NUMBER: NUMBER

TITAN URANIUM USA INC

Titan Uranium - Sheep Mountain Mines

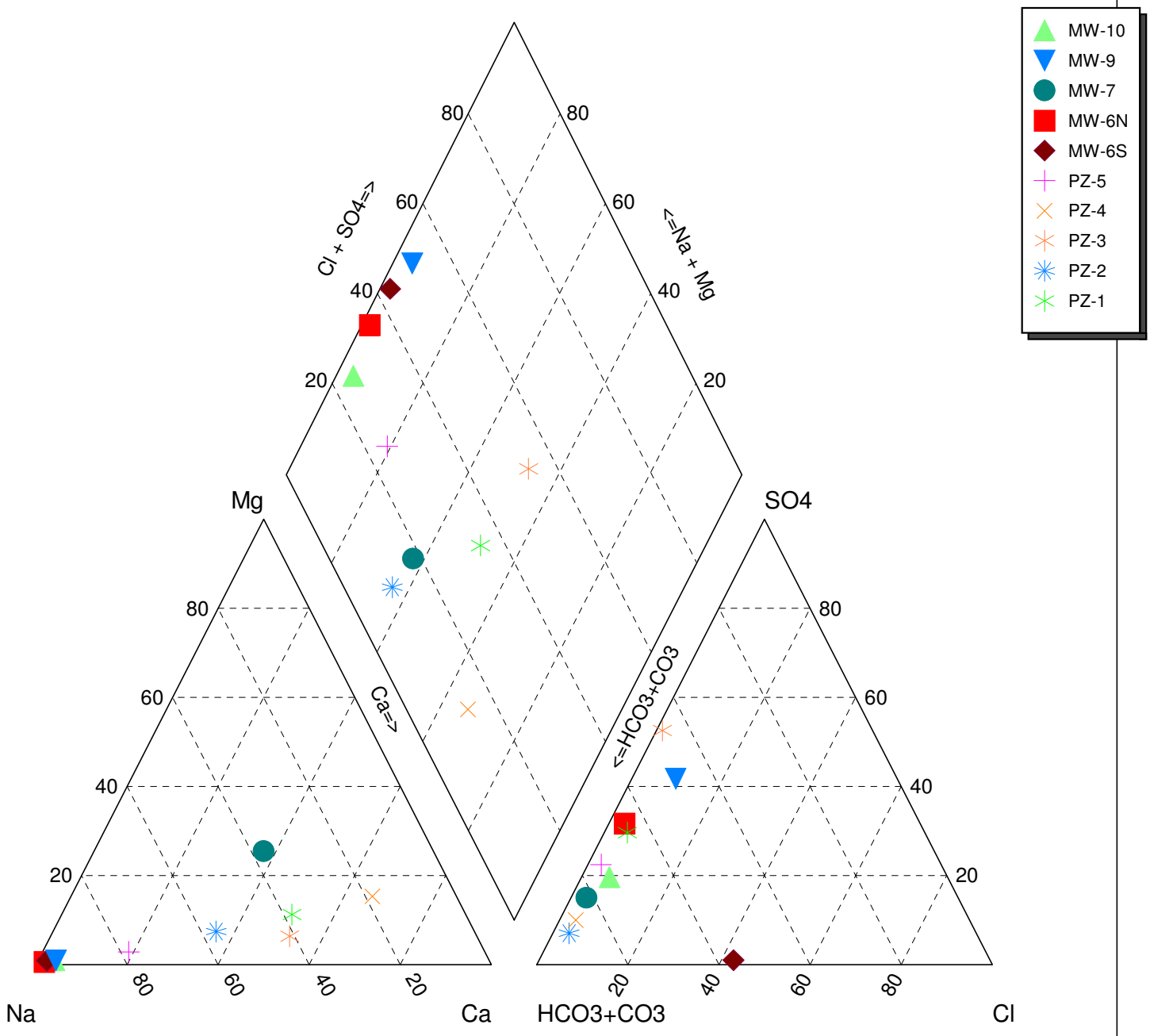
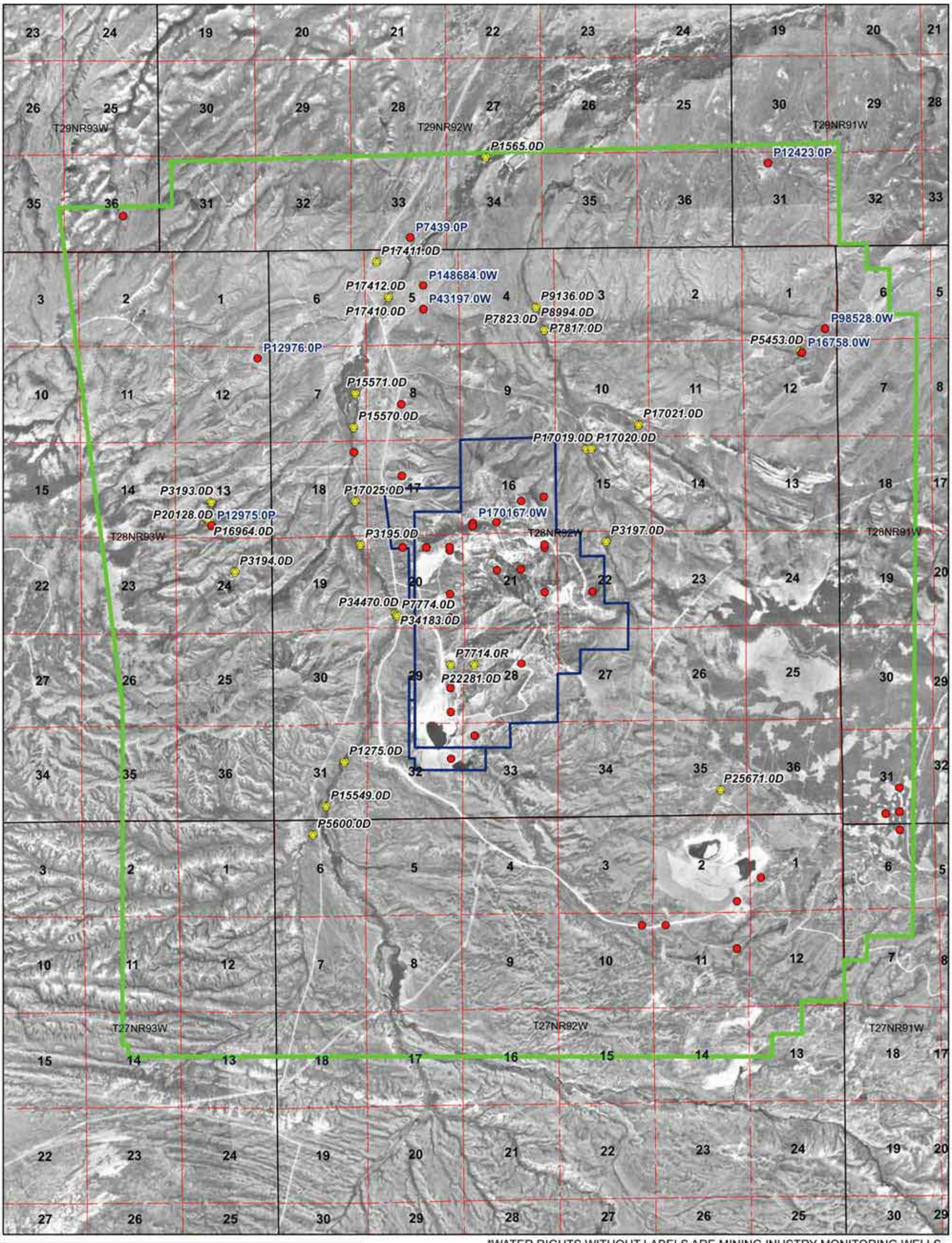


FIGURE D6.3

DESCRIPTION: 2009 & 2010 Monitoring Well Water Quality		
	PROJECT: Sheep Mountain	PROJECT NO: WYTUI101
	CLIENT: Titan Uranium	DATE: 2/15/2011



*WATER RIGHTS WITHOUT LABELS ARE MINING INUSTRY MONITORING WELLS.

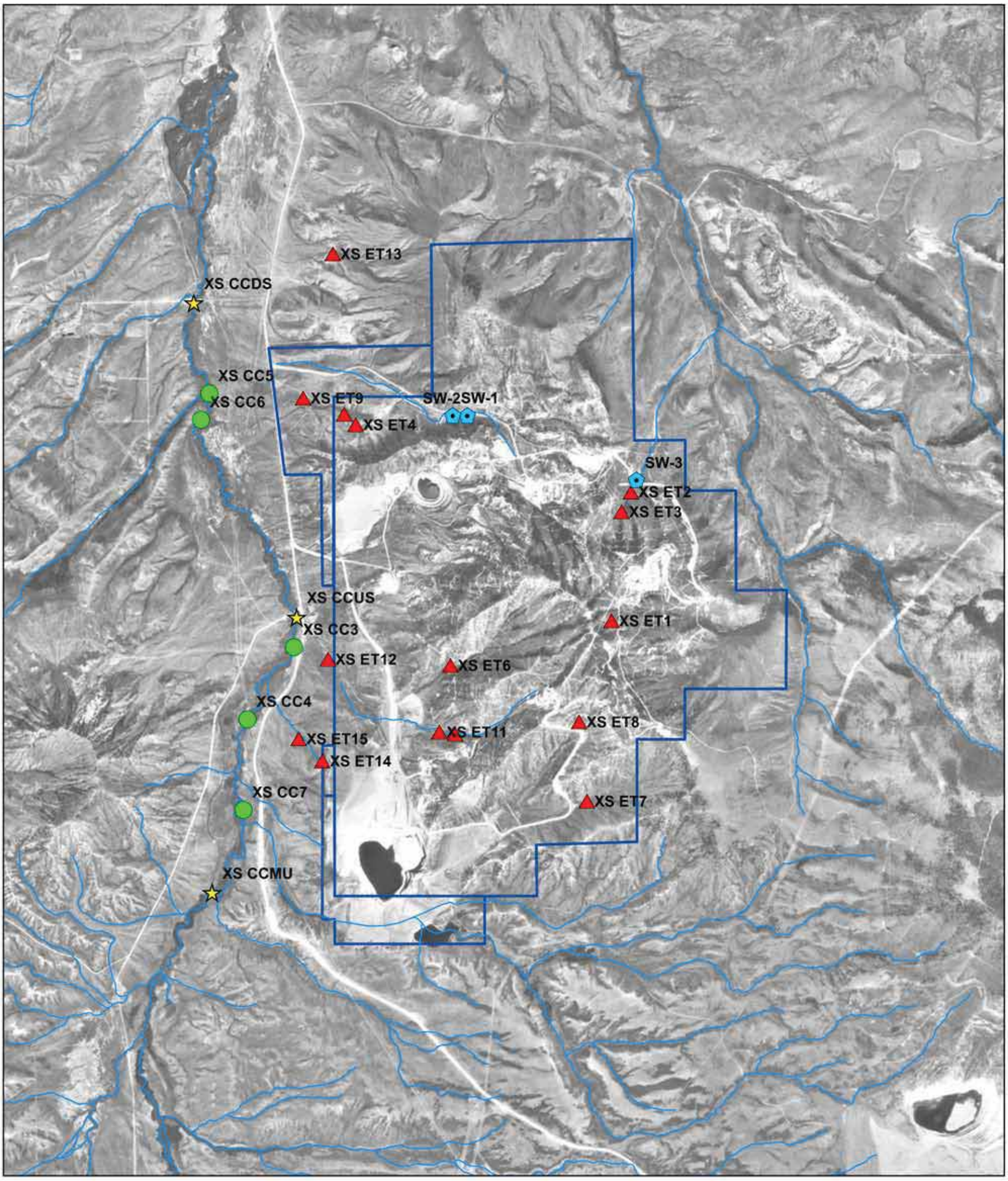
LEGEND

- GROUND WATER RIGHTS WITHIN 3 MILES
- SURFACE WATER RIGHTS WITHIN 3 MILES
- 3 MILE OFFSET
- PROJECT BOUNDARY

N

0 0.5 1 2 3 Miles

	FIGURE D6.4 SURFACE WATER AND GROUND WATER RIGHTS LOCATION MAP	SHEEP MOUNTAIN FREMONT COUNTY, WYOMING	REVISION DATE:	TITAN URANIUM USA INC
	SCALE: 1 IN. = 1 MI.		WYTUI101 HYDROLOGY - WATER RIGHTS.MXD	
	DRAWN BY: JHF/AMK	DATE: 6/14/11	DWG. NUMBER	



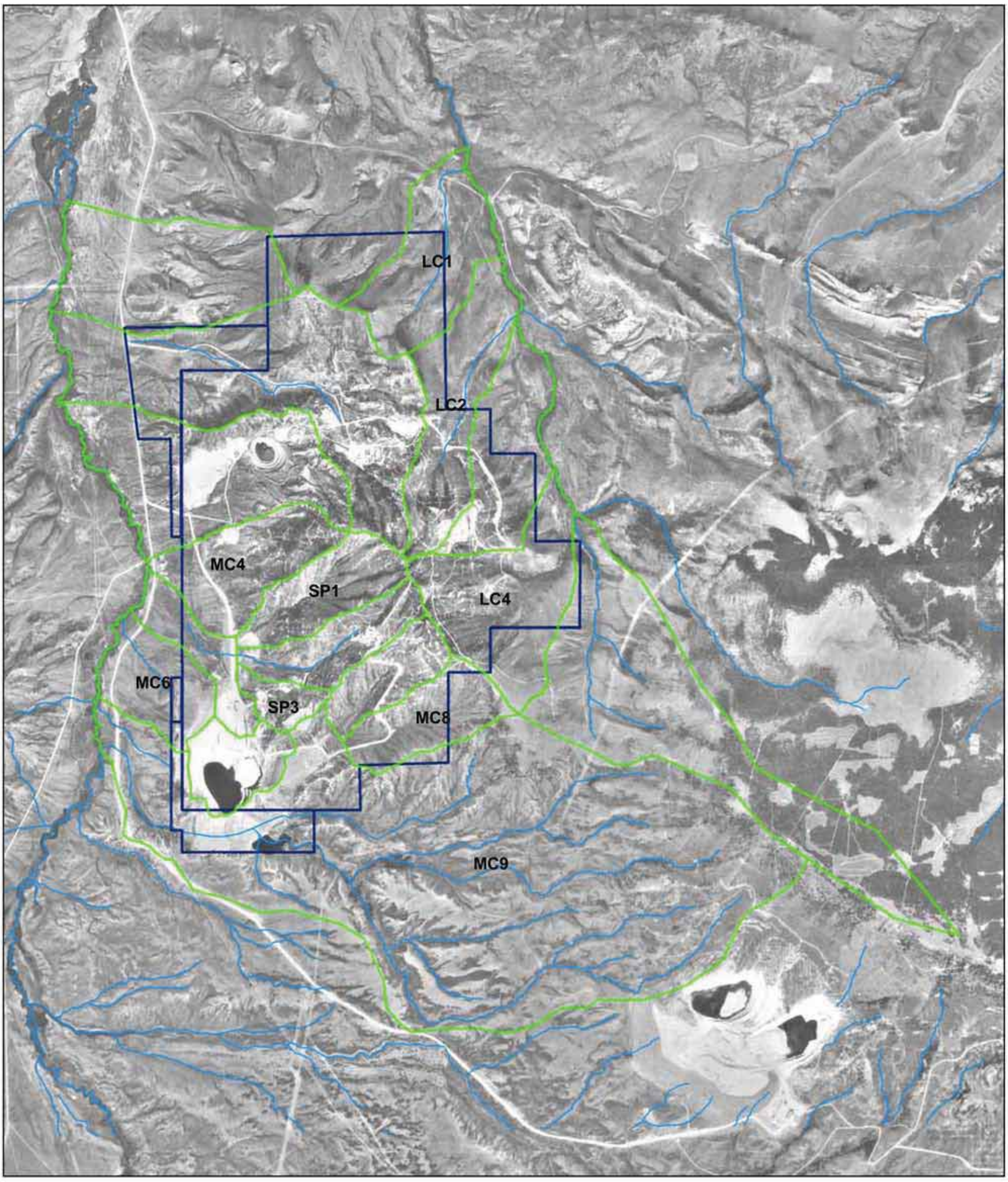
LEGEND

- IMPOUNDMENT SAMPLING LOCATIONS
- CROOKS CREEK GAGING STATIONS
- CROOKS CREEK CROSS SECTIONS
- EPHEMERAL TRIBUTARY CROSS SECTIONS
- STREAMS
- PROJECT BOUNDARY

N

1 0.5 0 1 Miles

	FIGURE D6.5 SURFACE WATER DATA COLLECTION LOCATIONS	SHEEP MOUNTAIN FREMONT COUNTY, WYOMING	REVISION DATE:	TITAN URANIUM USA INC
	SCALE: 1 IN. = 0.5 MI.		WYTUI101 HYDROLOGY - BASELINE SAMPLE LOCATIONS.MXD	
	DRAWN BY: JHF/AMK	DATE: 6/14/11	DWG. NUMBER	



LEGEND

- DRAINAGE BASINS
- PROJECT BOUNDARY
- STREAMS

N

1 0.5 0 1 Miles

	FIGURE D6.6 SURFACE WATER DRAINAGE BASINS		**SHEEP MOUNTAIN FREMONT COUNTY, WYOMING**	REVISION DATE:
	SCALE: 1 IN. = 1 MI.	DATE: 6/14/11		WYTUI101 HYDROLOGY- BASELINE WATERSHEDS.mxd
	DRAWN BY: JHF/AMK			DWG. NUMBER

TITAN URANIUM USA INC

ATTACHMENTS

Attachment A
Well Logs for the G Wells

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-1 DATE 5/16/2011
LOCATION COUNTY/STATE Fremont, WY

COMMENTS
Near intersection of Lost Creek Mine Rd and road
up towards McIntosh Pit
W of disturbed area immediately E of gas pipelines
0-10 ft, Qal/Qcl; 10-50 ft, Tfu; Kc contact 50 ft
No water was encountered in borehole. No well
completed at this location. No geophisical log.

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

STRATIGRAPHY CLASSIFICATION

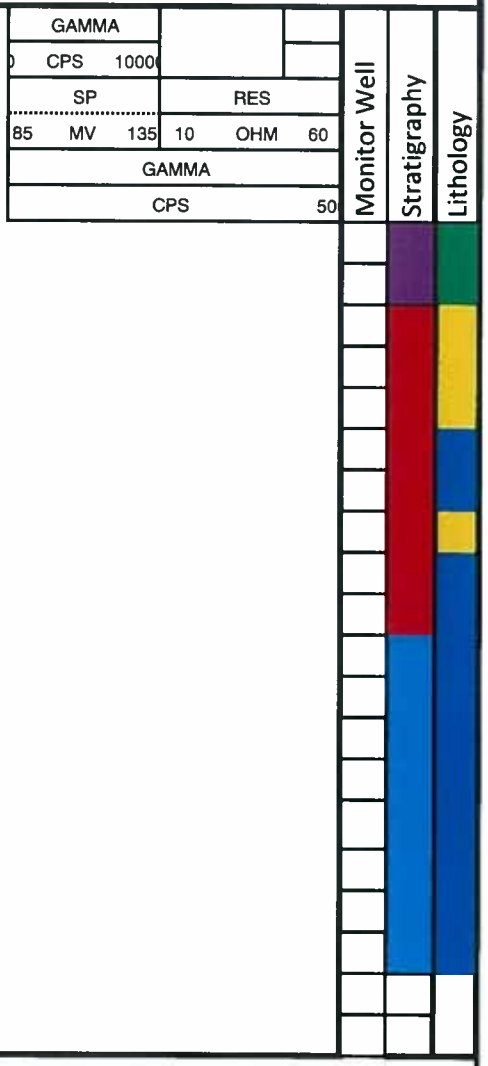
Quaternary Alluvium/colluvium
Fort Union
Cody Shale

Monitor Well

Blank Casing Screened

Depth (ft) From	To	Descriptive Geology: Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition*: Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Brn	vf-vc	P	SA	-	O	-	-	-	-	-	
5	10	Yellow-Brn	vf-vc	P	SA	-	O	-	-	-	-	-	
10	15	Yellow-Brn	vf-vc	P	SA	-	O	-	-	-	-	-	
15	20	Yellow-Brn	vf-vc	P	SA	-	O	-	-	-	-	-	
20	25	Yellow-Brn	fc	m	SA	-	O	-	-	-	-	-	
25	30	Grey-Green	-	-	-	-	R	-	-	-	-	-	
30	35	Grey-Green	-	-	-	-	R	-	-	-	-	-	
35	40	Grey-Green	vf-fc	P	SA	-	R	-	-	-	-	-	
40	45	Grey-Green	-	-	-	-	R	-	-	-	-	-	
45	50	Grey-Green	-	-	-	-	R	-	-	-	-	-	
50	55	Grey	-	-	-	-	-	-	-	-	-	-	
55	60	Grey	-	-	-	-	-	-	-	-	-	-	
60	65	Grey	-	-	-	-	-	-	-	-	-	-	
65	70	Grey	-	-	-	-	-	-	-	-	-	-	
70	75	Grey	-	-	-	-	-	-	-	-	-	-	
75	80	Grey	-	-	-	-	-	-	-	-	-	-	
80	85	Grey	-	-	-	-	-	-	-	-	-	-	
85	90	Grey	-	-	-	-	-	-	-	-	-	-	

Hawkins CBM Logging, Inc.



Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN
URANIUM USA INC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-2 DATE 5/17/2011
LOCATION Directly W of spoil pile N of McIntosh Pit, S. of access road. COUNTY/STATE Fremont, WY
elevation ~ 6653 ft

COMMENTS 0-10 ft Qal/Qcl; 10-36 ft Tbs/Tfu Undivided; Kc Contact 36 ft SWL at +55'
The upper sands were unsaturated. No well completion at this location. SWL elevation ~6653 ft

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

Stratigraphic Classification

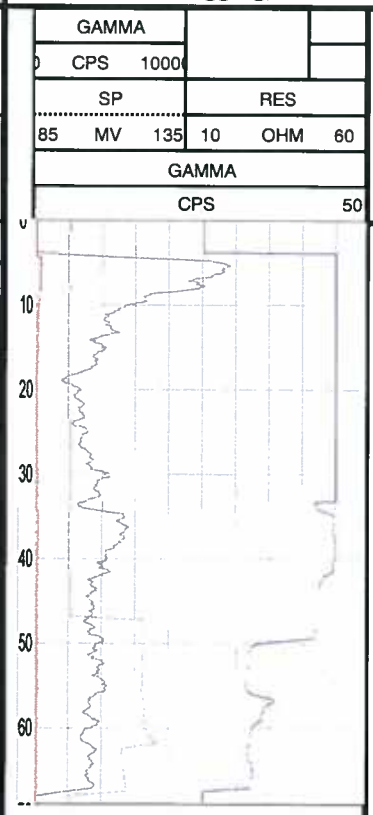
Quaternary Alluvium/colluvium
Fort Union
Cody Shale

Monitor Well

Blank Casing Screened

Depth (ft) From	To	Descriptive Geology Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition* Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Brn	vf-vc	P	SA	-	O	-	-	-	-	-	
5	10	Brn	vf-vc	P	SA	-	O	-	-	-	5-10%	-	
10	15	Yellow-Brn	f-vc	P	SA	-	O	-	-	-	5-10%	-	
15	20	Yellow-Brn	f-vc	P	SA	-	O	-	-	-	5%	-	
20	25	Brn	fc	m	SA	-	O	-	-	-	5%	-	
25	30	Brn	fc	m	SA	-	O	-	-	-	5%	-	
30	35	Brn	fc	m	SA	-	O	-	-	-	-	-	
35	40	Grey	-	-	-	-	-	-	-	-	-	-	
40	45	Grey	-	-	-	-	-	-	-	-	-	-	
45	50	Grey	-	-	-	-	-	-	-	-	-	-	
50	55	Grey	-	-	-	-	-	-	-	-	-	-	
55	60	Grey	-	-	-	-	-	-	-	-	-	-	
60	65	Grey	-	-	-	-	-	-	-	-	-	-	
65	70	Grey	-	-	-	-	-	-	-	-	-	-	

Hawkins CBM Logging, Inc.



Monitor Well | Stratigraphy | Lithology

Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN URANIUM USA NC

BOREHOLE LOG

PROJECT NAME: Sheep Mt. LOGGED BY: DAL
BOREHOLE ID: G-3 DATE: 5/17 & 18/2011
LOCATION: NE of proposed heap leach site near intersection of permit boundary and section 17/20 line. COUNTY/STA: Fremont, WY

COMMENTS
0-5 ft Qal/Qcl; 5-55 ft Tfu; Kc contact at 55 ft
Monitor well completed at this location. Ground elevation ~ 6714
SWL at 33 ft. SW elevation ~6681 ft.
SWL allowed to stabalize overnight- prior to setting SWL at 30.5 feet
SWL as of 6-8-11: 31.6"

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

STRATIGRAPHY CLASSIFICATION

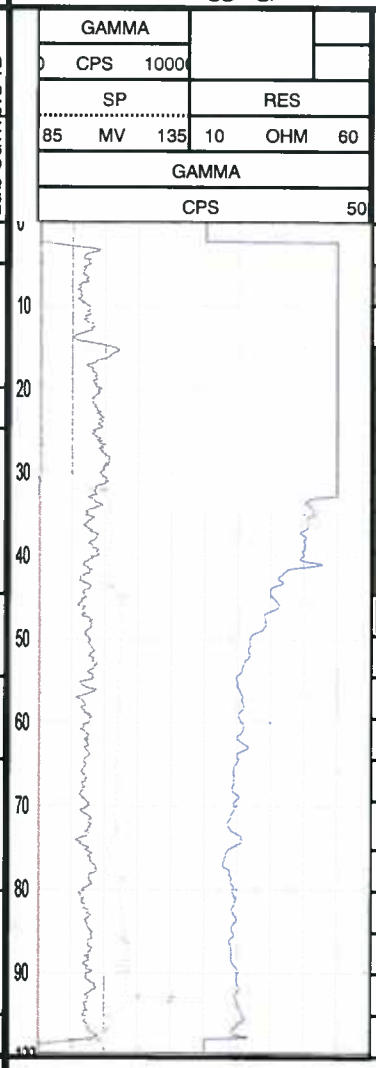
Quaternary Alluvium/colluvium
Fort Union
Cody Shale

Monitor Well

Blank Casing
Screened

Depth (ft) From	To	Descriptive Geology: Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition*: Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Brown	vf-vc	P	SA	-	O	-	-	-	-	-	
5	10	Grey-Green	-			-	P	-	-	-	-	-	
10	15	Grey-Green	-			-	P	-	-	-	-	-	
15	20	Yellow-Green	vf-m	m	SA	-	R	-	-	-	-	-	
20	25	Yellow-Green	vf-m	m	SA	-	R	-	-	-	-	-	
25	30	Yellow-Green	vf-m	m	SA	-	R	-	T	-	-	-	
30	35	Yellow-Green	vf-f	m	SA	-	R	-	-	-	-	-	
35	40	Yellow-Green	vf-f	m	SA	-	R	-	T	-	-	-	
40	45	Yellow-Green	vf-f	m	SA	-	R	-	-	-	-	-	
45	50	Yellow-Green	-	-	-	-	R	-	-	-	-	-	
50	55	Blue-Grey	-	-	-	-	R	-	-	-	-	-	
55	60	Grey	-	-	-	-	-	-	-	-	-	-	
60	65	Grey	-	-	-	-	-	-	-	-	-	-	
65	70	Grey	-	-	-	-	-	-	-	-	-	-	
70	75	Grey	-										
75	80	Grey	-										
80	85	Grey	-										
85	90	Grey	-										
90	95	Grey	-										
95	100	Grey	-										

Hawkins CBM Logging, Inc.



Monitor Well | Stratigraphy | Lithology

Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN
URANIUM USA NC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-4 DATE 5/17 & 18/2011
LOCATION W of N end of McIntosh COUNTY/STATE Fremont, WY
Pit between Lost Creek Mine Rd and pipelines

COMMENTS
0-12 ft Qcl; Tfu contact at 12 ft; did not reach Kc contact
Ground elevation ~ 6697ft, SWL 12 ft, SW elevation ~6685
SWL as of 6-8-11: 12.7'

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

Stratigraphic Classification

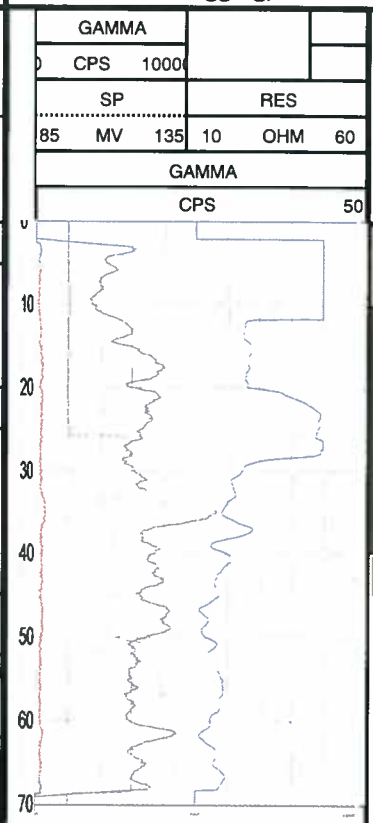
Quaternary Alluvium/colluvium
Fort Union
Cody Shale

Monitor Well

Blank Casing Screened

Depth (ft)		Descriptive Geology						Composition*					
From	To	Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Brown	-			-	O	-	-	-	-	-	
5	10	Brown	-			-	O	-	-	-	-	-	
10	15	Light Tan	f-vc	P		-	O	-	-	-	-	-	
15	20	Light Brown	vf-vc	P	SR	-	O	-	-	-	-	-	
20	25	Yellow-Brov	vf-vc	P	SR	-	O	-	T	-	-	-	
25	30	Light Grey	vf-vc	P	SR	-	O	-	-	-	-	-	
30	35	Tan	c-vc	m	SR	-	O	-	-	-	-	-	
35	40	Brown	c-vc	m	SR	-	O	-	-	-	-	-	
40	45	Tan	c-vc	m	SR	-	O	-	-	-	-	-	
45	50	Tan	c-vc	m	SR	-	O	-	-	-	-	-	
50	55	Light Grey	f-vc	P	SR	-	O	-	-	-	-	-	
55	60	Light Grey	f-vc	P	SR	-	O	-	-	-	-	-	
60	65	Light Grey	f-vc	P	SR	-	-	-	T	-	-	-	
65	70	Light Grey	f-vc	P	SR	-	-	-	-	-	-	-	

Hawkins CBM Logging, Inc.



Monitor Well | Stratigraphy | Lithology

Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN
URANIUM USA INC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-5 DATE 6/1/2011
LOCATION Located directly S of McIntosh Pit just N or permit boundary COUNTY/STATE Fremont, WY

COMMENTS
0-15 ft Qal/Qcl; Tbs contact at 15 ft; did not reach Tfu or Kc
Last 25 feet completed in coarse sandstone and conglomerates
SWL prior to setting the well ~89 ft
SWL as of 6-8-11: 87.2'
TD 110 ft- poor recovery after 100ft. Hard drilling.

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Alluvium/Fill

Stratigraphic Classification

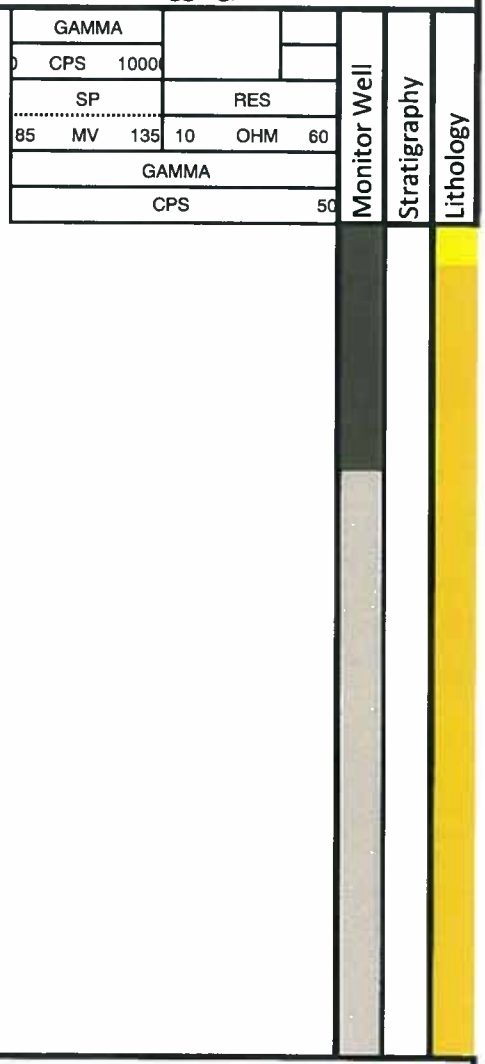
Quaternary Alluvium/colluvium
Fort Union
Battle Springs Sandstone

Monitor Well

Blank Casing Screened

Hawkins CBM Logging, Inc.

Depth (ft) From	To	Descriptive Geology Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition* Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Brn	vf-vc	P	SA	-	-	-	-	-	-	-	
5	10	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
10	15	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
15	20	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
20	25	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
25	30	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
30	35	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
35	40	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
40	45	Brn-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
45	50	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
50	55	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
55	60	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
60	65	yellow-grn	vf-m	P	SA	-	-	-	m	-	-	-	
65	70	yellow-grn	vf-c	P	SA	-	-	-	m	-	-	-	
70	75	yellow-grn	vf-m	P	SA	-	-	-	m	-	-	-	
75	80	yellow-grn	vf-vc	P	SA	-	-	-	m	-	-	-	
80	85	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
85	90	yellow-grn	vf-vc	P	SA	-	-	-	T	-	-	-	
90	95	yellow-grn	vf-vc	P	SA	-	-	-	-	-	-	-	
95	100	yellow-grn	vf-vc	P	SA	-	-	-	-	-	-	-	



Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN
URANIUM USA INC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL

BOREHOLE ID G-5 DATE 6/1/2011

LOCATION Located directly S of McIntosh Pit just N or permit boundary COUNTY/STATE Fremont, WY

COMMENTS

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Alluvium/Fill

Stratigraphic Classification

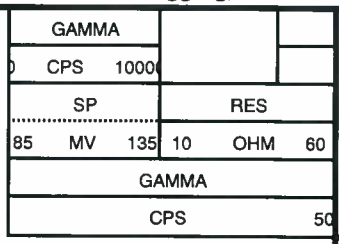
Quaternary Alluvium/colluvium
Fort Union
Battle Springs Sandstone

Monitor Well

Blank Casing Screened

Hawkins CBM Logging, Inc.

Depth (ft) From	Depth (ft) To	Descriptive Geology: Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition*: Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
100	105	Poor Recovery											
105	110	Poor Recovery											



Monitor Well | Stratigraphy | Lithology

Grain Size Description

vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

TITAN
URANIUM USA INC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL
BOREHOLE ID G-6 DATE 5/25&26/2011
LOCATION W of proposed heap leach just W of permit boundary COUNTY/STATE Fremont, WY

COMMENTS
0-15 ft Qal/Qcl; contact with Tbs/Tfu undivied at 15 ft
Ground elevation ~6769 ft, SWL 45 ft, SW elevation ~6729ft
SWL 34 ft, 15 ft of "sluff" in drill hole.
"sluff" compacted and stabalized with sand at depth of 65ft
SWL as of 6-8-11: 34.5'

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

Stratigraphic Classification

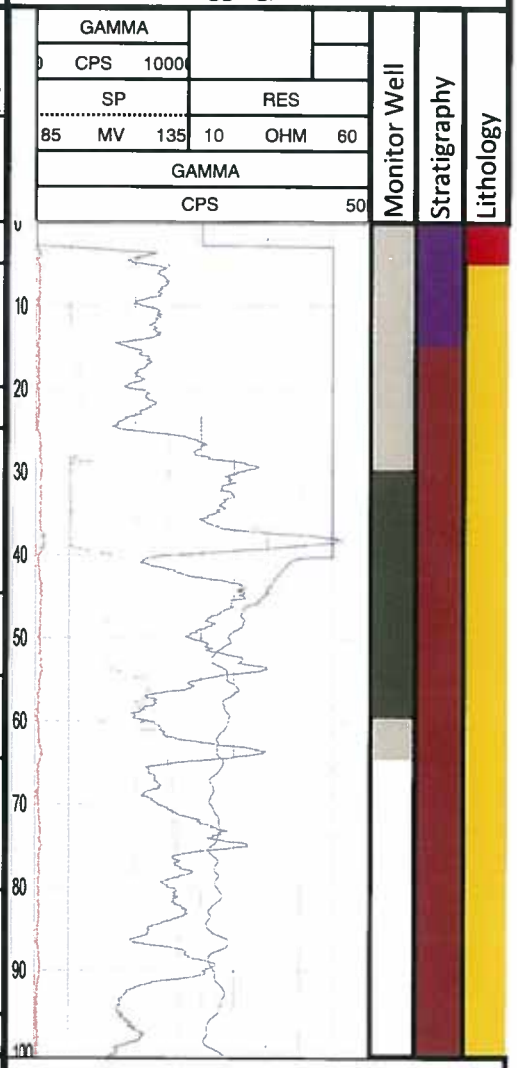
Quaternary Alluvium/colluvium
Fort Union
Battle Springs Sandstone

Monitor Well

Blank Casing Screened

Depth (ft)		Descriptive Geology						Composition*					
From	To	Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
0	5	Yellow-Brov	f-vc	P	SA	-	O	-	-	-	-	-	
5	10	Yellow-Gree	vf-vc	P	SA	-	O	-	-	-	-	-	
10	15	Yellow-Gree	vf-vc	P	SA	-	O	-	-	-	-	-	
15	20	Grey-Green	vf-vc	P	SA	-	R	-	-	-	-	-	
20	25	Grey-Green	vf-c	P	SA	-	R	-	-	-	-	-	
25	30	Yellow Gree	vf-vc	P	SA	-	P	-	-	-	-	-	
30	35	Grey-Green	vf-vc	P	SA	-	P	-	-	-	-	-	
35	40	Grey-Green	vf-c	P	SA	-	R	-	-	-	-	-	
40	45	Light Grey-(	vf-m	m	SA	-	O	-	m	-	-	-	
45	50	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
50	55	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
55	60	Grey-Green	vf-c	p	SA	-	R	-	-	-	-	-	
60	65	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
65	70	Grey-Green	vf-c	p	SA	-	R	-	-	-	-	-	
70	75	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
75	80	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
80	85	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
85	90	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
90	95	Grey-Green	vf-m	m	SA	-	R	-	-	-	-	-	
95	100	Grey-Green	vf-vc	p	SA	-	R	-	-	-	-	-	

Hawkins CBM Logging, Inc.



Grain Size Description
vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

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URANIUM USA INC

BOREHOLE LOG

PROJECT NAME Sheep Mt. LOGGED BY DAL

BOREHOLE ID G-6 DATE 5/25&26/2011

LOCATION COUNTY/STATE Fremont, WY

Pit between Lost Creek Mine Rd and pipelines

COMMENTS

Due to blow-out around auger, not sure to accuracy of cuttings

LITHOLOGY CLASSIFICATION

Clayey Sand
Sandstone
Shale
Clay

Stratigraphic Classification

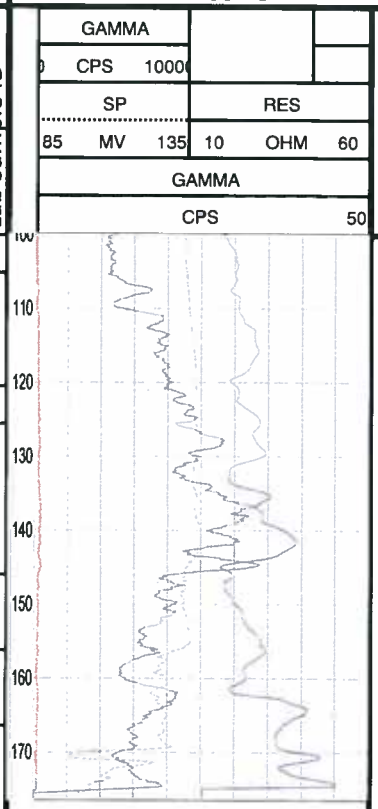
Quaternary Alluvium/colluvium
Fort Union
Battle Springs Sandstone

Monitor Well

Blank Casing
Screened

Depth (ft) From	Depth (ft) To	Descriptive Geology: Color	Grain Size	Sorting	Angularity	Argilaceous (%)	Oxi/Red	Composition*: Hematite	Limonite	Calcite	Feldspar	Carbon	Lab Sample ID*
100	5	Yellow-Brov	vf-c	p	SA	-	R	-	-	-	-	-	
105	110	Yellow-Gree	vf-c	p	SA	-	R	-	-	-	-	-	
110	115	Yellow-Gree	f-vc	p	SA	-	R	-	-	-	-	-	
115	120	Grey-Green	SAND- Almost no recovery										
120	125	Grey-Green	f-c	p	SA	-	R	-	-	-	-	-	
125	130	Yellow Gree	f-c	p	SA	-	R	-	-	-	-	-	
130	135	Grey-Green	f-vc	p	SA	-	R	-	-	-	-	-	
135	140	Grey-Green	f-vc	p	SA	-	R	-	-	-	-	-	
140	145	Light Grey-(	f-vc	p	SA	-	R	-	-	-	-	-	
145	150	Grey-Green	f-vc	p	SA	-	R	-	-	-	-	-	
150	155	Grey-Green	f-vc	p	SA	-	R	-	-	-	-	-	
155	160	Grey-Green	f-vc	p	SA	-	R	-	-	-	-	-	
160	165	Grey-Green	vf-c	p	SA	-	R	-	-	-	-	-	
165	170	Grey-Green	vf-c	p	SA	-	R	-	-	-	-	-	
170	175	Grey-Green	vf-c	p	SA	-	R	-	-	-	-	-	

Hawkins CBM Logging, Inc.



Monitor Well | Stratigraphy | Lithology

Grain Size Description

vf=fine (<0.075 mm)
f=fine (0.075-0.425 mm)
m=medium (0.425-2.0 mm)
c=coarse (2.0-4.75 mm)
vc=very coarse (>4.75 mm)

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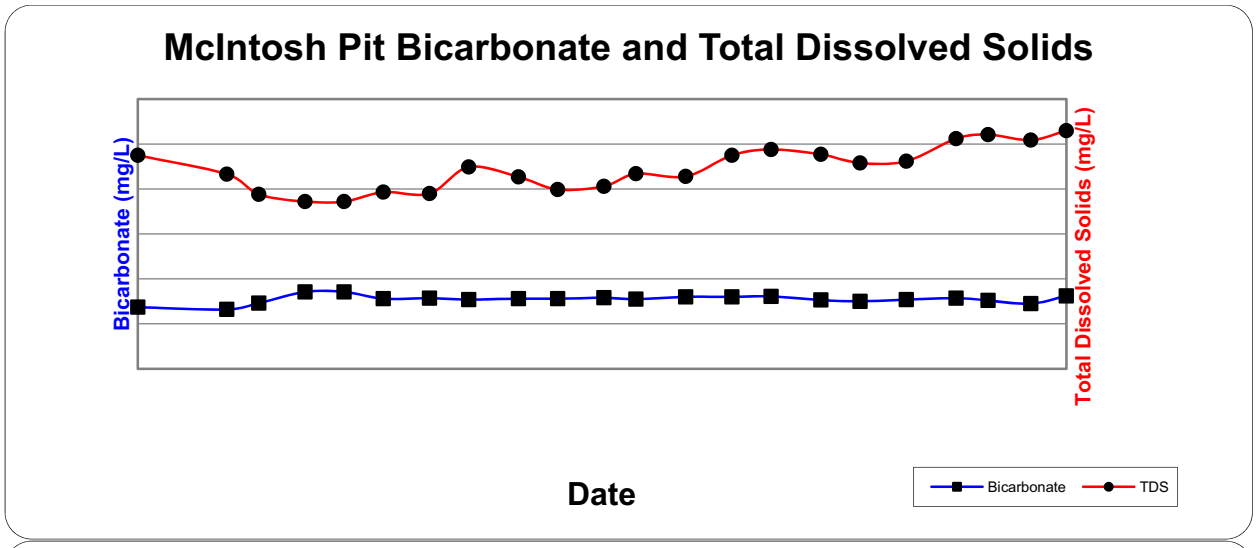
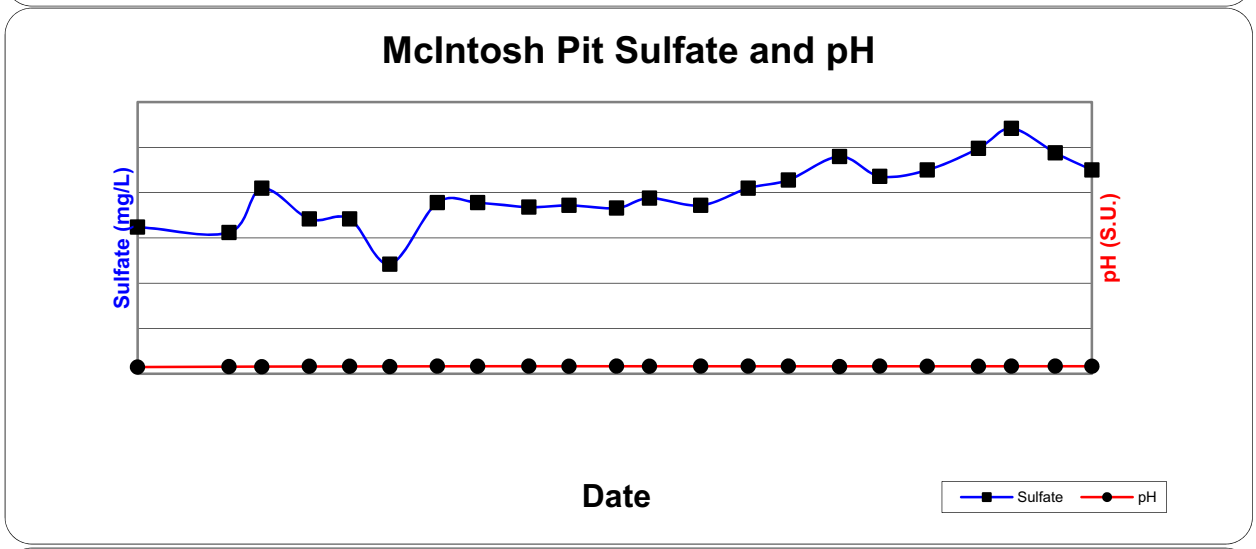
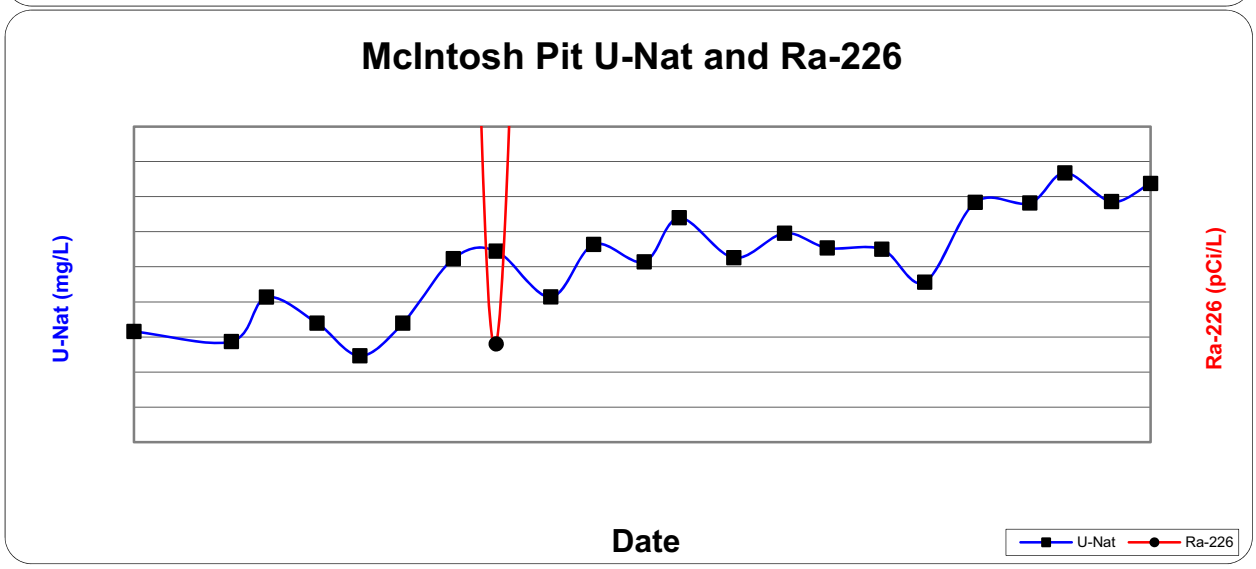
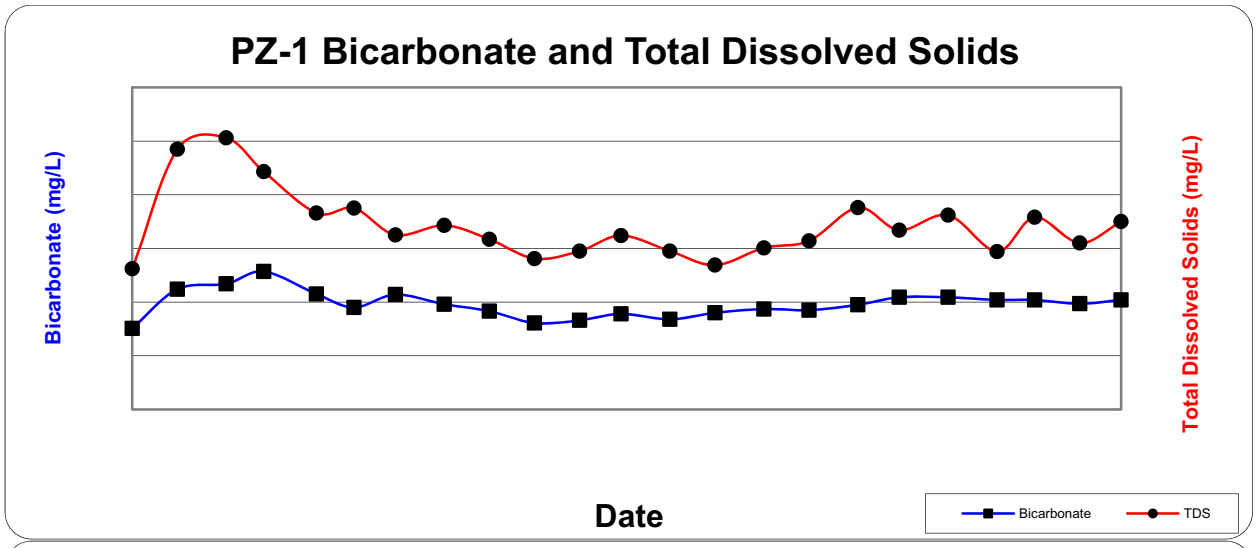
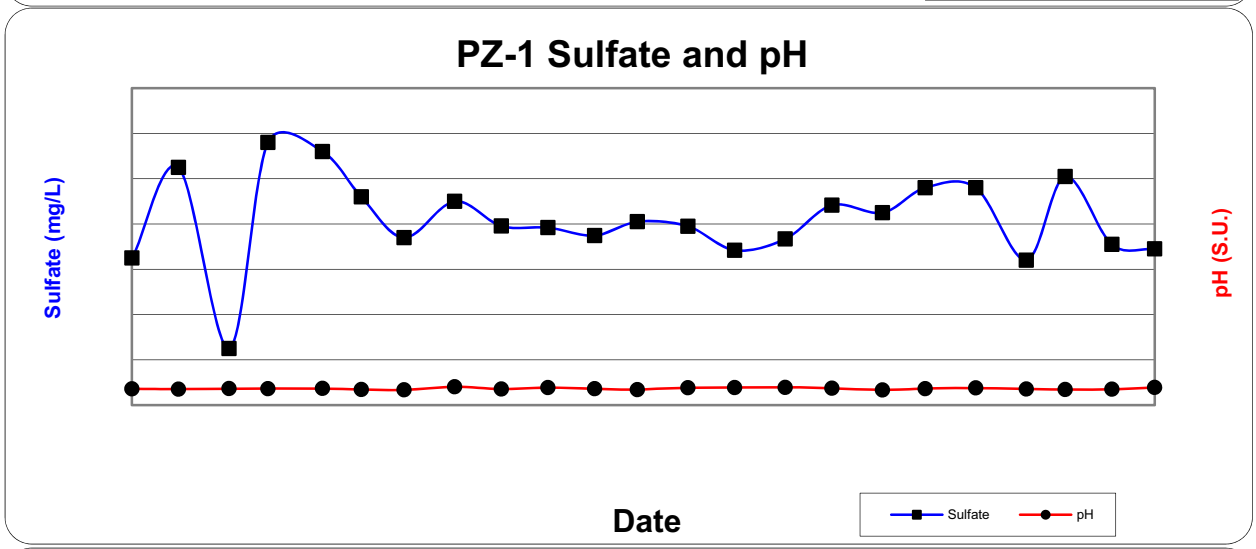
Attachment B
Historic Ground Water Data

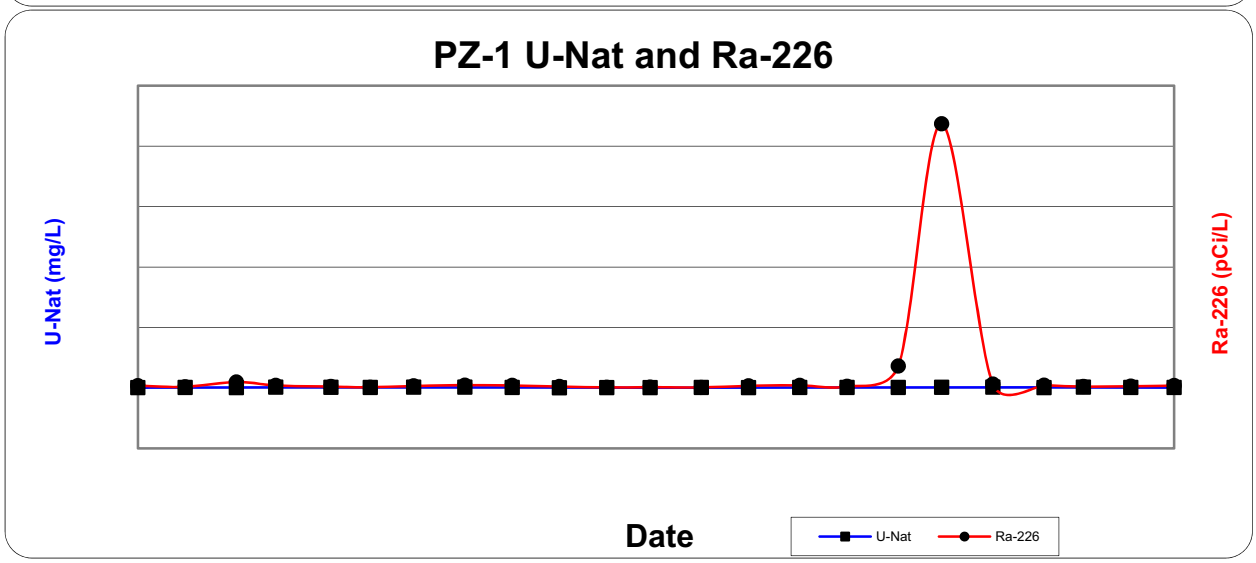

McIntosh Pit Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

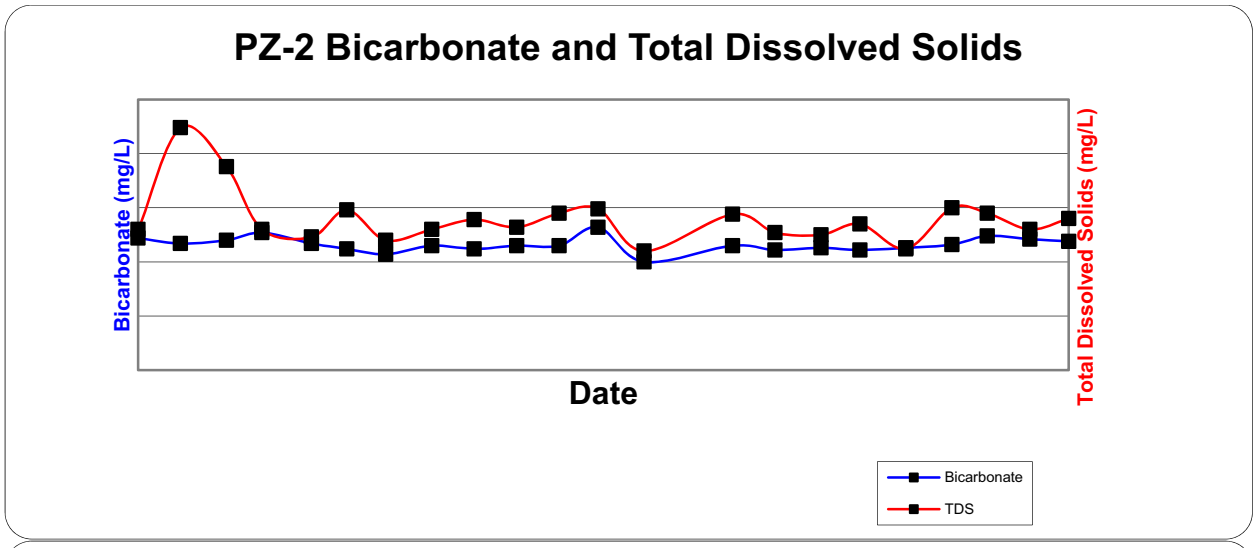

McIntosh Pit Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

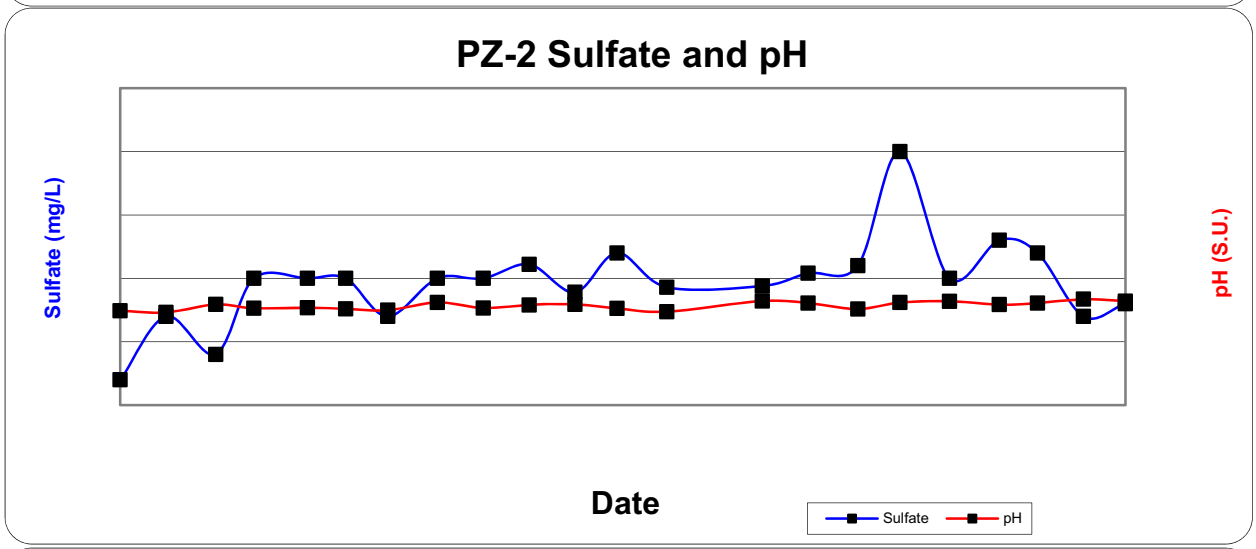

McIntosh Pit U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

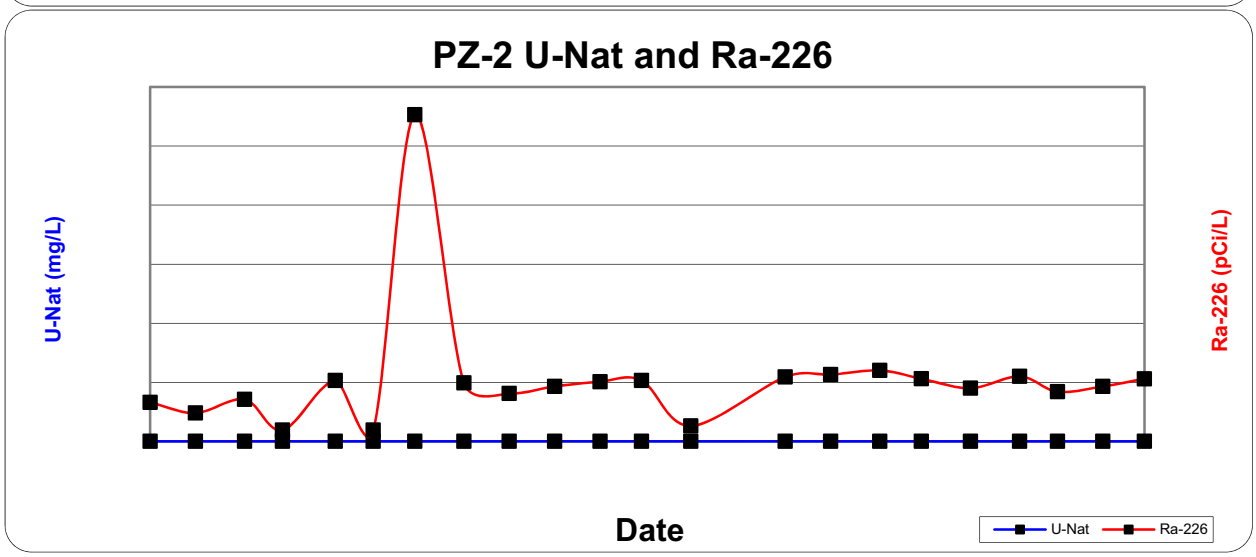

PZ-1 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

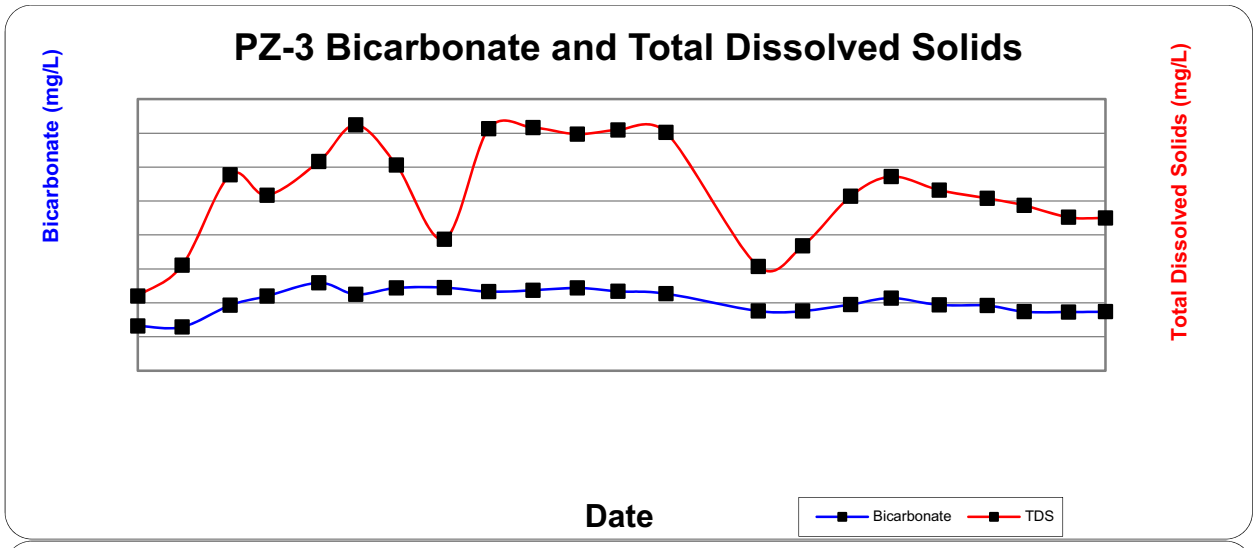

PZ-1 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

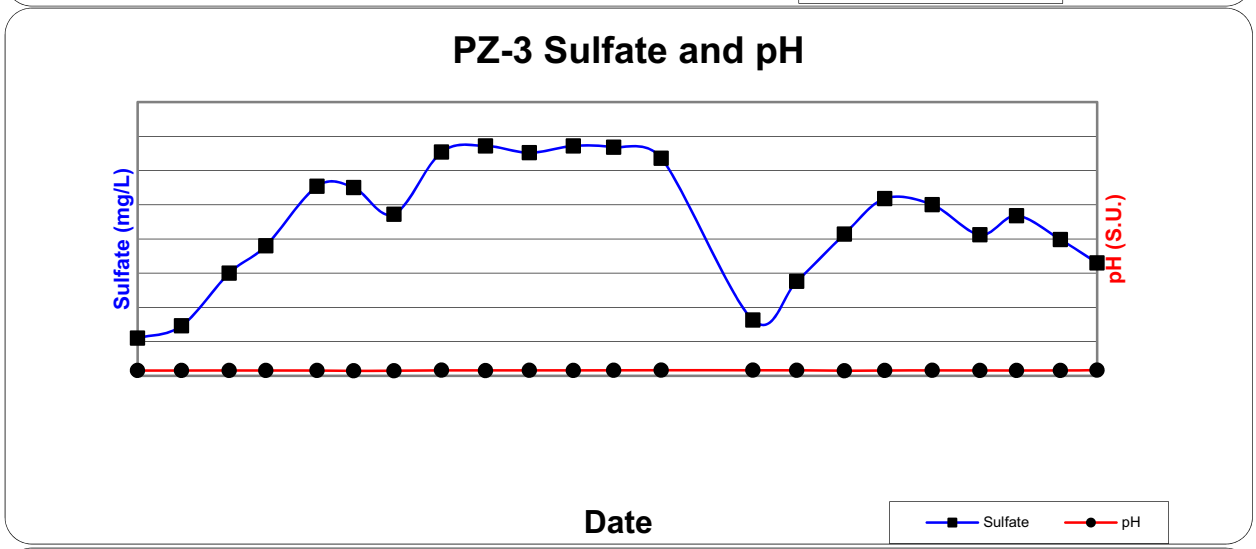

PZ-1 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

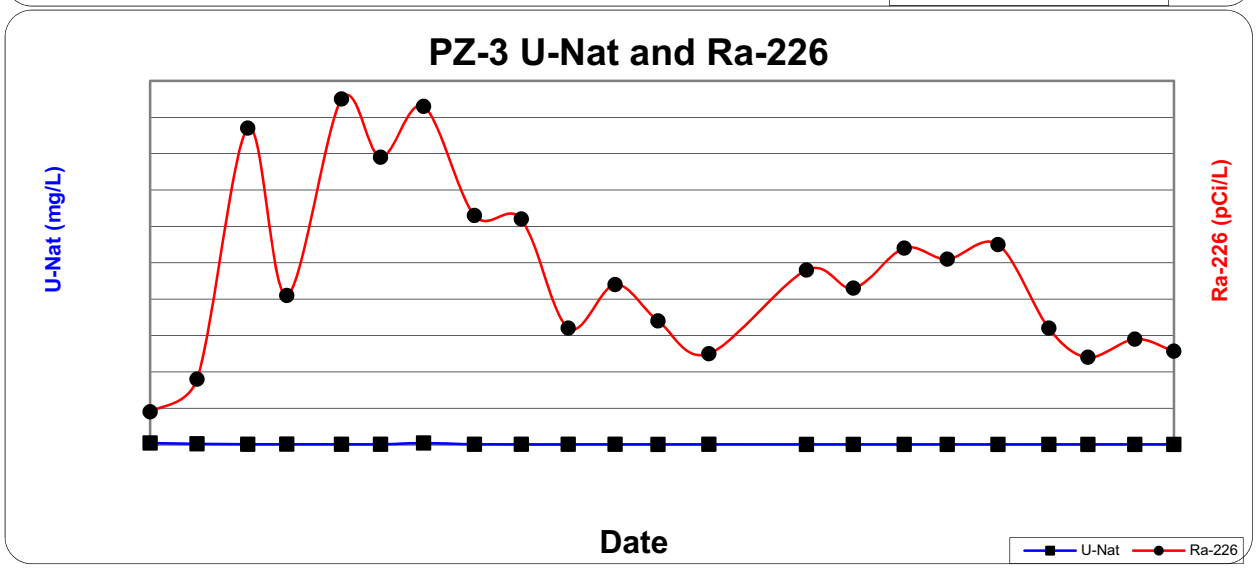

PZ-2 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

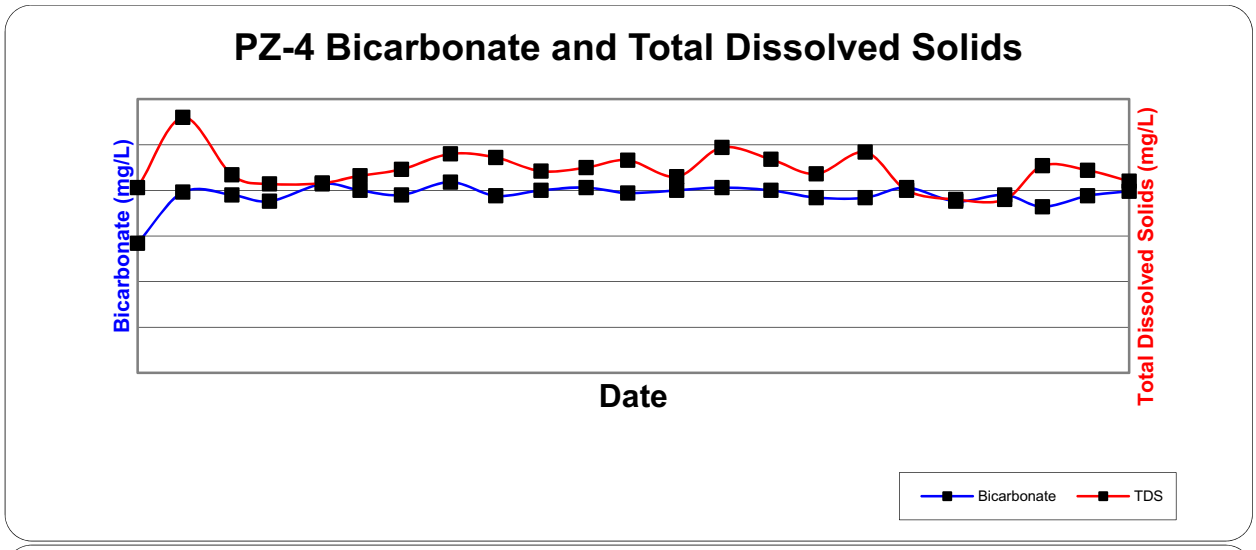

PZ-2 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

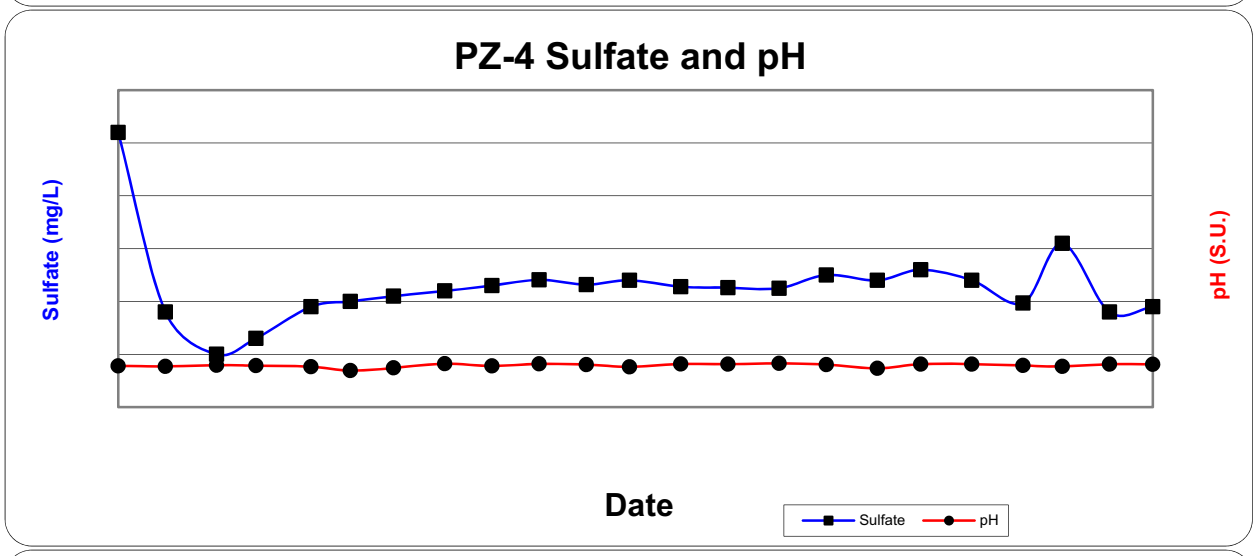

PZ-2 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

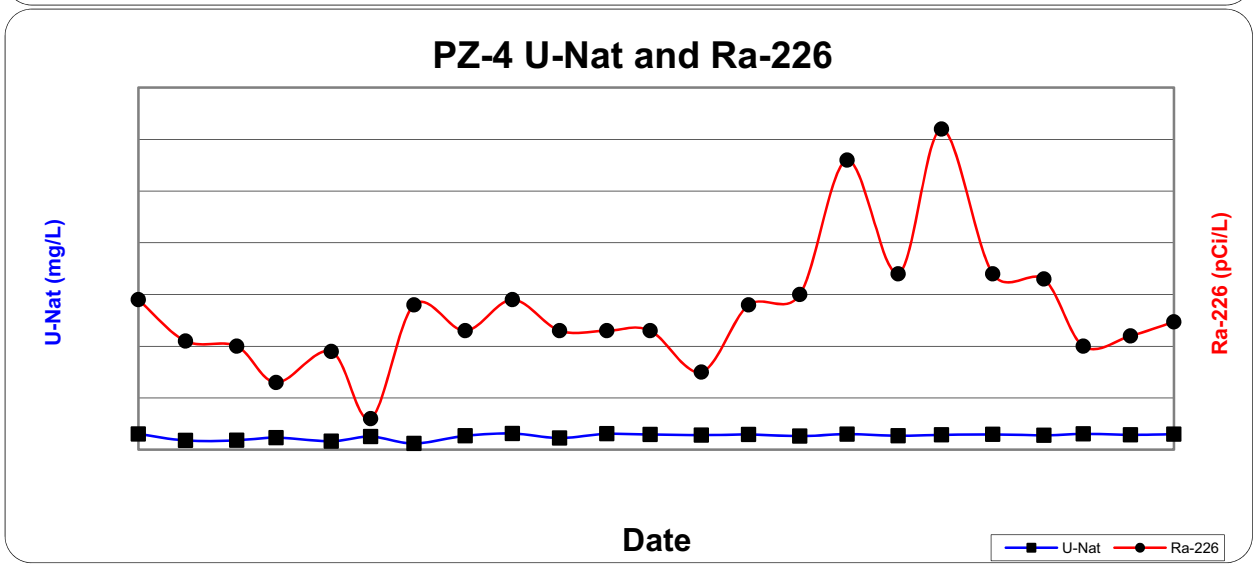

PZ-3 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

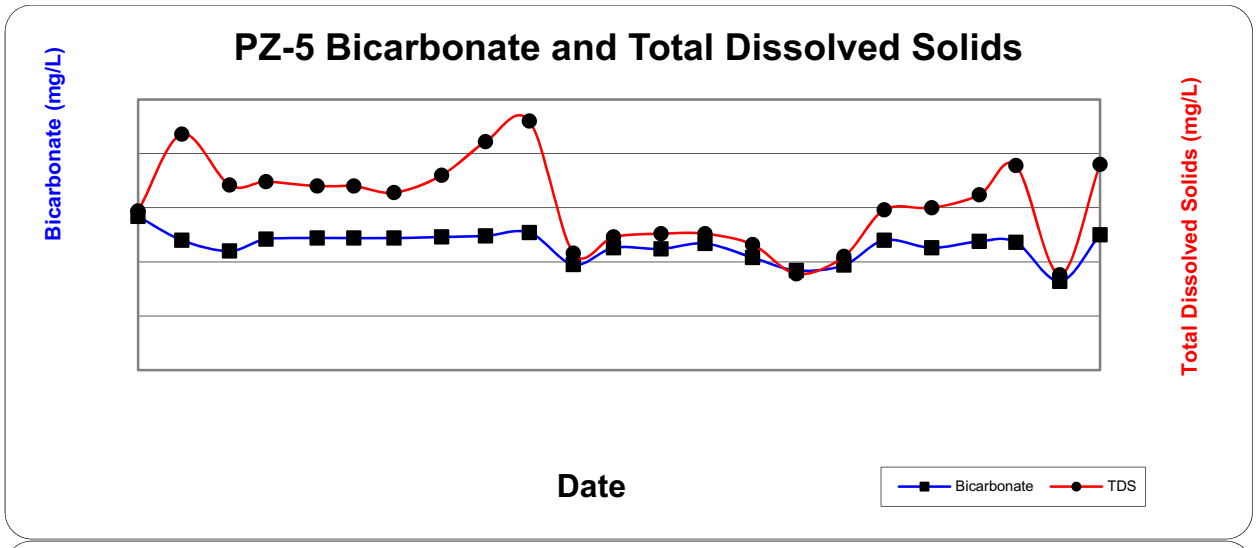

PZ-3 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

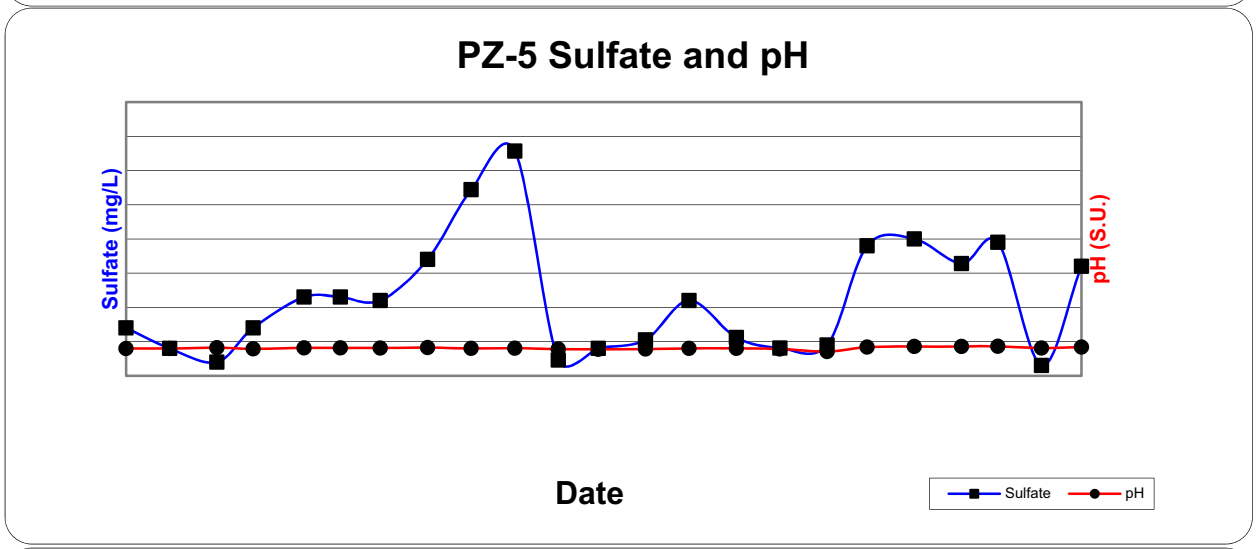

PZ-3 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

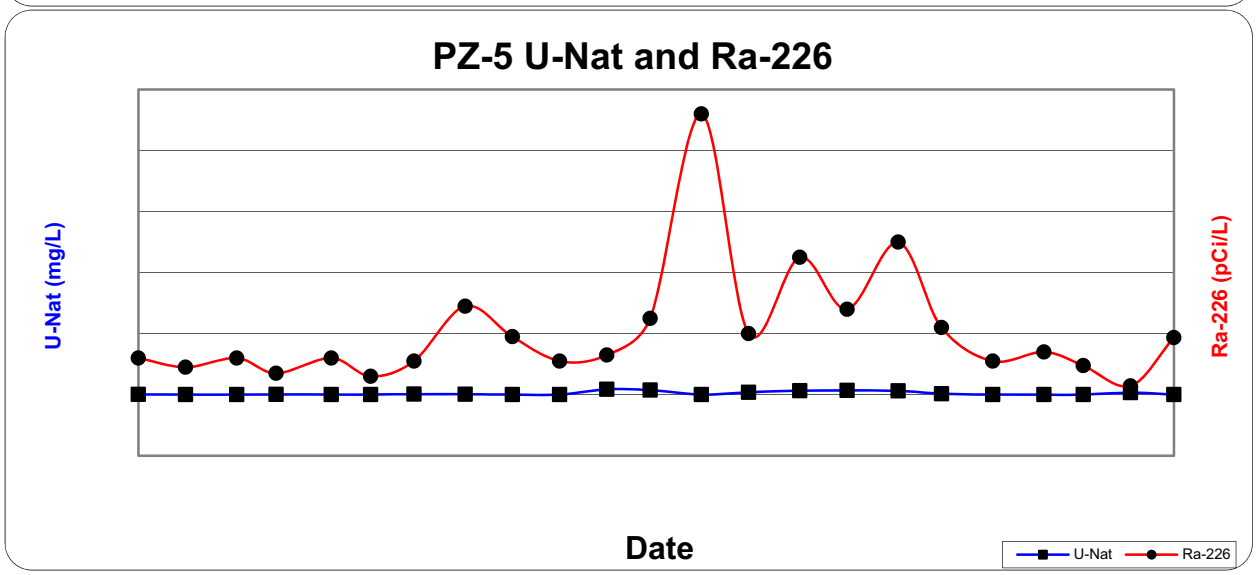

PZ-4 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

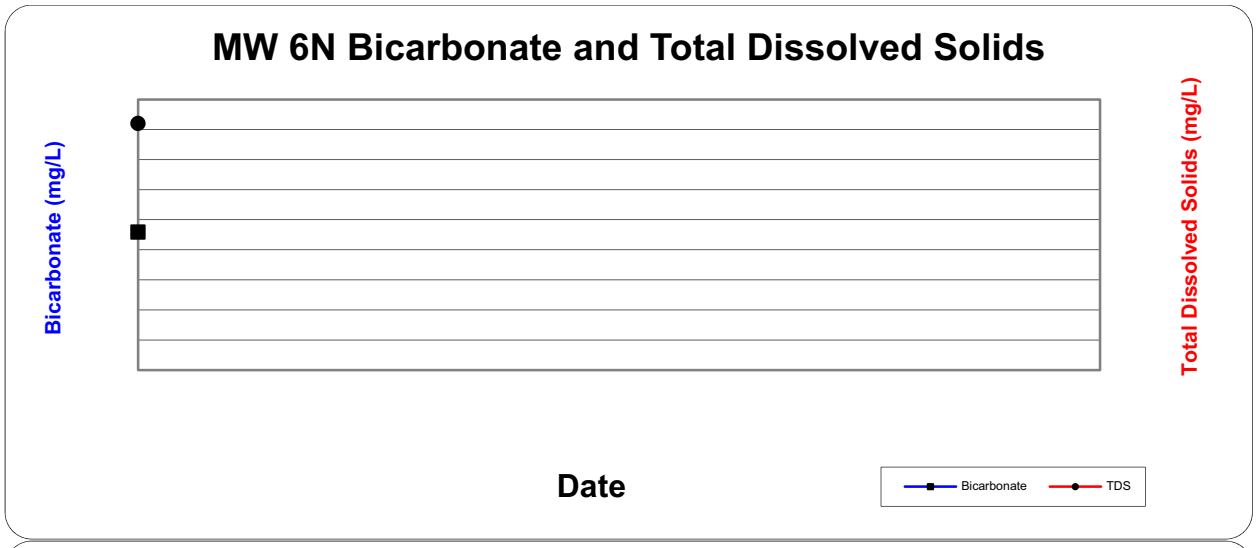

PZ-4 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

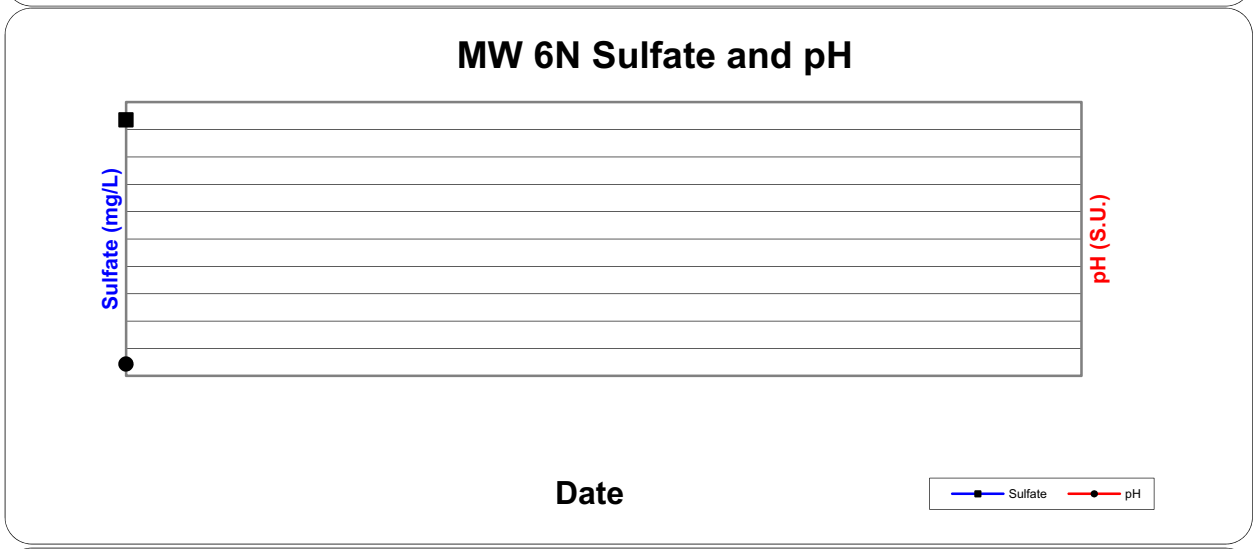

PZ-4 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

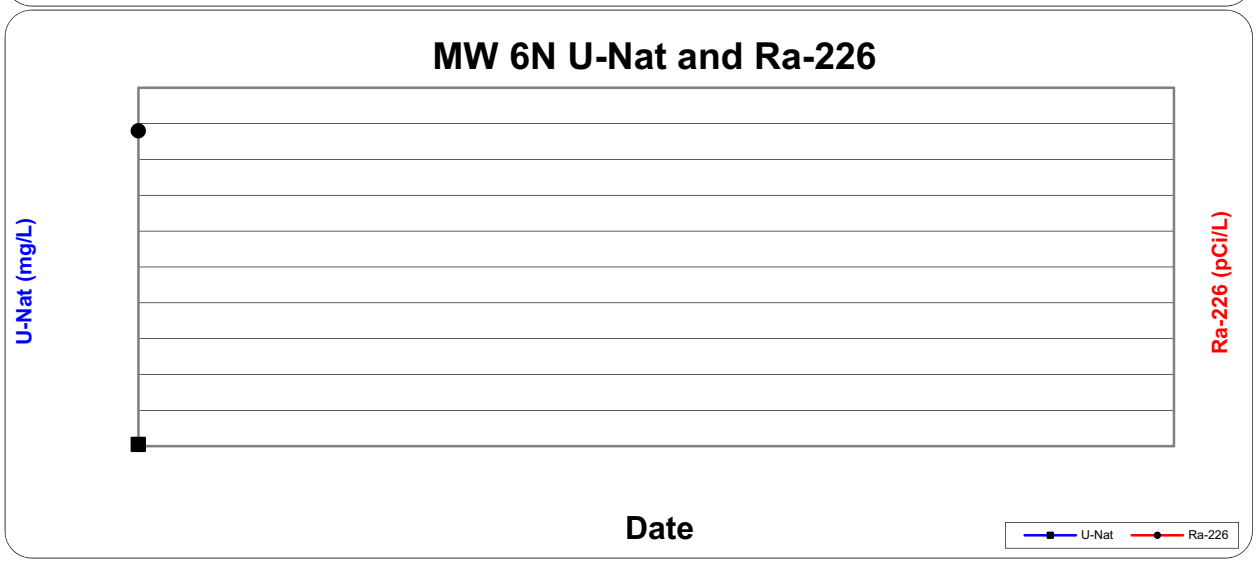

PZ-5 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

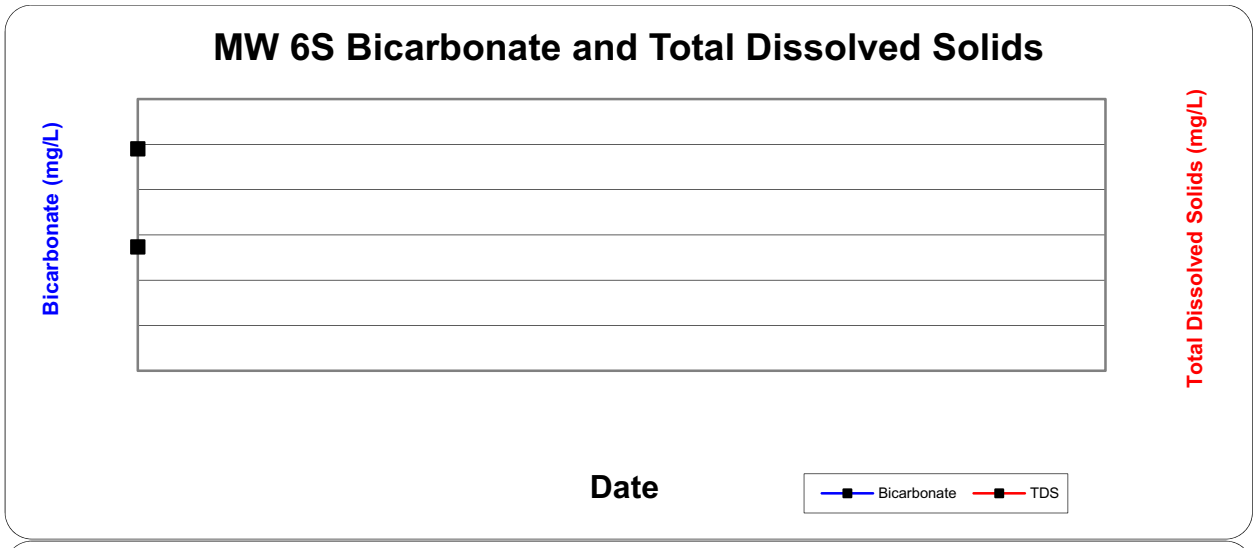

PZ-5 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

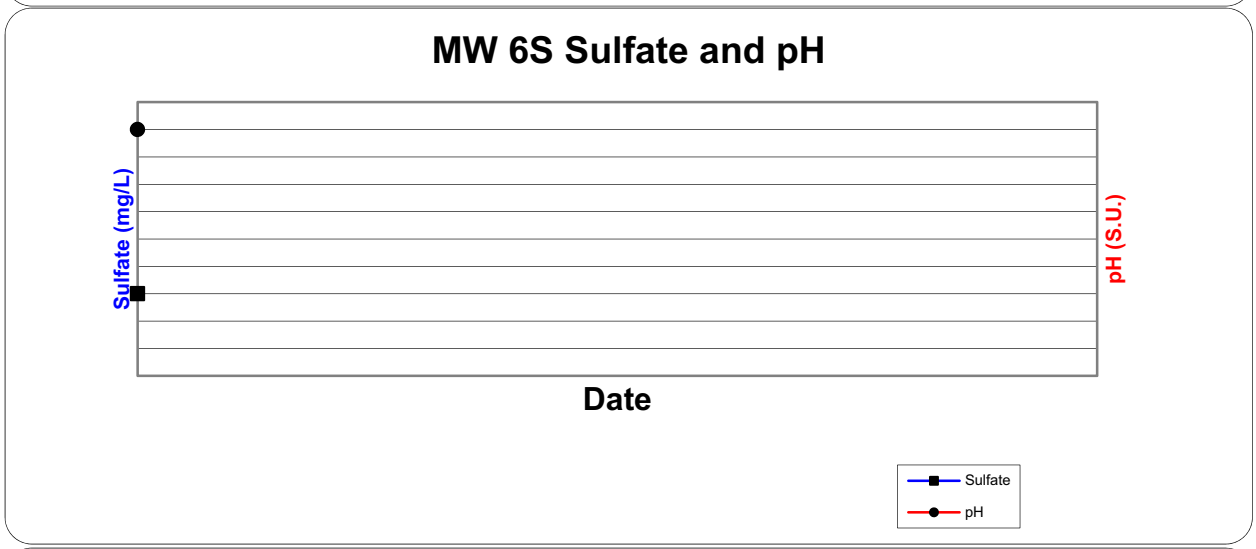

PZ-5 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

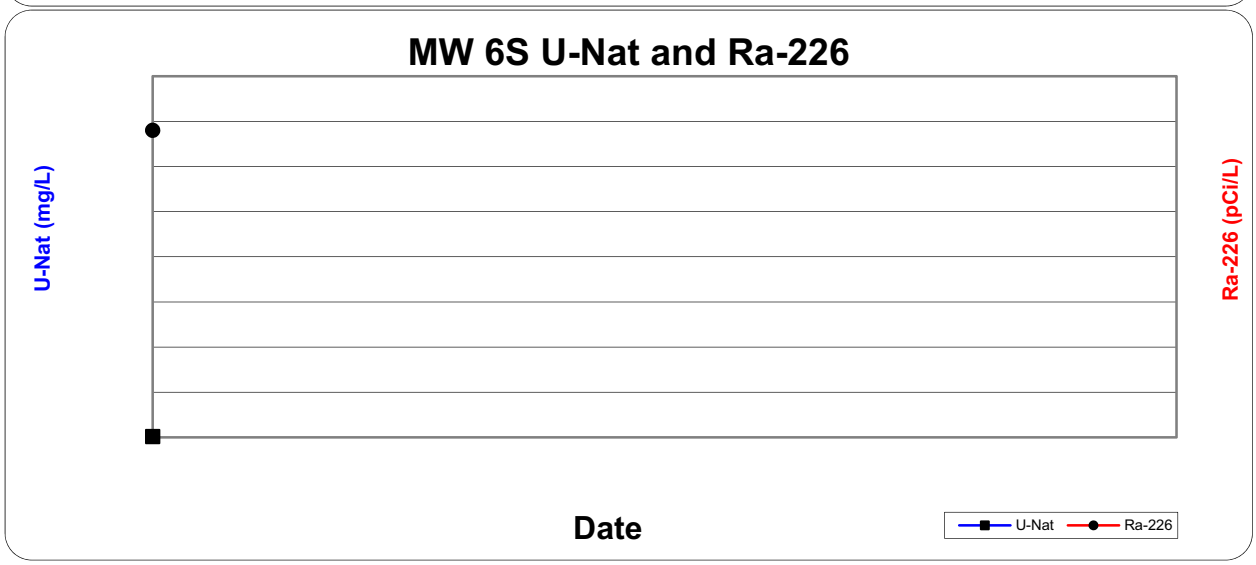

MW 6N Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

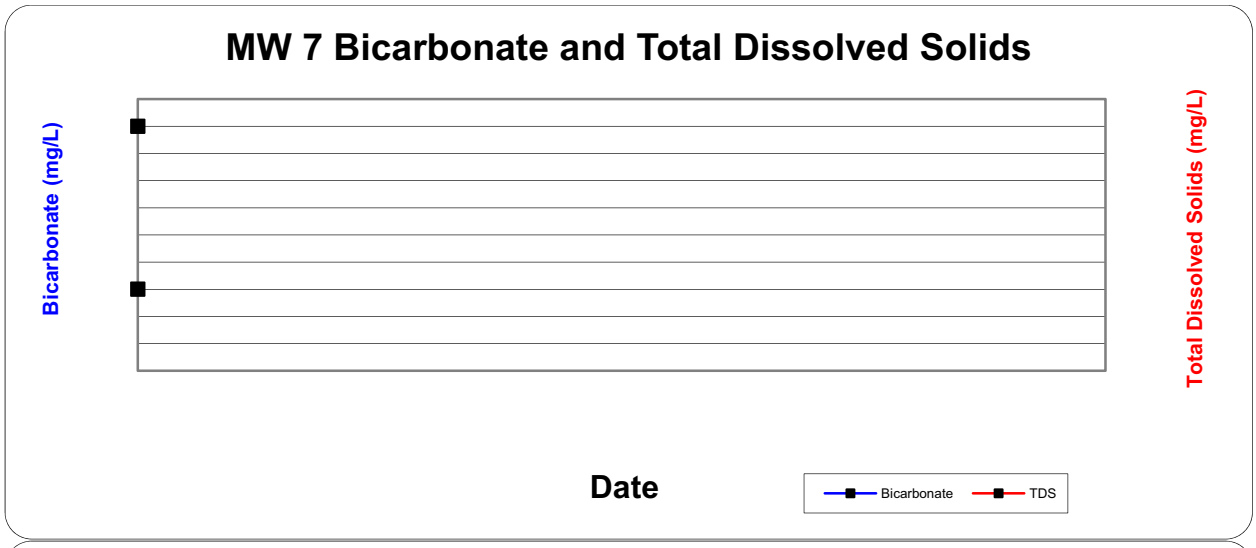

MW 6N Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

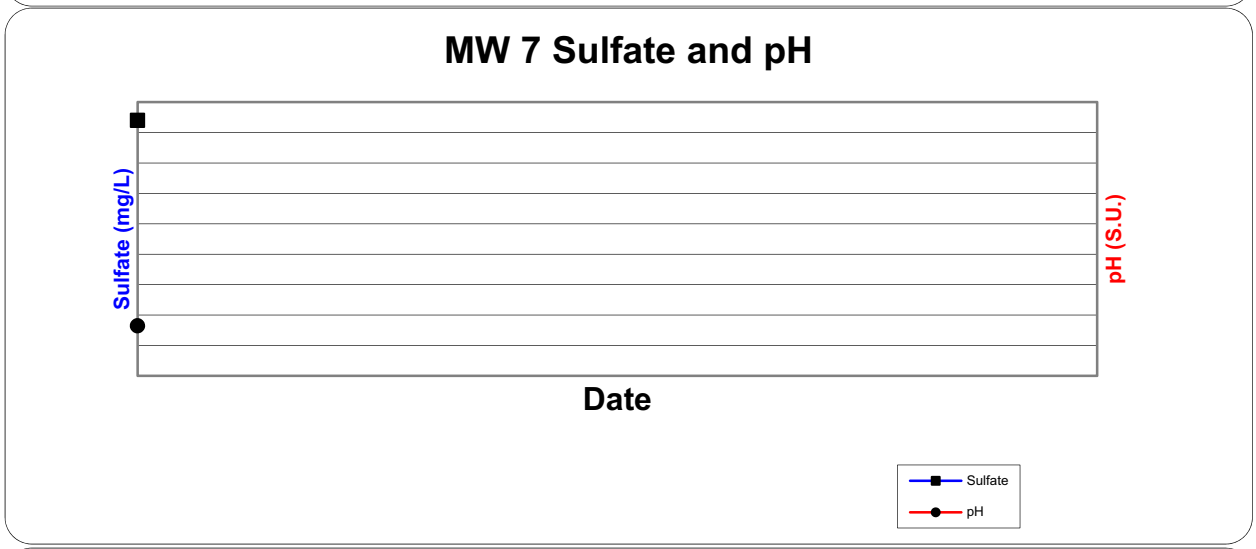

MW 6N U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

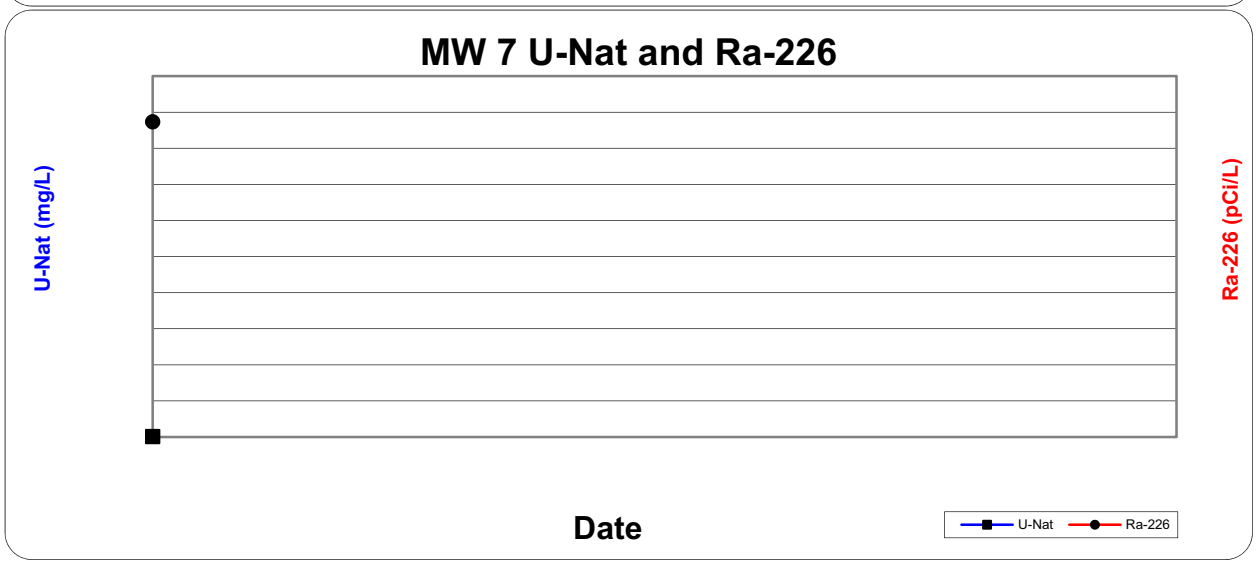

MW 6S Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

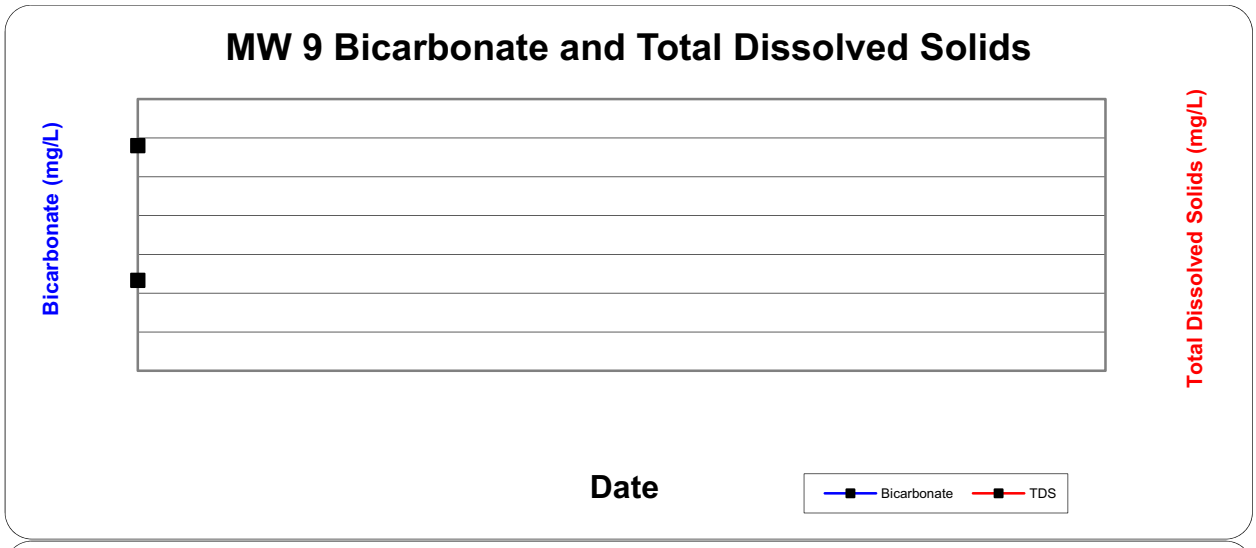

MW 6S Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

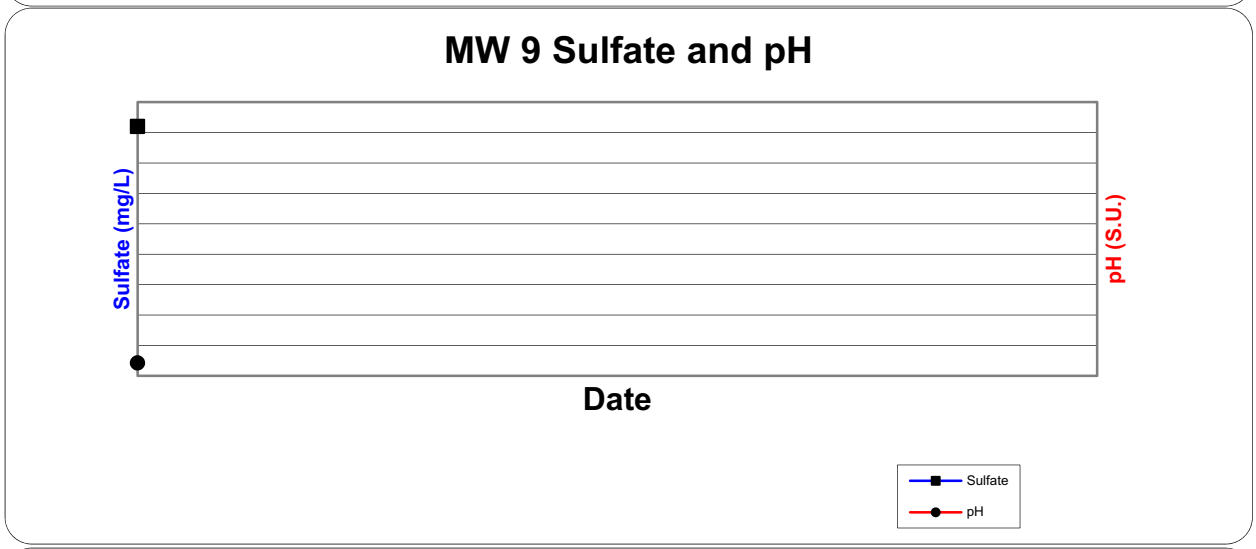

MW 6S U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

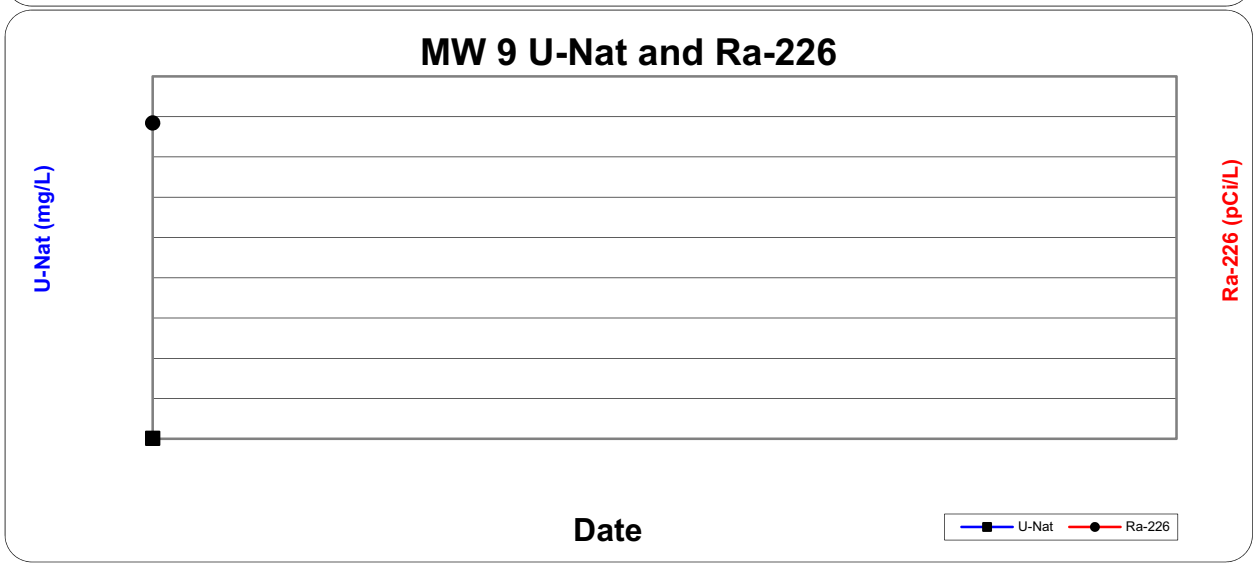

MW 7 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS

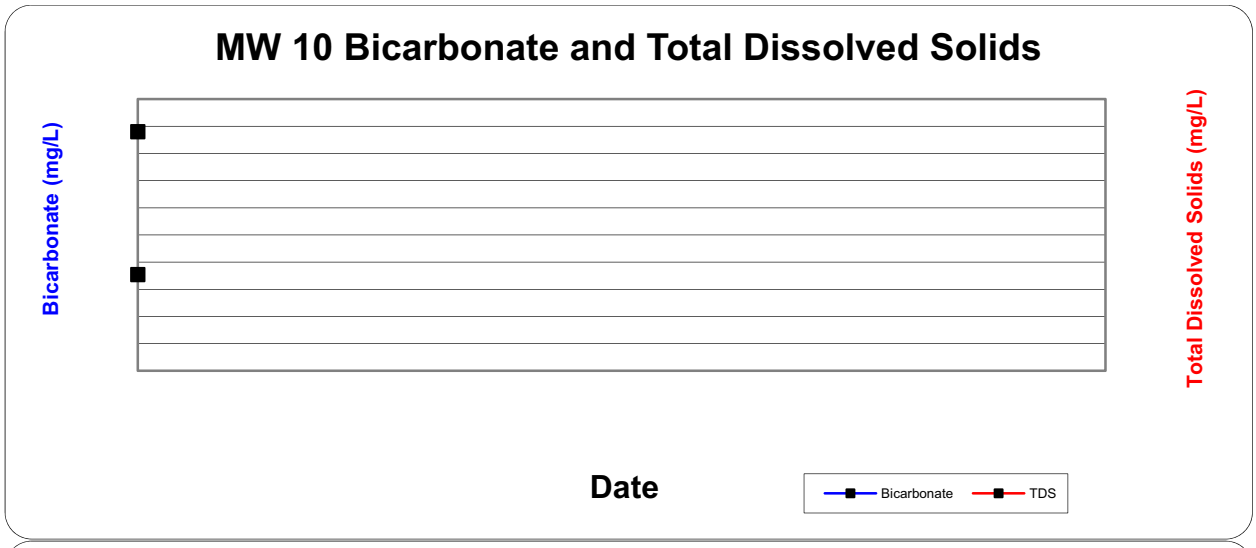

MW 7 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH

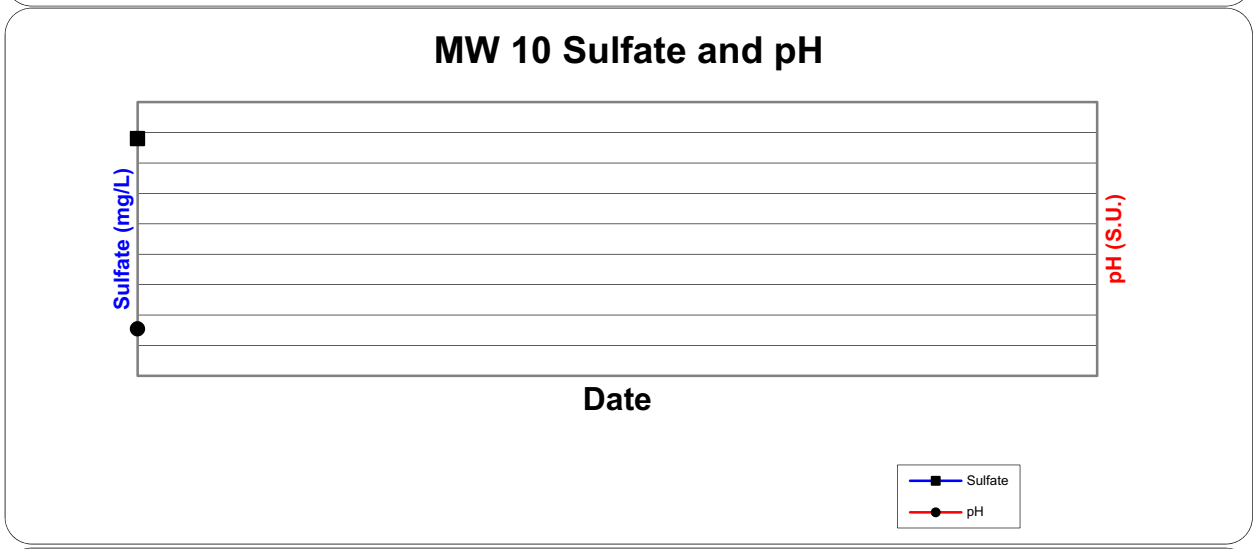

MW 7 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

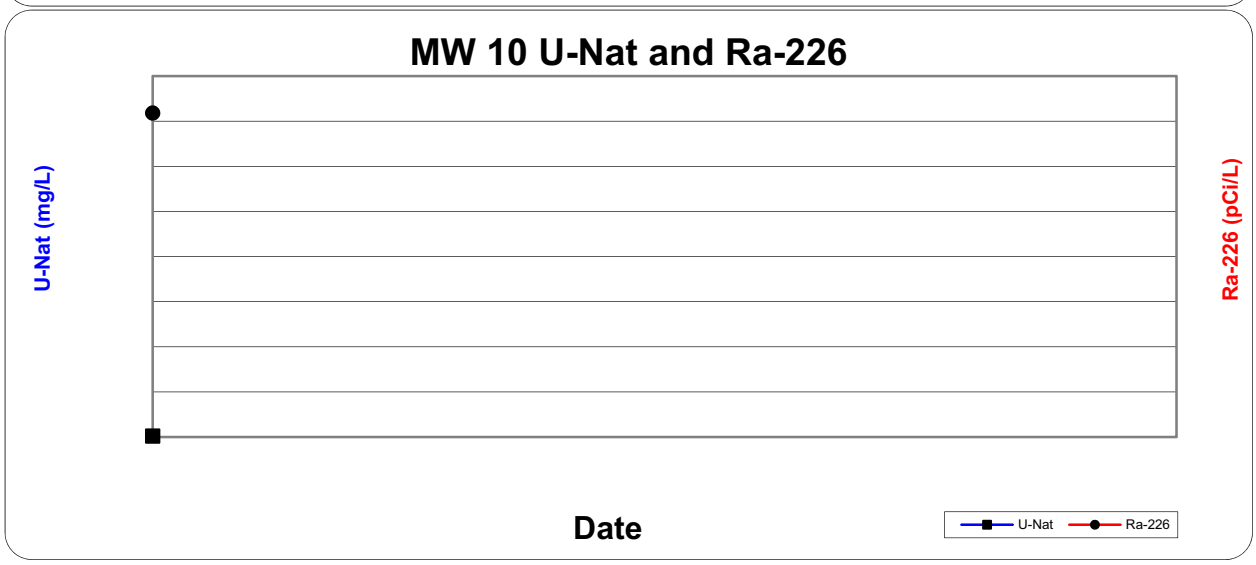

MW 9 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS


MW 9 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH


MW 9 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

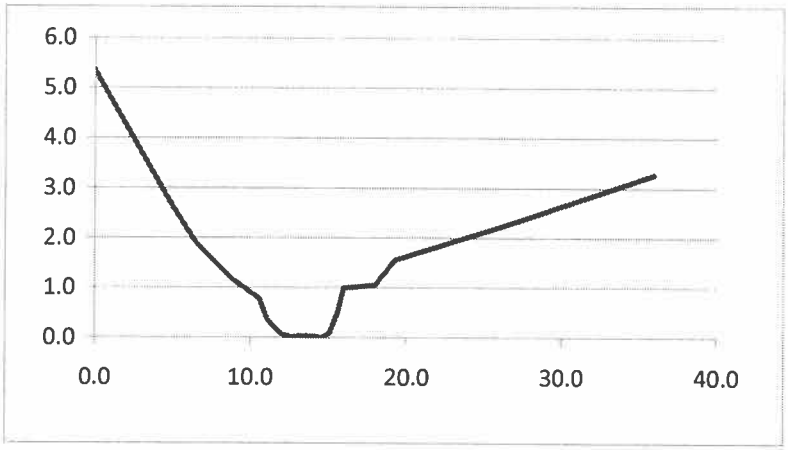

MW 10 Bicarbonate and Total Dissolved Solids
Bicarbonate (mg/L)
Total Dissolved Solids (mg/L)
Date
Bicarbonate
TDS


MW 10 Sulfate and pH
Sulfate (mg/L)
pH (S.U.)
Date
Sulfate
pH


MW 10 U-Nat and Ra-226
U-Nat (mg/L)
Ra-226 (pCi/L)
Date
U-Nat
Ra-226

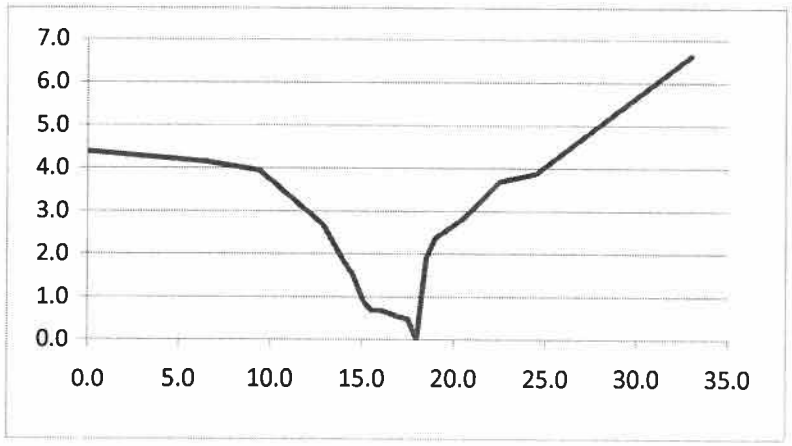
Attachment C1
Crooks Creek Cross Sections

CROOKS US
GPS: 118 Date: 6/16/10



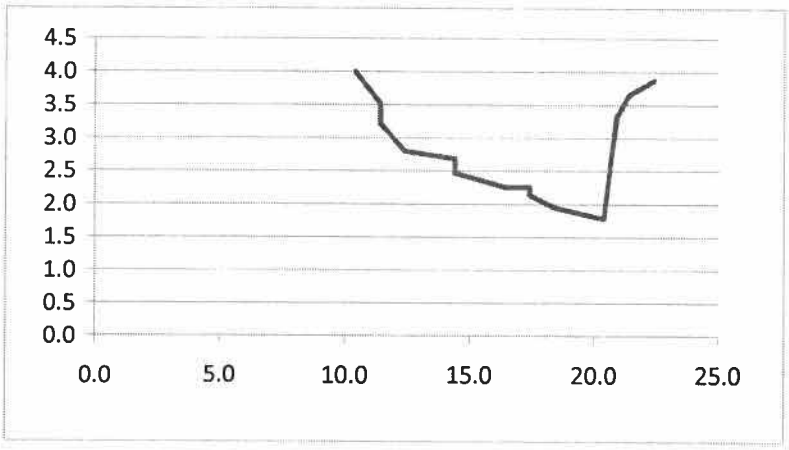
Station	Elevation
0.0	5.34
5.0	2.64
6.5	1.92
8.9	1.16
10.6	0.78
11.1	0.38
11.6	0.20
12.1	0.06
12.6	0.02
13.1	0.04
13.6	0.04
14.1	0.03
14.6	0.00
15.1	0.10
15.6	0.50
16.0	1.00
18.0	1.06
19.3	1.56
27.0	2.32
36.0	3.27

CROOKS DS
GPS: 144 Date: 6/16/10



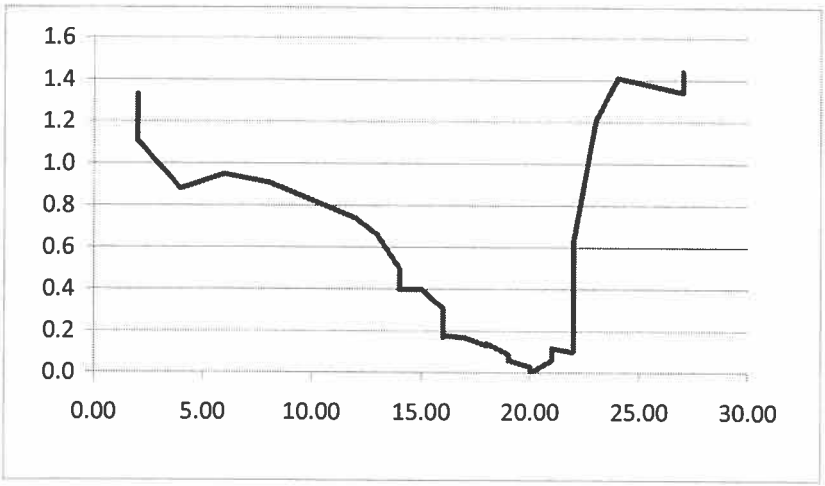
Station	Elevation
0.0	4.39
6.5	4.15
9.4	3.95
12.9	2.68
13.9	1.92
14.5	1.51
15.1	0.91
15.5	0.69
16.0	0.68
16.5	0.61
17.0	0.53
17.5	0.48
18.0	0.00
18.5	1.91
19.0	2.36
20.5	2.82
22.5	3.69
24.5	3.87
33.0	6.62

CROOKS DS - RESURVEY
Date: 5/18/11



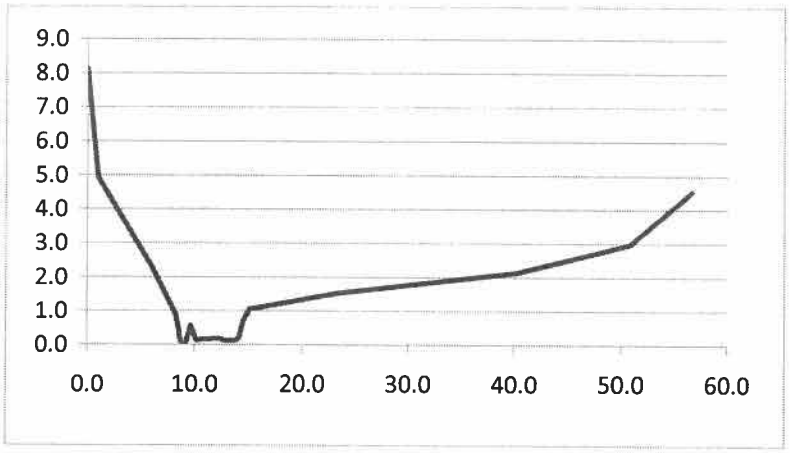
Station	Elevation
10.4	4.00
11.4	3.52
11.4	3.21
12.4	2.80
14.4	2.69
14.4	2.47
16.4	2.26
17.4	2.26
17.4	2.14
18.4	1.95
20.4	1.78
20.9	3.32
21.4	3.65
22.4	3.87

CROOKS MU (MACINTOSH UPSTREAM)



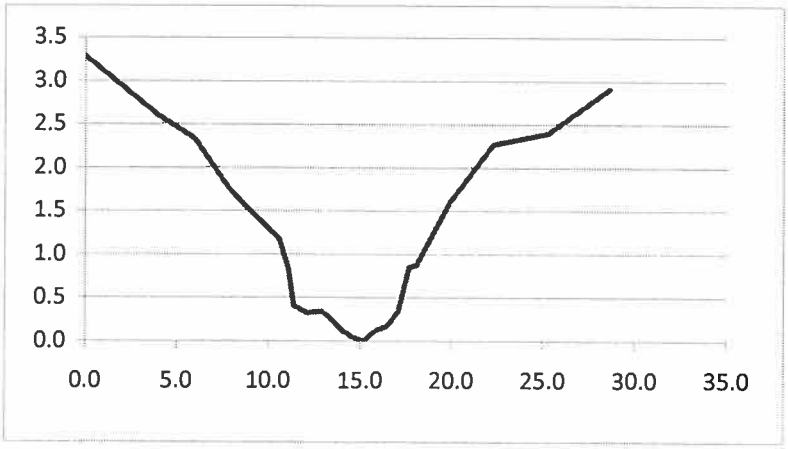
Station	Elevation
2.00	1.33
2.00	1.11
4.00	0.88
6.00	0.95
8.00	0.91
12.00	0.74
13.00	0.66
14.00	0.50
14.00	0.40
15.00	0.40
16.00	0.31
16.00	0.23
16.00	0.17
16.00	0.18
17.00	0.17
18.00	0.13
18.00	0.14
19.00	0.09
19.00	0.06
20.00	0.03
20.00	0.00
21.00	0.06
21.00	0.12
22.00	0.10
22.00	0.63
23.00	1.21
24.00	1.41
27.00	1.34
27.00	1.44

XSCC3
GPS: 137 Date: 6/18/10



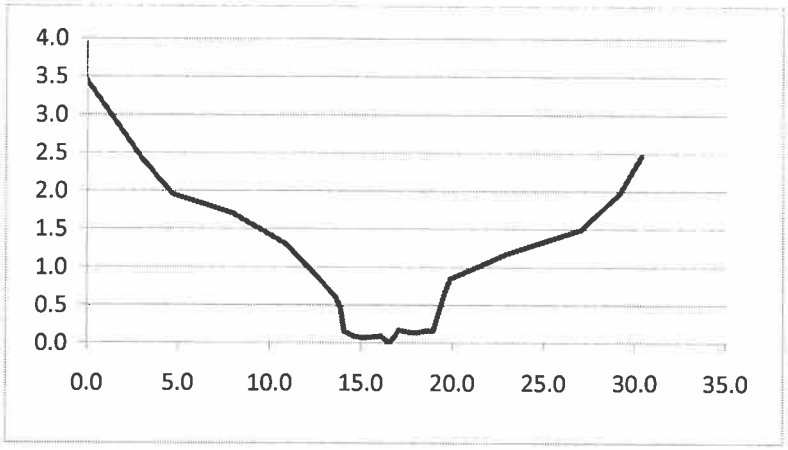
Station	Elevation
0.0	8.12
1.0	4.94
6.0	2.33
8.3	0.90
8.5	0.57
8.7	0.11
9.2	0.00
9.7	0.55
10.2	0.14
10.8	0.16
11.3	0.16
11.8	0.18
12.3	0.19
12.8	0.12
13.3	0.11
13.8	0.12
14.2	0.20
14.6	0.72
15.2	1.06
23.4	1.53
40.4	2.14
50.9	2.98
56.7	4.52

XSCC4
GPS: 138 Date: 6/18/10



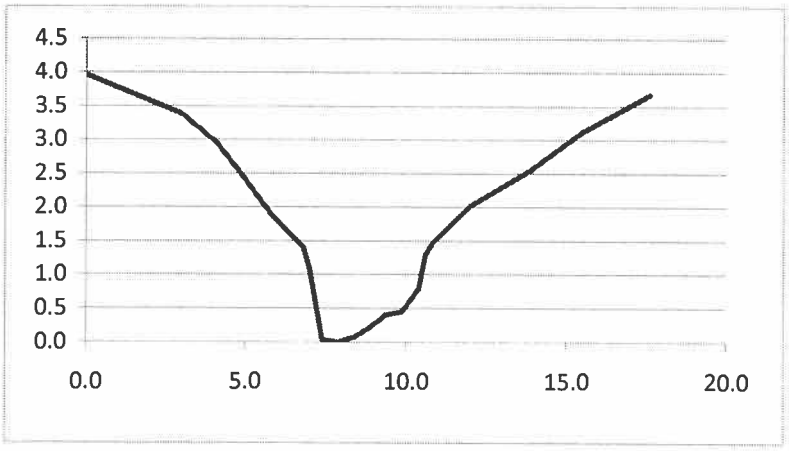
Station	Elevation
0.0	3.28
4.0	2.59
6.0	2.32
7.8	1.77
8.9	1.52
10.6	1.18
11.1	0.85
11.4	0.40
12.1	0.32
12.9	0.34
13.5	0.23
14.0	0.12
14.6	0.04
15.2	0.00
15.9	0.12
16.5	0.17
17.1	0.33
17.7	0.84
18.1	0.87
19.9	1.59
22.3	2.26
25.3	2.39
28.6	2.9

XSCC5
GPS: 141 Date: 6/18/10



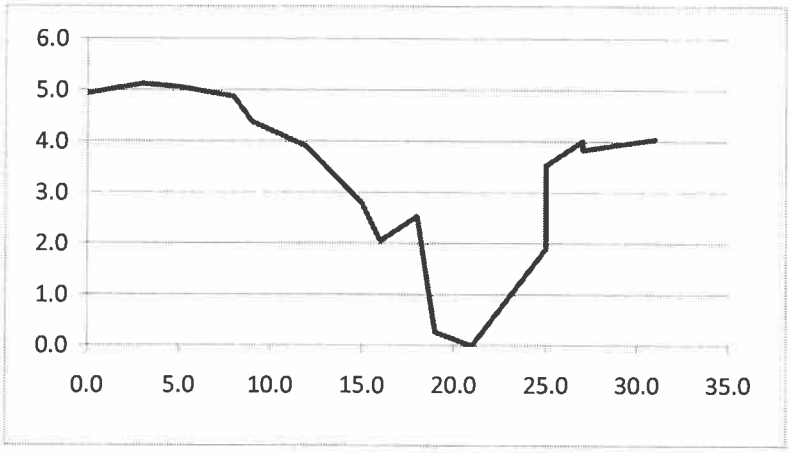
Station	Elevation
0.0	3.45
3.0	2.43
4.7	1.96
8.0	1.71
11.0	1.29
13.6	0.63
13.9	0.49
14.1	0.16
14.6	0.10
15.1	0.08
15.6	0.09
16.1	0.10
16.6	0.00
17.1	0.18
17.6	0.15
18.1	0.14
18.6	0.17
19.0	0.17
19.6	0.67
19.9	0.85
23.0	1.18
27.1	1.50
29.2	1.98
30.4	2.47

XSCC6
GPS: 143 Date: 6/18/10



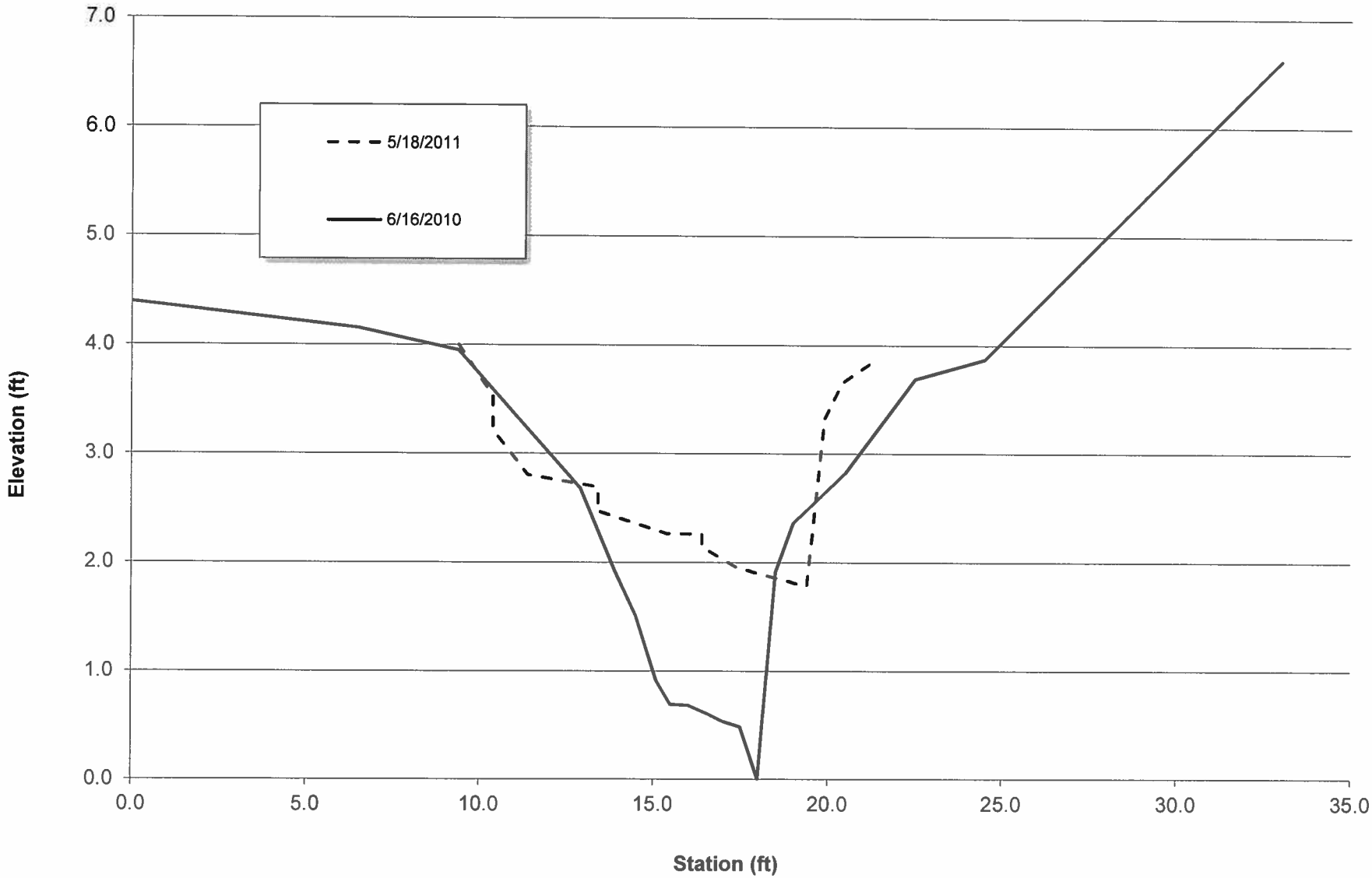
Station	Elevation
0.0	3.96
3.0	3.38
4.1	2.95
4.9	2.47
5.9	1.82
6.8	1.4
7.0	1.09
7.4	0.03
7.9	0
8.4	0.07
8.9	0.22
9.4	0.4
9.9	0.45
10.4	0.78
10.6	1.28
10.8	1.45
12.0	2.02
13.9	2.56
15.5	3.12
17.6	3.67

XSCC7
GPS: 143



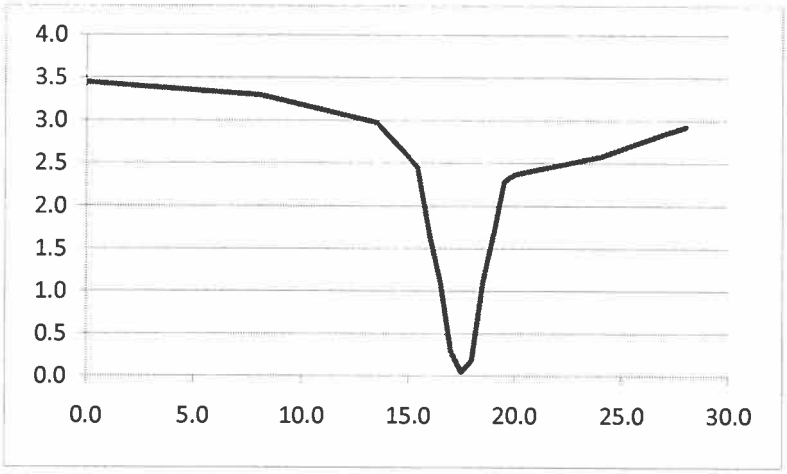
Station	Elevation
0.0	4.94
3.0	5.13
5.0	5.07
8.0	4.89
9.0	4.39
12.0	3.90
15.0	2.80
16.0	2.06
18.0	2.54
19.0	0.27
20.0	0.14
21.0	0.00
25.0	1.90
25.0	3.54
27.0	4.01
27.0	3.84
31.0	4.05

Attachment C2
Comparison – Channel Development Crooks DS 2010-2011


7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Elevation (ft)
5/18/2011
6/16/2010
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
Station (ft)

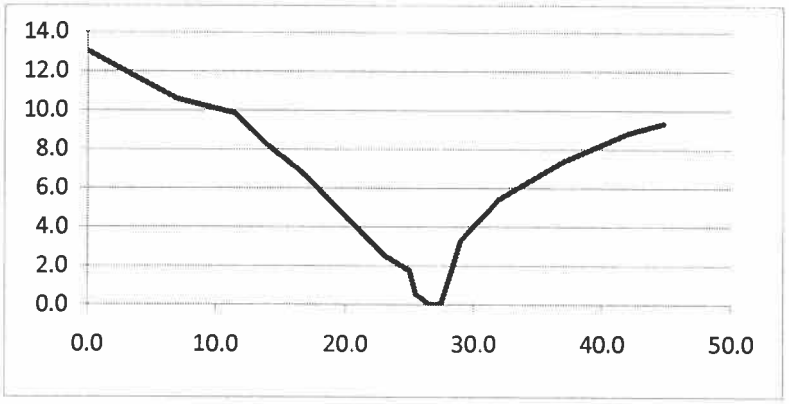
Attachment D
Ephemeral Tributary Cross Section

XSET1
GPS: 121 Date: 6/17/10



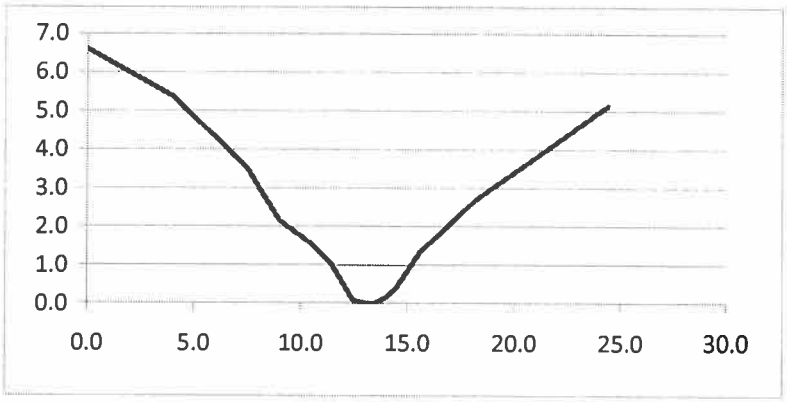
Station	Elevation
0.0	3.45
8.0	3.30
13.5	2.98
15.4	2.46
16.0	1.67
16.5	1.12
17.0	0.31
17.5	0.05
18.0	0.19
18.5	1.09
19.0	1.67
19.5	2.29
20.0	2.37
24.0	2.58
27.0	2.85
28.0	2.93

XSET2
GPS: 123 Date: 6/17/10



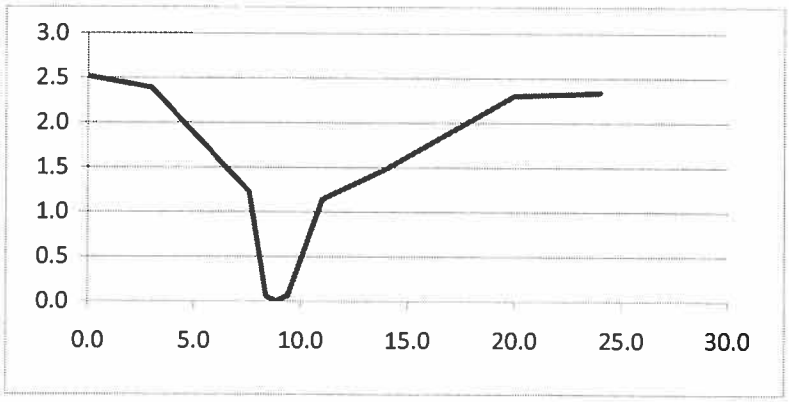
Station	Elevation
0.0	13.01
7.0	10.55
11.5	9.80
14.0	8.17
17.0	6.58
20.0	4.55
23.0	2.54
25.0	1.74
25.5	0.54
26.0	0.30
26.5	0.05
27.0	0.00
27.5	0.08
28.0	1.13
29.0	3.28
32.0	5.43
37	7.35
42	8.8
44.8	9.29

XSET3
GPS: 124 Date: 6/17/10



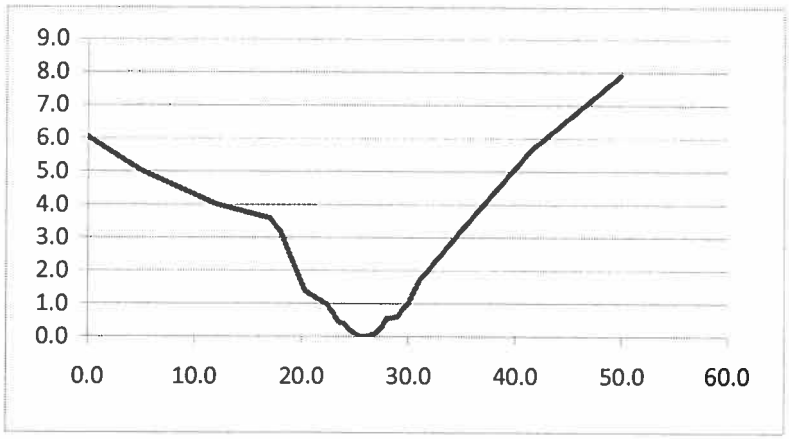
Station	Elevation
0.0	6.60
4.0	5.37
7.5	3.53
9.0	2.16
10.5	1.56
11.5	1.00
12.0	0.55
12.5	0.09
13.0	0.02
13.5	0.00
14.0	0.15
14.5	0.41
15.6	1.34
18.2	2.69
24.4	5.13

XSET4
GPS: 127 Date: 6/17/10



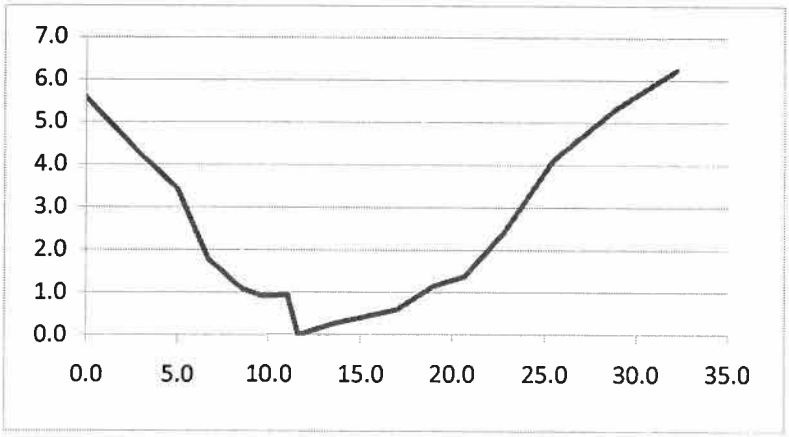
Station	Elevation
0.0	2.52
3.0	2.39
7.6	1.22
8.4	0.05
8.9	0.00
9.4	0.06
10.0	0.45
11.0	1.14
14.0	1.48
20.0	2.30
24.0	2.34

XSET5
GPS: 128 Date: 6/17/10



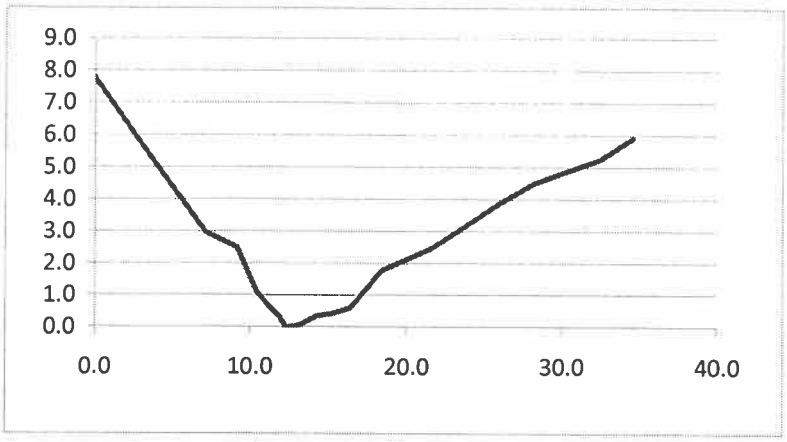
Station	Elevation
0.0	6.04
5.0	5.02
12.0	4.01
17.0	3.59
18.0	3.19
19.0	2.42
20.4	1.37
22.4	0.98
23.0	0.71
23.5	0.45
24.0	0.39
24.5	0.21
25.0	0.11
25.5	0.00
26.0	0.00
26.5	0.05
27.0	0.11
27.5	0.27
28.0	0.55
28.5	0.58
29.0	0.61
29.5	0.82
30.0	1.01
31.0	1.68
35.0	3.23
41.5	5.67
49.9	7.89

XSET6
GPS: 131 Date: 6/17/10



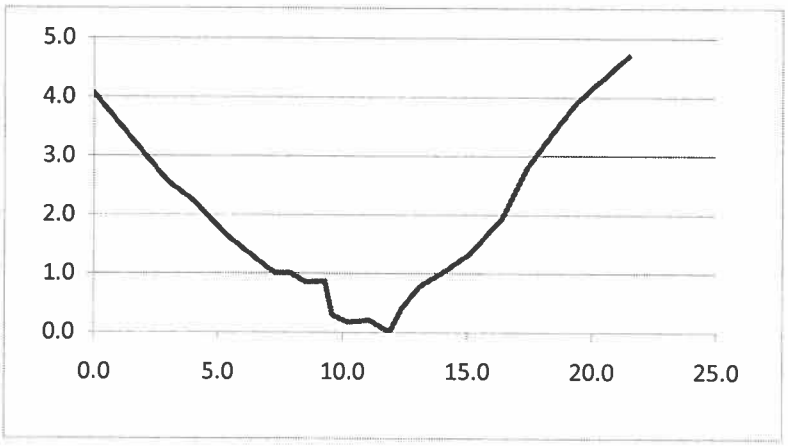
Station	Elevation
0.0	5.58
3.0	4.23
5.0	3.44
6.7	1.78
8.5	1.10
9.6	0.92
11.0	0.94
11.6	0.00
13.4	0.26
17.0	0.60
19.0	1.15
20.7	1.38
22.8	2.40
25.5	4.12
28.9	5.33
32.2	6.23

XSET7
GPS: 133 Date: 6/17/10



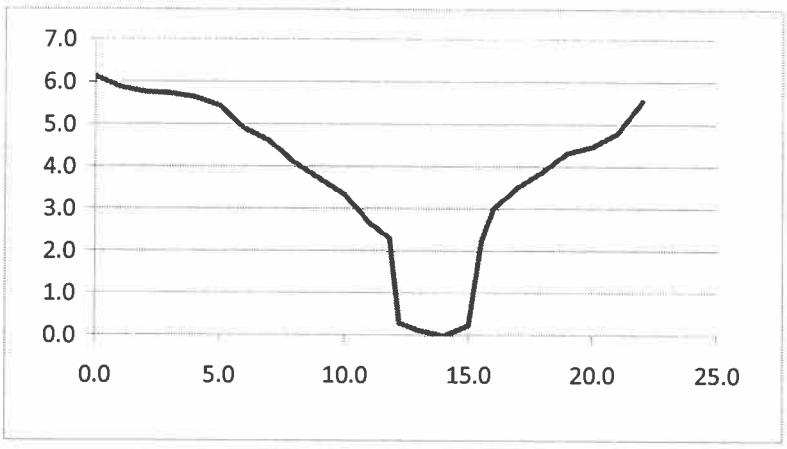
Station	Elevation
0.0	7.77
4.0	5.06
7.2	2.96
9.2	2.50
10.5	1.08
11.9	0.32
12.3	0.00
13.2	0.09
14.3	0.37
15.3	0.43
16.4	0.61
17.4	1.16
18.4	1.78
21.6	2.47
23.5	3.08
25.9	3.86
28.2	4.51
32.5	5.26
34.6	5.91

XSET8
GPS: 134 Date: 6/17/10



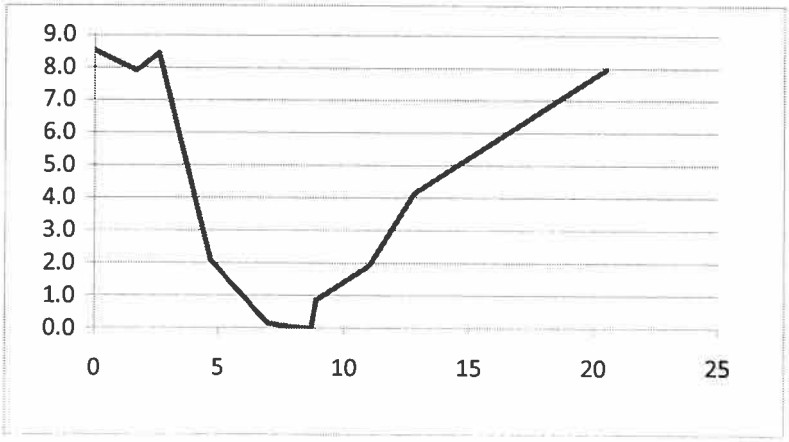
Station	Elevation
0.0	4.05
3.0	2.55
4.1	2.21
5.3	1.67
6.6	1.23
7.3	1.01
7.9	1.00
8.5	0.85
9.3	0.87
9.6	0.29
10.2	0.17
11.1	0.21
11.9	0.00
12.4	0.40
13.1	0.78
14.1	1.04
15.1	1.33
16.4	1.94
17.4	2.79
18.5	3.43
19.4	3.91
21.5	4.69

XSET9
GPS: 341 Date: 8/16/10



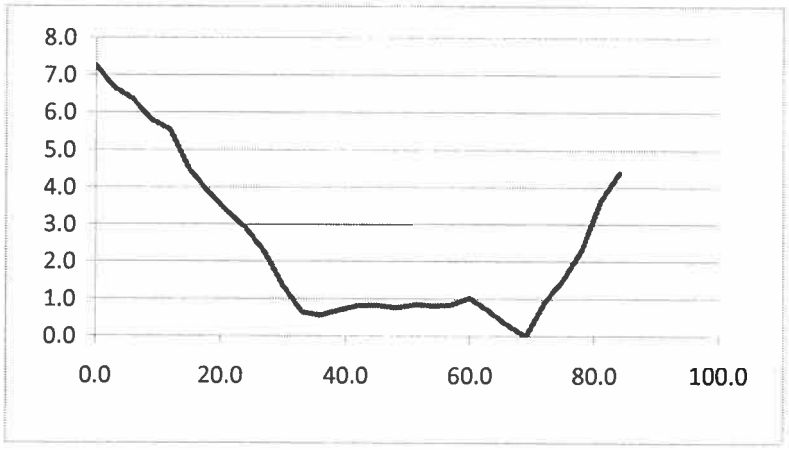
Station	Elevation
0.0	6.14
1.0	5.88
2.0	5.77
3.0	5.74
4.0	5.65
5.0	5.44
6.0	4.9
7.0	4.61
8.0	4.09
9.0	3.71
10.0	3.34
11.0	2.67
11.8	2.31
12.2	0.31
13.0	0.13
14.0	0
15.0	0.24
15.5	2.25
16.0	3.02
17.0	3.53
18.0	3.9
19.0	4.33
20.0	4.49
21.0	4.81
22.0	5.56

XSET10
GPS: 342 Date: 8/16/10



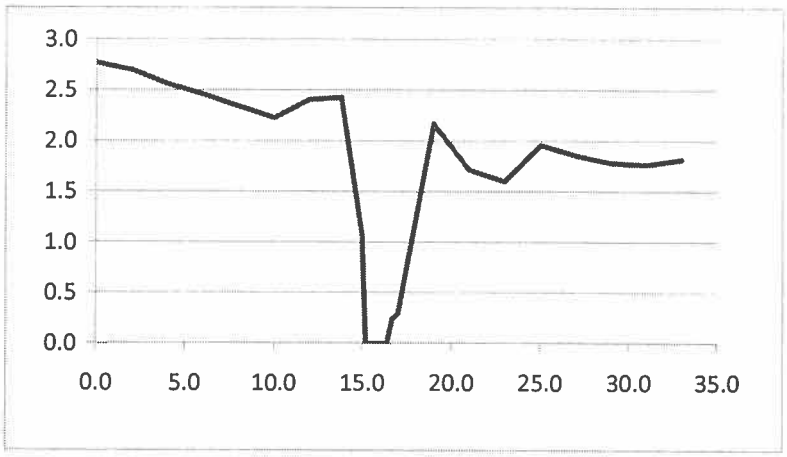
Station	Elevation
0	8.51
1.7	7.88
2.6	8.42
4.7	2.07
7	0.15
8	0.04
8.7	0
8.9	0.86
11	1.91
12.8	4.14
20.5	7.93

XSET11
GPS: 344 Date: 8/16/10



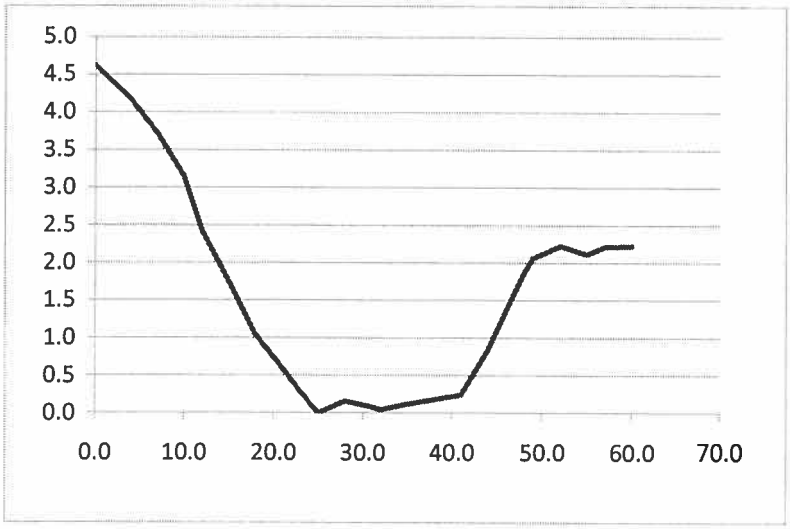
Station	Elevation
0.0	7.26
3.0	6.67
6.0	6.37
9.0	5.82
12.0	5.54
15.0	4.50
18.0	3.89
21.0	3.37
24.0	2.93
27.0	2.28
30.0	1.35
33.0	0.65
36.0	0.57
39.0	0.70
42.0	0.83
45.0	0.84
48.0	0.78
51.5	0.86
54.0	0.83
57.0	0.85
60.0	1.03
63.0	0.69
66.0	0.31
69.0	0.00
72.0	0.91
75.0	1.52
78.0	2.34
81.0	3.65
84.0	4.39

XSET12
GPS: 345 Date: 8/16/10



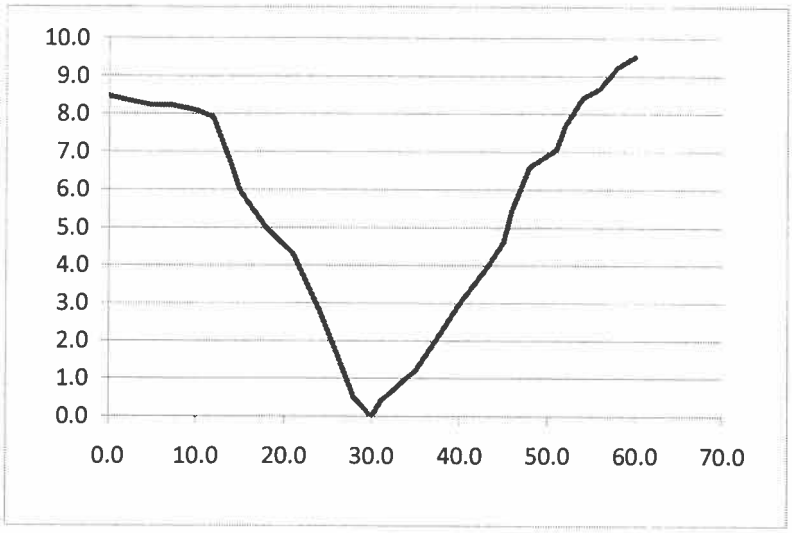
Station	Elevation
0.0	2.77
2.0	2.7
4.0	2.56
6.0	2.46
8.0	2.34
10.0	2.23
12.0	2.41
13.8	2.43
15.0	1.07
15.2	0
16.4	0
16.7	0.24
17.0	0.29
19.0	2.17
21.0	1.72
23.0	1.6
25.0	1.96
27.0	1.86
29.0	1.79
31.0	1.77
33.0	1.82

XSET13
GPS: 147 Date: 5/17/11



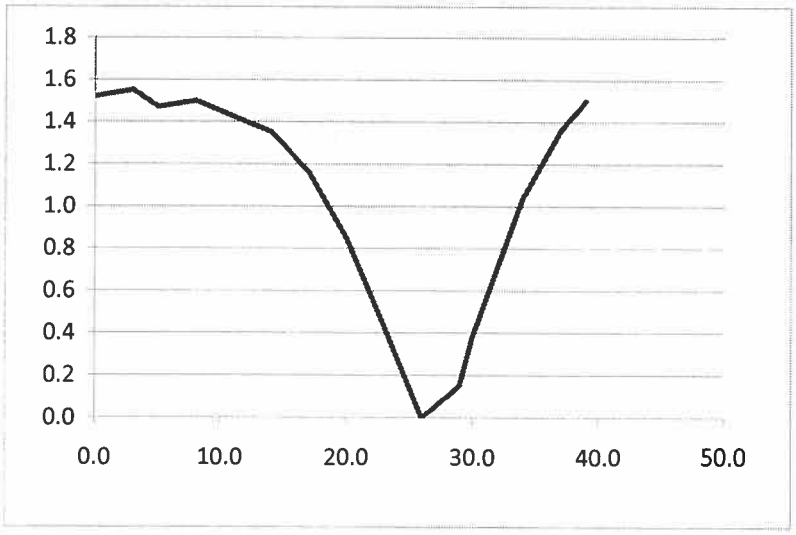
Station	Elevation
0.0	4.62
2.0	4.39
4.0	4.16
7.0	3.70
10.0	3.14
12.0	2.42
15.0	1.75
18.0	1.05
21.0	0.59
23.0	0.28
25.0	0.00
28.0	0.16
31.0	0.08
32.0	0.04
35.0	0.12
36.0	0.14
41.0	0.24
44.0	0.84
46.0	1.35
48.0	1.86
49.0	2.06
52.0	2.22
55.0	2.11
57.0	2.21
60.0	2.22

XSET14
GPS: 150 Date: 5/17/11



Station	Elevation
0.0	8.47
2.0	8.37
5.0	8.23
7.0	8.24
10.0	8.10
12.0	7.91
14.0	6.70
15.0	5.98
18.0	4.98
21.0	4.33
24.0	2.82
26.0	1.67
28.0	0.49
30.0	0.00
31.0	0.39
35.0	1.22
37.0	1.90
40.0	2.99
43.0	3.90
45.0	4.62
46.0	5.48
48.0	6.61
51.0	7.07
52.0	7.69
54.0	8.43
56.0	8.67
58.0	9.23
60.0	9.51

XSET15
GPS:151 Date: 5/17/11



Station	Elevation
0.0	1.52
3.0	1.55
5.0	1.47
8.0	1.50
14.0	1.35
17.0	1.16
20.0	0.85
23.0	0.43
26.0	0.00
29.0	0.15
30.0	0.38
32.0	0.71
34.0	1.04
37.0	1.36
39.0	1.50

Attachment E
Laboratory Results

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 8/10/2010
Report ID S1006530001

ProjectName: Sheep
Lab ID: S1006530-001
ClientSample ID: Creek Up
COC: 130636

WorkOrder: S1006530
CollectionDate: 6/28/2010 1:00:00 PM
DateReceived: 6/29/2010 3:22:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Alkalinity, Bicarbonate as HCO3	187	mg/L		5	SM 2320B	6/30/2010 4:47:53 PM	KO
Calcium	48	mg/L		1	EPA 200.7	6/30/2010 3:08:29 PM	DG
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	6/30/2010 4:47:53 PM	KO
Magnesium	5	mg/L		1	EPA 200.7	6/30/2010 3:08:29 PM	DG
Potassium	2	mg/L		1	EPA 200.7	6/30/2010 3:08:29 PM	DG
Chloride	2	mg/L		1	EPA 300.0	6/30/2010 3:57:19 PM	KO
Sodium	20	mg/L		1	EPA 200.7	6/30/2010 3:08:29 PM	DG
Fluoride	0.2	mg/L		0.1	SM 4500FC	6/30/2010 4:47:53 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	7/13/2010 11:55:00 AM	AS
Sulfate	27	mg/L		1	EPA 300.0	6/30/2010 3:57:19 PM	KO
Alkalinity, Total (As CaCO3)	156	mg/L		5	SM 2320B	6/30/2010 4:47:53 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	7/12/2010 4:12:00 PM	AS
General Parameters							
pH	8.3	s.u.		0.1	SM 4500 H B	6/30/2010 4:47:53 PM	KO
Electrical Conductivity	346	µmhos/cm		5	SM 2510B	6/30/2010 4:47:53 PM	KO
Total Dissolved Solids (180)	300	mg/L		10	SM 2540	6/29/2010 5:15:00 PM	MJH
Total Suspended Solids	10	mg/L		5	SM 2540	7/1/2010 11:10:00 AM	MJH
Silica as SiO2	22	mg/L		1	EPA 200.7	6/30/2010 3:08:29 PM	DG
Turbidity	1.4	NTU		0.1	SM 2130	6/30/2010 8:18:00 AM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 8/10/2010
Report ID S1006530001

ProjectName: Sheep
Lab ID: S1006530-001
ClientSample ID: Creek Up
COC: 130636

WorkOrder: S1006530
CollectionDate: 6/28/2010 1:00:00 PM
DateReceived: 6/29/2010 3:22:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	6/30/2010 3:08:29 PM	DG
Arsenic	0.002	mg/L		0.001	EPA 200.8	6/30/2010 12:13:35 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	6/30/2010 12:13:35 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	6/30/2010 3:08:29 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	6/30/2010 3:08:29 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	6/30/2010 12:13:35 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	6/30/2010 3:08:29 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	6/30/2010 12:13:35 PM	MS
Iron	0.06	mg/L		0.05	EPA 200.7	6/30/2010 3:08:29 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	6/30/2010 12:13:35 PM	MS
Manganese	0.02	mg/L		0.01	EPA 200.7	6/30/2010 3:08:29 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	7/7/2010 10:03:08 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	6/30/2010 12:13:35 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	6/30/2010 3:08:29 PM	DG
Selenium	0.001	mg/L		0.001	EPA 200.8	6/30/2010 12:13:35 PM	MS
Uranium	0.0123	mg/L		0.0003	EPA 200.8	6/30/2010 12:13:35 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	6/30/2010 12:13:35 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	6/30/2010 3:08:29 PM	DG
Total Metals							
Iron	0.29	mg/L		0.05	EPA 200.7	6/30/2010 5:20:55 PM	DG
Manganese	0.03	mg/L		0.01	EPA 200.7	6/30/2010 5:20:55 PM	DG
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	8/2/2010 8:30:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	8/2/2010 8:30:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	7/30/2010 3:43:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	7/30/2010 3:43:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	8/3/2010 10:28:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	8/3/2010 10:28:00 PM	SH
Radium 226	1.13	pCi/L		0.2	SM 7500-Ra B	7/28/2010 1:38:00 PM	SH
Radium 226 Precision (±)	0.20	pCi/L		0.2	SM 7500-Ra B	7/28/2010 1:38:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	7/26/2010 8:00:00 AM	LJK
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	7/26/2010 8:00:00 AM	LJK

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 8/10/2010
Report ID S1006530001

ProjectName: Sheep
Lab ID: S1006530-001
ClientSample ID: Creek Up
COC: 130636

WorkOrder: S1006530
CollectionDate: 6/28/2010 1:00:00 PM
DateReceived: 6/29/2010 3:22:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	8/6/2010 12:33:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	8/6/2010 12:33:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	8/5/2010 3:57:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	8/5/2010 3:57:00 PM	SH
Radium 226	0.25	pCi/L		0.2	SM 7500-Ra B	7/29/2010 6:37:00 PM	SH
Radium 226 Precision (±)	0.08	pCi/L		0.2	SM 7500-Ra B	7/29/2010 6:37:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	7/26/2010 8:00:00 AM	LJK
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	7/26/2010 8:00:00 AM	LJK
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	7/6/2010 9:47:18 AM	MS
Radionuclides - Total							
Gross Alpha	12.9	pCi/L		2	SM 7110B	7/16/2010 5:04:00 PM	SH
Gross Alpha Precision (±)	1.9	pCi/L		2	SM 7110B	7/16/2010 5:04:00 PM	SH
Gross Beta	4.2	pCi/L		3	SM 7110B	7/16/2010 5:04:00 PM	SH
Gross Beta Precision (±)	1.3	pCi/L		3	SM 7110B	7/16/2010 5:04:00 PM	SH
Data Quality							
Cation Sum	3.69	meq/L		0.00	SM 1030E	7/7/2010 8:49:24 AM	KO
Anion Sum	3.75	meq/L		0.00	SM 1030E	7/7/2010 8:49:24 AM	KO
Cation-Anion Balance	0.76	%		0.00	SM 1030E	7/7/2010 8:49:24 AM	KO
Solids, Total Dissolved (Calc)	200	mg/L		10	SM 1030E	7/7/2010 8:49:24 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Laboratories, Inc
555 Absaraka Street, Sheridan, Wyoming 82801
(307) 674-7506

Sample Analysis Report

CLIENT: Titan Uranium USA
1225 Market St.
Riverton, WY 82609

Date Reported: 7/12/2010
Report ID: O1006065001

Project: Sheep
Lab ID: O1006065-001
Client Sample ID: Creek Up
Matrix: Water

Work Order: O1006065
Collection Date: 6/28/2010 1:00:00 PM
Date Received: 6/29/2010 3:22:00 PM
COC: 130636

Analyses	Result	RL	Limits	Qual	Units	Date Analyzed/Init	
8015C Diesel Range Organics-Water						**Prep Date: 6/30/2010**	
Diesel Range Organics (nC10-nC32)	ND	0.50			mg/L	07/05/2010	ECS
Surr: o-Terphenyl	89.9		37-132		%REC	07/05/2010	ECS

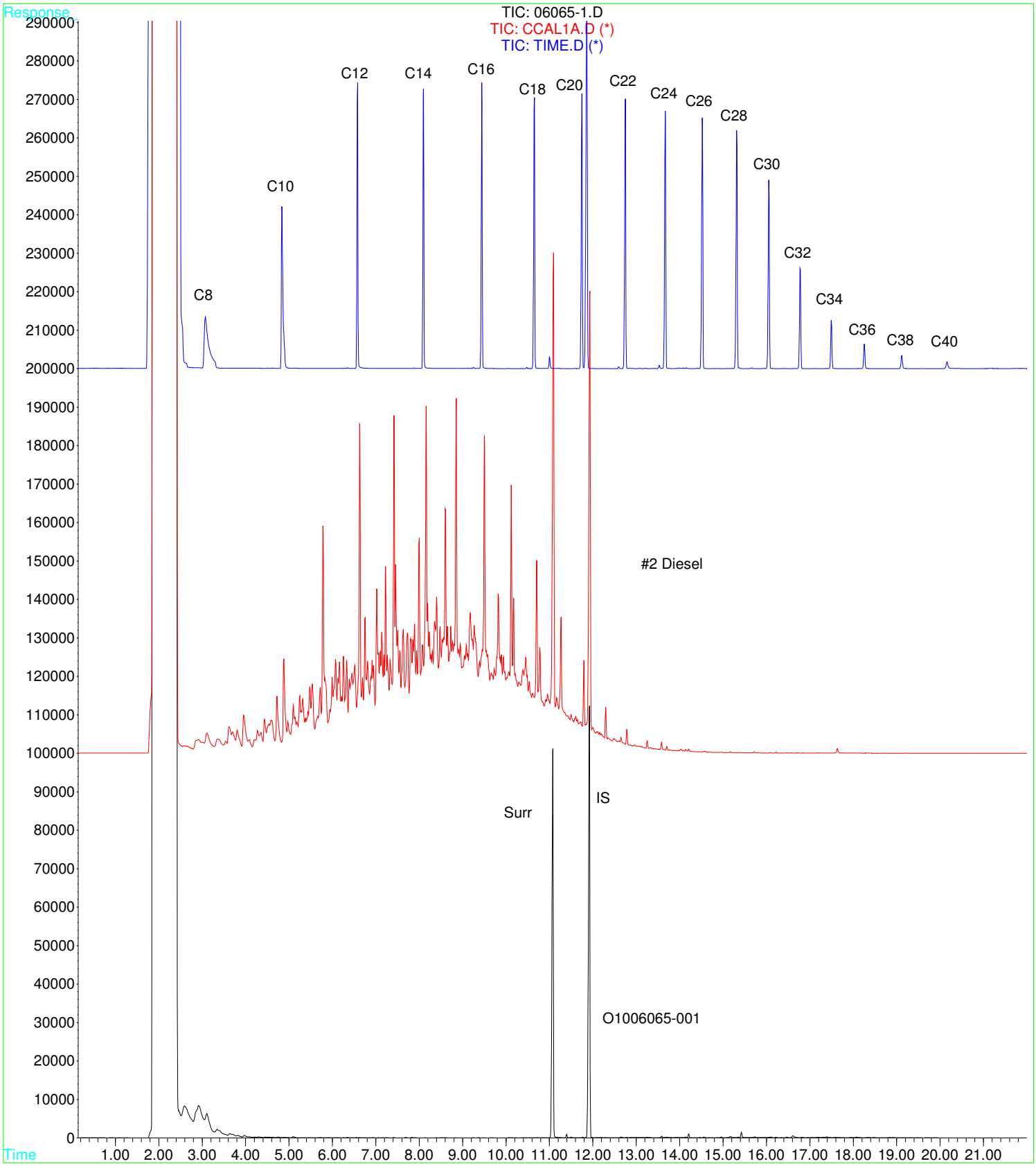
These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
D	Diluted out of recovery limit	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Effect
ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits

Reviewed by: Ed Scruton
Ed Scruton, Analytical Chemist

```
File        : U:\INST\DRO1\2010\JUL10\JUL05\06065-1.D
Operator    : ECS
Acquired    : 05 Jul 2010  19:09     using AcqMethod DROF.MTH
Instrument  :   DRO1
Sample Name: O1006065-001A
Misc Info   : water, 500ml/0.5ml, 5ul HQ4-95-5m
Vial Number: 14
```



Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-001
ClientSample ID: CC Down
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 12:15:00 PM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Alkalinity, Bicarbonate as HCO3	178	mg/L		5	SM 2320B	9/25/2010 9:48:23 PM	KO
Calcium	47	mg/L		1	EPA 200.7	9/27/2010 2:31:56 PM	DG
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	9/25/2010 9:48:23 PM	KO
Magnesium	5	mg/L		1	EPA 200.7	9/27/2010 2:31:56 PM	DG
Potassium	2	mg/L		1	EPA 200.7	9/27/2010 2:31:56 PM	DG
Chloride	3	mg/L		1	EPA 300.0	9/25/2010 3:24:38 PM	KO
Sodium	26	mg/L		1	EPA 200.7	9/27/2010 2:31:56 PM	DG
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	10/5/2010 6:03:00 PM	AS
Fluoride	ND	mg/L		0.1	SM 4500FC	9/27/2010 3:28:21 PM	KO
Sulfate	36	mg/L		1	EPA 300.0	9/25/2010 3:24:38 PM	KO
Alkalinity, Total (As CaCO3)	152	mg/L		5	SM 2320B	9/25/2010 9:48:23 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	10/6/2010 3:01:00 PM	AS
General Parameters							
pH	8.4	s.u.		0.1	SM 4500 H B	9/25/2010 9:48:23 PM	KO
Electrical Conductivity	358	µmhos/cm		5	SM 2510B	9/25/2010 9:48:23 PM	KO
Total Dissolved Solids (180)	240	mg/L		10	SM 2540	9/24/2010 2:15:00 PM	AMB
Total Suspended Solids	ND	mg/L		5	SM 2540	9/24/2010 3:24:00 PM	JF
Silica as SiO2	20.4	mg/L		0.1	EPA 200.7	9/27/2010 2:31:56 PM	DG

These results apply only to the samples tested.

RL - Reporting Limit

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B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-001
ClientSample ID: CC Down
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 12:15:00 PM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	9/27/2010 2:31:56 PM	DG
Arsenic	0.001	mg/L		0.001	EPA 200.8	9/24/2010 7:08:52 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:08:52 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	9/27/2010 2:31:56 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	9/27/2010 2:31:56 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:08:52 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:31:56 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:08:52 PM	MS
Iron	0.06	mg/L		0.05	EPA 200.7	9/27/2010 2:31:56 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:08:52 PM	MS
Manganese	0.01	mg/L		0.01	EPA 200.7	9/27/2010 2:31:56 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	9/29/2010 10:22:27 AM	DJ
Molybdenum	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:08:52 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	9/27/2010 2:31:56 PM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:08:52 PM	MS
Uranium	0.0208	mg/L		0.0003	EPA 200.8	9/24/2010 7:08:52 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:08:52 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:31:56 PM	DG
Total Metals							
Iron	0.25	mg/L		0.05	EPA 200.7	9/28/2010 11:07:03 PM	DG
Manganese	0.02	mg/L		0.01	EPA 200.7	9/28/2010 11:07:03 PM	DG
Radionuclides - Dissolved							
Lead 210	2.0	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Lead 210 Precision (±)	0.7	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	10/25/2010 9:40:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	10/25/2010 9:40:00 PM	SH
Radium 226	1.0	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:16 AM	SH
Radium 226 Precision (±)	0.2	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:16 AM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
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L	Analyzed by a contract laboratory
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S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-001
ClientSample ID: CC Down
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 12:15:00 PM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Radium 226	ND	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Radium 226 Precision (±)	ND	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	10/8/2010 3:04:10 PM	MS
Radionuclides - Total							
Gross Alpha	15.6	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Alpha Precision (±)	1.4	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta	7.1	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta Precision (±)	1.1	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Data Quality							
Cation Sum	3.98	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Anion Sum	3.85	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Cation-Anion Balance	1.58	%		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Solids, Total Dissolved (Calc)	210	mg/L		10	SM 1030E	10/5/2010 8:18:25 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-002
ClientSample ID: MW 6N
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 10:35:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	4	mg/L		1	EPA 200.7	9/27/2010 2:34:15 PM	DG
Alkalinity, Bicarbonate as HCO3	453	mg/L		5	SM 2320B	9/25/2010 10:02:36 PM	KO
Alkalinity, Carbonate as CO3	24	mg/L		5	SM 2320B	9/25/2010 10:02:36 PM	KO
Magnesium	1	mg/L		1	EPA 200.7	9/27/2010 2:34:15 PM	DG
Potassium	2	mg/L		1	EPA 200.7	9/27/2010 2:34:15 PM	DG
Chloride	14	mg/L		1	EPA 300.0	9/25/2010 3:34:21 PM	KO
Sodium	287	mg/L		1	EPA 200.7	9/27/2010 2:34:15 PM	DG
Fluoride	0.6	mg/L		0.1	SM 4500FC	9/27/2010 3:31:40 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	10/5/2010 6:10:00 PM	AS
Sulfate	184	mg/L		1	EPA 300.0	9/25/2010 3:34:21 PM	KO
Alkalinity, Total (As CaCO3)	412	mg/L		5	SM 2320B	9/25/2010 10:02:36 PM	KO
Nitrogen, Ammonia (As N)	0.1	mg/L		0.1	EPA 350.1	10/6/2010 3:02:00 PM	AS
General Parameters							
pH	8.8	s.u.		0.1	SM 4500 H B	9/25/2010 10:02:36 PM	KO
Electrical Conductivity	1220	µmhos/cm		5	SM 2510B	9/25/2010 10:02:36 PM	KO
Total Dissolved Solids (180)	820	mg/L		10	SM 2540	9/24/2010 2:20:00 PM	AMB
Total Suspended Solids	24	mg/L		5	SM 2540	9/24/2010 3:34:00 PM	JF
Silica as SiO2	6.7	mg/L		0.1	EPA 200.7	9/27/2010 2:34:15 PM	DG

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum
Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-002
ClientSample ID: MW 6N
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 10:35:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	9/27/2010 2:34:15 PM	DG
Arsenic	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:12:28 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:12:28 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	9/27/2010 2:34:15 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	9/27/2010 2:34:15 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:12:28 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:34:15 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:12:28 PM	MS
Iron	0.12	mg/L		0.05	EPA 200.7	9/27/2010 2:34:15 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:12:28 PM	MS
Manganese	0.01	mg/L		0.01	EPA 200.7	9/27/2010 2:34:15 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	9/29/2010 10:24:15 AM	DJ
Molybdenum	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:12:28 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	9/27/2010 2:34:15 PM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:12:28 PM	MS
Uranium	0.0026	mg/L		0.0003	EPA 200.8	9/24/2010 7:12:28 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:12:28 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:34:15 PM	DG
Total Metals							
Iron	1.88	mg/L		0.05	EPA 200.7	9/28/2010 11:09:25 PM	DG
Manganese	0.03	mg/L		0.01	EPA 200.7	9/28/2010 11:09:25 PM	DG
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Radium 228	2.3	pCi/L		1	Ra-05	10/25/2010 9:40:00 PM	SH
Radium 228 Precision (±)	1.4	pCi/L		1	Ra-05	10/25/2010 9:40:00 PM	SH
Radium 226	0.5	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:17 AM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:17 AM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-002
ClientSample ID: MW 6N
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 10:35:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	1.1	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Lead 210 Precision (±)	0.4	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Radium 226	0.6	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Uranium Suspended	0.0005	mg/L		0.0003	EPA 200.8	10/8/2010 3:06:30 PM	MS
Radionuclides - Total							
Gross Alpha	21.6	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Alpha Precision (±)	2.8	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta	16.6	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta Precision (±)	2.3	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Data Quality							
Cation Sum	12.82	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Anion Sum	12.50	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Cation-Anion Balance	1.26	%		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Solids, Total Dissolved (Calc)	740	mg/L		10	SM 1030E	10/5/2010 8:18:25 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-003
ClientSample ID: MW 6S
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 10:30:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	6	mg/L		1	EPA 200.7	9/27/2010 2:36:34 PM	DG
Alkalinity, Bicarbonate as HCO3	548	mg/L		5	SM 2320B	9/25/2010 10:18:19 PM	KO
Alkalinity, Carbonate as CO3	26	mg/L		5	SM 2320B	9/25/2010 10:18:19 PM	KO
Magnesium	2	mg/L		1	EPA 200.7	9/27/2010 2:36:34 PM	DG
Potassium	3	mg/L		1	EPA 200.7	9/27/2010 2:36:34 PM	DG
Chloride	267	mg/L		1	EPA 300.0	9/25/2010 3:44:10 PM	KO
Sodium	393	mg/L		1	EPA 200.7	9/27/2010 2:36:34 PM	DG
Fluoride	0.3	mg/L		0.1	SM 4500FC	9/27/2010 3:34:53 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	10/5/2010 6:11:00 PM	AS
Sulfate	2	mg/L		1	EPA 300.0	9/25/2010 3:44:10 PM	KO
Alkalinity, Total (As CaCO3)	492	mg/L		5	SM 2320B	9/25/2010 10:18:19 PM	KO
Nitrogen, Ammonia (As N)	0.4	mg/L		0.1	EPA 350.1	10/6/2010 3:03:00 PM	AS
General Parameters							
pH	8.7	s.u.		0.1	SM 4500 H B	9/25/2010 10:18:19 PM	KO
Electrical Conductivity	1730	µmhos/cm		5	SM 2510B	9/25/2010 10:18:19 PM	KO
Total Dissolved Solids (180)	1030	mg/L		10	SM 2540	9/24/2010 2:25:00 PM	AMB
Total Suspended Solids	32	mg/L		5	SM 2540	9/24/2010 3:39:00 PM	JF
Silica as SiO2	7.5	mg/L		0.1	EPA 200.7	9/27/2010 2:36:34 PM	DG

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-003
ClientSample ID: MW 6S
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 10:30:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	0.2	mg/L		0.1	EPA 200.7	9/27/2010 2:36:34 PM	DG
Arsenic	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:16:03 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:16:03 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	9/27/2010 2:36:34 PM	DG
Boron	0.3	mg/L		0.1	EPA 200.7	9/27/2010 2:36:34 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:16:03 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:36:34 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:16:03 PM	MS
Iron	0.14	mg/L		0.05	EPA 200.7	9/27/2010 2:36:34 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:16:03 PM	MS
Manganese	0.02	mg/L		0.01	EPA 200.7	9/27/2010 2:36:34 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	9/29/2010 10:25:53 AM	DJ
Molybdenum	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:16:03 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	9/27/2010 2:36:34 PM	DG
Selenium	0.002	mg/L		0.001	EPA 200.8	9/24/2010 7:16:03 PM	MS
Uranium	0.0005	mg/L		0.0003	EPA 200.8	9/24/2010 7:16:03 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:16:03 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:36:34 PM	DG
Total Metals							
Iron	2.29	mg/L		0.05	EPA 200.7	9/28/2010 11:11:46 PM	DG
Manganese	0.04	mg/L		0.01	EPA 200.7	9/28/2010 11:11:46 PM	DG
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	10/25/2010 9:40:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	10/25/2010 9:40:00 PM	SH
Radium 226	0.3	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:18 AM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:18 AM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-003
ClientSample ID: MW 6S
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 10:30:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Radium 226	0.2	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	10/8/2010 3:08:49 PM	MS
Radionuclides - Total							
Gross Alpha	7.4	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Alpha Precision (±)	2.7	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta	3.7	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta Precision (±)	3.9	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Data Quality							
Cation Sum	17.58	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Anion Sum	17.42	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Cation-Anion Balance	0.47	%		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Solids, Total Dissolved (Calc)	970	mg/L		10	SM 1030E	10/5/2010 8:18:25 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-004
ClientSample ID: MW 9
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 11:15:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	5	mg/L		1	EPA 200.7	10/4/2010 2:37:36 PM	DG
Alkalinity, Bicarbonate as HCO3	241	mg/L		5	SM 2320B	9/25/2010 10:32:24 PM	KO
Alkalinity, Carbonate as CO3	5	mg/L		5	SM 2320B	9/25/2010 10:32:24 PM	KO
Magnesium	1	mg/L		1	EPA 200.7	10/4/2010 2:37:36 PM	DG
Potassium	4	mg/L		1	EPA 200.7	10/4/2010 2:37:36 PM	DG
Chloride	28	mg/L		1	EPA 300.0	9/25/2010 3:53:53 PM	KO
Sodium	185	mg/L		1	EPA 200.7	10/4/2010 2:37:36 PM	DG
Fluoride	0.2	mg/L		0.1	SM 4500FC	9/27/2010 3:38:18 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	10/5/2010 6:12:00 PM	AS
Sulfate	185	mg/L		1	EPA 300.0	9/25/2010 3:53:53 PM	KO
Alkalinity, Total (As CaCO3)	206	mg/L		5	SM 2320B	9/25/2010 10:32:24 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	10/6/2010 3:04:00 PM	AS
General Parameters							
pH	8.5	s.u.		0.1	SM 4500 H B	9/25/2010 10:32:24 PM	KO
Electrical Conductivity	921	µmhos/cm		5	SM 2510B	9/25/2010 10:32:24 PM	KO
Total Dissolved Solids (180)	610	mg/L		10	SM 2540	9/24/2010 2:30:00 PM	AMB
Total Suspended Solids	10	mg/L		5	SM 2540	9/24/2010 3:44:00 PM	JF
Silica as SiO2	7.9	mg/L		0.1	EPA 200.7	9/27/2010 2:38:53 PM	DG

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-004
ClientSample ID: MW 9
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 11:15:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	9/27/2010 2:38:53 PM	DG
Arsenic	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:19:39 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:19:39 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	9/27/2010 2:38:53 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	9/27/2010 2:38:53 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:19:39 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:38:53 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:19:39 PM	MS
Iron	ND	mg/L		0.05	EPA 200.7	9/27/2010 2:38:53 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:19:39 PM	MS
Manganese	0.01	mg/L		0.01	EPA 200.7	9/27/2010 2:38:53 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	9/29/2010 10:27:34 AM	DJ
Molybdenum	0.02	mg/L		0.01	EPA 200.8	9/24/2010 7:19:39 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	9/27/2010 2:38:53 PM	DG
Selenium	0.002	mg/L		0.001	EPA 200.8	9/24/2010 7:19:39 PM	MS
Uranium	0.0070	mg/L		0.0003	EPA 200.8	9/24/2010 7:19:39 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:19:39 PM	MS
Zinc	0.01	mg/L		0.01	EPA 200.7	9/27/2010 2:38:53 PM	DG
Total Metals							
Iron	0.37	mg/L		0.05	EPA 200.7	9/28/2010 11:21:11 PM	DG
Manganese	0.01	mg/L		0.01	EPA 200.7	9/28/2010 11:21:11 PM	DG
Radionuclides - Dissolved							
Lead 210	1.1	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Lead 210 Precision (±)	0.5	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	10/25/2010 9:40:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	10/25/2010 9:40:00 PM	SH
Radium 226	2.5	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:19 AM	SH
Radium 226 Precision (±)	0.2	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:19 AM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-004
ClientSample ID: MW 9
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/21/2010 11:15:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	2.6	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Lead 210 Precision (±)	0.5	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Radium 226	1.1	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Thorium 230	1.0	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	0.3	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Uranium Suspended	0.0020	mg/L		0.0003	EPA 200.8	10/8/2010 3:11:09 PM	MS
Radionuclides - Total							
Gross Alpha	26.0	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Alpha Precision (±)	2.7	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta	14.1	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta Precision (±)	2.2	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Data Quality							
Cation Sum	8.50	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Anion Sum	8.75	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Cation-Anion Balance	1.42	%		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Solids, Total Dissolved (Calc)	530	mg/L		10	SM 1030E	10/5/2010 8:18:25 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-005
ClientSample ID: MW 7
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/20/2010 2:00:00 PM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	42	mg/L		1	EPA 200.7	9/27/2010 2:47:15 PM	DG
Alkalinity, Bicarbonate as HCO3	275	mg/L		5	SM 2320B	9/25/2010 11:01:44 PM	KO
Alkalinity, Carbonate as CO3	6	mg/L		5	SM 2320B	9/25/2010 11:01:44 PM	KO
Magnesium	18	mg/L		1	EPA 200.7	9/27/2010 2:47:15 PM	DG
Potassium	5	mg/L		1	EPA 200.7	9/27/2010 2:47:15 PM	DG
Chloride	3	mg/L		1	EPA 300.0	9/25/2010 4:03:43 PM	KO
Sodium	35	mg/L		1	EPA 200.7	9/27/2010 2:47:15 PM	DG
Fluoride	ND	mg/L		0.1	SM 4500FC	9/27/2010 3:41:35 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	10/5/2010 6:13:00 PM	AS
Sulfate	26	mg/L		1	EPA 300.0	9/25/2010 4:03:43 PM	KO
Alkalinity, Total (As CaCO3)	236	mg/L		5	SM 2320B	9/25/2010 11:01:44 PM	KO
Nitrogen, Ammonia (As N)	0.9	mg/L		0.1	EPA 350.1	10/6/2010 3:05:00 PM	AS
General Parameters							
pH	8.5	s.u.		0.1	SM 4500 H B	9/25/2010 11:01:44 PM	KO
Electrical Conductivity	464	µmhos/cm		5	SM 2510B	9/25/2010 11:01:44 PM	KO
Total Dissolved Solids (180)	250	mg/L		10	SM 2540	9/24/2010 2:35:00 PM	AMB
Total Suspended Solids	8	mg/L		5	SM 2540	9/24/2010 3:49:00 PM	JF
Silica as SiO2	7.9	mg/L		0.1	EPA 200.7	9/27/2010 2:47:15 PM	DG

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-005
ClientSample ID: MW 7
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/20/2010 2:00:00 PM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	9/27/2010 2:47:15 PM	DG
Arsenic	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:23:14 PM	MS
Barium	0.1	mg/L		0.1	EPA 200.8	9/24/2010 7:23:14 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	9/27/2010 2:47:15 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	9/27/2010 2:47:15 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:23:14 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:47:15 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:23:14 PM	MS
Iron	ND	mg/L		0.05	EPA 200.7	9/27/2010 2:47:15 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:23:14 PM	MS
Manganese	ND	mg/L		0.01	EPA 200.7	11/29/2010 9:06:43 AM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	9/29/2010 10:29:45 AM	DJ
Molybdenum	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:23:14 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	9/27/2010 2:47:15 PM	DG
Selenium	0.002	mg/L		0.001	EPA 200.8	9/24/2010 7:23:14 PM	MS
Uranium	0.0067	mg/L		0.0003	EPA 200.8	9/24/2010 7:23:14 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:23:14 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:47:15 PM	DG
Total Metals							
Iron	0.55	mg/L		0.05	EPA 200.7	9/28/2010 11:25:52 PM	DG
Manganese	0.02	mg/L		0.01	EPA 200.7	9/28/2010 11:25:52 PM	DG
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	10/25/2010 9:40:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	10/25/2010 9:40:00 PM	SH
Radium 226	10.6	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:20 AM	SH
Radium 226 Precision (±)	0.5	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:20 AM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-005
ClientSample ID: MW 7
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/20/2010 2:00:00 PM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	2.8	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Lead 210 Precision (±)	0.6	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Radium 226	0.4	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	10/8/2010 3:18:10 PM	MS
Radionuclides - Total							
Gross Alpha	18.8	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Alpha Precision (±)	1.6	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta	9.4	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta Precision (±)	1.2	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Data Quality							
Cation Sum	5.27	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Anion Sum	5.36	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Cation-Anion Balance	0.89	%		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Solids, Total Dissolved (Calc)	270	mg/L		10	SM 1030E	10/5/2010 8:18:25 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-006
ClientSample ID: PZ 4
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/20/2010 11:30:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	48	mg/L		1	EPA 200.7	9/27/2010 2:49:34 PM	DG
Alkalinity, Bicarbonate as HCO3	194	mg/L		5	SM 2320B	9/25/2010 11:15:54 PM	KO
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	9/25/2010 11:15:54 PM	KO
Magnesium	7	mg/L		1	EPA 200.7	9/27/2010 2:49:34 PM	DG
Potassium	2	mg/L		1	EPA 200.7	9/27/2010 2:49:34 PM	DG
Chloride	4	mg/L		1	EPA 300.0	9/25/2010 4:13:25 PM	KO
Sodium	21	mg/L		1	EPA 200.7	9/27/2010 2:49:34 PM	DG
Fluoride	ND	mg/L		0.1	SM 4500FC	9/27/2010 3:44:56 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	0.2	mg/L		0.1	EPA 353.2	10/5/2010 6:14:00 PM	AS
Sulfate	17	mg/L		1	EPA 300.0	9/25/2010 4:13:25 PM	KO
Alkalinity, Total (As CaCO3)	165	mg/L		5	SM 2320B	9/25/2010 11:15:54 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	10/6/2010 3:12:00 PM	AS
General Parameters							
pH	8.4	s.u.		0.1	SM 4500 H B	9/25/2010 11:15:54 PM	KO
Electrical Conductivity	344	µmhos/cm		5	SM 2510B	9/25/2010 11:15:54 PM	KO
Total Dissolved Solids (180)	210	mg/L		10	SM 2540	9/24/2010 2:40:00 PM	AMB
Total Suspended Solids	ND	mg/L		5	SM 2540	9/24/2010 3:54:00 PM	JF
Silica as SiO2	11.2	mg/L		0.1	EPA 200.7	9/27/2010 2:49:34 PM	DG

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-006
ClientSample ID: PZ 4
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/20/2010 11:30:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	9/27/2010 2:49:34 PM	DG
Arsenic	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:26:49 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:26:49 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	9/27/2010 2:49:34 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	9/27/2010 2:49:34 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	9/24/2010 7:26:49 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:49:34 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:26:49 PM	MS
Iron	ND	mg/L		0.05	EPA 200.7	9/27/2010 2:49:34 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:26:49 PM	MS
Manganese	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:49:34 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	9/29/2010 10:39:02 AM	DJ
Molybdenum	ND	mg/L		0.01	EPA 200.8	9/24/2010 7:26:49 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	9/27/2010 2:49:34 PM	DG
Selenium	0.002	mg/L		0.001	EPA 200.8	9/24/2010 7:26:49 PM	MS
Uranium	0.270	mg/L		0.0003	EPA 200.8	9/24/2010 7:26:49 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	9/24/2010 7:26:49 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	9/27/2010 2:49:34 PM	DG
Total Metals							
Iron	0.22	mg/L		0.05	EPA 200.7	9/28/2010 11:30:35 PM	DG
Manganese	ND	mg/L		0.01	EPA 200.7	9/28/2010 11:30:35 PM	DG
Radionuclides - Dissolved							
Lead 210	3.1	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Lead 210 Precision (±)	0.5	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/23/2010 12:25:00 PM	SH
Radium 228	4.7	pCi/L		1	Ra-05	10/22/2010 12:04:00 AM	SH
Radium 228 Precision (±)	0.9	pCi/L		1	Ra-05	10/22/2010 12:04:00 AM	SH
Radium 226	2.2	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:21 AM	SH
Radium 226 Precision (±)	0.2	pCi/L		0.2	SM 7500-Ra B	11/24/2010 11:54:21 AM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/30/2010
Report ID S1009458001

ProjectName: Sheep
Lab ID: S1009458-006
ClientSample ID: PZ 4
COC: 128869

WorkOrder: S1009458
CollectionDate: 9/20/2010 11:30:00 AM
DateReceived: 9/23/2010 10:50:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	4.0	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Lead 210 Precision (±)	0.6	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210	2.3	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Polonium 210 Precision (±)	0.6	pCi/L		1	OTW01	10/23/2010 7:33:00 PM	SH
Radium 226	ND	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Radium 226 Precision (±)	ND	pCi/L		0.2	SM 7500-Ra B	10/17/2010 1:19:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/25/2010 10:06:00 AM	ADM
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	10/8/2010 3:20:29 PM	MS
Radionuclides - Total							
Gross Alpha	163	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Alpha Precision (±)	4.5	pCi/L		2	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta	49.8	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Gross Beta Precision (±)	1.8	pCi/L		3	SM 7110B	10/2/2010 10:07:00 PM	SH
Data Quality							
Cation Sum	3.90	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Anion Sum	3.78	meq/L		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Cation-Anion Balance	1.61	%		0.00	SM 1030E	10/5/2010 8:18:25 AM	KO
Solids, Total Dissolved (Calc)	200	mg/L		10	SM 1030E	10/5/2010 8:18:25 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/20/2010
Report ID S1010125001

ProjectName: Sheep
Lab ID: S1010125-001
ClientSample ID: Creek Down
COC: 135562

WorkOrder: S1010125
CollectionDate: 10/7/2010 10:40:00 AM
DateReceived: 10/8/2010 11:05:00 AM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Alkalinity, Bicarbonate as HCO3	179	mg/L		5	SM 2320B	10/9/2010 12:53:54 AM	KO
Calcium	48	mg/L		1	EPA 200.7	10/11/2010 2:23:57 PM	DG
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	10/9/2010 12:53:54 AM	KO
Magnesium	5	mg/L		1	EPA 200.7	10/11/2010 2:23:57 PM	DG
Potassium	2	mg/L		1	EPA 200.7	10/11/2010 2:23:57 PM	DG
Chloride	3	mg/L		1	EPA 300.0	12/20/2010 10:11:00 PM	KO
Sodium	21	mg/L		1	EPA 200.7	10/11/2010 2:23:57 PM	DG
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	10/15/2010 5:08:00 PM	AS
Fluoride	0.2	mg/L		0.1	SM 4500FC	10/11/2010 2:46:45 PM	KO
Sulfate	36	mg/L		1	EPA 300.0	12/20/2010 10:11:00 PM	KO
Alkalinity, Total (As CaCO3)	154	mg/L		5	SM 2320B	10/9/2010 12:53:54 AM	KO
Nitrogen, Ammonia (As N)	ND	mg/L	B	0.1	EPA 350.1	10/19/2010 11:25:00 AM	AS
General Parameters							
pH	8.4	s.u.		0.1	SM 4500 H B	10/9/2010 12:53:54 AM	KO
Electrical Conductivity	359	µmhos/cm		5	SM 2510B	10/9/2010 12:53:54 AM	KO
Total Dissolved Solids (180)	260	mg/L		10	SM 2540	10/11/2010 3:05:00 PM	JF
Total Suspended Solids	12	mg/L		5	SM 2540	10/12/2010 1:21:00 PM	JF
Silica as SiO2	22.0	mg/L		0.1	EPA 200.7	10/11/2010 2:23:57 PM	DG
Turbidity	5.9	NTU	H	0.1	SM 2130	10/15/2010 8:23:00 AM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/20/2010
Report ID S1010125001

ProjectName: Sheep
Lab ID: S1010125-001
ClientSample ID: Creek Down
COC: 135562

WorkOrder: S1010125
CollectionDate: 10/7/2010 10:40:00 AM
DateReceived: 10/8/2010 11:05:00 AM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	10/11/2010 2:23:57 PM	DG
Arsenic	ND	mg/L		0.001	EPA 200.8	10/8/2010 2:12:35 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	10/8/2010 2:12:35 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	10/11/2010 2:23:57 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	10/11/2010 2:23:57 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	10/8/2010 2:12:35 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	10/11/2010 2:23:57 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	10/8/2010 2:12:35 PM	MS
Iron	0.08	mg/L		0.05	EPA 200.7	10/11/2010 2:23:57 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	10/8/2010 2:12:35 PM	MS
Manganese	0.01	mg/L		0.01	EPA 200.7	10/11/2010 2:23:57 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	10/12/2010 12:56:25 PM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	10/8/2010 2:12:35 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	10/11/2010 2:23:57 PM	DG
Selenium	0.001	mg/L		0.001	EPA 200.8	10/8/2010 2:12:35 PM	MS
Uranium	0.0199	mg/L		0.0003	EPA 200.8	10/8/2010 2:12:35 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	10/8/2010 2:12:35 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	10/11/2010 2:23:57 PM	DG
Total Metals							
Iron	0.38	mg/L		0.05	EPA 200.7	10/12/2010 3:45:02 PM	DG
Manganese	0.03	mg/L		0.01	EPA 200.7	10/12/2010 3:45:02 PM	DG
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	11/10/2010 11:13:00 AM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	11/10/2010 11:13:00 AM	SH
Polonium 210	ND	pCi/L		1	OTW01	11/9/2010 12:55:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	11/9/2010 12:55:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	10/23/2010 6:51:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	10/23/2010 6:51:00 PM	SH
Radium 226	1.0	pCi/L	B	0.2	SM 7500-Ra B	10/23/2010 5:17:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L	B	0.2	SM 7500-Ra B	10/23/2010 5:17:00 PM	SH
Thorium 230	ND	pCi/L		0.2	ACW10	11/8/2010 8:45:00 AM	WL
Thorium 230 Precision (±)	ND	pCi/L		0.2	ACW10	11/8/2010 8:45:00 AM	WL

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/20/2010
Report ID S1010125001

ProjectName: Sheep
Lab ID: S1010125-001
ClientSample ID: Creek Down
COC: 135562

WorkOrder: S1010125
CollectionDate: 10/7/2010 10:40:00 AM
DateReceived: 10/8/2010 11:05:00 AM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	11/10/2010 1:53:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	11/10/2010 1:53:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	11/18/2010 12:12:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	11/18/2010 12:12:00 PM	SH
Radium 226	6.3	pCi/L		0.2	SM 7500-Ra B	12/17/2010 1:57:08 PM	SH
Radium 226 Precision (±)	0.9	pCi/L		0.2	SM 7500-Ra B	12/17/2010 1:57:08 PM	SH
Thorium 230	2.2	pCi/L		0.2	ACW10	11/9/2010 9:00:00 AM	WL
Thorium 230 Precision (±)	0.9	pCi/L		0.2	ACW10	11/9/2010 9:00:00 AM	WL
Uranium Suspended	ND	mg/L		0.001	EPA 200.8	10/29/2010 1:23:11 PM	MS
Radionuclides - Total							
Gross Alpha	14.5	pCi/L		2	SM 7110B	10/24/2010 11:09:00 AM	SH
Gross Alpha Precision (±)	1.4	pCi/L		2	SM 7110B	10/24/2010 11:09:00 AM	SH
Gross Beta	10.7	pCi/L		3	SM 7110B	10/24/2010 11:09:00 AM	SH
Gross Beta Precision (±)	1.2	pCi/L		3	SM 7110B	10/24/2010 11:09:00 AM	SH
Data Quality							
Cation Sum	3.77	meq/L		0.00	SM 1030E	12/21/2010 10:03:16 AM	LJK
Anion Sum	3.92	meq/L		0.00	SM 1030E	12/21/2010 10:03:16 AM	LJK
Cation-Anion Balance	1.94	%		0.00	SM 1030E	12/21/2010 10:03:16 AM	LJK
Solids, Total Dissolved (Calc)	210	mg/L		10	SM 1030E	12/21/2010 10:03:16 AM	LJK

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/20/2010
Report ID S1010125001

ProjectName: Sheep
Lab ID: S1010125-002
ClientSample ID: Creek Up
COC: 135562

WorkOrder: S1010125
CollectionDate: 10/7/2010 10:15:00 AM
DateReceived: 10/8/2010 11:05:00 AM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	47	mg/L		1	EPA 200.7	10/11/2010 2:26:15 PM	DG
Alkalinity, Bicarbonate as HCO3	173	mg/L		5	SM 2320B	10/9/2010 1:19:42 AM	KO
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	10/9/2010 1:19:42 AM	KO
Magnesium	5	mg/L		1	EPA 200.7	10/11/2010 2:26:15 PM	DG
Potassium	3	mg/L		1	EPA 200.7	10/11/2010 2:26:15 PM	DG
Chloride	3	mg/L		1	EPA 300.0	12/20/2010 10:21:00 PM	KO
Sodium	19	mg/L		1	EPA 200.7	10/11/2010 2:26:15 PM	DG
Fluoride	0.2	mg/L		0.1	SM 4500FC	10/11/2010 2:50:15 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	10/15/2010 5:09:00 PM	AS
Sulfate	32	mg/L		1	EPA 300.0	12/20/2010 10:21:00 PM	KO
Alkalinity, Total (As CaCO3)	149	mg/L		5	SM 2320B	10/9/2010 1:19:42 AM	KO
Nitrogen, Ammonia (As N)	ND	mg/L	B	0.1	EPA 350.1	10/19/2010 11:26:00 AM	AS
General Parameters							
pH	8.4	s.u.		0.1	SM 4500 H B	10/9/2010 1:19:42 AM	KO
Electrical Conductivity	347	µmhos/cm		5	SM 2510B	10/9/2010 1:19:42 AM	KO
Total Dissolved Solids (180)	290	mg/L		10	SM 2540	10/11/2010 3:10:00 PM	JF
Total Suspended Solids	ND	mg/L		5	SM 2540	10/12/2010 1:26:00 PM	JF
Silica as SiO2	22.1	mg/L		0.1	EPA 200.7	10/11/2010 2:26:15 PM	DG
Turbidity	4.6	NTU	H	0.1	SM 2130	10/15/2010 8:26:00 AM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum
Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/20/2010
Report ID S1010125001

ProjectName: Sheep
Lab ID: S1010125-002
ClientSample ID: Creek Up
COC: 135562

WorkOrder: S1010125
CollectionDate: 10/7/2010 10:15:00 AM
DateReceived: 10/8/2010 11:05:00 AM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	10/11/2010 2:26:15 PM	DG
Arsenic	ND	mg/L		0.001	EPA 200.8	10/8/2010 2:16:10 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	10/8/2010 2:16:10 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	10/11/2010 2:26:15 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	10/11/2010 2:26:15 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	10/8/2010 2:16:10 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	10/11/2010 2:26:15 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	10/8/2010 2:16:10 PM	MS
Iron	0.10	mg/L		0.05	EPA 200.7	10/11/2010 2:26:15 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	10/8/2010 2:16:10 PM	MS
Manganese	0.03	mg/L		0.01	EPA 200.7	10/11/2010 2:26:15 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	10/12/2010 1:05:06 PM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	10/8/2010 2:16:10 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	10/11/2010 2:26:15 PM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	10/8/2010 2:16:10 PM	MS
Uranium	0.0140	mg/L		0.0003	EPA 200.8	10/8/2010 2:16:10 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	10/8/2010 2:16:10 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	10/11/2010 2:26:15 PM	DG
Total Metals							
Iron	0.34	mg/L		0.05	EPA 200.7	10/12/2010 3:47:20 PM	DG
Manganese	0.05	mg/L		0.01	EPA 200.7	10/12/2010 3:47:20 PM	DG
Radionuclides - Dissolved							
Lead 210	1.5	pCi/L		1	OTW01	11/10/2010 11:13:00 AM	SH
Lead 210 Precision (±)	0.7	pCi/L		1	OTW01	11/10/2010 11:13:00 AM	SH
Polonium 210	ND	pCi/L		1	OTW01	11/9/2010 12:55:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	11/9/2010 12:55:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	10/23/2010 6:51:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	10/23/2010 6:51:00 PM	SH
Radium 226	0.9	pCi/L	B	0.2	SM 7500-Ra B	10/23/2010 5:17:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L	B	0.2	SM 7500-Ra B	10/23/2010 5:17:00 PM	SH
Thorium 230	ND	pCi/L		0.2	ACW10	11/8/2010 8:45:00 AM	WL
Thorium 230 Precision (±)	ND	pCi/L		0.2	ACW10	11/8/2010 8:45:00 AM	WL

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/20/2010
Report ID S1010125001

ProjectName: Sheep
Lab ID: S1010125-002
ClientSample ID: Creek Up
COC: 135562

WorkOrder: S1010125
CollectionDate: 10/7/2010 10:15:00 AM
DateReceived: 10/8/2010 11:05:00 AM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	11/10/2010 1:53:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	11/10/2010 1:53:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	11/18/2010 12:12:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	11/18/2010 12:12:00 PM	SH
Radium 226	3.6	pCi/L		0.2	SM 7500-Ra B	12/17/2010 1:57:09 PM	SH
Radium 226 Precision (±)	0.6	pCi/L		0.2	SM 7500-Ra B	12/17/2010 1:57:09 PM	SH
Thorium 230	0.3	pCi/L		0.2	ACW10	11/9/2010 9:00:00 AM	WL
Thorium 230 Precision (±)	0.3	pCi/L		0.2	ACW10	11/9/2010 9:00:00 AM	WL
Uranium Suspended	ND	mg/L		0.001	EPA 200.8	10/29/2010 1:25:44 PM	MS
Radionuclides - Total							
Gross Alpha	13.2	pCi/L		2	SM 7110B	10/24/2010 11:09:00 AM	SH
Gross Alpha Precision (±)	1.3	pCi/L		2	SM 7110B	10/24/2010 11:09:00 AM	SH
Gross Beta	5.4	pCi/L		3	SM 7110B	10/24/2010 11:09:00 AM	SH
Gross Beta Precision (±)	1.1	pCi/L		3	SM 7110B	10/24/2010 11:09:00 AM	SH
Data Quality							
Cation Sum	3.60	meq/L		0.00	SM 1030E	12/21/2010 10:03:16 AM	LJK
Anion Sum	3.73	meq/L		0.00	SM 1030E	12/21/2010 10:03:16 AM	LJK
Cation-Anion Balance	1.84	%		0.00	SM 1030E	12/21/2010 10:03:16 AM	LJK
Solids, Total Dissolved (Calc)	200	mg/L		10	SM 1030E	12/21/2010 10:03:16 AM	LJK

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/28/2010
Report ID S1011290001

ProjectName: Sheep Mtn
Lab ID: S1011290-001
ClientSample ID: Creek Down (lower)
COC: 135345

WorkOrder: S1011290
CollectionDate: 11/15/2010 10:55:00 AM
DateReceived: 11/17/2010 1:30:00 PM
FieldSampler: MW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	47	mg/L		1	EPA 200.7	11/18/2010 12:40:06 AM	DG
Alkalinity, Bicarbonate as HCO3	166	mg/L		5	SM 2320B	11/18/2010 7:25:40 PM	KO
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	11/18/2010 7:25:40 PM	KO
Magnesium	5	mg/L		1	EPA 200.7	11/18/2010 12:40:06 AM	DG
Potassium	2	mg/L		1	EPA 200.7	11/18/2010 12:40:06 AM	DG
Chloride	3	mg/L		1	EPA 300.0	11/19/2010 1:00:31 AM	KO
Sodium	22	mg/L		1	EPA 200.7	11/18/2010 12:40:06 AM	DG
Fluoride	ND	mg/L		0.1	SM 4500FC	11/19/2010 2:04:13 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	11/18/2010 11:53:00 AM	AS
Sulfate	39	mg/L		1	EPA 300.0	11/19/2010 1:00:31 AM	KO
Alkalinity, Total (As CaCO3)	136	mg/L		5	SM 2320B	11/18/2010 7:25:40 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	11/18/2010 9:37:00 AM	AS
General Parameters							
pH	8.1	s.u.		0.1	SM 4500 H B	11/18/2010 7:25:40 PM	KO
Electrical Conductivity	342	µmhos/cm		5	SM 2510B	11/18/2010 7:25:40 PM	KO
Total Dissolved Solids (180)	150	mg/L		10	SM 2540	11/17/2010 5:05:00 PM	JF
Total Suspended Solids	20	mg/L		5	SM 2540	11/18/2010 5:15:00 PM	JF
Silica as SiO2	22.3	mg/L		0.1	EPA 200.7	11/18/2010 12:40:06 AM	DG
Turbidity	3.3	NTU	H	0.1	SM 2130	11/17/2010 4:44:00 PM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum
Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/28/2010
Report ID S1011290001

ProjectName: Sheep Mtn
Lab ID: S1011290-001
ClientSample ID: Creek Down (lower)
COC: 135345

WorkOrder: S1011290
CollectionDate: 11/15/2010 10:55:00 AM
DateReceived: 11/17/2010 1:30:00 PM
FieldSampler: MW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	11/18/2010 12:40:06 AM	DG
Arsenic	ND	mg/L		0.001	EPA 200.8	11/17/2010 3:40:44 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	11/17/2010 3:40:44 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	11/18/2010 12:40:06 AM	DG
Boron	ND	mg/L		0.1	EPA 200.7	11/18/2010 12:40:06 AM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	11/17/2010 3:40:44 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	11/18/2010 12:40:06 AM	DG
Copper	ND	mg/L		0.01	EPA 200.8	11/17/2010 3:40:44 PM	MS
Iron	0.05	mg/L		0.05	EPA 200.7	11/18/2010 12:40:06 AM	DG
Lead	ND	mg/L		0.01	EPA 200.8	11/17/2010 3:40:44 PM	MS
Manganese	0.01	mg/L		0.01	EPA 200.7	11/18/2010 12:40:06 AM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	11/23/2010 11:04:53 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	11/17/2010 3:40:44 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	11/18/2010 12:40:06 AM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	11/17/2010 3:40:44 PM	MS
Uranium	0.0188	mg/L		0.0003	EPA 200.8	11/17/2010 3:40:44 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	11/17/2010 3:40:44 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	11/18/2010 12:40:06 AM	DG
Total Metals							
Iron	0.29	mg/L		0.05	EPA 200.7	11/19/2010 3:40:52 PM	DG
Manganese	0.03	mg/L		0.01	EPA 200.7	11/19/2010 3:40:52 PM	DG
Radionuclides - Dissolved							
Lead 210	2.4	pCi/L		1	OTW01	12/9/2010 2:35:13 PM	SH
Lead 210 Precision (±)	0.9	pCi/L		1	OTW01	12/9/2010 2:35:13 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	12/10/2010 12:06:13 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	12/10/2010 12:06:13 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	12/1/2010 9:31:08 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	12/1/2010 9:31:08 PM	SH
Radium 226	0.8	pCi/L		0.2	SM 7500-Ra B	12/1/2010 9:15:00 AM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	12/1/2010 9:15:00 AM	SH
Thorium 230	ND	pCi/L		0.2	ACW10	12/1/2010 9:42:00 AM	WL
Thorium 230 Precision (±)	ND	pCi/L		0.2	ACW10	12/1/2010 9:42:00 AM	WL

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/28/2010
Report ID S1011290001

ProjectName: Sheep Mtn
Lab ID: S1011290-001
ClientSample ID: Creek Down (lower)
COC: 135345

WorkOrder: S1011290
CollectionDate: 11/15/2010 10:55:00 AM
DateReceived: 11/17/2010 1:30:00 PM
FieldSampler: MW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	1.9	pCi/L		1	OTW01	12/9/2010 5:12:00 PM	SH
Lead 210 Precision (±)	2.7	pCi/L		1	OTW01	12/9/2010 5:12:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	12/14/2010 4:07:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	12/14/2010 4:07:00 PM	SH
Radium 226	0.3	pCi/L		0.2	SM 7500-Ra B	12/22/2010 2:27:04 PM	SH
Radium 226 Precision (±)	0.5	pCi/L		0.2	SM 7500-Ra B	12/22/2010 2:27:04 PM	SH
Thorium 230	ND	pCi/L		0.2	ACW10	12/22/2010 8:26:00 AM	WL
Thorium 230 Precision (±)	ND	pCi/L		0.2	ACW10	12/22/2010 8:26:00 AM	WL
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	11/29/2010 12:53:45 PM	MS
Radionuclides - Total							
Gross Alpha	19.3	pCi/L		2	SM 7110B	12/7/2010 7:27:00 PM	SH
Gross Alpha Precision (±)	1.9	pCi/L		2	SM 7110B	12/7/2010 7:27:00 PM	SH
Gross Beta	6.92	piC/L		3	SM 7110B	12/7/2010 7:27:00 PM	SH
Gross Beta Precision (±)	1.1	piC/L		3	SM 7110B	12/7/2010 7:27:00 PM	SH
Data Quality							
Cation Sum	3.79	meq/L		0.00	SM 1030E	11/23/2010 11:15:30 AM	KO
Anion Sum	3.62	meq/L		0.00	SM 1030E	11/23/2010 11:15:30 AM	KO
Cation-Anion Balance	2.22	%		0.00	SM 1030E	11/23/2010 11:15:30 AM	KO
Solids, Total Dissolved (Calc)	200	mg/L		10	SM 1030E	11/23/2010 11:15:30 AM	KO

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RL - Reporting Limit

Qualifiers:

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E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/28/2010
Report ID S1011290001

ProjectName: Sheep Mtn
Lab ID: S1011290-002
ClientSample ID: Creek Up
COC: 135345

WorkOrder: S1011290
CollectionDate: 11/15/2010 10:15:00 AM
DateReceived: 11/17/2010 1:30:00 PM
FieldSampler: MW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	46	mg/L		1	EPA 200.7	11/18/2010 12:44:47 AM	DG
Alkalinity, Bicarbonate as HCO3	153	mg/L		5	SM 2320B	11/18/2010 7:36:24 PM	KO
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	11/18/2010 7:36:24 PM	KO
Magnesium	5	mg/L		1	EPA 200.7	11/18/2010 12:44:47 AM	DG
Potassium	2	mg/L		1	EPA 200.7	11/18/2010 12:44:47 AM	DG
Chloride	2	mg/L		1	EPA 300.0	11/19/2010 1:12:46 AM	KO
Sodium	19	mg/L		1	EPA 200.7	11/18/2010 12:44:47 AM	DG
Fluoride	ND	mg/L		0.1	SM 4500FC	11/19/2010 2:08:31 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	11/18/2010 11:54:00 AM	AS
Sulfate	36	mg/L		1	EPA 300.0	11/19/2010 1:12:46 AM	KO
Alkalinity, Total (As CaCO3)	126	mg/L		5	SM 2320B	11/18/2010 7:36:24 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	11/18/2010 9:38:00 AM	AS
General Parameters							
pH	8.1	s.u.		0.1	SM 4500 H B	11/18/2010 7:36:24 PM	KO
Electrical Conductivity	325	µmhos/cm		5	SM 2510B	11/18/2010 7:36:24 PM	KO
Total Dissolved Solids (180)	170	mg/L		10	SM 2540	11/17/2010 5:10:00 PM	JF
Total Suspended Solids	ND	mg/L		5	SM 2540	11/18/2010 5:20:00 PM	JF
Silica as SiO2	22.4	mg/L		0.1	EPA 200.7	11/18/2010 12:44:47 AM	DG
Turbidity	2.4	NTU	H	0.1	SM 2130	11/17/2010 4:48:00 PM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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E	Value above quantitation range
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M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/28/2010
Report ID S1011290001

ProjectName: Sheep Mtn
Lab ID: S1011290-002
ClientSample ID: Creek Up
COC: 135345

WorkOrder: S1011290
CollectionDate: 11/15/2010 10:15:00 AM
DateReceived: 11/17/2010 1:30:00 PM
FieldSampler: MW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	11/18/2010 12:44:47 AM	DG
Arsenic	ND	mg/L		0.001	EPA 200.8	11/17/2010 3:44:20 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	11/17/2010 3:44:20 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	11/18/2010 12:44:47 AM	DG
Boron	ND	mg/L		0.1	EPA 200.7	11/18/2010 12:44:47 AM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	11/17/2010 3:44:20 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	11/18/2010 12:44:47 AM	DG
Copper	ND	mg/L		0.01	EPA 200.8	11/17/2010 3:44:20 PM	MS
Iron	0.06	mg/L		0.05	EPA 200.7	11/18/2010 12:44:47 AM	DG
Lead	ND	mg/L		0.01	EPA 200.8	11/17/2010 3:44:20 PM	MS
Manganese	0.05	mg/L		0.01	EPA 200.7	11/18/2010 12:44:47 AM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	11/23/2010 11:10:46 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	11/17/2010 3:44:20 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	11/18/2010 12:44:47 AM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	11/17/2010 3:44:20 PM	MS
Uranium	0.0137	mg/L		0.0003	EPA 200.8	11/17/2010 3:44:20 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	11/17/2010 3:44:20 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	11/18/2010 12:44:47 AM	DG
Total Metals							
Iron	0.29	mg/L		0.05	EPA 200.7	11/19/2010 3:45:30 PM	DG
Manganese	0.07	mg/L		0.01	EPA 200.7	11/19/2010 3:45:30 PM	DG
Radionuclides - Dissolved							
Lead 210	1.6	pCi/L		1	OTW01	12/9/2010 2:35:14 PM	SH
Lead 210 Precision (±)	0.6	pCi/L		1	OTW01	12/9/2010 2:35:14 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	12/10/2010 12:06:14 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	12/10/2010 12:06:14 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	12/1/2010 9:31:10 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	12/1/2010 9:31:10 PM	SH
Radium 226	0.7	pCi/L		0.2	SM 7500-Ra B	12/1/2010 9:15:00 AM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	12/1/2010 9:15:00 AM	SH
Thorium 230	ND	pCi/L		0.2	ACW10	12/1/2010 1:49:00 PM	WL
Thorium 230 Precision (±)	ND	pCi/L		0.2	ACW10	12/1/2010 1:49:00 PM	WL

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
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M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 12/28/2010
Report ID S1011290001

ProjectName: Sheep Mtn
Lab ID: S1011290-002
ClientSample ID: Creek Up
COC: 135345

WorkOrder: S1011290
CollectionDate: 11/15/2010 10:15:00 AM
DateReceived: 11/17/2010 1:30:00 PM
FieldSampler: MW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	1.0	pCi/L		1	OTW01	12/9/2010 5:12:00 PM	SH
Lead 210 Precision (±)	2.7	pCi/L		1	OTW01	12/9/2010 5:12:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	12/14/2010 4:07:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	12/14/2010 4:07:00 PM	SH
Radium 226	ND	pCi/L		0.2	SM 7500-Ra B	12/22/2010 2:27:05 PM	SH
Radium 226 Precision (±)	ND	pCi/L		0.2	SM 7500-Ra B	12/22/2010 2:27:05 PM	SH
Thorium 230	ND	pCi/L		0.2	ACW10	12/22/2010 8:26:00 AM	WL
Thorium 230 Precision (±)	ND	pCi/L		0.2	ACW10	12/22/2010 8:26:00 AM	WL
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	11/29/2010 1:04:32 PM	MS
Radionuclides - Total							
Gross Alpha	12.4	pCi/L		2	SM 7110B	12/7/2010 7:27:00 PM	SH
Gross Alpha Precision (±)	1.7	pCi/L		2	SM 7110B	12/7/2010 7:27:00 PM	SH
Gross Beta	4.70	piC/L		3	SM 7110B	12/7/2010 7:27:00 PM	SH
Gross Beta Precision (±)	1.0	piC/L		3	SM 7110B	12/7/2010 7:27:00 PM	SH
Data Quality							
Cation Sum	3.56	meq/L		0.00	SM 1030E	11/23/2010 11:15:30 AM	KO
Anion Sum	3.33	meq/L		0.00	SM 1030E	11/23/2010 11:15:30 AM	KO
Cation-Anion Balance	3.34	%		0.00	SM 1030E	11/23/2010 11:15:30 AM	KO
Solids, Total Dissolved (Calc)	190	mg/L		10	SM 1030E	11/23/2010 11:15:30 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum
Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 1/25/2011
Report ID S1012228001

ProjectName: Sheep
Lab ID: S1012228-001
ClientSample ID: CC down
COC: 128867

WorkOrder: S1012228
CollectionDate: 12/10/2010 10:50:00 AM
DateReceived: 12/15/2010 1:52:00 PM
FieldSampler: MW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Alkalinity, Bicarbonate as HCO3	178	mg/L		5	SM 2320B	12/16/2010 6:15:21 PM	KO
Calcium	45	mg/L		1	EPA 200.7	12/17/2010 10:19:38 AM	DG
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	12/16/2010 6:15:21 PM	KO
Magnesium	5	mg/L		1	EPA 200.7	12/17/2010 10:19:38 AM	DG
Potassium	2	mg/L		1	EPA 200.7	12/17/2010 10:19:38 AM	DG
Chloride	3	mg/L		1	EPA 300.0	12/16/2010 6:38:18 PM	KO
Sodium	27	mg/L		1	EPA 200.7	12/17/2010 10:19:38 AM	DG
Fluoride	0.2	mg/L		0.1	SM 4500FC	12/16/2010 6:15:21 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	12/22/2010 3:11:00 PM	AS
Sulfate	37	mg/L		1	EPA 300.0	12/16/2010 6:38:18 PM	KO
Alkalinity, Total (As CaCO3)	146	mg/L		5	SM 2320B	12/16/2010 6:15:21 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	12/20/2010 10:59:00 AM	AS
General Parameters							
pH	8.3	s.u.		0.1	SM 4500 H B	12/16/2010 6:15:21 PM	KO
Electrical Conductivity	337	µmhos/cm		5	SM 2510B	12/16/2010 6:15:21 PM	KO
Total Dissolved Solids (180)	200	mg/L		10	SM 2540	12/15/2010 5:10:00 PM	JF
Total Suspended Solids	10	mg/L		5	SM 2540	12/15/2010 5:35:00 PM	JF
Silica as SiO2	21.5	mg/L		0.1	EPA 200.7	12/17/2010 10:19:38 AM	DG
Turbidity	5.7	NTU	H	0.1	SM 2130	12/16/2010 7:57:00 AM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum
Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 1/25/2011
Report ID S1012228001

ProjectName: Sheep
Lab ID: S1012228-001
ClientSample ID: CC down
COC: 128867

WorkOrder: S1012228
CollectionDate: 12/10/2010 10:50:00 AM
DateReceived: 12/15/2010 1:52:00 PM
FieldSampler: MW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	12/17/2010 10:19:38 AM	DG
Arsenic	0.001	mg/L		0.001	EPA 200.8	12/15/2010 3:35:54 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	12/15/2010 3:35:54 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	12/17/2010 10:19:38 AM	DG
Boron	ND	mg/L		0.1	EPA 200.7	12/17/2010 10:19:38 AM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	12/15/2010 3:35:54 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	12/17/2010 10:19:38 AM	DG
Copper	ND	mg/L		0.01	EPA 200.8	12/15/2010 3:35:54 PM	MS
Iron	0.06	mg/L		0.05	EPA 200.7	12/17/2010 10:19:38 AM	DG
Lead	ND	mg/L		0.01	EPA 200.8	12/15/2010 3:35:54 PM	MS
Manganese	0.01	mg/L		0.01	EPA 200.7	12/17/2010 10:19:38 AM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	12/21/2010 10:03:49 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	12/15/2010 3:35:54 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	12/17/2010 10:19:38 AM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	12/15/2010 3:35:54 PM	MS
Uranium	0.0215	mg/L		0.0003	EPA 200.8	12/15/2010 3:35:54 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	12/15/2010 3:35:54 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	12/17/2010 10:19:38 AM	DG
Total Metals							
Iron	0.31	mg/L		0.05	EPA 200.7	12/20/2010 3:46:16 PM	DG
Manganese	0.03	mg/L		0.01	EPA 200.7	12/20/2010 3:46:16 PM	DG
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	12/27/2010 12:07:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	12/27/2010 12:07:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	12/23/2010 4:49:00 PM	JY
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	12/23/2010 4:49:00 PM	JY
Radium 228	ND	pCi/L		1	Ra-05	12/27/2010 6:34:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	12/27/2010 6:34:00 PM	SH
Radium 226	0.8	pCi/L		0.2	SM 7500-Ra B	12/22/2010 12:29:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	12/22/2010 12:29:00 PM	SH
Thorium 230	ND	pCi/L		0.2	ACW10	12/23/2010 7:31:00 AM	WL
Thorium 230 Precision (±)	ND	pCi/L		0.2	ACW10	12/23/2010 7:31:00 AM	WL

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 1/25/2011
Report ID S1012228001

ProjectName: Sheep
Lab ID: S1012228-001
ClientSample ID: CC down
COC: 128867

WorkOrder: S1012228
CollectionDate: 12/10/2010 10:50:00 AM
DateReceived: 12/15/2010 1:52:00 PM
FieldSampler: MW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	2.2	pCi/L		1	OTW01	12/27/2010 12:07:00 PM	SH
Lead 210 Precision (±)	0.4	pCi/L		1	OTW01	12/27/2010 12:07:00 PM	SH
Polonium 210	2.3	pCi/L		1	OTW01	12/23/2010 4:49:00 PM	JY
Polonium 210 Precision (±)	0.8	pCi/L		1	OTW01	12/23/2010 4:49:00 PM	JY
Radium 226	0.3	pCi/L		0.2	SM 7500-Ra B	12/22/2010 2:27:21 PM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	12/22/2010 2:27:21 PM	SH
Thorium 230	ND	pCi/L		0.2	ACW10	12/23/2010 11:35:00 AM	WL
Thorium 230 Precision (±)	ND	pCi/L		0.2	ACW10	12/23/2010 11:35:00 AM	WL
Uranium Suspended	0.0003	mg/L		0.0003	EPA 200.8	12/21/2010 9:17:43 AM	MS
Radionuclides - Total							
Gross Alpha	14.7	pCi/L		2	SM 7110B	12/22/2010 9:40:00 PM	SH
Gross Alpha Precision (±)	1.8	pCi/L		2	SM 7110B	12/22/2010 9:40:00 PM	SH
Gross Beta	5.0	pCi/L		3	SM 7110B	12/22/2010 9:40:00 PM	SH
Gross Beta Precision (±)	1.0	pCi/L		3	SM 7110B	12/22/2010 9:40:00 PM	SH
Data Quality							
Cation Sum	3.86	meq/L		0.00	SM 1030E	12/21/2010 9:15:09 AM	KO
Anion Sum	3.78	meq/L		0.00	SM 1030E	12/21/2010 9:15:09 AM	KO
Cation-Anion Balance	0.96	%		0.00	SM 1030E	12/21/2010 9:15:09 AM	KO
Solids, Total Dissolved (Calc)	210	mg/L		10	SM 1030E	12/21/2010 9:15:09 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Jim Yocum
Jim Yocum, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 7/14/2010
Report ID: S1005410001

ProjectName: Sheep Mtn.
Lab ID: S1005410-003
ClientSample ID: Creek Upstream
COC: 128849

WorkOrder: S1005410
CollectionDate: 5/25/2010 1:15:00 PM
DateReceived: 5/27/2010 1:30:00 PM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	38	mg/L		1	EPA 200.7	5/28/2010 12:21:07 PM	RS
Alkalinity, Bicarbonate as HCO3	167	mg/L		5	SM 2320B	5/28/2010 5:55:44 PM	KO
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	5/28/2010 5:55:44 PM	KO
Magnesium	4	mg/L		1	EPA 200.7	5/28/2010 12:21:07 PM	RS
Potassium	2	mg/L		1	EPA 200.7	5/28/2010 12:21:07 PM	RS
Chloride	2	mg/L		1	EPA 300.0	6/1/2010 11:12:00 AM	KO
Sodium	22	mg/L		1	EPA 200.7	5/28/2010 12:21:07 PM	RS
Fluoride	0.2	mg/L		0.1	SM 4500FC	5/28/2010 5:55:44 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	6/10/2010 2:14:00 PM	AS
Sulfate	21	mg/L		1	EPA 300.0	6/1/2010 11:12:00 AM	KO
Alkalinity, Total (As CaCO3)	140	mg/L		5	SM 2320B	5/28/2010 5:55:44 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	6/10/2010 2:25:00 PM	AS
General Parameters							
pH	8.4	s.u.		0.1	SM 4500 H B	5/28/2010 5:55:44 PM	KO
Electrical Conductivity	318	µmhos/cm		5	SM 2510B	5/28/2010 5:55:44 PM	KO
Total Dissolved Solids (180)	220	mg/L		10	SM 2540	5/28/2010 4:00:00 PM	MJH
Total Suspended Solids	6	mg/L		5	SM 2540	6/1/2010 10:20:00 AM	MJH
Silica as SiO2	20	mg/L		1	EPA 200.7	5/28/2010 12:21:07 PM	RS
Turbidity	2.7	NTU	H	0.1	SM 2130	5/28/2010 3:31:00 PM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 7/14/2010
Report ID: S1005410001

ProjectName: Sheep Mtn.
Lab ID: S1005410-003
ClientSample ID: Creek Upstream
COC: 128849

WorkOrder: S1005410
CollectionDate: 5/25/2010 1:15:00 PM
DateReceived: 5/27/2010 1:30:00 PM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	5/28/2010 12:21:07 PM	RS
Arsenic	ND	mg/L		0.001	EPA 200.8	5/28/2010 12:15:56 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	5/28/2010 12:15:56 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	5/28/2010 12:21:07 PM	RS
Boron	ND	mg/L		0.1	EPA 200.7	5/28/2010 12:21:07 PM	RS
Cadmium	ND	mg/L		0.001	EPA 200.8	5/28/2010 12:15:56 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	5/28/2010 12:21:07 PM	RS
Copper	ND	mg/L		0.01	EPA 200.8	5/28/2010 12:15:56 PM	MS
Iron	0.08	mg/L		0.05	EPA 200.7	5/28/2010 12:21:07 PM	RS
Lead	ND	mg/L		0.01	EPA 200.8	5/28/2010 12:15:56 PM	MS
Manganese	0.01	mg/L		0.01	EPA 200.7	5/28/2010 12:21:07 PM	RS
Mercury	ND	mg/L		0.001	EPA 245.1	6/2/2010 10:15:02 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	5/28/2010 12:15:56 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	5/28/2010 12:21:07 PM	RS
Selenium	ND	mg/L		0.001	EPA 200.8	5/28/2010 12:15:56 PM	MS
Uranium	0.0165	mg/L		0.0003	EPA 200.8	5/28/2010 12:15:56 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	5/28/2010 12:15:56 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	5/28/2010 12:21:07 PM	RS
Total Metals							
Iron	0.31	mg/L		0.05	EPA 200.7	6/1/2010 3:27:05 PM	RS
Manganese	0.04	mg/L		0.01	EPA 200.7	6/1/2010 3:27:05 PM	RS
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	6/29/2010 2:43:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	6/29/2010 2:43:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	7/1/2010 5:14:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	7/1/2010 5:14:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	6/29/2010 3:05:00 AM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	6/29/2010 3:05:00 AM	SH
Radium 226	0.77	pCi/L		0.2	SM 7500-Ra B	6/28/2010 1:43:00 PM	SH
Radium 226 Precision (±)	0.13	pCi/L		0.2	SM 7500-Ra B	6/28/2010 1:43:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	6/26/2010	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	6/26/2010	WN

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 7/14/2010
Report ID: S1005410001

ProjectName: Sheep Mtn.
Lab ID: S1005410-003
ClientSample ID: Creek Upstream
COC: 128849

WorkOrder: S1005410
CollectionDate: 5/25/2010 1:15:00 PM
DateReceived: 5/27/2010 1:30:00 PM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	6/30/2010	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	6/30/2010	SH
Polonium 210	ND	pCi/L		1	OTW01	6/23/2010 6:47:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	6/23/2010 6:47:00 PM	SH
Radium 226	0.31	pCi/L		0.2	SM 7500-Ra B	7/2/2010 1:01:00 PM	SH
Radium 226 Precision (±)	0.07	pCi/L		0.2	SM 7500-Ra B	7/2/2010 1:01:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	6/26/2010	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	6/26/2010	WN
Uranium Suspended	0.118	mg/L		0.0003	EPA 200.8	6/2/2010 1:14:06 PM	MS
Radionuclides - Total							
Gross Alpha	12.3	pCi/L		2	SM 7110B	6/29/2010 7:14:00 PM	SH
Gross Alpha Precision (±)	3.1	pCi/L		2	SM 7110B	6/29/2010 7:14:00 PM	SH
Gross Beta	8.3	pCi/L		3	SM 7110B	6/29/2010 7:14:00 PM	SH
Gross Beta Precision (±)	2.3	pCi/L		3	SM 7110B	6/29/2010 7:14:00 PM	SH
Data Quality							
Cation Sum	3.25	meq/L		0.01	SM 1030E	6/3/2010 10:33:47 AM	KO
Anion Sum	3.31	meq/L		0.01	SM 1030E	6/3/2010 10:33:47 AM	KO
Cation-Anion Balance	0.85	%		0.01	SM 1030E	6/3/2010 10:33:47 AM	KO
Solids, Total Dissolved (Calc)	170	mg/L		10	SM 1030E	6/3/2010 10:33:47 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Laboratories, Inc
555 Absaraka Street, Sheridan, Wyoming 82801
(307) 674-7506

Sample Analysis Report

CLIENT: Titan Uranium USA
1225 Market St.
Riverton, WY 82609

Date Reported: 6/9/2010
Report ID: O1005053001

Project: Sheep Mtn.
Lab ID: O1005053-003
Client Sample ID: Creek Upstream
Matrix: Water

Work Order: O1005053
Collection Date: 5/25/2010 1:15:00 PM
Date Received: 5/27/2010 1:30:00 PM
COC: 128849

Analyses	Result	RL	Limits	Qual	Units	Date Analyzed/Init	
8015C Diesel Range Organics-Water						**Prep Date: 5/28/2010**	
Diesel Range Organics (nC10-nC32)	ND	0.50			mg/L	06/01/2010	UB
Surr: o-Terphenyl	89.5		37-132		%REC	06/01/2010	UB

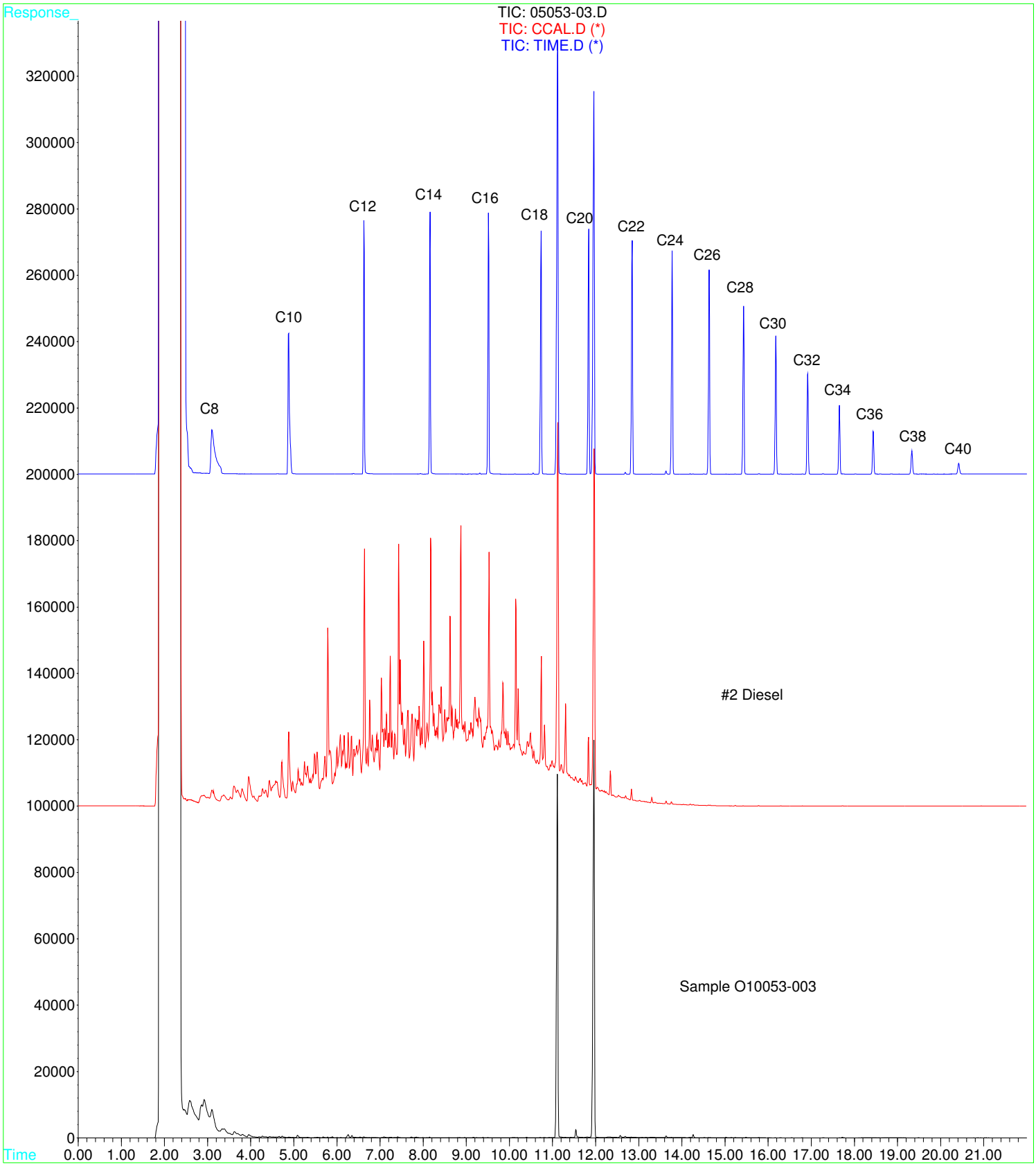
These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
D	Diluted out of recovery limit	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Effect
ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits

Reviewed by: Ed Scruton
Ed Scruton, Analytical Chemist

```
File        : U:\INST\DRO1\2010\JUN10\JUN01\05053-03.D
Operator    : UB\ECS
Acquired    : 01 Jun 2010  13:00     using AcqMethod DROF.MTH
Instrument  :   DRO1
Sample Name: O1005053-003A
Misc Info   : water;500ml/0.5ml; 5ul HQ4-76-2e;
Vial Number: 7
```



Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 7/14/2010
Report ID: S1005410001

ProjectName: Sheep Mtn.
Lab ID: S1005410-004
ClientSample ID: Creek Downst.
COC: 128849

WorkOrder: S1005410
CollectionDate: 5/25/2010 1:45:00 PM
DateReceived: 5/27/2010 1:30:00 PM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	42	mg/L		1	EPA 200.7	5/28/2010 12:26:14 PM	RS
Alkalinity, Bicarbonate as HCO3	174	mg/L		5	SM 2320B	5/28/2010 6:06:00 PM	KO
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	5/28/2010 6:06:00 PM	KO
Magnesium	5	mg/L		1	EPA 200.7	5/28/2010 12:26:14 PM	RS
Potassium	2	mg/L		1	EPA 200.7	5/28/2010 12:26:14 PM	RS
Chloride	3	mg/L		1	EPA 300.0	6/1/2010 11:25:00 AM	KO
Sodium	25	mg/L		1	EPA 200.7	5/28/2010 12:26:14 PM	RS
Fluoride	0.2	mg/L		0.1	SM 4500FC	5/28/2010 6:06:00 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	6/10/2010 2:15:00 PM	AS
Sulfate	26	mg/L		1	EPA 300.0	6/1/2010 11:25:00 AM	KO
Alkalinity, Total (As CaCO3)	146	mg/L		5	SM 2320B	5/28/2010 6:06:00 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	6/10/2010 2:26:00 PM	AS
General Parameters							
pH	8.4	s.u.		0.1	SM 4500 H B	5/28/2010 6:06:00 PM	KO
Electrical Conductivity	338	µmhos/cm		5	SM 2510B	5/28/2010 6:06:00 PM	KO
Total Dissolved Solids (180)	240	mg/L		10	SM 2540	5/28/2010 4:05:00 PM	MJH
Total Suspended Solids	22	mg/L		5	SM 2540	6/1/2010 10:25:00 AM	MJH
Silica as SiO2	21	mg/L		1	EPA 200.7	5/28/2010 12:26:14 PM	RS
Turbidity	5.1	NTU	H	0.1	SM 2130	5/28/2010 3:33:00 PM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 7/14/2010
Report ID: S1005410001

ProjectName: Sheep Mtn.
Lab ID: S1005410-004
ClientSample ID: Creek Downst.
COC: 128849

WorkOrder: S1005410
CollectionDate: 5/25/2010 1:45:00 PM
DateReceived: 5/27/2010 1:30:00 PM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	5/28/2010 12:26:14 PM	RS
Arsenic	0.001	mg/L		0.001	EPA 200.8	5/28/2010 12:19:31 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	5/28/2010 12:19:31 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	5/28/2010 12:26:14 PM	RS
Boron	ND	mg/L		0.1	EPA 200.7	5/28/2010 12:26:14 PM	RS
Cadmium	ND	mg/L		0.001	EPA 200.8	5/28/2010 12:19:31 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	5/28/2010 12:26:14 PM	RS
Copper	ND	mg/L		0.01	EPA 200.8	5/28/2010 12:19:31 PM	MS
Iron	0.05	mg/L		0.05	EPA 200.7	5/28/2010 12:26:14 PM	RS
Lead	ND	mg/L		0.01	EPA 200.8	5/28/2010 12:19:31 PM	MS
Manganese	ND	mg/L		0.01	EPA 200.7	5/28/2010 12:26:14 PM	RS
Mercury	ND	mg/L		0.001	EPA 245.1	6/2/2010 10:16:44 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	5/28/2010 12:19:31 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	5/28/2010 12:26:14 PM	RS
Selenium	ND	mg/L		0.001	EPA 200.8	5/28/2010 12:19:31 PM	MS
Uranium	0.0185	mg/L		0.0003	EPA 200.8	5/28/2010 12:19:31 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	5/28/2010 12:19:31 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	5/28/2010 12:26:14 PM	RS
Total Metals							
Iron	0.40	mg/L		0.05	EPA 200.7	6/1/2010 3:29:25 PM	RS
Manganese	0.03	mg/L		0.01	EPA 200.7	6/1/2010 3:29:25 PM	RS
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	6/29/2010 2:43:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	6/29/2010 2:43:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	7/1/2010 5:14:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	7/1/2010 5:14:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	6/29/2010 3:05:00 AM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	6/29/2010 3:05:00 AM	SH
Radium 226	0.82	pCi/L		0.2	SM 7500-Ra B	6/28/2010 1:43:00 PM	SH
Radium 226 Precision (±)	0.12	pCi/L		0.2	SM 7500-Ra B	6/28/2010 1:43:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	6/26/2010	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	6/26/2010	WN

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 7/14/2010
Report ID: S1005410001

ProjectName: Sheep Mtn.
Lab ID: S1005410-004
ClientSample ID: Creek Downst.
COC: 128849

WorkOrder: S1005410
CollectionDate: 5/25/2010 1:45:00 PM
DateReceived: 5/27/2010 1:30:00 PM
FieldSampler: CS
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	6/30/2010	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	6/30/2010	SH
Polonium 210	ND	pCi/L		1	OTW01	6/23/2010 6:47:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	6/23/2010 6:47:00 PM	SH
Radium 226	0.42	pCi/L		0.2	SM 7500-Ra B	7/2/2010 1:01:00 PM	SH
Radium 226 Precision (±)	0.08	pCi/L		0.2	SM 7500-Ra B	7/2/2010 1:01:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	6/26/2010	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	6/26/2010	WN
Uranium Suspended	0.287	mg/L		0.0003	EPA 200.8	6/2/2010 1:17:42 PM	MS
Radionuclides - Total							
Gross Alpha	12.3	pCi/L		2	SM 7110B	6/29/2010 7:14:00 PM	SH
Gross Alpha Precision (±)	3.1	pCi/L		2	SM 7110B	6/29/2010 7:14:00 PM	SH
Gross Beta	11.4	pCi/L		3	SM 7110B	6/29/2010 7:14:00 PM	SH
Gross Beta Precision (±)	2.5	pCi/L		3	SM 7110B	6/29/2010 7:14:00 PM	SH
Data Quality							
Cation Sum	3.61	meq/L		0.01	SM 1030E	6/3/2010 10:33:47 AM	KO
Anion Sum	3.55	meq/L		0.01	SM 1030E	6/3/2010 10:33:47 AM	KO
Cation-Anion Balance	0.88	%		0.01	SM 1030E	6/3/2010 10:33:47 AM	KO
Solids, Total Dissolved (Calc)	190	mg/L		10	SM 1030E	6/3/2010 10:33:47 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Laboratories, Inc
555 Absaraka Street, Sheridan, Wyoming 82801
(307) 674-7506

Sample Analysis Report

CLIENT: Titan Uranium USA
1225 Market St.
Riverton, WY 82609

Date Reported: 6/9/2010
Report ID: O1005053001

Project: Sheep Mtn.
Lab ID: O1005053-004
Client Sample ID: Creek Downstr
Matrix: Water

Work Order: O1005053
Collection Date: 5/25/2010 1:45:00 PM
Date Received: 5/27/2010 1:30:00 PM
COC: 128849

Analyses	Result	RL	Limits	Qual	Units	Date Analyzed/Init	
8015C Diesel Range Organics-Water						**Prep Date: 5/28/2010**	
Diesel Range Organics (nC10-nC32)	0.50	0.50			mg/L	06/01/2010	UB
Surr: o-Terphenyl	89.0		37-132		%REC	06/01/2010	UB

These results apply only to the samples tested. **RL - Reporting Limit**

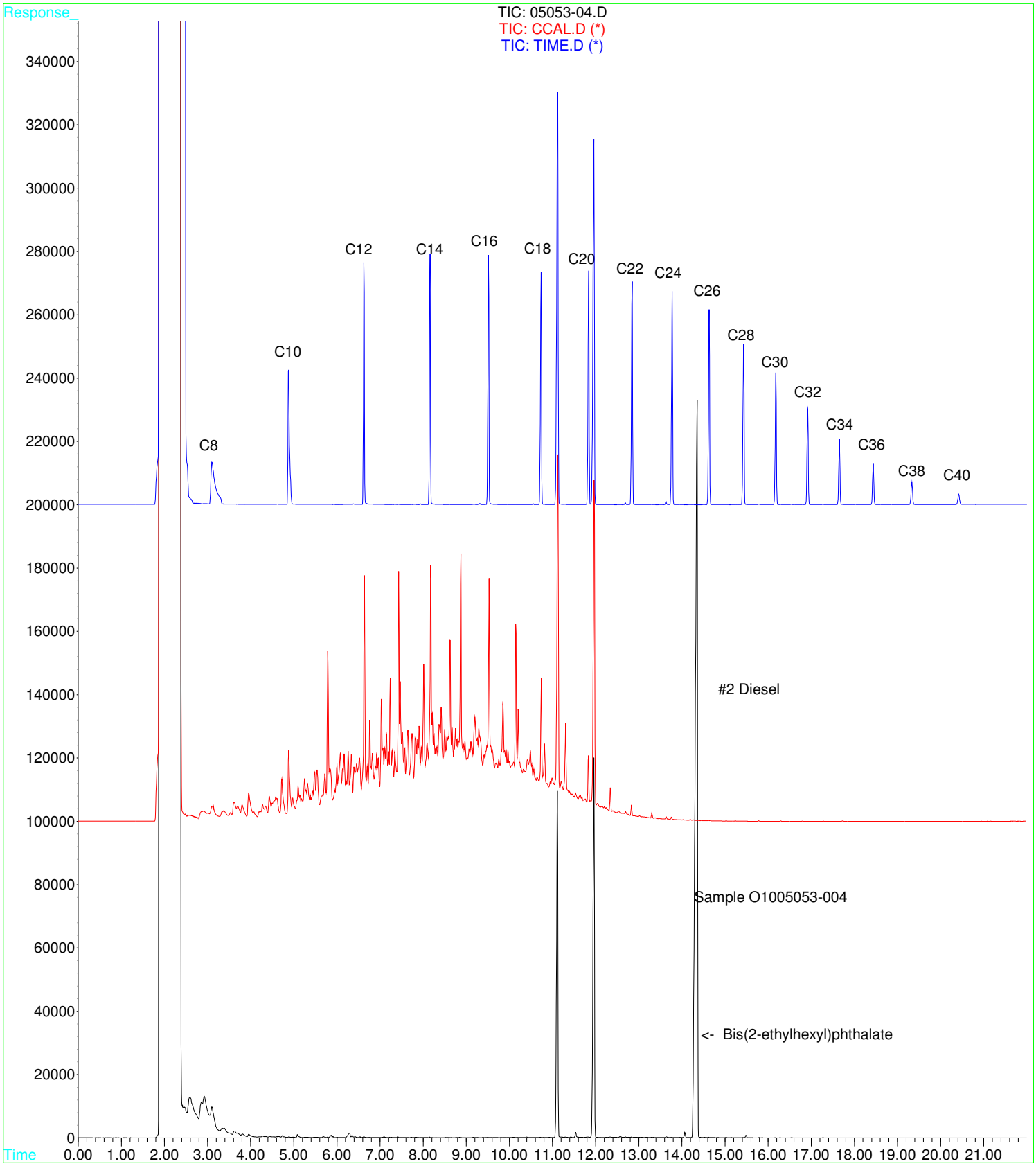
Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
D	Diluted out of recovery limit	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Effect
ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits

Reviewed by: Ed Scruton

Ed Scruton, Analytical Chemist

```
File        : U:\INST\DRO1\2010\JUN10\JUN01\05053-04.D
Operator    : UB\ECS
Acquired    : 01 Jun 2010  14:06     using AcqMethod DROF.MTH
Instrument  :   DRO1
Sample Name: O1005053-004A
Misc Info   : water;500ml/0.5ml; 5ul HQ4-76-2e;
Vial Number: 9
```



Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 8/10/2010
Report ID: S1006553001

ProjectName: Sheep
Lab ID: S1006553-001
ClientSample ID: Creek Down
COC: 128864

WorkOrder: S1006553
CollectionDate: 6/29/2010 1:25:00 PM
DateReceived: 6/30/2010 3:00:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Alkalinity, Bicarbonate as HCO3	194	mg/L		5	SM 2320B	7/1/2010 3:47:31 PM	KO
Calcium	49	mg/L		1	EPA 200.7	7/1/2010 2:54:40 PM	DG
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	7/1/2010 3:47:31 PM	KO
Magnesium	6	mg/L		1	EPA 200.7	7/1/2010 2:54:40 PM	DG
Potassium	2	mg/L		1	EPA 200.7	7/1/2010 2:54:40 PM	DG
Chloride	3	mg/L		1	EPA 300.0	7/1/2010 7:22:17 PM	KO
Sodium	28	mg/L		1	EPA 200.7	7/1/2010 2:54:40 PM	DG
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	7/13/2010 12:23:00 PM	AS
Fluoride	0.2	mg/L		0.1	SM 4500FC	7/1/2010 3:47:31 PM	KO
Sulfate	35	mg/L		1	EPA 300.0	7/1/2010 7:22:17 PM	KO
Alkalinity, Total (As CaCO3)	161	mg/L		5	SM 2320B	7/1/2010 3:47:31 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	7/12/2010 4:40:00 PM	AS
General Parameters							
pH	8.3	s.u.		0.1	SM 4500 H B	7/1/2010 3:47:31 PM	KO
Electrical Conductivity	375	µmhos/cm		5	SM 2510B	7/1/2010 3:47:31 PM	KO
Total Dissolved Solids (180)	270	mg/L		10	SM 2540	7/28/2010 8:10:00 AM	MJH
Total Suspended Solids	6	mg/L		5	SM 2540	7/1/2010 12:30:00 PM	MJH
Silica as SiO2	22.1	mg/L		0.1	EPA 200.7	7/1/2010 2:54:40 PM	DG
Turbidity	2.2	NTU		0.1	SM 2130	6/30/2010 4:11:00 PM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 8/10/2010
Report ID: S1006553001

ProjectName: Sheep
Lab ID: S1006553-001
ClientSample ID: Creek Down
COC: 128864

WorkOrder: S1006553
CollectionDate: 6/29/2010 1:25:00 PM
DateReceived: 6/30/2010 3:00:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	7/1/2010 2:54:40 PM	DG
Arsenic	0.002	mg/L		0.001	EPA 200.8	6/30/2010 4:03:27 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	6/30/2010 4:03:27 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	7/1/2010 2:54:40 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	7/1/2010 2:54:40 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	6/30/2010 4:03:27 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	7/1/2010 2:54:40 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	6/30/2010 4:03:27 PM	MS
Iron	ND	mg/L		0.05	EPA 200.7	7/1/2010 2:54:40 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	6/30/2010 4:03:27 PM	MS
Manganese	0.01	mg/L		0.01	EPA 200.7	7/1/2010 2:54:40 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	7/7/2010 11:14:46 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	6/30/2010 4:03:27 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	7/1/2010 2:54:40 PM	DG
Selenium	0.002	mg/L		0.001	EPA 200.8	6/30/2010 4:03:27 PM	MS
Uranium	0.0197	mg/L		0.0003	EPA 200.8	6/30/2010 4:03:27 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	6/30/2010 4:03:27 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	7/1/2010 2:54:40 PM	DG
Total Metals							
Iron	0.20	mg/L		0.05	EPA 200.7	7/7/2010 1:11:13 PM	RS
Manganese	0.03	mg/L		0.01	EPA 200.7	7/7/2010 1:11:13 PM	RS
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	8/2/2010 8:30:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	8/2/2010 8:30:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	7/30/2010 3:43:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	7/30/2010 3:43:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	8/4/2010 3:02:00 AM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	8/4/2010 3:02:00 AM	SH
Radium 226	1.13	pCi/L		0.2	SM 7500-Ra B	7/28/2010 1:38:00 PM	SH
Radium 226 Precision (±)	0.21	pCi/L		0.2	SM 7500-Ra B	7/28/2010 1:38:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	7/26/2010	LJK
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	7/26/2010	LJK

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 8/10/2010
Report ID: S1006553001

ProjectName: Sheep
Lab ID: S1006553-001
ClientSample ID: Creek Down
COC: 128864

WorkOrder: S1006553
CollectionDate: 6/29/2010 1:25:00 PM
DateReceived: 6/30/2010 3:00:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	8/6/2010 12:33:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	8/6/2010 12:33:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	8/5/2010 3:57:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	8/5/2010 3:57:00 PM	SH
Radium 226	ND	pCi/L		0.2	SM 7500-Ra B	7/29/2010 6:37:00 PM	SH
Radium 226 Precision (±)	ND	pCi/L		0.2	SM 7500-Ra B	7/29/2010 6:37:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	7/26/2010	LJK
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	7/26/2010	LJK
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	7/6/2010 10:01:41 AM	MS
Radionuclides - Total							
Gross Alpha	18.2	pCi/L		2	SM 7110B	7/16/2010 5:04:00 PM	SH
Gross Alpha Precision (±)	2.2	pCi/L		2	SM 7110B	7/16/2010 5:04:00 PM	SH
Gross Beta	6.8	pCi/L		3	SM 7110B	7/16/2010 5:04:00 PM	SH
Gross Beta Precision (±)	1.3	pCi/L		3	SM 7110B	7/16/2010 5:04:00 PM	SH
Data Quality							
Cation Sum	4.19	meq/L		0.00	SM 1030E	7/7/2010 8:58:35 AM	KO
Anion Sum	4.04	meq/L		0.00	SM 1030E	7/7/2010 8:58:35 AM	KO
Cation-Anion Balance	1.78	%		0.00	SM 1030E	7/7/2010 8:58:35 AM	KO
Solids, Total Dissolved (Calc)	220	mg/L		10	SM 1030E	7/7/2010 8:58:35 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Laboratories, Inc
555 Absaraka Street, Sheridan, Wyoming 82801
(307) 674-7506

Sample Analysis Report

CLIENT: Titan Uranium USA
1225 Market St.
Riverton, WY 82609

Date Reported: 7/13/2010
Report ID: O1007001001

Project: Sheep
Lab ID: O1007001-001
Client Sample ID: Creek Down
Matrix: Water

Work Order: O1007001
Collection Date: 6/29/2010 1:25:00 PM
Date Received: 6/30/2010 3:00:00 PM
COC: 128864

Analyses	Result	RL	Limits	Qual	Units	Date Analyzed/Init	
8015C Diesel Range Organics-Water						**Prep Date: 7/6/2010**	
Diesel Range Organics (nC10-nC32)	ND	0.50			mg/L	07/06/2010	UB
Surr: o-Terphenyl	77.9		37-132		%REC	07/06/2010	UB

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
D	Diluted out of recovery limit	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Matrix Effect
ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits

Reviewed by: Ed Scruton

Ed Scruton, Analytical Chemist

```
File        : U:\INST\DRO1\2010\JUL10\JUL06\07001-01.D
Operator    : UB\ECS
Acquired    : 06 Jul 2010  15:10     using AcqMethod DROF.MTH
Instrument  :   DRO1
Sample Name: O1007001-001A
Misc Info   : water, 500ml/0.5ml; 5uL HQ4-95-5n;
Vial Number: 4
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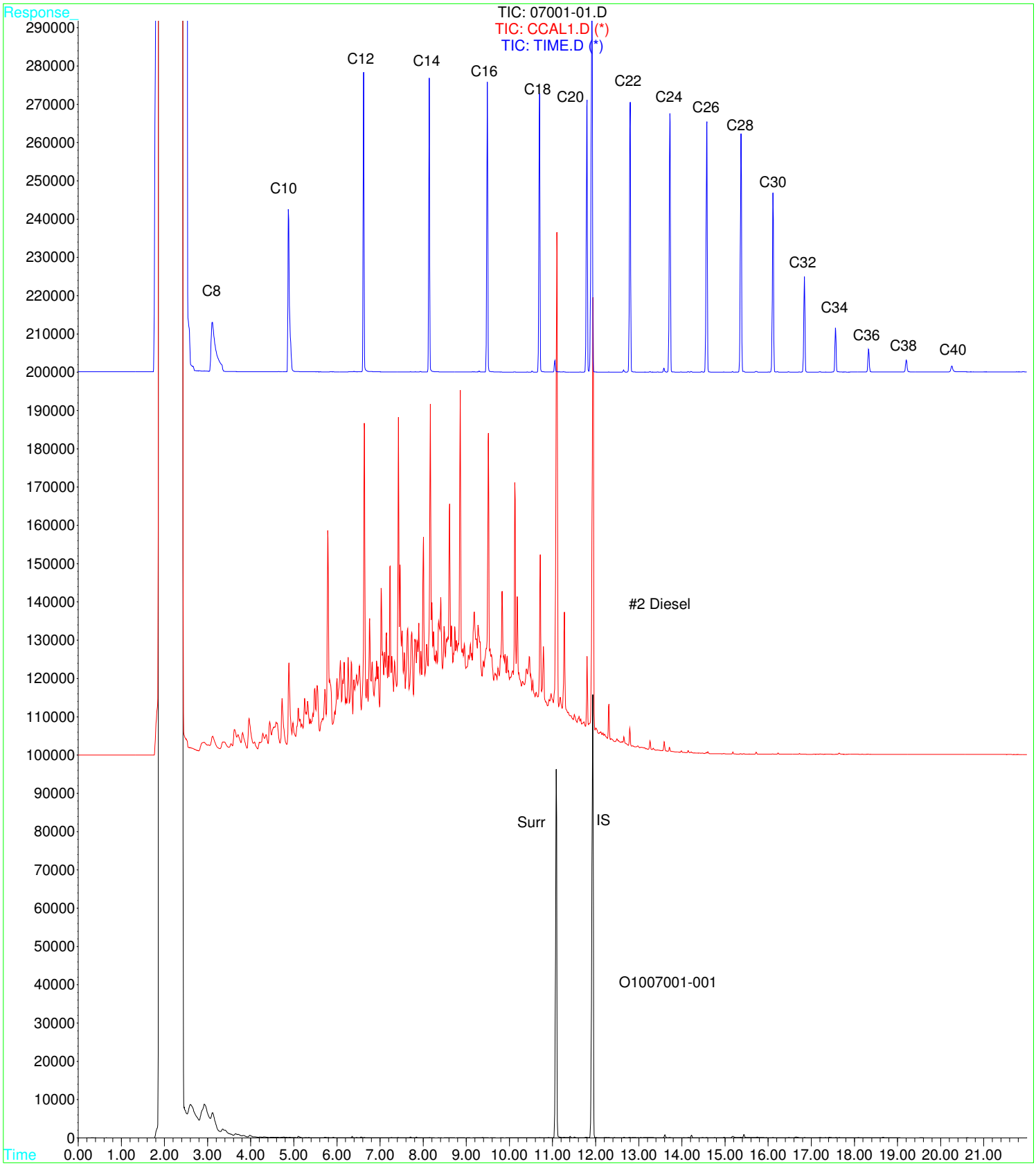

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 9/14/2010
Report ID: S1007385001

ProjectName: Sheep
Lab ID: S1007385-001
ClientSample ID: Creek Up
COC: 135343

WorkOrder: S1007385
CollectionDate: 7/22/2010 10:45:00 AM
DateReceived: 7/27/2010 3:33:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Alkalinity, Bicarbonate as HCO3	181	mg/L		5	SM 2320B	7/28/2010 3:48:13 PM	KO
Calcium	46	mg/L		1	EPA 200.7	7/28/2010 9:51:38 PM	DG
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	7/28/2010 3:48:13 PM	KO
Magnesium	5	mg/L		1	EPA 200.7	7/28/2010 9:51:38 PM	DG
Potassium	2	mg/L		1	EPA 200.7	7/28/2010 9:51:38 PM	DG
Chloride	2	mg/L		1	EPA 300.0	7/28/2010 5:27:48 PM	KO
Sodium	18	mg/L		1	EPA 200.7	7/28/2010 9:51:38 PM	DG
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	8/3/2010 12:07:00 PM	AS
Fluoride	0.2	mg/L		0.1	SM 4500FC	7/28/2010 3:48:13 PM	KO
Sulfate	27	mg/L		1	EPA 300.0	7/28/2010 5:27:48 PM	KO
Alkalinity, Total (As CaCO3)	148	mg/L		5	SM 2320B	7/28/2010 3:48:13 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	8/4/2010 12:01:00 PM	AS
General Parameters							
pH	8.2	s.u.		0.1	SM 4500 H B	7/28/2010 3:48:13 PM	KO
Electrical Conductivity	325	µmhos/cm		5	SM 2510B	7/28/2010 3:48:13 PM	KO
Total Dissolved Solids (180)	240	mg/L		10	SM 2540	7/28/2010 10:10:00 AM	MJH
Total Suspended Solids	ND	mg/L		5	SM 2540	7/29/2010 10:15:00 AM	MJH
Silica as SiO2	22.5	mg/L		0.1	EPA 200.7	7/28/2010 9:51:38 PM	DG
Turbidity	2.1	NTU	H	0.1	SM 2130	7/28/2010 4:42:00 PM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 9/14/2010
Report ID: S1007385001

ProjectName: Sheep
Lab ID: S1007385-001
ClientSample ID: Creek Up
COC: 135343

WorkOrder: S1007385
CollectionDate: 7/22/2010 10:45:00 AM
DateReceived: 7/27/2010 3:33:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	7/28/2010 9:51:38 PM	DG
Arsenic	0.002	mg/L		0.001	EPA 200.8	7/28/2010 5:27:45 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	7/28/2010 5:27:45 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	7/28/2010 9:51:38 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	7/28/2010 9:51:38 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	7/28/2010 5:27:45 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	7/28/2010 9:51:38 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	7/28/2010 5:27:45 PM	MS
Iron	0.11	mg/L		0.05	EPA 200.7	7/28/2010 9:51:38 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	7/28/2010 5:27:45 PM	MS
Manganese	ND	mg/L		0.01	EPA 200.7	7/28/2010 9:51:38 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	7/30/2010 7:28:56 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	7/28/2010 5:27:45 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	7/28/2010 9:51:38 PM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	7/28/2010 5:27:45 PM	MS
Uranium	0.0137	mg/L		0.0003	EPA 200.8	7/28/2010 5:27:45 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	7/28/2010 5:27:45 PM	MS
Zinc	0.01	mg/L		0.01	EPA 200.7	7/28/2010 9:51:38 PM	DG
Total Metals							
Iron	0.37	mg/L		0.05	EPA 200.7	7/28/2010 11:21:10 PM	DG
Manganese	0.03	mg/L		0.01	EPA 200.7	7/28/2010 11:21:10 PM	DG
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	8/20/2010 11:12:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	8/20/2010 11:12:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	8/24/2010 5:45:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	8/24/2010 5:45:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	9/9/2010 10:57:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	9/9/2010 10:57:00 PM	SH
Radium 226	1.0	pCi/L		0.2	SM 7500-Ra B	8/29/2010 10:59:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	8/29/2010 10:59:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	8/12/2010	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	8/12/2010	WN

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 9/14/2010
Report ID: S1007385001

ProjectName: Sheep
Lab ID: S1007385-001
ClientSample ID: Creek Up
COC: 135343

WorkOrder: S1007385
CollectionDate: 7/22/2010 10:45:00 AM
DateReceived: 7/27/2010 3:33:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	8/21/2010 9:49:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	8/21/2010 9:49:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	8/24/2010 3:49:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	8/24/2010 3:49:00 PM	SH
Radium 226	ND	pCi/L		0.2	SM 7500-Ra B	8/30/2010 11:27:00 PM	SH
Radium 226 Precision (±)	ND	pCi/L		0.2	SM 7500-Ra B	8/30/2010 11:27:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	8/12/2010	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	8/12/2010	WN
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	8/2/2010 6:56:06 PM	MS
Radionuclides - Total							
Gross Alpha	9.6	pCi/L		2	SM 7110B	9/2/2010 6:29:00 AM	SH
Gross Alpha Precision (±)	1.7	pCi/L		2	SM 7110B	9/2/2010 6:29:00 AM	SH
Gross Beta	4.7	pCi/L		3	SM 7110B	9/2/2010 6:29:00 AM	SH
Gross Beta Precision (±)	1.3	pCi/L		3	SM 7110B	9/2/2010 6:29:00 AM	SH
Data Quality							
Cation Sum	3.53	meq/L		0.01	SM 1030E	8/3/2010 7:54:49 AM	KO
Anion Sum	3.59	meq/L		0.01	SM 1030E	8/3/2010 7:54:49 AM	KO
Cation-Anion Balance	0.86	%		0.01	SM 1030E	8/3/2010 7:54:49 AM	KO
Solids, Total Dissolved (Calc)	190	mg/L		10	SM 1030E	8/3/2010 7:54:49 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 9/14/2010
Report ID: S1007385001

ProjectName: Sheep
Lab ID: S1007385-002
ClientSample ID: Creek Down
COC: 135343

WorkOrder: S1007385
CollectionDate: 7/22/2010 11:00:00 AM
DateReceived: 7/27/2010 3:33:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	46	mg/L		1	EPA 200.7	7/28/2010 9:54:08 PM	DG
Alkalinity, Bicarbonate as HCO3	185	mg/L		5	SM 2320B	7/28/2010 3:58:41 PM	KO
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	7/28/2010 3:58:41 PM	KO
Magnesium	5	mg/L		1	EPA 200.7	7/28/2010 9:54:08 PM	DG
Potassium	2	mg/L		1	EPA 200.7	7/28/2010 9:54:08 PM	DG
Chloride	3	mg/L		1	EPA 300.0	7/28/2010 5:38:28 PM	KO
Sodium	20	mg/L		1	EPA 200.7	7/28/2010 9:54:08 PM	DG
Fluoride	0.2	mg/L		0.1	SM 4500FC	7/28/2010 3:58:41 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	8/3/2010 12:14:00 PM	AS
Sulfate	29	mg/L		1	EPA 300.0	7/28/2010 5:38:28 PM	KO
Alkalinity, Total (As CaCO3)	152	mg/L		5	SM 2320B	7/28/2010 3:58:41 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	8/4/2010 12:08:00 PM	AS
General Parameters							
pH	8.3	s.u.		0.1	SM 4500 H B	7/28/2010 3:58:41 PM	KO
Electrical Conductivity	338	µmhos/cm		5	SM 2510B	7/28/2010 3:58:41 PM	KO
Total Dissolved Solids (180)	240	mg/L		10	SM 2540	7/28/2010 10:15:00 AM	MJH
Total Suspended Solids	41	mg/L		5	SM 2540	7/29/2010 10:20:00 AM	MJH
Silica as SiO2	22.2	mg/L		0.1	EPA 200.7	7/28/2010 9:54:08 PM	DG
Turbidity	17.3	NTU	H	0.1	SM 2130	7/28/2010 4:44:00 PM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 9/14/2010
Report ID: S1007385001

ProjectName: Sheep
Lab ID: S1007385-002
ClientSample ID: Creek Down
COC: 135343

WorkOrder: S1007385
CollectionDate: 7/22/2010 11:00:00 AM
DateReceived: 7/27/2010 3:33:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	7/28/2010 9:54:08 PM	DG
Arsenic	0.002	mg/L		0.001	EPA 200.8	7/28/2010 5:31:19 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	7/28/2010 5:31:19 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	7/28/2010 9:54:08 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	7/28/2010 9:54:08 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	7/28/2010 5:31:19 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	7/28/2010 9:54:08 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	7/28/2010 5:31:19 PM	MS
Iron	0.07	mg/L		0.05	EPA 200.7	7/28/2010 9:54:08 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	7/28/2010 5:31:19 PM	MS
Manganese	ND	mg/L		0.01	EPA 200.7	7/28/2010 9:54:08 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	7/30/2010 7:30:43 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	7/28/2010 5:31:19 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	7/28/2010 9:54:08 PM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	7/28/2010 5:31:19 PM	MS
Uranium	0.0172	mg/L		0.0003	EPA 200.8	7/28/2010 5:31:19 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	7/28/2010 5:31:19 PM	MS
Zinc	0.02	mg/L		0.01	EPA 200.7	7/28/2010 9:54:08 PM	DG
Total Metals							
Iron	0.74	mg/L		0.05	EPA 200.7	7/28/2010 11:23:40 PM	DG
Manganese	0.05	mg/L		0.01	EPA 200.7	7/28/2010 11:23:40 PM	DG
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	8/20/2010 11:12:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	8/20/2010 11:12:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	8/24/2010 5:45:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	8/24/2010 5:45:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	9/9/2010 10:57:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	9/9/2010 10:57:00 PM	SH
Radium 226	0.9	pCi/L		0.2	SM 7500-Ra B	8/29/2010 10:59:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	8/29/2010 10:59:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	8/12/2010	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	8/12/2010	WN

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 9/14/2010
Report ID: S1007385001

ProjectName: Sheep
Lab ID: S1007385-002
ClientSample ID: Creek Down
COC: 135343

WorkOrder: S1007385
CollectionDate: 7/22/2010 11:00:00 AM
DateReceived: 7/27/2010 3:33:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	8/21/2010 9:49:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	8/21/2010 9:49:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	8/24/2010 3:49:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	8/24/2010 3:49:00 PM	SH
Radium 226	0.78	pCi/L		0.2	SM 7500-Ra B	8/30/2010 11:27:00 PM	SH
Radium 226 Precision (±)	0.11	pCi/L		0.2	SM 7500-Ra B	8/30/2010 11:27:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	8/12/2010	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	8/12/2010	WN
Uranium Suspended	0.0007	mg/L		0.0003	EPA 200.8	8/2/2010 6:58:26 PM	MS
Radionuclides - Total							
Gross Alpha	16.8	pCi/L		2	SM 7110B	9/2/2010 6:29:00 AM	SH
Gross Alpha Precision (±)	2.1	pCi/L		2	SM 7110B	9/2/2010 6:29:00 AM	SH
Gross Beta	9.7	pCi/L		3	SM 7110B	9/2/2010 6:29:00 AM	SH
Gross Beta Precision (±)	1.4	pCi/L		3	SM 7110B	9/2/2010 6:29:00 AM	SH
Data Quality							
Cation Sum	3.67	meq/L		0.01	SM 1030E	8/3/2010 7:54:49 AM	KO
Anion Sum	3.72	meq/L		0.01	SM 1030E	8/3/2010 7:54:49 AM	KO
Cation-Anion Balance	0.68	%		0.01	SM 1030E	8/3/2010 7:54:49 AM	KO
Solids, Total Dissolved (Calc)	200	mg/L		10	SM 1030E	8/3/2010 7:54:49 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Laboratories, Inc
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Sample Analysis Report

CLIENT: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported: 12/1/2010
Report ID: S1008362001

Work Order: S1008362
Collection Date: 8/18/2010 1:10:00 PM
Date Received: 8/20/2010 10:49:00 AM
Sampler: JW
Matrix: Water

Project: Sheep Mtn
Lab ID: S1008362-002
Client Sample ID: CC Down
COC: 128866

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
General Parameters						
pH	8.2	0.1		s.u.	08/23/2010 1528 KO	SM 4500 H B
Electrical Conductivity	372	5		µmhos/cm	08/23/2010 1528 KO	SM 2510B
Total Dissolved Solids (180)	270	10		mg/L	08/23/2010 925 AMB	SM 2540
Solids, Total Dissolved (Calc)	230	10		mg/L	11/23/2010 1633 LJK	SM 1030E
Total Suspended Solids	46	5		mg/L	08/23/2010 1405 AMB	SM 2540
Alkalinity, Total (As CaCO3)	158	5		mg/L	08/23/2010 1528 KO	SM 2320B
Nitrogen, Ammonia (As N)	ND	0.1		mg/L	08/31/2010 958 AS	EPA 350.1
Silica as SiO2	21.0	0.1		mg/L	08/21/2010 1026 DG	EPA 200.7
Turbidity	16.5	0.1	H	NTU	08/20/2010 1736 WN	SM 2130
Anions						
Alkalinity, Bicarbonate as HCO3	193	5		mg/L	08/23/2010 1528 KO	SM 2320B
Alkalinity, Carbonate as CO3	ND	5		mg/L	08/23/2010 1528 KO	SM 2320B
Chloride	4	1		mg/L	08/20/2010 1952 KO	EPA 300.0
Fluoride	0.2	0.1		mg/L	08/23/2010 1528 KO	SM 4500FC
Nitrogen, Nitrate-Nitrite (as N)	ND	0.1		mg/L	08/31/2010 1645 AS	EPA 353.2
Sulfate	46	1		mg/L	08/20/2010 1952 KO	EPA 300.0
Cations						
Calcium	49	1		mg/L	08/21/2010 1026 DG	EPA 200.7
Magnesium	6	1		mg/L	08/21/2010 1026 DG	EPA 200.7
Potassium	2	1		mg/L	08/21/2010 1026 DG	EPA 200.7
Sodium	27	1		mg/L	08/21/2010 1026 DG	EPA 200.7
Cation/Anion-Milliequivalents						
Bicarbonate as HCO3	3.16	0.01		meq/L	11/23/2010 1633 LJK	SM 1030E
Carbonate as CO3	ND	0.01		meq/L	11/23/2010 1633 LJK	SM 1030E
Chloride	0.09	0.01		meq/L	11/23/2010 1633 LJK	SM 1030E
Fluoride	ND	0.01		meq/L	11/23/2010 1633 LJK	SM 1030E
Nitrate + Nitrite as N	ND	0.01		meq/L	11/23/2010 1633 LJK	SM 1030E
Sulfate	0.95	0.01		meq/L	11/23/2010 1633 LJK	SM 1030E
Calcium	2.46	0.01		meq/L	11/23/2010 1633 LJK	SM 1030E
Magnesium	0.47	0.01		meq/L	11/23/2010 1633 LJK	SM 1030E
Potassium	0.04	0.01		meq/L	11/23/2010 1633 LJK	SM 1030E
Sodium	1.15	0.01		meq/L	11/23/2010 1633 LJK	SM 1030E

These results apply only to the samples tested.

Qualifiers:
- * Value exceeds Maximum Contaminant Level
- E Value above quantitation range
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL
- O Outside the Range of Dilutions

RL - Reporting Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- L Analyzed by a contract laboratory
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits

Reviewed by: Lacey Ketron
Lacey Ketron, Project Manager

Inter-Mountain Laboratories, Inc
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Sample Analysis Report

CLIENT: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported: 12/1/2010
Report ID: S1008362001

Work Order: S1008362
Collection Date: 8/18/2010 1:10:00 PM
Date Received: 8/20/2010 10:49:00 AM
Sampler: JW
Matrix: Water

Project: Sheep Mtn
Lab ID: S1008362-002
Client Sample ID: CC Down
COC: 128866

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Cation / Anion Balance						
Cation Sum	4.14	0		meq/L	11/23/2010 1633 LJK	SM 1030E
Anion Sum	4.23	0		meq/L	11/23/2010 1633 LJK	SM 1030E
Cation-Anion Balance	0.98	0		%	11/23/2010 1633 LJK	SM 1030E
Radiochemistry						
Gross Alpha	19.3 ± 1.6	2		pCi/L	09/29/2010 1956 SH	SM 7110B
Gross Beta	13.7 ± 1.2	3		pCi/L	09/29/2010 1956 SH	SM 7110B
Radium 226 (Dissolved)	1.3 ± 0.2	0.2		pCi/L	09/21/2010 1236 SH	SM 7500-Ra B
Radium 226 (Suspended)	0.9± 0.1	0.2		pCi/L	09/25/2010 1558 SH	SM 7500-Ra B
Radium 228 (Dissolved)	ND	1		pCi/L	09/26/2010 2138 SH	Ra-05
Lead 210 (Dissolved)	ND	1		pCi/L	09/17/2010 1605 SH	OTW01
Lead 210 (Suspended)	ND	1		pCi/L	09/22/2010 1651 SH	OTW01
Polonium 210 (Dissolved)	ND	1		pCi/L	09/17/2010 1605 SH	OTW01
Polonium 210 (Suspended)	ND	1		pCi/L	09/17/2010 1605 SH	OTW01
Thorium 230 (Dissolved)	0.59 ± 0.13	0.2	L	pCi/L	10/13/2010 906 WN	ACW10
Thorium 230 (Suspended)	ND	0.2	L	pCi/L	10/13/2010 906 WN	ACW10
Uranium Suspended	0.001	0.001		mg/L	09/08/2010 1136 MS	EPA 200.8
Dissolved Metals						
Aluminum	ND	0.1		mg/L	08/21/2010 1026 DG	EPA 200.7
Arsenic	0.002	0.001		mg/L	08/20/2010 2356 MS	EPA 200.8
Barium	ND	0.1		mg/L	08/20/2010 2356 MS	EPA 200.8
Beryllium	ND	0.001		mg/L	08/21/2010 1026 DG	EPA 200.7
Boron	0.2	0.1		mg/L	08/21/2010 1026 DG	EPA 200.7
Cadmium	ND	0.001		mg/L	08/20/2010 2356 MS	EPA 200.8
Chromium	ND	0.01		mg/L	08/21/2010 1026 DG	EPA 200.7
Copper	ND	0.01		mg/L	08/20/2010 2356 MS	EPA 200.8
Iron	0.09	0.05		mg/L	08/21/2010 1026 DG	EPA 200.7
Lead	ND	0.01		mg/L	08/20/2010 2356 MS	EPA 200.8
Manganese	ND	0.01		mg/L	08/21/2010 1026 DG	EPA 200.7
Mercury	ND	0.001		mg/L	08/24/2010 1108 BK	EPA 245.1
Molybdenum	ND	0.01		mg/L	08/20/2010 2356 MS	EPA 200.8
Nickel	ND	0.05		mg/L	08/21/2010 1026 DG	EPA 200.7
Selenium	ND	0.001		mg/L	08/20/2010 2356 MS	EPA 200.8
Uranium	0.0232	0.0003		mg/L	08/20/2010 2356 MS	EPA 200.8
Vanadium	ND	0.1		mg/L	08/20/2010 2356 MS	EPA 200.8
Zinc	ND	0.01		mg/L	08/21/2010 1026 DG	EPA 200.7

These results apply only to the samples tested.

Qualifiers:
- * Value exceeds Maximum Contaminant Level
- E Value above quantitation range
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL
- O Outside the Range of Dilutions

RL - Reporting Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- L Analyzed by a contract laboratory
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits

Reviewed by: Lacey Ketron
Lacey Ketron, Project Manager

Inter-Mountain Laboratories, Inc
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Sample Analysis Report

CLIENT: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported: 12/1/2010
Report ID: S1008362001

Work Order: S1008362
Collection Date: 8/18/2010 1:10:00 PM
Date Received: 8/20/2010 10:49:00 AM
Sampler: JW
Matrix: Water

Project: Sheep Mtn
Lab ID: S1008362-002
Client Sample ID: CC Down
COC: 128866

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Total Metals						
Iron	0.79	0.05		mg/L	08/23/2010 2306 DG	EPA 200.7
Manganese	0.05	0.01		mg/L	08/23/2010 2306 DG	EPA 200.7

These results apply only to the samples tested.

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions

RL - Reporting Limit

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by: Lacey Ketron
Lacey Ketron, Project Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/1/2010
Report ID: S1008362001

ProjectName: Sheep Mtn
Lab ID: S1008362-001
ClientSample ID: CC Up
COC: 128866

WorkOrder: S1008362
CollectionDate: 8/18/2010 11:00:00 AM
DateReceived: 8/20/2010 10:49:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	49	mg/L		1	EPA 200.7	11/1/2010 2:46:33 PM	DG
Alkalinity, Bicarbonate as HCO3	190	mg/L		5	SM 2320B	8/23/2010 3:18:40 PM	KO
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	8/23/2010 3:18:40 PM	KO
Magnesium	5	mg/L		1	EPA 200.7	11/1/2010 2:46:33 PM	DG
Potassium	2	mg/L		1	EPA 200.7	11/1/2010 2:46:33 PM	DG
Chloride	2	mg/L		1	EPA 300.0	8/20/2010 7:42:12 PM	KO
Sodium	24	mg/L		1	EPA 200.7	11/1/2010 2:46:33 PM	DG
Fluoride	0.2	mg/L		0.1	SM 4500FC	8/23/2010 3:18:40 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	8/31/2010 4:44:00 PM	AS
Sulfate	37	mg/L		1	EPA 300.0	8/20/2010 7:42:12 PM	KO
Alkalinity, Total (As CaCO3)	158	mg/L		5	SM 2320B	8/23/2010 3:18:40 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	8/31/2010 9:47:00 AM	AS
General Parameters							
pH	8.3	s.u.		0.1	SM 4500 H B	8/23/2010 3:18:40 PM	KO
Electrical Conductivity	352	µmhos/cm		5	SM 2510B	8/23/2010 3:18:40 PM	KO
Total Dissolved Solids (180)	260	mg/L		10	SM 2540	8/23/2010 9:20:00 AM	AMB
Total Suspended Solids	6	mg/L		5	SM 2540	8/23/2010 2:00:00 PM	AMB
Silica as SiO2	18.5	mg/L		0.1	EPA 200.7	8/21/2010 10:24:23 AM	DG
Turbidity	4.7	NTU	H	0.1	SM 2130	8/20/2010 5:34:00 PM	WN

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/1/2010
Report ID: S1008362001

ProjectName: Sheep Mtn
Lab ID: S1008362-001
ClientSample ID: CC Up
COC: 128866

WorkOrder: S1008362
CollectionDate: 8/18/2010 11:00:00 AM
DateReceived: 8/20/2010 10:49:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	8/21/2010 10:24:23 AM	DG
Arsenic	0.002	mg/L		0.001	EPA 200.8	8/20/2010 11:52:57 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	8/20/2010 11:52:57 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	8/21/2010 10:24:23 AM	DG
Boron	0.2	mg/L		0.1	EPA 200.7	8/21/2010 10:24:23 AM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	8/20/2010 11:52:57 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	8/21/2010 10:24:23 AM	DG
Copper	ND	mg/L		0.01	EPA 200.8	8/20/2010 11:52:57 PM	MS
Iron	ND	mg/L		0.05	EPA 200.7	11/30/2010 2:38:28 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	8/20/2010 11:52:57 PM	MS
Manganese	0.02	mg/L		0.01	EPA 200.7	8/21/2010 10:24:23 AM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	8/24/2010 11:06:22 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	8/20/2010 11:52:57 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	8/21/2010 10:24:23 AM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	8/20/2010 11:52:57 PM	MS
Uranium	0.0152	mg/L		0.0003	EPA 200.8	8/20/2010 11:52:57 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	8/20/2010 11:52:57 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	8/21/2010 10:24:23 AM	DG
Total Metals							
Iron	0.40	mg/L		0.05	EPA 200.7	8/23/2010 10:57:21 PM	DG
Manganese	0.05	mg/L		0.01	EPA 200.7	8/23/2010 10:57:21 PM	DG
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	9/26/2010 9:38:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	9/26/2010 9:38:00 PM	SH
Radium 226	1.3	pCi/L		0.2	SM 7500-Ra B	9/21/2010 12:36:00 PM	SH
Radium 226 Precision (±)	0.2	pCi/L		0.2	SM 7500-Ra B	9/21/2010 12:36:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/13/2010 9:06:00 AM	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/13/2010 9:06:00 AM	WN

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/1/2010
Report ID: S1008362001

ProjectName: Sheep Mtn
Lab ID: S1008362-001
ClientSample ID: CC Up
COC: 128866

WorkOrder: S1008362
CollectionDate: 8/18/2010 11:00:00 AM
DateReceived: 8/20/2010 10:49:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	9/22/2010 4:51:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	9/22/2010 4:51:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Radium 226	0.3	pCi/L		0.2	SM 7500-Ra B	9/25/2010 3:58:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	9/25/2010 3:58:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/13/2010 9:06:00 AM	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/13/2010 9:06:00 AM	WN
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	9/8/2010 11:29:36 AM	MS
Radionuclides - Total							
Gross Alpha	11.8	pCi/L		2	SM 7110B	9/29/2010 7:56:00 PM	SH
Gross Alpha Precision (±)	1.3	pCi/L		2	SM 7110B	9/29/2010 7:56:00 PM	SH
Gross Beta	6.4	pCi/L		3	SM 7110B	9/29/2010 7:56:00 PM	SH
Gross Beta Precision (±)	1.1	pCi/L		3	SM 7110B	9/29/2010 7:56:00 PM	SH
Data Quality							
Cation Sum	3.97	meq/L		0.00	SM 1030E	11/23/2010 4:33:40 PM	LJK
Anion Sum	4.01	meq/L		0.00	SM 1030E	11/23/2010 4:33:40 PM	LJK
Cation-Anion Balance	0.46	%		0.00	SM 1030E	11/23/2010 4:33:40 PM	LJK
Solids, Total Dissolved (Calc)	220	mg/L		10	SM 1030E	11/23/2010 4:33:40 PM	LJK

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/1/2010
Report ID: S1008362001

ProjectName: Sheep Mtn
Lab ID: S1008362-002
ClientSample ID: CC Down
COC: 128866

WorkOrder: S1008362
CollectionDate: 8/18/2010 1:10:00 PM
DateReceived: 8/20/2010 10:49:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Calcium	49	mg/L		1	EPA 200.7	8/21/2010 10:26:41 AM	DG
Alkalinity, Bicarbonate as HCO3	193	mg/L		5	SM 2320B	8/23/2010 3:28:59 PM	KO
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	8/23/2010 3:28:59 PM	KO
Magnesium	6	mg/L		1	EPA 200.7	8/21/2010 10:26:41 AM	DG
Potassium	2	mg/L		1	EPA 200.7	8/21/2010 10:26:41 AM	DG
Chloride	4	mg/L		1	EPA 300.0	8/20/2010 7:52:52 PM	KO
Sodium	27	mg/L		1	EPA 200.7	8/21/2010 10:26:41 AM	DG
Fluoride	0.2	mg/L		0.1	SM 4500FC	8/23/2010 3:28:59 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	8/31/2010 4:45:00 PM	AS
Sulfate	46	mg/L		1	EPA 300.0	8/20/2010 7:52:52 PM	KO
Alkalinity, Total (As CaCO3)	158	mg/L		5	SM 2320B	8/23/2010 3:28:59 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	8/31/2010 9:58:00 AM	AS
General Parameters							
pH	8.2	s.u.		0.1	SM 4500 H B	8/23/2010 3:28:59 PM	KO
Electrical Conductivity	372	µmhos/cm		5	SM 2510B	8/23/2010 3:28:59 PM	KO
Total Dissolved Solids (180)	270	mg/L		10	SM 2540	8/23/2010 9:25:00 AM	AMB
Total Suspended Solids	46	mg/L		5	SM 2540	8/23/2010 2:05:00 PM	AMB
Silica as SiO2	21.0	mg/L		0.1	EPA 200.7	8/21/2010 10:26:41 AM	DG
Turbidity	16.5	NTU	H	0.1	SM 2130	8/20/2010 5:36:00 PM	WN

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/1/2010
Report ID: S1008362001

ProjectName: Sheep Mtn
Lab ID: S1008362-002
ClientSample ID: CC Down
COC: 128866

WorkOrder: S1008362
CollectionDate: 8/18/2010 1:10:00 PM
DateReceived: 8/20/2010 10:49:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	8/21/2010 10:26:41 AM	DG
Arsenic	0.002	mg/L		0.001	EPA 200.8	8/20/2010 11:56:33 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	8/20/2010 11:56:33 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	8/21/2010 10:26:41 AM	DG
Boron	0.2	mg/L		0.1	EPA 200.7	8/21/2010 10:26:41 AM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	8/20/2010 11:56:33 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	8/21/2010 10:26:41 AM	DG
Copper	ND	mg/L		0.01	EPA 200.8	8/20/2010 11:56:33 PM	MS
Iron	0.09	mg/L		0.05	EPA 200.7	8/21/2010 10:26:41 AM	DG
Lead	ND	mg/L		0.01	EPA 200.8	8/20/2010 11:56:33 PM	MS
Manganese	ND	mg/L		0.01	EPA 200.7	8/21/2010 10:26:41 AM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	8/24/2010 11:08:00 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	8/20/2010 11:56:33 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	8/21/2010 10:26:41 AM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	8/20/2010 11:56:33 PM	MS
Uranium	0.0232	mg/L		0.0003	EPA 200.8	8/20/2010 11:56:33 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	8/20/2010 11:56:33 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	8/21/2010 10:26:41 AM	DG
Total Metals							
Iron	0.79	mg/L		0.05	EPA 200.7	8/23/2010 11:06:38 PM	DG
Manganese	0.05	mg/L		0.01	EPA 200.7	8/23/2010 11:06:38 PM	DG
Radionuclides - Dissolved							
Lead 210	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Radium 228	ND	pCi/L		1	Ra-05	9/26/2010 9:38:00 PM	SH
Radium 228 Precision (±)	ND	pCi/L		1	Ra-05	9/26/2010 9:38:00 PM	SH
Radium 226	1.3	pCi/L		0.2	SM 7500-Ra B	9/21/2010 12:36:00 PM	SH
Radium 226 Precision (±)	0.2	pCi/L		0.2	SM 7500-Ra B	9/21/2010 12:36:00 PM	SH
Thorium 230	0.59	pCi/L	L	0.2	ACW10	10/13/2010 9:06:00 AM	WN
Thorium 230 Precision (±)	0.13	pCi/L	L	0.2	ACW10	10/13/2010 9:06:00 AM	WN

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/1/2010
Report ID: S1008362001

ProjectName: Sheep Mtn
Lab ID: S1008362-002
ClientSample ID: CC Down
COC: 128866

WorkOrder: S1008362
CollectionDate: 8/18/2010 1:10:00 PM
DateReceived: 8/20/2010 10:49:00 AM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	9/22/2010 4:51:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	9/22/2010 4:51:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	9/17/2010 4:05:00 PM	SH
Radium 226	0.9	pCi/L		0.2	SM 7500-Ra B	9/25/2010 3:58:00 PM	SH
Radium 226 Precision (±)	0.1	pCi/L		0.2	SM 7500-Ra B	9/25/2010 3:58:00 PM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	10/13/2010 9:06:00 AM	WN
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	10/13/2010 9:06:00 AM	WN
Uranium Suspended	0.0012	mg/L		0.0003	EPA 200.8	9/8/2010 11:36:36 AM	MS
Radionuclides - Total							
Gross Alpha	19.3	pCi/L		2	SM 7110B	9/29/2010 7:56:00 PM	SH
Gross Alpha Precision (±)	1.6	pCi/L		2	SM 7110B	9/29/2010 7:56:00 PM	SH
Gross Beta	13.7	pCi/L		3	SM 7110B	9/29/2010 7:56:00 PM	SH
Gross Beta Precision (±)	1.2	pCi/L		3	SM 7110B	9/29/2010 7:56:00 PM	SH
Data Quality							
Cation Sum	4.14	meq/L		0.00	SM 1030E	11/23/2010 4:33:40 PM	LJK
Anion Sum	4.23	meq/L		0.00	SM 1030E	11/23/2010 4:33:40 PM	LJK
Cation-Anion Balance	0.98	%		0.00	SM 1030E	11/23/2010 4:33:40 PM	LJK
Solids, Total Dissolved (Calc)	230	mg/L		10	SM 1030E	11/23/2010 4:33:40 PM	LJK

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/5/2010
Report ID: S1009309001

ProjectName: Sheep Mtn
Lab ID: S1009309-001
ClientSample ID: CC Up
COC: 137030

WorkOrder: S1009309
CollectionDate: 9/14/2010 11:10:00 PM
DateReceived: 9/16/2010 12:42:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Major Species							
Alkalinity, Bicarbonate as HCO3	179	mg/L		5	SM 2320B	9/17/2010 9:12:03 PM	KO
Calcium	45	mg/L		1	EPA 200.7	9/20/2010 4:59:19 PM	DG
Alkalinity, Carbonate as CO3	ND	mg/L		5	SM 2320B	9/17/2010 9:12:03 PM	KO
Magnesium	5	mg/L		1	EPA 200.7	9/20/2010 4:59:19 PM	DG
Potassium	2	mg/L		1	EPA 200.7	9/20/2010 4:59:19 PM	DG
Chloride	2	mg/L		1	EPA 300.0	9/20/2010 1:25:37 PM	KO
Sodium	24	mg/L		1	EPA 200.7	9/20/2010 4:59:19 PM	DG
Fluoride	0.2	mg/L		0.1	SM 4500FC	9/17/2010 9:12:03 PM	KO
Nitrogen, Nitrate-Nitrite (as N)	ND	mg/L		0.1	EPA 353.2	9/26/2010 10:19:00 AM	AS
Sulfate	33	mg/L		1	EPA 300.0	9/20/2010 1:25:37 PM	KO
Alkalinity, Total (As CaCO3)	146	mg/L		5	SM 2320B	9/17/2010 9:12:03 PM	KO
Nitrogen, Ammonia (As N)	ND	mg/L		0.1	EPA 350.1	9/27/2010 2:27:00 PM	AS
General Parameters							
pH	8.2	s.u.		0.1	SM 4500 H B	9/17/2010 9:12:03 PM	KO
Electrical Conductivity	332	µmhos/cm		5	SM 2510B	9/17/2010 9:12:03 PM	KO
Total Dissolved Solids (180)	230	mg/L		10	SM 2540	9/17/2010 3:50:00 PM	JF
Total Suspended Solids	ND	mg/L	H	5	SM 2540	9/30/2010 4:25:00 PM	AMB
Silica as SiO2	20.4	mg/L		0.1	EPA 200.7	9/20/2010 4:59:19 PM	DG
Turbidity	2.1	NTU		0.1	SM 2130	9/16/2010 4:36:00 PM	KB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL
O	Outside the Range of Dilutions
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Enviromental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Date Reported 11/5/2010
Report ID: S1009309001

ProjectName: Sheep Mtn
Lab ID: S1009309-001
ClientSample ID: CC Up
COC: 137030

WorkOrder: S1009309
CollectionDate: 9/14/2010 11:10:00 PM
DateReceived: 9/16/2010 12:42:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Dissolved Metals							
Aluminum	ND	mg/L		0.1	EPA 200.7	9/20/2010 4:59:19 PM	DG
Arsenic	0.001	mg/L		0.001	EPA 200.8	9/17/2010 12:20:23 PM	MS
Barium	ND	mg/L		0.1	EPA 200.8	9/17/2010 12:20:23 PM	MS
Beryllium	ND	mg/L		0.001	EPA 200.7	9/20/2010 4:59:19 PM	DG
Boron	ND	mg/L		0.1	EPA 200.7	9/20/2010 4:59:19 PM	DG
Cadmium	ND	mg/L		0.001	EPA 200.8	9/17/2010 12:20:23 PM	MS
Chromium	ND	mg/L		0.01	EPA 200.7	9/20/2010 4:59:19 PM	DG
Copper	ND	mg/L		0.01	EPA 200.8	9/17/2010 12:20:23 PM	MS
Iron	0.05	mg/L		0.05	EPA 200.7	9/20/2010 4:59:19 PM	DG
Lead	ND	mg/L		0.01	EPA 200.8	9/17/2010 12:20:23 PM	MS
Manganese	0.03	mg/L		0.01	EPA 200.7	9/20/2010 4:59:19 PM	DG
Mercury	ND	mg/L		0.001	EPA 245.1	9/21/2010 11:20:59 AM	BK
Molybdenum	ND	mg/L		0.01	EPA 200.8	9/17/2010 12:20:23 PM	MS
Nickel	ND	mg/L		0.05	EPA 200.7	9/20/2010 4:59:19 PM	DG
Selenium	ND	mg/L		0.001	EPA 200.8	9/17/2010 12:20:23 PM	MS
Uranium	0.0150	mg/L		0.0003	EPA 200.8	9/17/2010 12:20:23 PM	MS
Vanadium	ND	mg/L		0.1	EPA 200.8	9/17/2010 12:20:23 PM	MS
Zinc	ND	mg/L		0.01	EPA 200.7	9/20/2010 4:59:19 PM	DG
Total Metals							
Iron	0.25	mg/L		0.05	EPA 200.7	9/21/2010 5:12:13 PM	DG
Manganese	0.04	mg/L		0.01	EPA 200.7	9/21/2010 5:12:13 PM	DG
Radionuclides - Dissolved							
Lead 210	1.2	pCi/L		1	OTW01	10/6/2010 3:11:00 PM	SH
Lead 210 Precision (±)	0.9	pCi/L		1	OTW01	10/6/2010 3:11:00 PM	SH
Polonium 210	ND	pCi/L		1	OTW01	10/3/2010 8:13:00 PM	SH
Polonium 210 Precision (±)	ND	pCi/L		1	OTW01	10/3/2010 8:13:00 PM	SH
Radium 228	1.9	pCi/L		1	Ra-05	10/11/2010 3:16:00 AM	SH
Radium 228 Precision (±)	0.8	pCi/L		1	Ra-05	10/11/2010 3:16:00 AM	SH
Radium 226	2.1	pCi/L		0.2	SM 7500-Ra B	10/6/2010 10:00:00 AM	SH
Radium 226 Precision (±)	0.2	pCi/L		0.2	SM 7500-Ra B	10/6/2010 10:00:00 AM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	11/3/2010 3:13:00 PM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	11/3/2010 3:13:00 PM	ADM

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	L	Analyzed by a contract laboratory
M	Value exceeds Monthly Ave or MCL	ND	Not Detected at the Reporting Limit
O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

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Sample Analysis Report

Company: Titan Uranium USA
1225 Market St.
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COC: 137030

WorkOrder: S1009309
CollectionDate: 9/14/2010 11:10:00 PM
DateReceived: 9/16/2010 12:42:00 PM
FieldSampler: JW
Matrix: Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Suspended							
Lead 210	ND	pCi/L		1	OTW01	10/6/2010 5:21:00 PM	SH
Lead 210 Precision (±)	ND	pCi/L		1	OTW01	10/6/2010 5:21:00 PM	SH
Polonium 210	4.0	pCi/L		1	OTW01	10/6/2010 1:39:00 PM	SH
Polonium 210 Precision (±)	0.7	pCi/L		1	OTW01	10/6/2010 1:39:00 PM	SH
Radium 226	ND	pCi/L		0.2	SM 7500-Ra B	10/4/2010 9:06:00 AM	SH
Radium 226 Precision (±)	ND	pCi/L		0.2	SM 7500-Ra B	10/4/2010 9:06:00 AM	SH
Thorium 230	ND	pCi/L	L	0.2	ACW10	11/3/2010 3:13:00 PM	ADM
Thorium 230 Precision (±)	ND	pCi/L	L	0.2	ACW10	11/3/2010 3:13:00 PM	ADM
Uranium Suspended	ND	mg/L		0.0003	EPA 200.8	9/28/2010 10:22:20 AM	MS
Radionuclides - Total							
Gross Alpha	12.4	pCi/L		2	SM 7110B	9/29/2010 7:56:00 PM	SH
Gross Alpha Precision (±)	1.3	pCi/L		2	SM 7110B	9/29/2010 7:56:00 PM	SH
Gross Beta	5.8	pCi/L		3	SM 7110B	9/29/2010 7:56:00 PM	SH
Gross Beta Precision (±)	1.1	pCi/L		3	SM 7110B	9/29/2010 7:56:00 PM	SH
Data Quality							
Cation Sum	3.71	meq/L		0.01	SM 1030E	9/29/2010 9:22:30 AM	KO
Anion Sum	3.66	meq/L		0.01	SM 1030E	9/29/2010 9:22:30 AM	KO
Cation-Anion Balance	0.67	%		0.01	SM 1030E	9/29/2010 9:22:30 AM	KO
Solids, Total Dissolved (Calc)	200	mg/L		10	SM 1030E	9/29/2010 9:22:30 AM	KO

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
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L	Analyzed by a contract laboratory
ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits

Reviewed by:
Wade Nieuwsma, Assistant Laboratory Manager

APPENDIX D7
ADDENDUM 2011

APPENDIX D-7
TITAN URANIUM USA, INC,
2010 BASELINE SOIL ASSESSMENT
SHEEP MOUNTAIN SOIL ANALYSIS AREA

Prepared for:

Titan Uranium, USA Inc.
2510 15th St., Suite 7
Casper, WY 82609

Prepared by:

BKS Environmental Associates, Inc.
P.O. Box 3017
Rock Springs, Wyoming 82902

June 2011

APPENDIX D-7

SOILS

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SOILS

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APPENDIX D-7

SOILS

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INTRODUCTION

This report presents baseline information on the soils occurring within the Titan Uranium, USA Inc. (Titan) – Sheep Mountain Soil Analysis Area. Baseline soils inventories were used to delineate the soil resources within the Sheep Mountain Soil Analysis Area and were used to determine topsoil salvage depths and ultimately replacement depths over the entire proposed project disturbance area.

METHODS

Review of Existing Literature

The soils in this portion of Fremont County were studied and mapped to an Order 3 scale by the U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS) in 1983. Information regarding Fremont County is available in both electronic and hard copy formats. The NRCS has also centralized dissemination of typical soil series descriptions. This information is available on the internet at www.nrcs.usda.gov.

The 1980 Appendix D-7 Soil Assessment done by Mine Reclamation Consultants, Inc. under contract with Western Nuclear, Inc. was also reviewed. This soil survey was conducted during the fall of 1979 on the Western Nuclear, Inc. study area. The soil series identified within the study area included the BlackHall, Cotopaxi, Elk Mountain, Fluetsch, Ryan Park and Typic Cryorthents series. The estimated overall depth of salvageable topsoil was considered to be 0.73 feet. The most common limiting factor described was coarse textures with high percentages of fine sand or coarser material that limited the available water holding capacity. The 1980 Appendix D-7 Soil Assessment can be found in Addendum D-7-H.

2010 Project Participants

BKS Environmental Associates, Inc. (BKS) of Rock Springs, Wyoming performed the 2010 soil survey fieldwork, mapping and compiled the resulting report. Aerial imagery, for all maps used for this project, was obtained from the USDA. Drafting of the final soils map was completed by BKS. All soil samples were taken to Inter-Mountain Laboratories Inc. (IML) in Gillette, Wyoming for transmittal to Sheridan, Wyoming for analysis.

Soil Survey

Field mapping was conducted according to techniques and procedures outlined in the National Cooperative Soil Survey. Wyoming Department of Environmental Quality (WDEQ) Land Quality Division (LQD) Guideline 1 (August 1994 Revision) was used as a guide during all phases of the study.

An Order 2 soil survey was conducted in August of 2010. Actual soil boundaries were identified in the field by exposing soil profiles to determine the nature and extent of soil series within the Sheep Mountain Soil Analysis Area. The soil boundaries were delineated on a 2006 NAIP orthophoto with a relative scale of 1:8,000 for purposes of permit submittal. Refer to Table D-7.1.1 for Soil Map Unit Acreages and total Sheep Mountain Soil Analysis Area acreage.

In February and May 2011, several of the original disturbance boundaries were altered and new disturbance boundaries were added. The sampling done in August 2010 did not take these new disturbance boundaries into consideration but these new areas were observed to be similar to the previously surveyed area. Due to the potential of future disturbance boundary changes, a buffer was added around the leach and spoil disturbance areas. The original 2010 Soil Survey Area is included on the soil map for reference. All the acreages from the original 2010 Soil Survey Area are not incorporated in the report tables but reflect the revised disturbance boundaries with the associated buffer acres.

For information regarding the soils found outside of the disturbance boundary, see the NRCS Soil Map found in Addendum D-7-I. The detailed soil mapping found within the disturbance boundaries was conducted during this survey and uses the same NRCS soil series found within the project area. Due to the different soil survey order and scale, a number of the soil mapping boundaries on the disturbed areas differ from the NRCS mapping.

A total of 1,244.04 acres were included in the final soil mapping of the Sheep Mountain Soil Analysis Area. Overall, 21 soil profiles were exposed, sampled and had corresponding profile descriptions written. A total of 12 of those sampled profiles were sent to the laboratory for analysis. This resulted in 41 soil samples being sent to the laboratory. Due to change in the disturbance boundaries, only 9 of the 12 sampled profiles sent for analysis are used in this report.

It should be noted that a significant part of the project area was heavily disturbed or had already been reclaimed. All of the Underground Shaft areas (Sheep I and Sheep II) were considered disturbed. A sample was taken in each of the Underground Shaft areas, but due to the severely disturbed nature of the soils they were not taken to the laboratory for analysis. Large reclaimed areas were found in the original Paydirt Heap Leach and McIntosh Heap locations. The soils found there are not in their natural condition but the samples taken in these areas were sent to the laboratory. The soils mapped in these reclaimed areas are referred to as Onason Reclaimed Variants because they most resemble the Onason soil series. Refer to Tables D-7.1.3 for Soil Sample Locations within the Sheep Mountain Soil Analysis Area.

Field Sampling

Sampling of soil series identified within the original 2010 Soil Survey Area generally followed WDEQ Guideline 1 recommendations of three sampled pedons for series encompassing greater than 160 acres, two sampled pedons for series encompassing between 40 and 160 acres, and one sampled pedon for series

encompassing less than 40 acres. Since the disturbance boundaries changed after the initial soil survey and a buffer area was added, the Cushool soil series does not meet the soil sampling recommendations. See Table D-7.1.2 for the Soil Series Sample Summary within the Sheep Mountain Soil Analysis Area.

All soil samples were collected with a Giddings truck mounted auger or hand auger to paralithic contact or a maximum depth of 60", whichever was shallower. Sampled profiles were described in the field, to the extent possible, by the physical and chemical nature of each profile horizon. Backhoe pits were not utilized for soil sampling. Refer to Addendum D-7-F for Site Photographs.

Sample locations were identified on a base map, and global positioning system (GPS) points were collected with a hand-held Garmin GPS unit. Soil samples were placed in clean, labeled, polyethylene plastic bags, and sealed to limit sample drying. Samples were kept as cool as possible, but not stored on ice. Samples were delivered to IML in Gillette, Wyoming when sampling was completed for transmittal to Sheridan, Wyoming.

Laboratory Analysis

Samples were placed into lined aluminum pans to air dry. Coarse fragments were measured with a 10 mesh screen prior to grinding; the entire sample was then hand ground to pass a 10 mesh screen. An approximate 20 ounce subsample was obtained through splitting with a series of riffle splitters and subsequently analyzed. A second subsample was maintained in storage at IML. Approximately five percent of the samples were run for duplicate analysis.

Actual laboratory analysis followed the methodology outlined in WDEQ-LQD Guideline 1. In general, samples were processed as soon as possible after receipt. All analytical data is found in Addendum D-7-D Soil Laboratory Analysis.

RESULTS AND DISCUSSION

Soil Survey - General

The soils occurring within the Sheep Mountain Soil Analysis Area are typical of semi-deserts in the western intermountains of the United States. Due to prevailing climate and vegetation conditions, organic matter is accumulated slowly and is confined primarily to the surface horizon(s), resulting in light-coloration throughout the profile.

Topography consisted of rounded hills with moderate to steep slopes. Elevations ranged from 6,600 feet to 8,000 feet. The ground was sparsely vegetated with sage and grasses with occasional small to medium sized pine trees at higher elevations. The soils occurring throughout the Sheep Mountain Soil Analysis Area were generally coarse-loamy textured. The soils varied in depth to paralithic material, ranging from

5 inches to greater than 60 inches, but were mostly shallow. The majority of the soils were formed in slope alluvium over residuum weathered from sandstone.

Soil Mapping Unit Interpretation

The primary purpose of the 2010 baseline soils inventory was to characterize the soils within the Sheep Mountain Soil Analysis Area in terms of topsoil salvage depths and related physical and chemical properties. Refer to Addendum D-7-B and D-7-C for Soil Map Unit Descriptions and Soil Series Descriptions, respectively. Map units were based on existing NRCS format but tailored to fit actual findings within the Sheep Mountain Soil Analysis Area.

Analytical Results

Analyzed parameters, as defined in WDEQ Guideline 1, are in Addendum D-7-D, Soil Laboratory Analysis. Laboratory soil texture analysis did not include percent fine sands. Field observations of fine sands within individual profiles as well as sample site topographic position were used in conjunction with laboratory analytical results to determine series designation for soils with fine sands. For a few of the profile sampling locations, laboratory analysis yielded finer or coarser than expected textures, based on field observations. Where textures were not typical for the series (e.g., according to field observations or laboratory analysis), it was noted in the Range of Characteristics in the soil series descriptions.

Evaluation of Soil Suitability as a Plant Growth Medium

Approximate salvage depths of each map unit series are presented in Table D-7.1.6 and ranged from zero to 1.67 feet. Within the Sheep Mountain Soil Analysis Area, suitability of soil as a plant growth medium was generally limited by the physical factor of low saturation percentages and coarse fragment percentages. Chemical limiting factors included EC, SAR and selenium. According to WDEQ Guideline 1, marginal material was found in 7 of the 9 sampled profiles. Unsuitable material was found in 2 of the 9 sampled profiles. Marginal and unsuitable parameter information for the sampled profiles is identified in Table D-7.1.4. A summary of trends in marginal and unsuitable parameters as it relates to soil series is found in Table D-7.1.5.

Topsoil Volume Calculations

Based on the 2010 baseline soils inventory, associated field observations, and subsequent chemical analysis, the recommended weighted average topsoil salvage depth over the entire Sheep Mountain Soil Analysis Area was determined to be 0.33 feet. Refer to Table D-7.1.6 for Approximate Soil Salvage Depths. It is important to note that all listed depths in the tables or text are to the nearest hundredth decimal place as an artifact of calculation, despite the fact that topsoil salvage/replacement equipment depth capabilities are limited.

Soil Erosion Properties and Impacts

Based on the soil mapping unit descriptions, the hazard for wind and water erosion within the Sheep Mountain Soil Analysis Area varies from negligible to moderate. The potential for wind and water erosion is mainly a factor of surface characteristics of the soil, including texture and organic matter content. Given the generally coarse-loamy texture of the surface horizons throughout a majority of the Sheep Mountain Soil Analysis Area, the soils are more susceptible to erosion from wind than water. See Table D-7.1.7 for a Summary of Wind and Water Erosion Hazards within the Sheep Mountain Soil Analysis Area.

Prime Farmland Assessment

Prime farmland was assessed by Nick Biltoft, the NRCS District Conservationist, Riverton, Wyoming. According to the NRCS soil survey, there are 3 soil map units within the eastern part of Fremont County that are determined to be prime farmland and only when irrigated. These 3 soil map units were not found within the Sheep Mountain Soil Analysis Area during the BKS, NRCS, or 1980 historical D-7 soil surveys. Refer to Addendum D-7-E for the NRCS Letter of Determination.

REFERENCES

U.S. Department of Agriculture, Natural Resource Conservation Service. 1993. Soil Survey of Fremont County, East Part and Dubois Area, Wyoming.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. [Online WWW]. Available URL: "http://soils.usda.gov/technical/classification/osd/index.html" [Accessed 18 January 2011]. USDA-NRCS, Lincoln, NE.

U.S. Department of Agriculture. 1975. Soil Taxonomy. U.S. Dept. of Agric. Handbook 436, 754 pp. Government Printing Office.

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Wyoming Department of Environmental Quality, Land Quality Division. 1994. Guideline 1, Topsoil and Overburden.

ADDENDUM D-7-A
TABLES

Table D-7.1.1: Soil Map Unit Acreages

Map Symbol	Map Unit Description	Permit Acreage	% Total Permit Area
BO	Bosler fine sandy loam	154.64	12.43
CU	Cushool sandy loam	251.82	20.24
D	Disturbance	334.7	26.90
ON / ON-RV	Onason / Onason Reclaimed Variant	446.02	35.85
RO	Rock River sandy loam	56.86	4.57
	Total	**1,244.04**	**100.00**

Table D-7.1.2: Soil Series Sample Summary

Soil Series	Number of Profiles to be Sampled for Chemical Analysis
Bosler	3
Cushool	2
Onason / Onason Reclaimed Variant	3
Rock River	1
Total	**9**

Table D-7.1.3: Soil Sample Locations

Soil Sample Number	Map Unit Symbol	Soil Series
2	BO	Bosler
4	CU	Cushool
6	ON	Onason
7	ON	Onason
8	CU	Cushool
10	RO	Rock River
11	BO	Bosler
13	BO	Bosler
17	ON-RV	Onason Reclaimed Variant

Table D-7.1.4: Marginal and Unsuitable Parameters within Sampled Profiles

Soil Sample Number	Soils Series	Depth (in)	Marginal[1]	Unsuitable[1]
2	Bosler	0-6	Saturation %	---
4	Cushool	5-11	Saturation %	---
6	Onason	12-18	Saturation %	---
7	Onason	0-18	Saturation %	---
8	Cushool	6-30	Saturation %	---
10	Rock River	10-20	SAR	---
		20-60	---	SAR
		20-60	EC	---
		20-60	Selenium	---
11	Bosler	28-40	---	SAR
13	Bosler	16-36	Saturation %	---
		16-26	Coarse Frag %	---
17	Onason	0-10	Saturation %	---

[1]Marginal and unsuitable parameters determined by comparing lab analysis with Table I-2 (Criteria to establish topsoil suitability) from WDEQ LQD Guideline 1.

Table D-7.1.5: Trends in Marginal and Unsuitable Parameters for Soil Series

Soils Series	Unsuitable/Marginal Parameter[1]
Bosler	Coarse Frag %, SAR, Saturation %
Cushool	Saturation %
Onason / Onason Reclaimed Variant	Saturation %
Rock River	EC, SAR, Selenium

[1]Marginal and unsuitable parameters determined by comparing lab analysis with Table I-2 (Criteria to establish topsoil suitability) from WDEQ LQD Guideline 1.

Table D-7.1.6: Approximate Soil Salvage Depths

Map Symbol	Map Unit Description	Permit Acreage[1]	Salvage Depth[2] (feet)	Total Volume of Topsoil[3]
BO	Bosler fine sandy loam	154.64	1.22	188.66
CU	Cushool sandy loam	251.82	0.46	115.84
D	Disturbance	334.7	0	0.00
ON / ON-RV	Onason / Onason Reclaimed Variant	446.02	0.14	62.44
RO	Rock River sandy loam	56.86	0.83	47.19
Average Salvage Depth of Project Area[4]		**---**	**0.33**	**---**
Total		**1,244.04**	**---**	**414.13**

[1]Found in Table D-7.1.1 of this report.
[2]Found in Addendum D-7-B of this report, under Topsoil Suitability.
[3]Calculated by multiplying permit acreage by salvage depth in feet, as shown in Table II-1 (Topsoil Volume Summary) of WDEQ LQD Guideline 1.
[4]Calculated as the average of the weighted average salvage depths found in Addendum D-7-B.

Table D-7.1.7: Wind and Water Erosion Hazards

Map Unit Symbol	Soil Series	Water Erosion Hazard[1]	Wind Erosion Hazard[2]
BO	Bosler	Moderate	Moderate
CU	Cushool	Slight	Moderate
ON / ON-RV	Onason / Onason Reclaimed Variant	Negligible	Moderate
RO	Rock River	Moderate	Moderate

[1]Based on Kw factor of A horizon from the NRCS Soil Data Mart {http://soildatamart.nrcs.usda.gov/}
[2]Based on Wind Erodibility Group from the NRCS Soil Data Mart {http://soildatamart.nrcs.usda.gov/}.

ADDENDUM D-7-B

SOIL MAP UNIT DESCRIPTION

Bosler fine sandy loam[1] – BO

This map unit consists of very deep, well drained soils formed in slopewash alluvium. Slopes range from 0 to 15 percent. The Bosler soil occurs on relict alluvial terraces and alluvial fan aprons at elevations between 6,000 to 8,000 feet.

The average annual precipitation ranges from 9 to 14 inches. The mean annual air temperature is approximately 40 to 45 degrees Fahrenheit, and the average frost-free season is approximately 70 to 110 days.

Permeability within the Bosler soil is moderate. The available water capacity is low (about 4.3 inches). Effective rooting depth is 60 inches or more. Surface runoff is slow to medium. The hazard of water or wind erosion is moderate.

Topsoil Suitability

This map unit is a fair source of topsoil to 14.67 inches based on an average of 2010 sample locations. According to WDEQ Guideline 1, the following marginal and unsuitable parameters were found:

Soil Sample 2

- marginal saturation percent values from 0 to 6 inches

Soil Sample 11

- unsuitable SAR values from 28 to 40 inches

Soil Sample 13

- marginal saturation percent values from 16 to 36 inches
- marginal coarse fragment percent values from 16 to 26 inches

The 14.67-inch salvage depth was used in Table D-7.1.6 Approximate Soil Salvage Depths to calculate topsoil salvage volumes for the Bosler series.

[1]Map unit description based on 1993 Fremont County - East Part and Dubois Area NRCS information.

Cushool sandy loam[1] – CU

This map unit consists of well drained soils that are moderately deep to soft sandstone that formed in slope alluvium and colluvium over residuum weathered from sandy shale and sandstone. Slopes range from 0 to 50 percent. The Cushool soil occurs on rock-controlled hills, pediments, structural benches, ridges, and short fan aprons at elevations between 5,300 to 7,800 feet.

The average annual precipitation ranges from 9 to 14 inches. The mean annual air temperature is approximately 39 to 45 degrees Fahrenheit, and the average frost-free season is approximately 75 to 110 days.

Permeability within the Cushool soil is moderate. The available water capacity is low (about 5.2 inches). Effective rooting depth is 20 to 40 inches. Surface runoff is low to high depending on slope. The hazard of water erosion is slight and the hazard of wind erosion is moderate.

Topsoil Suitability

This map unit is a fair source of topsoil to 5.5 inches based on an average of 2010 sample locations. According to WDEQ Guideline 1, the following marginal parameters were found:

Soil Sample 4

- marginal saturation percent values from 5 to 11 inches

Soil Sample 8

- marginal saturation percent values from 6 to 30 inches

The 5.5-inch salvage depth was used in Table D-7.1.6 Approximate Soil Salvage Depths to calculate topsoil salvage volumes for the Cushool series.

[1]Map unit description based on 1993 Fremont County - East Part and Dubois Area NRCS information.

Onason gravelly sandy loam / Onason Reclaimed Variant[1]– ON / ON-RV

This map unit consists of well drained soils that are shallow and very shallow to soft sandstone and formed in residuum and slopewash alluvium weathered from the underlying bedrock. Slopes range from 5 to 45 percent. The Onason soil occurs on footslopes, backslopes, and shoulders of hills and ridges at elevations between 6,000 to 7,600 feet.

The average annual precipitation ranges from 10 to 14 inches. The mean annual air temperature is approximately 34 to 44 degrees Fahrenheit, and the average frost-free season is approximately 80 to 110 days.

Permeability within the Onason soil is moderately rapid. The available water capacity is very low (about 1.5 inches). Effective rooting depth is 10 to 20 inches. Surface runoff is slow. The hazard of water erosion is negligible and the hazard of wind erosion is moderate.

Topsoil Suitability

This map unit is a fair source of topsoil to 1.67 inches based on an average of 2010 sample locations. According to WDEQ Guideline 1, the following marginal and unsuitable parameters were found:

Soil Sample 6

- marginal saturation percentage values from 12 to 18 inches

Soil Sample 7

- marginal saturation percentage values from 0 to 18 inches

Soil Sample 17

- marginal saturation percentage values from 0 to 10 inches

The 1.67-inch salvage depth was used in Table D-7.1.6 Approximate Soil Salvage Depths to calculate topsoil salvage volumes for the Onason series.

[1]Map unit description based on 1993 Fremont County - East Part and Dubois Area NRCS information.

Rock River sandy loam[1] – RO

This map unit consists of very deep, well drained soils that formed in calcareous alluvium derived mainly from sandstone, eolian deposits, and residuum. Slopes range from 0 to 25 percent. The Rock River soil occurs on alluvial fan aprons, relict terraces, benches, hillslopes, and areas of valley fill at elevations between 5,900 to 7,800 feet.

The average annual precipitation ranges from 10 to 14 inches. The mean annual air temperature is approximately 41 to 45 degrees Fahrenheit, and the average frost-free season is approximately 75 to 110 days.

Permeability within the Rock River soil is moderate. The available water capacity is moderate (about 8.7 inches). Effective rooting depth is 60 inches or more. Surface runoff is medium to rapid. The hazard of water or wind erosion is moderate.

Topsoil Suitability

This map unit is a fair source of topsoil to 10 inches based on Sample Location 10. According to WDEQ Guideline 1, the following marginal and unsuitable parameters were found:

Soil Sample 10

- marginal SAR values from 10 to 20 inches
- unsuitable SAR values from 20 to 60 inches
- marginal EC values from 20 to 60 inches
- marginal Selenium values from 20 to 60 inches

The 10-inch salvage depth was used in Table D-7.1.6 Approximate Soil Salvage Depths to calculate topsoil salvage volumes for the Rock River series.

[1]Map unit description based on 1993 Fremont County - East Part and Dubois Area NRCS information.

ADDENDUM D-7-C
SOIL SERIES DESCRIPTIONS

BOSLER sandy loam

SOIL MAPPING UNIT: BO

SOIL SAMPLE LOCATION: 2

TYPICAL PEDON: Bosler sandy loam-rangeland. (Colors are for dry soil unless otherwise stated.

The Bosler series consists of very deep, well drained soils formed in slopewash alluvium. They occupy relict alluvial terraces and alluvial fan aprons. Slopes typically are less than 6 percent but range from 0 to 15 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 41 degrees F.

A--0 to 6 inches; grayish brown (10YR 5/2) sandy loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, very friable, nonsticky and nonplastic; common fine and very fine roots; 10 percent fine gravel; non-effervescent; neutral (pH 7.1); clear smooth boundary.

Bt--6 to 12 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots; common distinct clay films on faces of peds; 5 percent fine gravel; non-effervescent; slightly alkaline (pH 7.4); clear smooth boundary.

C1--12 to 19 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots; common distinct clay films on faces of peds; 5 percent fine gravel; non-effervescent; neutral (pH 7.1); clear smooth boundary.

C2--19 to 30 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots; common distinct clay films on faces of peds; 5 percent fine gravel; non-effervescent; slightly alkaline (pH 7.5); clear smooth boundary.

2C--30 to 60 inches; very gravelly sand; single grained, loose; non-effervescent; 40 percent fine and medium granitic and quartzitic gravel. (This horizon was considered paralithic in the field and was not sampled)

TYPE LOCATION: Fremont County, Wyoming; refer to waypoint 13 on the map included in this report.

RANGE IN CHARACTERISTICS (according to official series description): The depth of contrasting 2Bk or 2C horizon is 20 to 40 inches. The mean annual soil temperature ranges from 41 to 47 degrees F.,

and the mean annual summer temperature ranges from 59 to 63 degrees F. Rock fragment content above the 2Bk or 2C horizon ranges from 0 to 15 percent gravel.

The A horizon has hue of 7.5YR through 2.5Y, value of 5 or 6 dry, 3 through 5 moist, and chroma of 2 through 4. EC is less than 2 mmhos. This horizon is typically free of carbonates but may effervesce slightly in some pedons. Reaction ranges from neutral through moderately alkaline.

The Bt and Btk horizons have hue of 7.5YR through 2.5Y, value of 4 through 6 dry, 3 through 6 moist, and chroma of 2 through 4. Texture is sandy clay loam or clay loam with 20 to 35 percent clay and more than 35 percent fine sand or coarser. EC is less than 2 mmhos. Reaction is neutral through moderately alkaline. The Bt is a diagnostic argillic horizon, and in most pedons the Btk is also part of the diagnostic argillic.

The Bk horizon has hue of 7.5YR through 2.5Y, value of 6 through 8 dry, 5 through 7 moist, and chroma of 1 through 4. Texture is loam with 18 to 27 percent clay. EC is less than 2 mmhos. Reaction is moderately or strongly alkaline. The Bk is a diagnostic calcic horizon with 15 to 35 percent calcium carbonate equivalent.

The 2C or 2Bk horizon has variable colors depending upon the lithochromic colors of the clean sand and gravel. Texture is gravelly sand, extremely gravelly sand, very gravelly loamy sand, loamy sand or sand. This horizon may be stratified with lenses of sand or gravel. Rock fragments vary with strata but average from 0 to 70 percent fine and medium quartzitic or granitic gravel. There is less than 5 percent cobbles present.

TAXONOMIC CLASS: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Ustic Calciargids

SUITABILITY FOR TOPSOIL (according to WDEQ Guideline 1, 1994): Marginal values were found for saturation percentage from 0-6". Estimated salvage depth is 0 inches due to marginal saturation percentage values.

GEOGRAPHIC SETTING (according to official series description): Bosler soils are on gently to moderately sloping relict high terraces, fan aprons, and fan piedmonts. They formed in medium textured, mixed alluvium over sand and gravel strata. Elevation ranges from 6,000 to 8,000 feet. The mean annual precipitation ranges from 9 to 14 inches of which about half falls as snow and rain in April, May, and early June. The mean annual temperature ranges from 40 to 45 degrees F. The frost-free season is estimated to be 70 to 110 days depending upon elevation, aspect, and air drainage.

VARIATION FROM TYPICAL SERIES: This profile is less calcareous than usual. There are "C" horizons in place of the typical "Btk" and "Bk" horizons. The pH is more acidic from 19-30" than normal.

CUSHOOL loamy sand

SOIL MAPPING UNIT: CU

SOIL SAMPLE LOCATION: 4

TYPICAL PEDON: Cushool loamy sand-rangeland. (Colors are for dry soil unless otherwise stated.)

The Cushool series consists of well drained soils that are moderately deep to soft sandstone. They formed in slope alluvium and colluvium over residuum weathered from sandy shale and sandstone. Cushool soils are on rock-controlled hills, pediments, structural benches, ridges, and short fan aprons. Slopes are 0 to 50 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 41 degrees F.

A--0 to 5 inches; grayish brown (10YR 5/2) loamy sand, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; non-effervescent; slightly acid (pH 6.3); clear smooth boundary.

Bt1--5 to 11 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; few distinct clay films on faces of peds and inside root channels; non-effervescent; slightly acid (pH 6.2); clear smooth boundary.

Bt2--11 to 18 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; many clay films on faces of peds and in root channels; non-effervescent; slightly acid (pH 6.3).

Bt3--18 to 30 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few fine roots; few distinct clay films on faces of peds and in root channels; non-effervescent; neutral (pH 6.6); gradual wavy boundary.

Cr--30 to 48 inches; soft, non-calcareous sand interbedded with thin and moderately thick lenses of sandstone.

TYPE LOCATION: Fremont County, Wyoming; refer to waypoint 4 on the map included in this report.

RANGE IN CHARACTERISTICS (according to official series description):

Mean annual soil temperature ranges: 41 to 47 degrees F.
Mean summer temperature: 59 to 63 degrees F
Depth to calcic horizon: 11 to 34 inches
Depth to paralithic contact: 20 to 40 inches shale interbedded with sandstone
These soils are typically free of carbonates through the upper part of the Bt horizon.
Rock fragments range from 0 to 30 percent throughout the whole soil and are pebbles or channers.
Exchangeable sodium ranges from 0 to 15 percent throughout the argillic horizon and Bk horizons.
EC ranges from 0 to 4 mmhos throughout.

A horizon:
Hue: 7.5YR to 5Y
Value: 4 through 7 dry, 3 through 5 moist
Chroma: 2 through 6 dry or moist
Calcium carbonate equivalent: 0 to 5 percent
Reaction: neutral through moderately alkaline

Bt horizon:
Hue: 7.5YR to 5Y
Value: 4 through 6 dry, 3 or 4 moist
Chroma: 2 through 6 dry or moist
Texture: sandy clay loam, fine sandy loam, or sandy loam with 18 to 35 percent clay, 0 to 28 percent silt, and 45 to 80 percent sand with more than 35 percent being fine sand or coarser.
Calcium carbonate equivalent: 0 to 5 percent
Reaction: neutral through moderately alkaline
The Btk horizon when present is moderately or strongly alkaline.

Bk horizon:
Hue: 7.5YR to 5Y
Value: 5 through 7 dry, 4 through 7 moist
Chroma: 2 through 6 dry or moist
Texture: loamy fine sand, sandy loam, fine sandy loam
Calcium carbonate equivalent: 5 to 15 percent
Reaction: moderately or strongly alkaline

A thin C horizon is present in some pedons.

TAXONOMIC CLASS: Fine, smectitic, frigid Ustic Paleargids

SUITABILITY FOR TOPSOIL (according to WDEQ Guideline 1, 1994): Marginal values were found for saturation percentage from 5-11". Estimated salvage depth is 5 inches due to marginal saturation percentage values.

GEOGRAPHIC SETTING (according to official series description):

Parent material: slope alluvium and colluvium over residuum weathered from sandy shale and sandstone
Landform: rock-controlled hill and ridge slopes, fan aprons, pediments, and structural benches
Slopes: 0 to 50 percent
Elevations: 5,300 to 7,800 feet
Mean annual precipitation: about 12 inches but ranges from 9 to 14 inches of which about half falls as snow and rain in April, May, and early June
Mean annual temperature: about 41 degrees F. and ranges from 39 to 45 degrees F.
Frost-free season: 75 to 110 days depending upon elevation, aspect, and air drainage.

VARIATION FROM TYPICAL SERIES: This profile is less calcareous and more acidic than typical.

ONASON sandy loam

SOIL MAPPING UNIT: ON

SOIL SAMPLE LOCATION: 6

TYPICAL PEDON: Onason gravelly sandy loam - rangeland. (Colors are for dry soil unless otherwise stated.)

The Onason series consists of well drained soils that are shallow and very shallow to soft sandstone. These soils formed in residuum and slopewash alluvium weathered from the underlying bedrock. Onason soils are on footslopes, backslopes, and shoulders of hills and ridges. Slopes range from 5 to 45 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 41 degrees F.

A--0 to 5 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many fine and few medium roots; 15 percent semirounded pebbles; non-effervescent; neutral (pH 6.6); abrupt smooth boundary.

C1--5 to 12 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and few medium roots; 15 percent semirounded pebbles; non-effervescent; slightly acid (pH 6.4); clear smooth boundary.

C2--12 to 18 inches; light yellowish brown (2.5Y 6/4) sandy loam, light olive brown (2.5Y 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine and few medium roots; 15 percent semirounded pebbles; non-effervescent; slightly acid (pH 6.5); abrupt wavy boundary.

Cr--18 to 36 inches; soft, coarse-grained non-calcareous sandstone interbedded with thin lenses of shale.

TYPE LOCATION: Fremont County, Wyoming; refer to waypoint 6 on the map included in this report.

RANGE IN CHARACTERISTICS (according to official series description): Depth to the paralithic contact and bedrock ranges from 4 to 20 inches. These soils are noncalcareous throughout. The mean annual soil temperature is 36 to 45 degrees F., and the mean summer soil temperature is 59 to 62 degrees F. The particle size control section averages gravelly sandy loam or sandy loam throughout. Clay ranges from 8 to 18 percent and rock fragments of fine or very fine semirounded pebbles range from 0 to 35 percent. EC is less than 2 mmhos throughout.
The A horizon has hue of 2.5Y or 10YR, value of 4 through 6 dry, 3 through 5 moist, and chroma of 2 through 4. Lag gravel covering up to 75 percent of the surface is common in some pedons. Reaction is neutral or mildly alkaline.

The C horizon has hue of 2.5Y or 10YR, value of 5 or 6 dry, 4 through 6 moist, and chroma of 2 through 4. A thin Bw horizon is present in some pedons. Reaction is neutral or mildly alkaline.

The Cr horizon consists of soft, noncalcareous, coarse- and medium-grained sandstone interbedded with thin lenses of shale and siltstone. The yellowish brown or brown sandstone may have discontinuous lenses of hard sandstone or shale in some pedons. The soil-bedrock interface is considered a paralithic contact and roots plane out at the contact.

TAXONOMIC CLASS: Loamy, mixed, superactive, nonacid, frigid, shallow Ustic Torriorthents

SUITABILITY FOR TOPSOIL (according to WDEQ Guideline 1, 1994): Marginal values were found for saturation percentage from 12-18". Estimated salvage depth is 5 inches due to the presence of the "C" horizon.

GEOGRAPHIC SETTING (according to official series description): Onason soils are on footslopes, backslopes, and shoulders of rolling and steep hills and ridges. These soils formed in residuum and slopewash alluvium weathered from the underlying noncalcareous sandstone. Slopes range from 5 to 45 percent. Elevations are 6,000 to 7,600 feet. The climate is cool, semiarid with moist springs and dry summers. The mean annual precipitation ranges from 10 to 14 inches of which about half falls as snow or rain in April, May, and early June. The mean annual temperature is about 34 to 44 degrees F. The estimated frost-free season is about 80 to 110 days, but frost may occur in any month.

VARIATION FROM TYPICAL SERIES: The pH is slightly more acidic from 5-18" than normal. There is no typical A2 horizon.

ONASON loamy sand

SOIL MAPPING UNIT: ON

SOIL SAMPLE LOCATION: 7

TYPICAL PEDON: Onason gravelly loamy sand - rangeland. (Colors are for dry soil unless otherwise stated.)

The Onason series consists of well drained soils that are shallow and very shallow to soft sandstone. These soils formed in residuum and slopewash alluvium weathered from the underlying bedrock. Onason soils are on footslopes, backslopes, and shoulders of hills and ridges. Slopes range from 5 to 45 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 41 degrees F.

A--0 to 5 inches; brown (10YR 5/3) loamy sand, brown (10YR 4/3) moist; weak very fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many fine and few medium roots; 15 percent semirounded pebbles; non-effervescent; slightly acid (pH 6.2); abrupt smooth boundary.

C--5 to 18 inches; light yellowish brown (2.5Y 6/4) sandy loam, light olive brown (2.5Y 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine and few medium roots; 15 percent semirounded pebbles; non-effervescent; slightly acid (pH 6.3); abrupt wavy boundary.

Cr--18 to 36 inches; soft, coarse-grained non-calcareous sandstone interbedded with thin lenses of shale.

TYPE LOCATION: Fremont County, Wyoming; refer to waypoint 7 on the map included in this report.

RANGE IN CHARACTERISTICS (according to official series description): Depth to the paralithic contact and bedrock ranges from 4 to 20 inches. These soils are noncalcareous throughout. The mean annual soil temperature is 36 to 45 degrees F., and the mean summer soil temperature is 59 to 62 degrees F. The particle size control section averages gravelly sandy loam or sandy loam throughout. Clay ranges from 8 to 18 percent and rock fragments of fine or very fine semirounded pebbles range from 0 to 35 percent. EC is less than 2 mmhos throughout.
The A horizon has hue of 2.5Y or 10YR, value of 4 through 6 dry, 3 through 5 moist, and chroma of 2 through 4. Lag gravel covering up to 75 percent of the surface is common in some pedons. Reaction is neutral or mildly alkaline.

The C horizon has hue of 2.5Y or 10YR, value of 5 or 6 dry, 4 through 6 moist, and chroma of 2 through 4. A thin Bw horizon is present in some pedons. Reaction is neutral or mildly alkaline.

The Cr horizon consists of soft, noncalcareous, coarse- and medium-grained sandstone interbedded with thin lenses of shale and siltstone. The yellowish brown or brown sandstone may have discontinuous

lenses of hard sandstone or shale in some pedons. The soil-bedrock interface is considered a paralithic contact and roots plane out at the contact.

TAXONOMIC CLASS: Loamy, mixed, superactive, nonacid, frigid, shallow Ustic Torriorthents

SUITABILITY FOR TOPSOIL (according to WDEQ Guideline 1, 1994): Marginal values were found for saturation percentage from 0-18". Estimated salvage depth is 0 inches due to marginal saturation percentage values.

GEOGRAPHIC SETTING (according to official series description): Onason soils are on footslopes, backslopes, and shoulders of rolling and steep hills and ridges. These soils formed in residuum and slopewash alluvium weathered from the underlying noncalcareous sandstone. Slopes range from 5 to 45 percent. Elevations are 6,000 to 7,600 feet. The climate is cool, semiarid with moist springs and dry summers. The mean annual precipitation ranges from 10 to 14 inches of which about half falls as snow or rain in April, May, and early June. The mean annual temperature is about 34 to 44 degrees F. The estimated frost-free season is about 80 to 110 days, but frost may occur in any month.

VARIATION FROM TYPICAL SERIES: The pH is slightly more acidic than normal. There is no typical A2 horizon.

CUSHOOL sandy loam

SOIL MAPPING UNIT: CU

SOIL SAMPLE LOCATION: 8

TYPICAL PEDON: Cushool sandy loam -rangeland. (Colors are for dry soil unless otherwise stated.)

The Cushool series consists of well drained soils that are moderately deep to soft sandstone. They formed in slope alluvium and colluvium over residuum weathered from sandy shale and sandstone. Cushool soils are on rock-controlled hills, pediments, structural benches, ridges, and short fan aprons. Slopes are 0 to 50 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 41 degrees F.

A--0 to 6 inches; grayish brown (10YR 5/2) sandy loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; non-effervescent; neutral (pH 6.6); clear smooth boundary.

Bt1--6 to 18 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; few distinct clay films on faces of peds and inside root channels; non-effervescent; neutral (pH 6.8); clear smooth boundary.

Bt2--18 to 30 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few fine roots; few distinct clay films on faces of peds and in root channels; non-effervescent; neutral (pH 6.7); gradual wavy boundary.

Cr--30 to 36 inches; soft, non-calcareous sand interbedded with thin and moderately thick lenses of sandstone.

TYPE LOCATION: Fremont County, Wyoming; refer to waypoint 8 on the map included in this report.

RANGE IN CHARACTERISTICS (according to official series description):

Mean annual soil temperature ranges: 41 to 47 degrees F.
Mean summer temperature: 59 to 63 degrees F
Depth to calcic horizon: 11 to 34 inches
Depth to paralithic contact: 20 to 40 inches shale interbedded with sandstone
These soils are typically free of carbonates through the upper part of the Bt horizon.
Rock fragments range from 0 to 30 percent throughout the whole soil and are pebbles or channers.

Exchangeable sodium ranges from 0 to 15 percent throughout the argillic horizon and Bk horizons.
EC ranges from 0 to 4 mmhos throughout.

A horizon:
Hue: 7.5YR to 5Y
Value: 4 through 7 dry, 3 through 5 moist
Chroma: 2 through 6 dry or moist
Calcium carbonate equivalent: 0 to 5 percent
Reaction: neutral through moderately alkaline

Bt horizon:
Hue: 7.5YR to 5Y
Value: 4 through 6 dry, 3 or 4 moist
Chroma: 2 through 6 dry or moist
Texture: sandy clay loam, fine sandy loam, or sandy loam with 18 to 35 percent clay, 0 to 28 percent silt, and 45 to 80 percent sand with more than 35 percent being fine sand or coarser.
Calcium carbonate equivalent: 0 to 5 percent
Reaction: neutral through moderately alkaline
The Btk horizon when present is moderately or strongly alkaline.

Bk horizon:
Hue: 7.5YR to 5Y
Value: 5 through 7 dry, 4 through 7 moist
Chroma: 2 through 6 dry or moist
Texture: loamy fine sand, sandy loam, fine sandy loam
Calcium carbonate equivalent: 5 to 15 percent
Reaction: moderately or strongly alkaline

A thin C horizon is present in some pedons.

TAXONOMIC CLASS: Fine, smectitic, frigid Ustic Paleargids

SUITABILITY FOR TOPSOIL (according to WDEQ Guideline 1, 1994): Marginal values were found for saturation percentage from 6-30". Estimated salvage depth is 6 inches due to marginal saturation percentage values.

GEOGRAPHIC SETTING (according to official series description):

Parent material: slope alluvium and colluvium over residuum weathered from sandy shale and sandstone
Landform: rock-controlled hill and ridge slopes, fan aprons, pediments, and structural benches

Slopes: 0 to 50 percent
Elevations: 5,300 to 7,800 feet
Mean annual precipitation: about 12 inches but ranges from 9 to 14 inches of which about half falls as snow and rain in April, May, and early June
Mean annual temperature: about 41 degrees F. and ranges from 39 to 45 degrees F.
Frost-free season: 75 to 110 days depending upon elevation, aspect, and air drainage.

VARIATION FROM TYPICAL SERIES: This profile is more acidic from 18-30". This profile is less calcareous than typical.

ROCK RIVER loam

SOIL MAPPING UNIT: RO

SOIL SAMPLE LOCATION: 10

TYPICAL PEDON: Rock River loam-rangeland. (Colors are for dry soil unless otherwise stated.)

The Rock River series consists of very deep, well drained soils that formed in calcareous alluvium derived mainly from sandstone, eolian deposits, and residuum. Rock River soils are on alluvial fan aprons, relict terraces, benches, hillslopes, and areas of valley fill. Slopes are 0 to 25 percent. The mean annual precipitation is about 10 inches, and the mean annual temperature is about 42 degrees F.

A--0 to 5 inches; light brownish gray (10YR 6/2) loam, dark yellowish brown (10YR 3/4) moist; hard crust that parts to weak fine granular; hard, very friable, slightly sticky and slightly plastic; many fine and medium roots; non-effervescent; slightly alkaline (pH 7.5); clear smooth boundary.

Bt1--5 to 10 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate medium angular blocky; hard, firm sticky and plastic; few fine and many medium roots; continuous thin clay films on faces of peds; non-effervescent; slightly alkaline (pH 7.7); clear smooth boundary.

Bt2--10 to 20 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate fine and medium angular blocky; hard, firm, sticky and plastic; few coarse roots; continuous, thin clay films on faces of peds; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bt3--20 to 33 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common thin clay films on faces of peds; slightly effervescent, lime as many fine and medium soft masses and threads; 10 percent pebbles 1/4 to 3/4 inch in diameter; moderately alkaline (pH 8.0); clear smooth boundary.

Bt4--33 to 44 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common thin clay films on faces of peds; slightly effervescent, lime as many fine and medium soft masses and threads; 10 percent pebbles 1/4 to 3/4 inch in diameter; moderately alkaline (pH 8.1); clear smooth boundary.

Bt5--44 to 60 inches; light brownish gray (10YR 6/2) loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; slightly effervescent; moderately alkaline (pH 8.0).

TYPE LOCATION: Fremont County, Wyoming; refer to waypoint 10 on the map included in this report.

RANGE IN CHARACTERISTICS (according to official series description):

Depth to continuous horizons of calcium carbonate accumulation is 13 to 30 inches. Depth to the base of the argillic horizon is 12 to 34 inches. The mean annual soil temperature ranges from 43 to 46 degrees F., and the mean summer soil temperature ranges from 59 to 65 degrees F. EC is less than 4 mmhos throughout. The rock fragments in the soil are less than 3/4 inch in diameter.

The A horizon has hue of 2.5Y through 7.5YR, value of 4 through 6 dry, 3 through 5 moist, and chroma of 2 through 4. Reaction is neutral through moderately alkaline.

The Bt horizon has hue of 2.5Y through 7.5YR, value of 4 through 6 dry, 4 or 5 moist, and chroma of 2 through 6. Texture is sandy clay loam or gravelly sandy clay loam, averaging 20 to 35 percent clay and has more than 35 percent fine or coarser sand. Rock fragments range from 0 to 25 percent pebbles. Reaction is neutral through moderately alkaline.

The Bk horizon has hue of 2.5Y through 7.5YR, value of 5 through 8 dry, 4 through 7 moist, and chroma of 2 through 6. Texture is sandy clay loam, sandy loam, or fine sandy loam modified with from 0 to 30 percent pebbles. Some pedons have textures of loamy sand or coarser below 40 inches. It has accumulation of secondary calcium carbonate that ranges from 1 through 14 percent. Reaction is moderately or strongly alkaline. Some pedons have a C horizon.

TAXONOMIC CLASS: Fine-loamy, mixed, superactive, frigid Ustic Calciargids

SUITABILITY FOR TOPSOIL (according to WDEQ Guideline 1, 1994): Marginal values were found for selenium and EC from 20-60” and for SAR from 10-20”. Unsuitable values were found for SAR from 20-60”. Estimated salvage depth is 10 inches due to marginal SAR values.

GEOGRAPHIC SETTING (according to official series description):

Rock River soils are on alluvial fans, fan aprons, benches, hillslopes, and toeslopes. The soils formed in material weathered from calcareous sandstone, eolian deposits, and residuum. Slopes are 0 to 25 percent. Elevation is 5,900 to 7,800 feet. The mean annual precipitation ranges from 10 to 14 inches of which about half falls as snow or rain in April, May, and early June. The mean annual temperature is about 41 to 45 degrees F., and the mean summer temperature is 59 to 63 degrees F. The frost-free season is about 75 to 110 days but varies according to aspect, elevation, and air drainage.

VARIATION FROM TYPICAL SERIES: This profile is less calcareous than typical. The texture is slightly finer than usual from 0-10” and 20-60”.

BOSLER loam

SOIL MAPPING UNIT: BO

SOIL SAMPLE LOCATION: 11

TYPICAL PEDON: Bosler loam-rangeland. (Colors are for dry soil unless otherwise stated.

The Bosler series consists of very deep, well drained soils formed in slopewash alluvium. They occupy relict alluvial terraces and alluvial fan aprons. Slopes typically are less than 6 percent but range from 0 to 15 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 41 degrees F.

A--0 to 6 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, very friable, nonsticky and nonplastic; common fine and very fine roots; 10 percent fine gravel; non-effervescent; neutral (pH 6.6); clear smooth boundary.

Bt1--6 to 14 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots; common distinct clay films on faces of peds; 5 percent fine gravel; non-effervescent; slightly alkaline (pH 7.4); clear smooth boundary.

Bt2--14 to 28 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots; common distinct clay films on faces of peds; 5 percent fine gravel; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Btk--28 to 40 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots; common distinct clay films on faces of peds; 5 percent fine gravel; moderately effervescent; moderately alkaline (pH 7.9); clear smooth boundary.

2C--40 to 60 inches; very gravelly sand; single grained, loose; calcareous; 40 percent fine and medium granitic and quartzitic gravel. (This horizon was considered paralithic in the field and was not sampled)

TYPE LOCATION: Fremont County, Wyoming; refer to waypoint 11 on the map included in this report.

RANGE IN CHARACTERISTICS (according to official series description):

The depth of contrasting 2Bk or 2C horizon is 20 to 40 inches. The mean annual soil temperature ranges from 41 to 47 degrees F., and the mean annual summer temperature ranges from 59 to 63 degrees F. Rock fragment content above the 2Bk or 2C horizon ranges from 0 to 15 percent gravel.

The A horizon has hue of 7.5YR through 2.5Y, value of 5 or 6 dry, 3 through 5 moist, and chroma of 2 through 4. EC is less than 2 mmhos. This horizon is typically free of carbonates but may effervesce slightly in some pedons. Reaction ranges from neutral through moderately alkaline.

The Bt and Btk horizons have hue of 7.5YR through 2.5Y, value of 4 through 6 dry, 3 through 6 moist, and chroma of 2 through 4. Texture is sandy clay loam or clay loam with 20 to 35 percent clay and more than 35 percent fine sand or coarser. EC is less than 2 mmhos. Reaction is neutral through moderately alkaline. The Bt is a diagnostic argillic horizon, and in most pedons the Btk is also part of the diagnostic argillic.

The Bk horizon has hue of 7.5YR through 2.5Y, value of 6 through 8 dry, 5 through 7 moist, and chroma of 1 through 4. Texture is loam with 18 to 27 percent clay. EC is less than 2 mmhos. Reaction is moderately or strongly alkaline. The Bk is a diagnostic calcic horizon with 15 to 35 percent calcium carbonate equivalent.

The 2C or 2Bk horizon has variable colors depending upon the lithochromic colors of the clean sand and gravel. Texture is gravelly sand, extremely gravelly sand, very gravelly loamy sand, loamy sand or sand. This horizon may be stratified with lenses of sand or gravel. Rock fragments vary with strata but average from 0 to 70 percent fine and medium quartzitic or granitic gravel. There is less than 5 percent cobbles present.

TAXONOMIC CLASS: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Ustic Calciargids

SUITABILITY FOR TOPSOIL (according to WDEQ Guideline 1, 1994): Unsuitable values were found for SAR from 28-40”. Estimated salvage depth is 28 inches due to unsuitable SAR values.

GEOGRAPHIC SETTING (according to official series description): Bosler soils are on gently to moderately sloping relict high terraces, fan aprons, and fan piedmonts. They formed in medium textured, mixed alluvium over sand and gravel strata. Elevation ranges from 6,000 to 8,000 feet. The mean annual precipitation ranges from 9 to 14 inches of which about half falls as snow and rain in April, May, and early June. The mean annual temperature ranges from 40 to 45 degrees F. The frost-free season is estimated to be 70 to 110 days depending upon elevation, aspect, and air drainage.

VARIATION FROM TYPICAL SERIES: This profile is slightly finer than typical from 0-28”.

BOSLER sandy loam

SOIL MAPPING UNIT: BO

SOIL SAMPLE LOCATION: 13

TYPICAL PEDON: Bosler sandy loam-rangeland. (Colors are for dry soil unless otherwise stated.

The Bosler series consists of very deep, well drained soils formed in slopewash alluvium. They occupy relict alluvial terraces and alluvial fan aprons. Slopes typically are less than 6 percent but range from 0 to 15 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 41 degrees F.

A--0 to 8 inches; grayish brown (10YR 5/2) sandy loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, very friable, nonsticky and nonplastic; common fine and very fine roots; 10 percent fine gravel; non-effervescent; neutral (pH 6.8); clear smooth boundary.

Bt--8 to 16 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots; common distinct clay films on faces of peds; 5 percent fine gravel; non-effervescent; slightly acid (pH 6.3); clear smooth boundary.

C1--16 to 26 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots; common distinct clay films on faces of peds; 5 percent fine gravel; non-effervescent; neutral (pH 6.7); clear smooth boundary.

C2--26 to 36 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots; common distinct clay films on faces of peds; 5 percent fine gravel; non-effervescent; neutral (pH 7.3); clear smooth boundary.

2C--36 to 60 inches; very gravelly sand; single grained, loose; non-effervescent; 40 percent fine and medium granitic and quartzitic gravel. (This horizon was considered paralithic in the field and was not sampled)

TYPE LOCATION: Fremont County, Wyoming; refer to waypoint 13 on the map included in this report.

RANGE IN CHARACTERISTICS (according to official series description): The depth of contrasting 2Bk or 2C horizon is 20 to 40 inches. The mean annual soil temperature ranges from 41 to 47 degrees F.,

and the mean annual summer temperature ranges from 59 to 63 degrees F. Rock fragment content above the 2Bk or 2C horizon ranges from 0 to 15 percent gravel.

The A horizon has hue of 7.5YR through 2.5Y, value of 5 or 6 dry, 3 through 5 moist, and chroma of 2 through 4. EC is less than 2 mmhos. This horizon is typically free of carbonates but may effervesce slightly in some pedons. Reaction ranges from neutral through moderately alkaline.

The Bt and Btk horizons have hue of 7.5YR through 2.5Y, value of 4 through 6 dry, 3 through 6 moist, and chroma of 2 through 4. Texture is sandy clay loam or clay loam with 20 to 35 percent clay and more than 35 percent fine sand or coarser. EC is less than 2 mmhos. Reaction is neutral through moderately alkaline. The Bt is a diagnostic argillic horizon, and in most pedons the Btk is also part of the diagnostic argillic.

The Bk horizon has hue of 7.5YR through 2.5Y, value of 6 through 8 dry, 5 through 7 moist, and chroma of 1 through 4. Texture is loam with 18 to 27 percent clay. EC is less than 2 mmhos. Reaction is moderately or strongly alkaline. The Bk is a diagnostic calcic horizon with 15 to 35 percent calcium carbonate equivalent.

The 2C or 2Bk horizon has variable colors depending upon the lithochromic colors of the clean sand and gravel. Texture is gravelly sand, extremely gravelly sand, very gravelly loamy sand, loamy sand or sand. This horizon may be stratified with lenses of sand or gravel. Rock fragments vary with strata but average from 0 to 70 percent fine and medium quartzitic or granitic gravel. There is less than 5 percent cobbles present.

TAXONOMIC CLASS: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Ustic Calciargids

SUITABILITY FOR TOPSOIL (according to WDEQ Guideline 1, 1994): Marginal values were found for saturation percentage from 16-36” and for coarse fragment percentage from 16-26”. Estimated salvage depth is 16 inches due to due to marginal saturation and coarse fragment percentage values.

GEOGRAPHIC SETTING (according to official series description): Bosler soils are on gently to moderately sloping relict high terraces, fan aprons, and fan piedmonts. They formed in medium textured, mixed alluvium over sand and gravel strata. Elevation ranges from 6,000 to 8,000 feet. The mean annual precipitation ranges from 9 to 14 inches of which about half falls as snow and rain in April, May, and early June. The mean annual temperature ranges from 40 to 45 degrees F. The frost-free season is estimated to be 70 to 110 days depending upon elevation, aspect, and air drainage.

VARIATION FROM TYPICAL SERIES: This profile is less calcareous than usual. There are “C” horizons in place of the typical “Btk” and “Bk” horizons. The pH is more acidic from 8-36” than normal.

ONASON Reclaimed Variant

SOIL MAPPING UNIT: ON-RV

SOIL SAMPLE LOCATION: 17

TYPICAL PEDON: Onason gravelly sandy loam - rangeland. (Colors are for dry soil unless otherwise stated.)

The Onason series consists of well drained soils that are shallow and very shallow to soft sandstone. These soils formed in residuum and slopewash alluvium weathered from the underlying bedrock. Onason soils are on footslopes, backslopes, and shoulders of hills and ridges. Slopes range from 5 to 45 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 41 degrees F.

A--0 to 4 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many fine and few medium roots; 15 percent semirounded pebbles; non-effervescent; neutral (pH 7.3); abrupt smooth boundary.

C--4 to 10 inches; light yellowish brown (2.5Y 6/4) sandy loam, light olive brown (2.5Y 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine and few medium roots; 15 percent semirounded pebbles; non-effervescent; neutral (pH 7.2); abrupt wavy boundary.

Cr--10 to 24 inches; soft, coarse-grained non-calcareous sandstone interbedded with thin lenses of shale.

TYPE LOCATION: Fremont County, Wyoming; refer to waypoint 17 on the map included in this report.

RANGE IN CHARACTERISTICS (according to official series description): Depth to the paralithic contact and bedrock ranges from 4 to 20 inches. These soils are noncalcareous throughout. The mean annual soil temperature is 36 to 45 degrees F., and the mean summer soil temperature is 59 to 62 degrees F. The particle size control section averages gravelly sandy loam or sandy loam throughout. Clay ranges from 8 to 18 percent and rock fragments of fine or very fine semirounded pebbles range from 0 to 35 percent. EC is less than 2 mmhos throughout.
The A horizon has hue of 2.5Y or 10YR, value of 4 through 6 dry, 3 through 5 moist, and chroma of 2 through 4. Lag gravel covering up to 75 percent of the surface is common in some pedons. Reaction is neutral or mildly alkaline.

The C horizon has hue of 2.5Y or 10YR, value of 5 or 6 dry, 4 through 6 moist, and chroma of 2 through 4. A thin Bw horizon is present in some pedons. Reaction is neutral or mildly alkaline.

The Cr horizon consists of soft, noncalcareous, coarse- and medium-grained sandstone interbedded with thin lenses of shale and siltstone. The yellowish brown or brown sandstone may have discontinuous

lenses of hard sandstone or shale in some pedons. The soil-bedrock interface is considered a paralithic contact and roots plane out at the contact.

TAXONOMIC CLASS: Loamy, mixed, superactive, nonacid, frigid, shallow Ustic Torriorthents

SUITABILITY FOR TOPSOIL (according to WDEQ Guideline 1, 1994): Marginal values were found for saturation percentage from 0-10". Estimated salvage depth is 0 inches due to marginal saturation percentage values.

GEOGRAPHIC SETTING (according to official series description): Onason soils are on footslopes, backslopes, and shoulders of rolling and steep hills and ridges. These soils formed in residuum and slopewash alluvium weathered from the underlying noncalcareous sandstone. Slopes range from 5 to 45 percent. Elevations are 6,000 to 7,600 feet. The climate is cool, semiarid with moist springs and dry summers. The mean annual precipitation ranges from 10 to 14 inches of which about half falls as snow or rain in April, May, and early June. The mean annual temperature is about 34 to 44 degrees F. The estimated frost-free season is about 80 to 110 days, but frost may occur in any month.

VARIATION FROM TYPICAL SERIES: This is reclaimed soil that most resembles the Onason soil series. There is no typical A2 horizon.

ADDENDUM D-7-D

SOIL LABORATORY ANALYSIS

Inter-Mountain Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Soil Analysis Report
Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Report ID: S1008301001

Project: Sheep Mtn.
Date Received: 8/18/2010

Date Reported: 9/30/2010
Work Order: S1008301

Lab ID	Sample ID	Depths Inches	pH s.u.	Saturation %	Electrical Conductivity dS/m	Organic Matter LOI %	PE Calcium meq/L	PE Magnesium meq/L	PE Sodium meq/L	SAR
S1008301-001	#2	0-6	7.1	23.9	0.48	0.8	2.39	0.49	0.23	0.19
S1008301-002	#2	6-12	7.4	26.5	0.49	1.2	2.58	0.62	0.21	0.16
S1008301-003	#2	12-19	7.1	34.1	0.49	1.2	2.42	0.93	0.29	0.23
S1008301-004	#2	19-30	7.5	32.2	0.47	1.1	2.04	0.89	0.39	0.32
S1008301-005	#4	0-5	6.3	27.7	0.39	1.1	1.38	0.52	0.14	0.14
S1008301-006	#4	5-11	6.2	22.4	0.40	1.1	1.53	0.48	0.24	0.24
S1008301-007	#4	11-18	6.3	25.1	0.33	1.0	1.28	0.50	0.28	0.29
S1008301-008	#4	18-30	6.6	28.2	0.32	0.9	1.30	0.56	0.30	0.32
S1008301-009	#6	0-5	6.6	27.9	0.44	1.3	1.41	0.51	0.12	0.12
S1008301-010	#6	5-12	6.4	27.0	0.64	0.9	2.23	0.90	0.22	0.18
S1008301-011	#6	12-18	6.5	23.5	0.37	0.9	1.21	0.54	0.27	0.29
S1008301-012	#7	0-5	6.2	24.8	0.27	1.1	0.75	0.27	0.10	0.14
S1008301-013	#7	5-18	6.3	22.0	0.35	0.8	1.03	0.39	0.25	0.30
S1008301-014	#8	0-6	6.6	25.7	0.38	1.0	1.09	0.69	0.17	0.18
S1008301-015	#8	6-18	6.8	21.8	0.47	0.8	1.87	0.77	0.20	0.17
S1008301-016	#8	18-30	6.7	23.3	0.30	0.7	0.84	0.39	0.23	0.29
S1008301-017	#9	0-5	6.4	31.8	0.50	1.5	2.00	0.95	0.32	0.27
S1008301-018	#9	5-10	6.4	42.0	0.44	1.6	0.91	0.75	1.47	1.61
S1008301-019	#9	10-20	7.3	43.3	0.58	1.3	0.77	0.64	2.84	3.38
S1008301-020	#10	0-5	7.5	34.0	0.63	1.5	2.26	1.33	0.63	0.47

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Page 1 of 4

Inter-Mountain Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
(307) 672-8945

Soil Analysis Report
Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Report ID: S1008301001

Project: Sheep Mtn.
Date Received: 8/18/2010

Date Reported: 9/30/2010
Work Order: S1008301

Lab ID	Sample ID	Depths Inches	Sand %	Silt %	Clay %	Texture	Coarse Fragment %	Available Selenium ppm	Available Boron ppm
S1008301-001	#2	0-6	75.0	15.0	10.0	Sandy Loam	17.0	<0.02	0.15
S1008301-002	#2	6-12	76.0	14.0	10.0	Sandy Loam	10.6	<0.02	0.17
S1008301-003	#2	12-19	63.0	19.0	18.0	Sandy Loam	11.7	<0.02	0.31
S1008301-004	#2	19-30	58.0	25.0	17.0	Sandy Loam	2.25	<0.02	0.25
S1008301-005	#4	0-5	82.0	11.0	7.0	Loamy Sand	2.46	<0.02	0.27
S1008301-006	#4	5-11	71.0	18.0	11.0	Sandy Loam	12.7	<0.02	0.29
S1008301-007	#4	11-18	69.0	18.0	13.0	Sandy Loam	9.88	<0.02	0.22
S1008301-008	#4	18-30	67.0	17.0	16.0	Sandy Loam	7.63	<0.02	0.21
S1008301-009	#6	0-5	74.0	16.0	10.0	Sandy Loam	7.51	<0.02	0.29
S1008301-010	#6	5-12	72.0	17.0	11.0	Sandy Loam	7.98	<0.02	0.27
S1008301-011	#6	12-18	73.0	16.0	11.0	Sandy Loam	8.53	<0.02	0.23
S1008301-012	#7	0-5	81.0	11.0	8.0	Loamy Sand	8.50	<0.02	0.21
S1008301-013	#7	5-18	78.0	11.0	11.0	Sandy Loam	8.50	<0.02	0.22
S1008301-014	#8	0-6	76.0	14.0	10.0	Sandy Loam	17.3	<0.02	0.16
S1008301-015	#8	6-18	77.0	13.0	10.0	Sandy Loam	15.7	<0.02	0.12
S1008301-016	#8	18-30	71.0	16.0	13.0	Sandy Loam	12.6	<0.02	0.10
S1008301-017	#9	0-5	66.0	22.0	12.0	Sandy Loam	2.02	<0.02	0.21
S1008301-018	#9	5-10	31.0	41.0	28.0	Clay Loam	1.72	<0.02	0.24
S1008301-019	#9	10-20	29.0	43.0	28.0	Clay Loam	16.0	<0.02	0.26
S1008301-020	#10	0-5	49.0	32.0	19.0	Loam	7.41	<0.02	0.36

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Page 2 of 4

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1673 Terra Avenue, Sheridan, Wyoming 82801
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Soil Analysis Report
Titan Uranium USA
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Report ID: S1008301001

Project: Sheep Mtn.
Date Received: 8/18/2010

Date Reported: 9/30/2010
Work Order: S1008301

Lab ID	Sample ID	Depths Inches	pH s.u.	Saturation %	Electrical Conductivity dS/m	Organic Matter LOI %	PE Calcium meq/L	PE Magnesium meq/L	PE Sodium meq/L	SAR
S1008301-021	#10	5-10	7.7	31.2	0.66	1.3	0.92	0.65	3.49	3.94
S1008301-022	#10	10-20	8.2	34.2	1.61	0.8	0.64	0.66	11.8	14.7
S1008301-023	#10	20-33	8.0	39.7	10.9	0.7	17.2	30.9	111	22.7
S1008301-024	#10	33-44	8.1	40.0	11.5	0.7	17.8	26.7	122	25.8
S1008301-025	#10	44-60	8.0	28.1	9.92	0.7	16.5	16.6	98.8	24.3
S1008301-026	#11	0-6	6.6	57.1	0.49	1.5	2.03	0.96	0.26	0.21
S1008301-027	#11	6-14	7.4	34.2	0.62	1.3	1.05	0.59	2.74	3.02
S1008301-028	#11	14-28	8.2	42.9	1.16	0.9	0.71	0.79	8.03	9.26
S1008301-029	#11	28-40	7.9	35.2	7.37	0.6	19.6	16.0	65.1	15.4
S1008301-031	#12	0-5	6.3	26.1	0.40	1.5	1.19	0.56	0.17	0.19
S1008301-032	#12	5-10	6.4	28.9	0.36	1.4	1.32	0.62	0.23	0.24
S1008301-033	#12	10-18	6.5	21.1	0.36	1.0	0.88	0.50	0.25	0.31
S1008301-034	#13	0-8	6.8	27.8	0.58	1.4	3.18	1.22	0.47	0.32
S1008301-035	#13	8-16	6.3	33.5	0.27	1.3	0.83	0.35	0.22	0.28
S1008301-036	#13	16-26	6.7	23.3	0.35	0.7	1.06	0.48	0.47	0.54
S1008301-037	#13	26-36	7.3	24.8	0.45	0.8	1.65	0.64	0.85	0.80
S1008301-038	#15	0-6	5.8	26.1	0.26	1.1	0.75	0.29	0.16	0.22
S1008301-039	#15	6-18	6.4	26.2	0.31	1.0	1.38	0.46	0.25	0.26
S1008301-040	#17	0-4	7.3	23.9	0.64	1.2	2.72	0.92	1.10	0.81
S1008301-041	#17	4-10	7.2	23.1	0.53	1.2	2.98	0.64	0.21	0.16

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Page 3 of 4

Inter-Mountain Laboratories, Inc.
1673 Terra Avenue, Sheridan, Wyoming 82801
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Soil Analysis Report
Titan Uranium USA
1225 Market St.
Riverton, WY 82501

Report ID: S1008301001

Project: Sheep Mtn.
Date Received: 8/18/2010

Date Reported: 9/30/2010
Work Order: S1008301

Lab ID	Sample ID	Depths Inches	Sand %	Silt %	Clay %	Texture	Coarse Fragment %	Available Selenium ppm	Available Boron ppm
S1008301-021	#10	5-10	51.0	28.0	21.0	Loam	5.55	<0.02	0.29
S1008301-022	#10	10-20	54.0	26.0	20.0	Sandy Clay Loam	9.04	<0.02	0.29
S1008301-023	#10	20-33	45.0	34.0	21.0	Loam	2.41	0.16	0.30
S1008301-024	#10	33-44	45.0	30.0	25.0	Loam	5.43	0.28	0.31
S1008301-025	#10	44-60	45.0	32.0	23.0	Loam	7.39	0.22	0.29
S1008301-026	#11	0-6	49.0	31.0	20.0	Loam	7.25	<0.02	0.17
S1008301-027	#11	6-14	45.0	36.0	19.0	Loam	3.52	<0.02	0.18
S1008301-028	#11	14-28	31.0	43.0	26.0	Loam	5.30	<0.02	0.35
S1008301-029	#11	28-40	56.0	27.0	17.0	Sandy Loam	14.3	<0.02	0.38
S1008301-031	#12	0-5	69.0	19.0	12.0	Sandy Loam	9.91	<0.02	0.22
S1008301-032	#12	5-10	66.0	17.0	17.0	Sandy Loam	7.33	<0.02	0.28
S1008301-033	#12	10-18	75.0	14.0	11.0	Sandy Loam	6.91	<0.02	0.21
S1008301-034	#13	0-8	69.0	18.0	13.0	Sandy Loam	15.0	<0.02	0.14
S1008301-035	#13	8-16	53.0	30.0	17.0	Sandy Loam	16.6	<0.02	0.16
S1008301-036	#13	16-26	73.0	16.0	11.0	Sandy Loam	27.8	<0.02	0.13
S1008301-037	#13	26-36	65.0	22.0	13.0	Sandy Loam	16.6	<0.02	0.19
S1008301-038	#15	0-6	77.0	12.0	11.0	Sandy Loam	12.1	<0.02	0.19
S1008301-039	#15	6-18	75.0	16.0	9.0	Sandy Loam	13.6	<0.02	0.16
S1008301-040	#17	0-4	73.0	17.0	10.0	Sandy Loam	14.5	<0.02	0.16
S1008301-041	#17	4-10	72.0	17.0	11.0	Sandy Loam	14.8	<0.02	0.20

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Page 4 of 4

ADDENDUM D-7-E
PRIME FARMLAND DESIGNATION

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
508 North Broadway Avenue
Riverton, Wyoming 82501
(307) 856-7524 Ext 3

Received 12-17-10

Date: December 15, 2010

To: Jacob Mulinix
P.O. Box 3467
Gillette, WY 82717-3467

Jacob,

Here is the information you requested. There are only 3 soil map units from this soil survey that have been determined to be Prime Farmland, and that is only when irrigated. See attached.

Nick Biltoft, DC
Riverton NRCS

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U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

PAGE 1 OF 1
03/31/99

PRIME FARMLAND
prime farmland

Map symbol	Soil name
104	Almy loam, 0 to 6 percent slopes (where irrigated)
185	Poposhia loam, 1 to 6 percent slopes (where irrigated)
207	Sinkson-Almy sandy clay loams, 0 to 6 percent slopes (where irrigated)

ADDENDUM D-7-F

PHOTOGRAPHS

(Photo time stamps are not accurate)

Photo 1: Profile view of Sample Point 2

Photo 2: General view of Sample Point 2

Photo 3: Profile view of Sample Point 4

Photo 4: General view of Sample Point 4

Photo 5: Profile view of Sample Point 6

Photo 6: General view of Sample Point 6

Photo 7: Profile view of Sample Point 7

Photo 8: General view of Sample Point 7

Photo 9: Profile view of Sample Point 8

Photo 10: General view of Sample Point 8

Photo 13: Profile view of Sample Point 10

Photo 14: General view of Sample Point 10

Photo 15: Profile view of Sample Point 11

Photo 16: General view of Sample Point 11

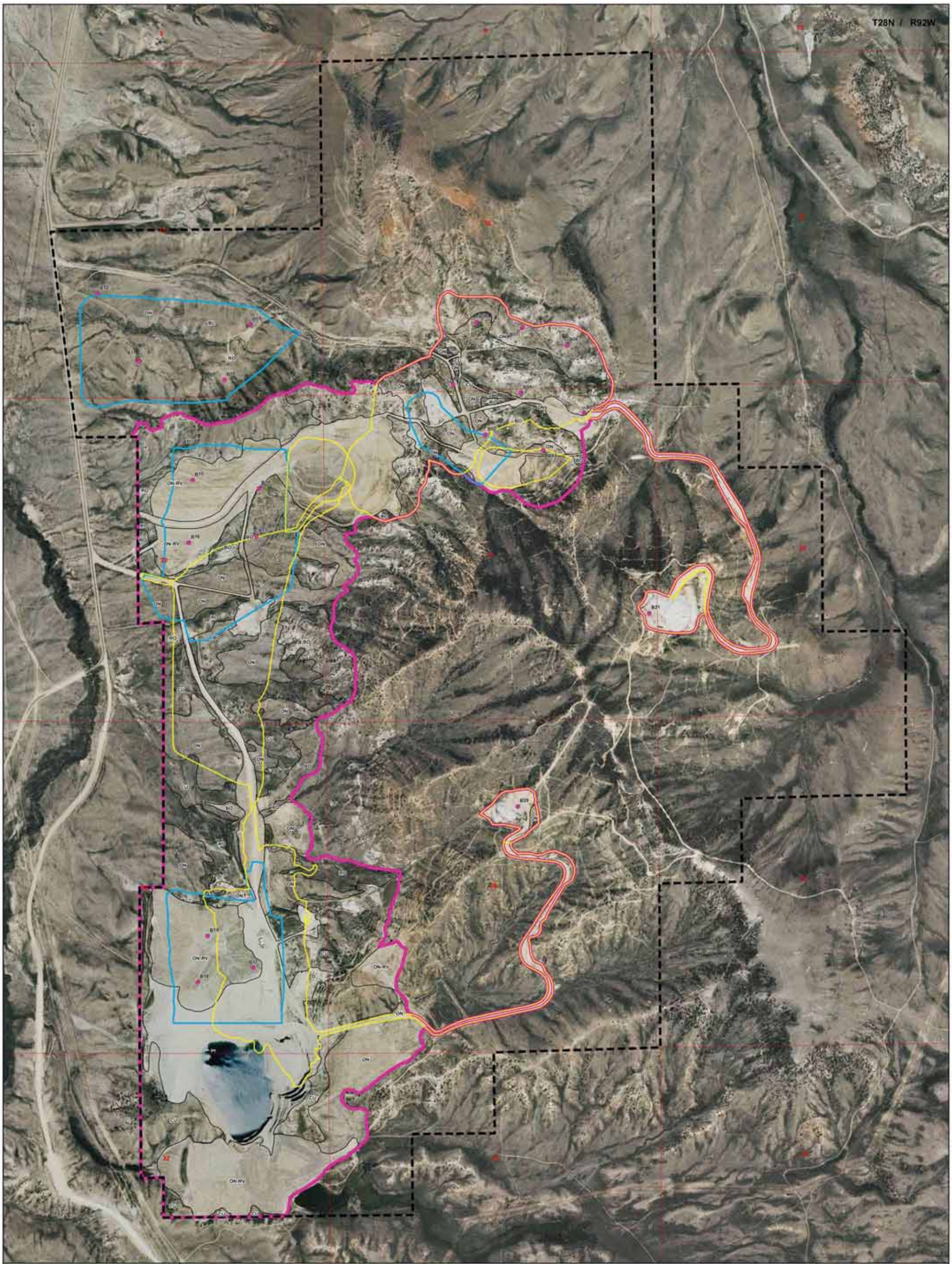
Photo 19: Profile view of Sample Point 13

Photo 22: Profile view of Sample Point 17

Photo 23: General view of Sample Point 17

ADDENDUM D-7-G

MAP



BRS Engineering
Titan Uranium
USA, Inc

Sheep Mountain
Baseline Soil
Assessment

Fremont County, WY

Legend

- Soil Sampling Locations
- Soil Map Units
- Permit Boundary
- Soil Analysis Area 2011
- Soil Survey Area 2010
- Maximum Extent of Surface Disturbance
- Sections
- TWN/RNG

Soil Series	MU Symbol
Blazon clay loam	BL
Bosler fine sandy loam	BO
Cushool sandy loam	CU
Disturbance	D
Onason gravelly sandy loam	ON
Onason Reclaimed Variant	ON-RV
Rock River sandy loam	RO

N

0 0.125 0.25 0.5
Miles
1:8,400

BKS Environmental Associates, Inc.

Map Created by: BKS - Tracy Speltz
Map Created on: April 30, 2010
Map Updated: June 14, 2011
Map Projection: NAD 83, UTM Zone 13
K:\Projects\BRS_Corporation\643_BRS_Titan_Sheep_MT_Uranium\Maps\BRS_Titan_Uranium_Project_Soils_v4.mxd

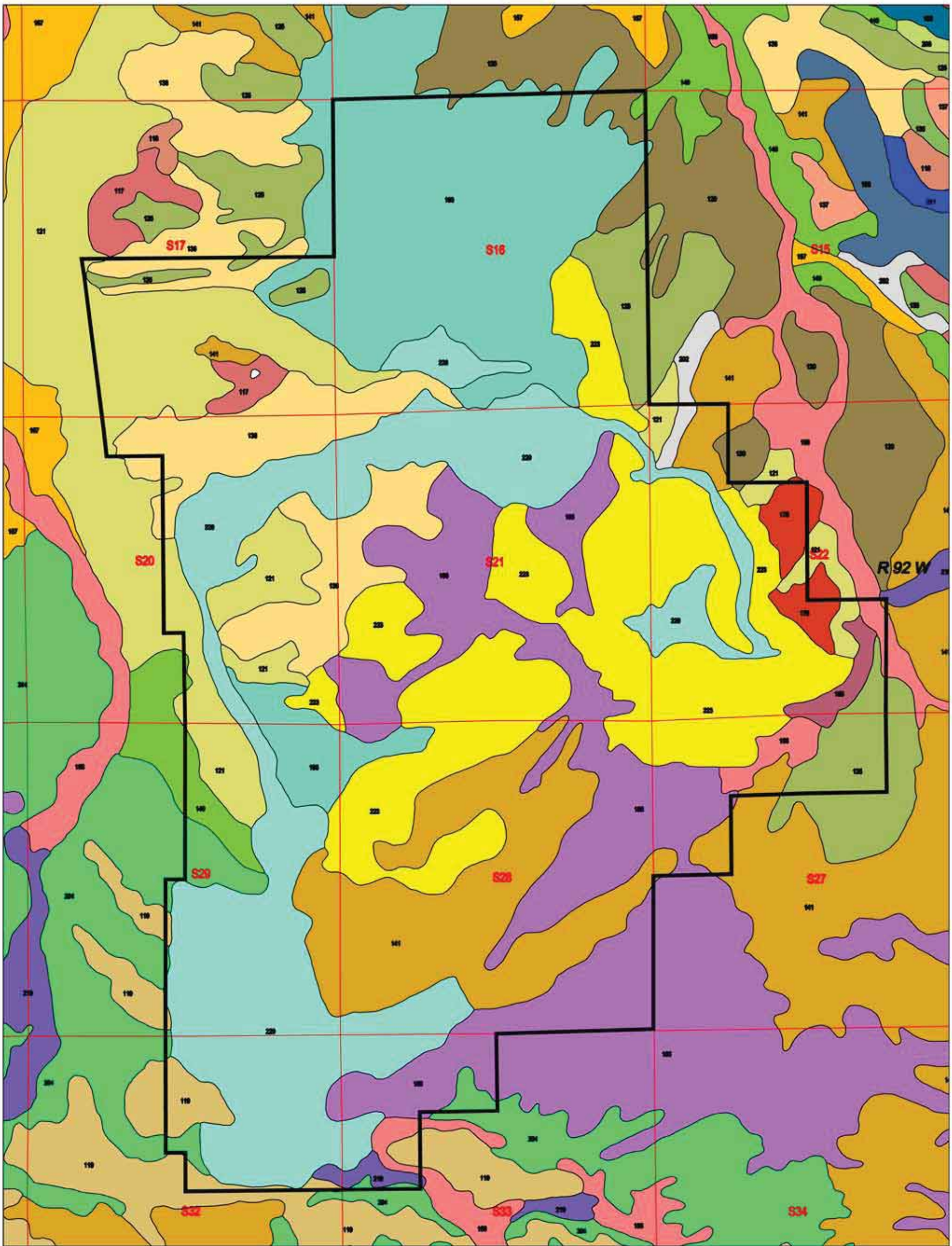
ADDENDUM D-7-H

1980 APPENDIX D-7 SOIL ASSESSMENT

REFER TO MINE PERMIT 381C

ADDENDUM D-7-I

NRCS SOIL MAP



LEGEND

SECTION LINE

PERMIT BOUNDARY

SOIL SERIES

117	Blackhall-Carmody association
118	Blazon-rock outcrop-Carmody complex
119	Blurrim-Onason complex
120	Bosler-Rock River sandy loams
121	Bosler-Ryan Park fine sandy loams
125	Brownsto very bouldery-Decross variant-Brownsto complex
135	Crago-Penoro association
136	Cragosen-Carmody-Blazon complex
137	Cragosen-Rock outcrop-Carmody complex
140	Cushool-Rock River Association
141	Dahlquist-Rock River complex
157	Havre-Absher-Forelle loams
158	Havre-Forelle-Glendive complex
175	Milvar-Milren complex
182	Posmore-Rock outcrop-Asholer complex
183	Peyton sandy loam
188	Quander-Youga-Onason complex
193	Rockinchair-Rock outcrop-Sinkson complex
196	Rock outcrop-Blackhall complex
202	Ryan Park loamy fine sand
203	Ryan Park-Carmody association
204	Ryark sandy loam
208	Sinkson-Almy-Thermopolis association
211	Thermopolis-Sinkson association
219	Venapai-Silas loams
223	Youga-Quander complex
229	Dumps, mine

N

1,500' 0 750' 1,500'

1 inch = 1,500'

BRS ENGINEERING

EXISTING SOIL CONDITIONS

SCALE: 1"=1500'

DRAWN BY:CDS

DATE: 6/1/11

SHEEP MOUNTAIN MINES
FREMONT COUNTY, WYOMING

REVISION DATE: 06/01/11

CAD FILENAME:

DWG. NUMBER: FIGURE

TITAN URANIUM USA INC

APPENDIX D8
ADDENDUM 2011

APPENDIX D-8

TITAN URANIUM USA, INC,

2011 BASELINE VEGETATION ASSESSMENT ADDENDUM

SHEEP MOUNTAIN PROJECT AREA

Prepared for:

Titan Uranium, USA Inc.

2510 15th St., Suite 7

Casper, WY 82609

Prepared by:

BKS Environmental Associates, Inc.

P.O. Box 3467

Gillette, Wyoming 82717

APPENDIX D-8 – VEGETATION
2011 ADDENDUM

APPENDIX D-5 – GEOLGY AND OVERBRUDEN
2011 ADDENDUM

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D8.3 SAGEBRUSH-GRASS ..... PAGE 7
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D8.5 VEGETATION SURVEY DISCUSSION ..... PAGE 12
D8.6 THREATENED, ENDANGERED, AND SPECIAL CONCERN PLANT SPECIES ..... PAGE 12

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ADDENDUMS

Vegetation Species Summary ..... Addendum D8-A
Vegetation Cover Summaries ..... Addendum D8-B
Vegetation Production Summaries ..... Addendum D8-C
Vegetation Density Summaries ..... Addendum D8-D
Tree DBH and Height Data ..... Addendum D8-E

D8.1 SURVEY METHODOLOGY

General

Methods incorporated in the survey are, at a minimum, those suggested by Wyoming DEQ, Land Quality Division (WDEQ-LQD), for a predisturbance survey of the vegetation components (Guideline No.2).

Mapping

Established techniques for mapping plant communities were implemented to determine vegetation communities within the study area. Aerial photos of the study area were obtained and areas of similar vegetation characteristics were delineated. Each mapping unit was examined and delineated in the field and data concerning vegetation structure and general physiography were recorded. These data were analyzed to provide an understanding of the area enabling:

1. the identification of the kinds of vegetation communities that would comprise the vegetation type map;
2. the development of the narrative to describe each mapping unit.

Trees and shrubs were used as name designators for vegetative units and, as a general rule, inclusions less than three acres were not mapped. Aerial photographs provided the base maps for the delineation of the mapping units.

Vegetation type delineation was followed by drafting the vegetation map on stable base mylar and determining acreages for each mapping unit.

Sampling Procedures

Cover and shrub height data were extracted from randomly located line transects, quadrats were used for production, total population counts were done for tree data, and reconnaissance surveys were implemented to identify presence or absence of noxious weeds, selenium indicator species, rare or endangered plants, browse species, and unique sites. Reconnaissance surveys and plant species collections were made during May, June, July, and August, 1980, and cover, production, shrub height and tree data were gathered during early to mid-August 1980. Threatened and endangered plant surveys and Bureau of Land Management (BLM) sensitive species surveys were also conducted between May and August 2010.

Sample Location Selection

A random sample for each vegetation type occurring within the proposed affected area was taken by laying out two perpendicular lines, one along the south edge of the permit area (x axis) and one along the west edge (y axis). (Sampling procedure varied slightly between the affected and control areas as described below.) On the affected area, starting point locations for randomly locating transects and quadrats were initially determined in the office prior to field work by establishing a grid with x and y axes, each containing 999 units. Unit size for each axis was determined by permit area width and length. Numbers were taken from a table of random numbers with 999 as the greatest possible number. The starting points for initiating randomization were then marked on a map. Random numbers were generated until sufficient points were obtained for each vegetation type. These points were then located as close as possible in the field and a second set of two 2-digit numbers was taken from a table of random numbers to

determine quadrat location. The field operator then paced the number indicated by the first random number in a predetermined direction. (North was used unless pacing in this direction would take the operator out of the selected vegetation type. If this occurred, the operator paced south from the starting point.) Then, the operator rotated 90 degrees to the right and paced the number of steps indicated by the second random number. The southwest corner of the exclosure or the cover transect starting point was set at the tip of the operator's boot.

On the control areas, the southwest corner of the site was designated the starting point with an approximate east-west line along the south edge of the control area as the x-axis and an approximate north-south line along the west edge of the area as the y axis. A set of two 2-digit numbers was taken from a table of random numbers with 99 as the greatest possible number. The field operator then paced along the y axis (north) the number indicated by the first random number, turned 90 degrees and paced in a direction parallel to the x axis number indicated by the second random number. The southwest corner of the exclosure was then established at the tip of the operators boot.

Exclosure Construction

Exclosures, erected in May, 1980, were constructed in the shape of a pyramid, standing approximately five feet high and having a square base approximately five feet on each side. Four pieces of 48-inch high, two-by four-inch mesh, 12.5-gauge welded wire were cut to fit each side of the exclosure and were secured at each corner to half-inch reinforcement bar. The four 6.7-foot long pieces of rebar were driven six or more inches in the ground and tied together at the top. Two or more l8-inch stakes (3/8-inch rebar) were driven in the ground at the base of two or more sides of the exclosure to help hold the wire against the ground.

Transects

The line-point intercept sampling technique was used for cover estimation as described in Wyoming DEQ Guideline No.2, March 1979. Twenty points were sampled for cover along each of the 30.5 meter (100 feet) line transects; a sample point every five feet.

Quadrats

Production data were extracted from a meter square quadrat placed in the center of each exclosure. Near the end of the 1980 growing season (early to mid-August) annual year's growth of the above-ground biomass within each quadrat was clipped by major species and life forms (perennial grasses, grass-like species, perennial forbs, half-shrubs, shrubs, annual grasses, and annual forbs) and placed in separate drying bags. Major species are defined as the three or more species which are dominant in the vegetation type being sampled (not necessarily dominant in the quadrat). Samples were oven dried at 105°C for 24 hours, weighed to the nearest 0.1 gram, and weights recorded on data sheets.

Sample Adequacy

The number of samples required for estimating cover and production in each vegetation type were determined using the formulas suggested by the Wyoming Department of Environmental Quality Guideline No.2, Revision 2, March, 1979. Determination of the actual number of exclosures to be erected was based on past experience in similar vegetation types. Random sampling proceeded until adequate numbers were attained for cover and production for each type in relation to

confidence levels established by Wyoming DEQ, LQD or until minimum sample numbers were met as required (Cover: 30 transects on proposed affected areas and 15 on control area; Production: 15 quadrats on proposed affected areas and 10 on control areas).

Reconnaissance Surveys

In addition to other field work, special reconnaissance surveys were undertaken to note the presence of weeds, rare and endangered plants, important browse species, selenium indicator plants, and unusual or unique features.

An approximate population count was made on tree species to be affected by proposed mining activities.

General slope and aspect were recorded for each vegetation type and photographs (35mm kodacolor print film) were taken of each vegetation community and any unique areas (photo location and direction are identified on the vegetation map). During the 2010, threatened, endangered, and BLM sensitive plant surveys, photographs were taken using a digital camera.

Species Composition

Plant specimens with questionable identifications were collected and identified by personnel at the Rocky Mountain Herbarium on the University of Wyoming campus and by Bob Dorn at the Rocky Mountain Herbarium in 2010. A species list has been compiled and is presented in Addendum D8-A to provide the number and types of species that were found on the study area during 1980. An additional column was added to the species list to reflect the species noted within the mine permit during the 2010 vegetation radionuclide and threatened, endangered, and BLM sensitive species surveys.

Cover

Sixty cover transects were sampled in the proposed Congo Pit project area (30 in the Sagebrush-Grass type and 30 in the Limber Pine-Big Sagebrush type). Fifty-nine transects were established in the control areas (29 in the Sagebrush-Grass type and 30 in the Limber Pine-Big Sagebrush control). Cover data by species, litter, rock, and bare ground are listed in Addendum D8-B and production data by species and/or lifeform are summarized in Addendum D8-C.

Each transect comprised a sample size of one and a detection of a ten percent reduction with 90 percent confidence was established as the minimum sample adequacy level for both total vegetation cover and vegetation-litter-rock. Cover transects location and direction were randomly determined using numbers from a table of random numbers for location and random numbers generated by an HP25 for direction. If a transect fell outside the vegetation type being sampled, new random orientations were selected until the transect was within the type.

At each 1.5 m. (5 feet) interval along the 30.5 m. (100 feet) transect (total of 20 points per transect) , the first hit along a line projected downward perpendicular to the lower edge of the steel tape was recorded. (When overstory was present, the first hit projected upward was recorded.) Vegetation by species, litter, rock and bare ground were determined for percent cover. If more than one plant species would be hit by projecting the point downward, the additional species hit would be recorded as overlapping plant canopy structure.

Production

Production data were extracted from a meter square quadrat placed in the center of each exclosure. Near the end of the 1980 growing season (early to mid August) annual year's growth of the above-ground biomass within each quadrat was clipped by major species and life forms (perennial grasses, grass-like species, perennial forbs, half-shrubs, shrubs, annual grasses and annual forbs) and placed in separate drying bags. Major species are defined as the three or more species which are dominant in the vegetation type being sampled (not necessarily dominant in the quadrat). Samples were oven-dried at 105° C for 24 hours, weighted to the nearest 0.1gram, and weights recorded on data sheets.

Shrub Density

Shrub heights were measured by species along cover transects beginning at production quadrats. Shrubs intersecting the 30.5 m. (100 feet) line transect were measured to the nearest centimeter. Shrub height data are listed by species in Addendum D8-D and tree DBH and height data are summarized in Addendum D8-E.

Tree Density

Tree Density was determined within the Limber Pine-Big Sagebrush vegetation type. The method of total population sampling was utilized since the widespread intermittent nature of tree spacing in the community type made the point-quarter sampling method less effective. Tree height and diameter at breast height (DBH) were determined for trees within the Limber Pine-Big Sagebrush vegetation type. An approximate total number of tree species was also made within that community.

Control Areas

A control area (2.5 acres or larger) was established for each vegetation type on a site outside the proposed affected area. These sites will be used for cover and production comparisons and the evaluation of precipitation effects when bond release is anticipated (DEQ, LQD Guideline No.2, March, 1979).

D8.2 VEGETATION SURVEY RESULTS

Mapping

Geographic and topographic location of the two major vegetation types occurring on the study area is reasonably predictable as they appear to be directly related to soil, soil depth, slope, aspect, and, to some degree, elevation. A third vegetation community, Quaking Aspen with a Grass-Forb understory, exists southeast of the proposed affected area. The type is along a small, narrow hillside drainage, away from any proposed affected areas.

The Sagebrush-Grass type covers more total acres both within the proposed affected area and study area for a total of 782 acres. The affected area totals 142 acres (43%) and the study area totals 640 acres (43%). Acreages for the Limber Pine-Big Sagebrush type total 35.5 acres on the affected area (11%) and 383 acres (28.9%) in the study area (Table 3.6-1). The Quaking Aspen--Grass Forb type will not be disturbed under present development plans. The type comprised 0.2 % of the study area.

Table 3.6-1: Summary of Acreages for Vegetation Type (August 1980)

Vegetation Communities	Proposed Affected Area	Sampled Area	Control	Study Area
Sagebrush-Grass	142	180	5	640
Limber Pine-Big Sagebrush	35.5	42	4	383
Quaking Aspen	0	0	0	3
Disturbed	152.5	162	0	300
Total	**330**	**384**	**9**	**1,326**

D8.3 SAGEBRUSH-GRASS

General

The sagebrush-grass vegetation type predominantly at lower elevations than the Limber Pine-Big Sagebrush type, generally occurs on flat to moderately sloping concave fans of sandstone derived alluvium. This type is dominated by big sagebrush (*Artemisia tridentata*), black sagebrush (*Artemisia nova*), rubber rabbitbrush (*Chrysothamnus nauseosusa*), and Douglas rabbitbrush (*Chrysothamnus viscidiflorus*).

Cover

The Sagebrush-Grass type comprises 43% of the proposed affected area and 48.3% of the study area. A total of 59 transects were sampled for this vegetation types (30 in the proposed area and 29 in the control area). Vegetation cover averages approximately 37% on the type. Litter and rock average between 25% and 37% (25% on proposed affected, 37% on control area). More litter was found in the control area than the affected area. Bare ground averaged between 26% and 38% (38% on affected, 26% on control area).

Table 3.6-2: Absolute Cover for the Sagebrush-Grass Vegetation Type

Vegetation Parameter	Mean Study Area	Mean Control Area
Absolute Total Vegetation Cover (percent)	37.3	37.1
Absolute Total Cover for Litter/Rock (Percent)	22.8/2.3	35.2/1.5
Absolute Total Cover for Bare Ground (Percent)	37.5	26.2
Absolute Total Cover (percent)	62.5	73.8

Production

Annual production for 1980 on the Sagebrush-Grass type averaged 464 pounds per acre on the proposed affected area and 350 pounds per acre on the control area. Of this total, shrubs comprised the greatest percent with 275 pounds per acre on the affected area and 168 pounds per acre on the control area (59 and 48 percent respectively of the total vegetative production). While

perennial grasses made up 34 and 38 percent, respectively, (158 and 131 lbs/acre). Grasslike and perennial forbs comprised approximately 2 percent
each on the proposed affected area and between 6 and 8 percent each on the control areas.

Table 3.6-3: Production for the Sagebrush-Grass Vegetation Type

Vegetation Parameter	Mean Study Area	Mean Control Area
Grams per meter squared	52	39.2
Pounds per acres	463.9	349.5

Sample Adequacy

A total of 59 cover transects and 34 production plots were sampled in the Sagebrush-Grass type. The number of transects and quadrats sampled in each vegetation type proposed affected area and control was established from formulas and requirements defined in Wyoming DEQ, LQD Guideline No.2, Revision 2, March, 1979. The Sagebrush-Grass met sample adequacy guidelines. Refer to Table 3.6- 4 below for sample adequacy values.

Table 3.6-4: Summary of Sample Adequacy Calculations for Sagebrush-Grass Vegetation Type.

	Calculated Sample Adequacy Number (Affected Area	Actual Sample Number (Affected Area)	Calculated Sample Adequacy Number (Control Area)	Actual Sample Number (Control Area)
Sagebrush-Grass				
Total Vegetation Cover	20	30	28	29
Total Ground Cover	10	30	8.0	29
Total Production	7	18	4	16

Species Composition and Diversity

Shrubs comprise over 20 percent of the total ground cover, while grasses make up 9%, perennial forbs between 4% and 5%, and grasslike species around 3%. Bluebunch wheatgrass (*Agropyron spicatum*) and Sandberg bluegrass *(Poa secunda*), are the most dominant grass species. Threadleaf sedge (*Carex filifolia*) is the most dominant grasslike species. Hoods phlox (*Phlox hoodii*), rose pussytoes (*Antennaria rosea*), and hooker sandwort (*Arenaria hookeri*) are the most common forbs. For a complete list of species within the Sagebrush- Grass type refer to Addendum D8-A.

Table 3.6-5:. Vegetation Cover Sampling Data Summary of Species by Lifeform for the Sagebrush-Grass Vegetation Type.

	Vegetation Cover	
	Mean Study Area	**Mean Control Area**
Grasses	8.7	9.0
Grasslikes	3.3	2.5
Annual Forbs	0.3	0.2
Perennial Forbs	3.7	5.0
Half-Shrubs	0.8	0.3
Full Shrubs	20.5	20.0

Shrub Density

Shrubs, ranging from 2 to 69 cm high, average 21 cm within the type. Big sagebrush averages 18 cm in height, rubber rabbitbrush averages 33 cm, and Douglas rabbitbrush averages 17 cm tall.

D8.4 LIMBER PINE-BIG SAGEBRUSH

General

The Limber Pine-Big Sagebrush type, occurring predominantly along the ridge tops and steeper slopes, is characterized by shallow to very shallow soils interspersed with rock outcrops and boulder wash. The type is dominated by limber pine (*Pinus flexilis*), big sagebrush, black sagebrush, Douglas rabbitbrush, antelope bitterbrush (*Purshia tridentata*), bluebunch wheatgrass, Idaho fescue (*Festuca idahoensis*) and bluegrass (*Poa* spp.).

Cover

The Limber Pine-Big Sagebrush type comprises 11% (35.5 acres on the affected area) and 28.9% (383 acres in the study area). A total of 60 transects were sampled for this vegetation types (30 in the proposed area and 30 in the control area). Vegetation cover averages approximately 43% on the affected area and 40% on the control area. Litter and rock average between 30% and 35%; and bare ground between 25% and 27%.

Table 3.6-6: Absolute Cover for the Limber Pine-Big Sagebrush Vegetation Type

Vegetation Parameter	Mean Study Area	Mean Control Area
Absolute Total Vegetation Cover (percent)	42.8	39.8
Absolute Total Litter/Rock Cover (percent)	19.7/10.8	28.3/6.8
Absolute Total Bare Ground Cover (percent)	26.7	25
Absolute Total Cover (percent)	73.3	75.0

Production

Annual production for 1980 on the Limber Pine-Big Sagebrush type averaged 580 pounds per acre on the proposed affected area and 380 pounds per acre on the control area. Of this, shrubs comprised the greatest percent of the total on the affected area with 299 pounds per acre (52% of the total vegetation production) followed by perennial grasses with 231 pounds per acre (40%). Together perennial grasses and shrubs comprised nearly 92% of total production on the affected area for the type. Perennial forbs made up most of the remaining production with 41 pounds per acres (7%).

Table 3.6-7: Production for the Limber Pine-Big Sagebrush Vegetation Type

Vegetation Parameter	Mean Study Area	Mean Control Area
Grams per meter squared	65	42.5
Pounds per acres	579.5	379.5

Sample Adequacy

A total of 60 cover transects and 36 production plots were sampled in the Limber Pine-Big Sagebrush type. The number of transects and quadrats sampled in each vegetation type proposed affected area and control was established from formulas and requirements defined in Wyoming DEQ, LQD Guideline No.2, Revision 2, March, 1979. The Limber Pine-Big Sagebrush met sample adequacy guidelines. Refer to Table 3.6-8 below for sample adequacy values.

Table 3.6-8: Summary of Sample Adequacy Calculations for Limber Pine-Big Sagebrush Vegetation Type.

	Calculated Sample Adequacy Number (Affected Area	Actual Sample Number (Affected Area)	Calculated Sample Adequacy Number (Control Area)	Actual Sample Number (Control Area)
Limber Pine-Big Sagebrush				
Total Vegetation Cover	21	30	28	30
Total Ground Cover	12	30	6	30
Total Production	5	18	7	18

Species Composition and Diversity

Shrubs comprise 24.7% of the total ground cover, grasses comprised 11.5%, perennial forbs were 5.3%, while grasslikes, half-shrubs, and succulents comprised less than 1% vegetation cover on the affected area. The control area had a higher percentage of grass present at 16.5% compared to

the approximate 12% on the affected area. However, all other totals by lifeform were less in the control area, and half shrubs and succulents were not noted. Rose pussytoes and hooker sandwort are the most common perennial forbs. Big sagebrush is the most abundant shrub in both areas. Also, this community had two tree species present, Limber Pine and *Juniperus osteosperma* (Utah Juniper). For a complete list of species within the Limber Pine-Big Sagebrush type refer to Addendum D8-A.

Table 3.6-9: Vegetation Cover Sampling Data Summary of Species by Lifeform for the Limber Pine-Big Sagebrush Vegetation Type

	Percent Vegetation Cover	
	Mean Affected Study Area	**Mean Control Area**
Grasses	11.5	16.5
Grasslikes	0.7	0.2
Forbs	5.3	4.2
Half-Shrubs	0.5	0.0
Full Shrubs	24.7	19.0
Succulents	0.2	0.0

Shrub Density

Shrubs, ranging from 5 to 97 cm high, average 29 cm within the type. Big sagebrush averages 34 cm, black sagebrush averages 16 cm, antelope bitterbrush averages 23 cm, and snowberry (*Symphoricarpos* spp.) averages 19 cm in height.

Tree Density

Limber pines were the dominant species in total number and DBH, while the Utah juniper had greater height then the limber pine. The proposed affected area had approximately 146 limber pine trees and 15 Utah juniper trees present. These numbers include most of the trees in the Congo Pit area and the north and south haul road, but it is not a total population count. The mean DBH in the proposed affected area for limber pines was 15.6 cm and the height mean was 4.4 m. The mean DBH in the proposed affected area for Utah juniper was 17cm and the mean height was 5.2 m. The control area had a total of 25 limber pines and 45 Utah junipers; these include all the trees in the control area. The DBH was not calculated in the control area on either species, the height was less in the control area than the proposed affected.

Table 3.6-10: Tree Density Data (DBH, Height, Total Number of Species Present) Summary for the Limber Pine-Big Sagebrush Vegetation Type

Area	Species	DBH (cm)		Height (m)		Total Number
		Mean	Range	Mean	Range	
Proposed Affected Area	Limber pine	15.6	4.0-30.7	4.4	2.1-9.1	146
	Utah juniper	17	--	5.2	--	15
	Total Number	--	--	--	--	161
Control Area	Limber pine	31.3	20.2-48.5	4.2	1.2-7.6	25
	Utah juniper	--	--	2.4	0.9-6.1	45
	Total Number	--	--	--	--	70

D8.5 VEGETATION SURVEY DISCUSSION

The North Crooks Gap proposed affected area (Congo Pit Project Area) contains approximately 330 acres of which 152 acres are presently disturbed to the extent that no vegetation community of consequence is established. Of the remaining 178 acres, the sagebrush--grass type comprises 80% (142 acres) with a 1980 average vegetation cover of 37% and an average annual production (1980) of 464 pounds per acre. The Limber Pine-Big Sagebrush type makes up 20% (35.5 acres) with a 1980 average vegetation cover of 43 percent and 1980 average annual production of 580 pounds per acre.

The proposed affected area had an average 1980 vegetative cover of 38.4 percent and average production of 487 pounds per acre within the two vegetation types (excluding disturbed lands).

Nearly all the Sagebrush-Grass type and most of the Limber Pine-Big Sagebrush type have been partially or completely disturbed by past or present mine related activities within the proposed Congo pit, south and north haul roads, and south spoil pile sites. The proposed north spoil site has been disturbed in several minor areas, but vegetation communities are well established for the most part. Natural succession is evident on many of the older roads and disturbance areas, while the more recent disturbed sites have little perennial vegetative cover.

No noxious weeds were sighted on the study area during the 1980 reconnaissance surveys. However, during pedestrian reconnaissance surveys in 2010, one state designated weed, *Cirsium arvense* (Canada thistle), and one county designated weed, *Cirsium vulgare* (bull thistle) were noted within the project area. Bull thistle was noted on the reclaimed land south of the Congo Pit, within the affected area. Canada thistle was located on a historical mine exploration road west of the Sheep 2 Shaft, outside the affected area, but within the project area.

One selenium indicator species, *Astragalus pectinatus* (milkvetch) was observed during the 1980 study. The species appeared as scattered individuals along the discharge stream from the present mine facility. The stream passes through the center of the proposed north spoil dump site in an east to west direction.

D8.6 THREATENED, ENDANGERED, AND SPECIAL CONCERN PLANT SPECIES

No threatened or endangered plant species were encountered on the study area during 1980 field investigations. In 2010, plant and habitat surveys for both *Penstemon haydenii* (blowout penstemon) an endangered plant species and *Spiranthes diluvialis* (Ute ladies'-tresses) a threatened plant species were not noted. Habitat for these species is also absent.

However, one Bureau of Land Management (BLM) sensitive plant species, *Pinus flexilus* (limber pine) is present within the affected area as well as the control area. Limber pine is a major component to the Limber pine-Big sagebrush vegetation community. *Physaria saximontana* var. *saximontana* (Rocky Mountain twinpod) is another BLM sensitive species that has habitat in the project area, however it has no individuals or populations present. Rocky Mountain twinpod has limited habitat within the road disturbance boundary south of Sheep 2 Shaft.

References

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Wyoming Department of Environmental Quality, Land Quality Division. 1979, Guideline 2.

Range Inventory and Analysis, 1980, Vegetation Survey of the Western Nuclear, Inc. North Crooks Gap Study Area (Revised 4-6-81)

ADDENDUM D8-A

VEGETATION SPECIES SUMMARY

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Annual Grasses							
Bromus tectorum	Cheatgrass					X	X
Perennial Grasses							
Agropyron cristatum	Crested wheatgrass					X	X
Agropyron dasystachyum	Thickspike wheatgrass	X		X			X
Agropyron riparium	Streambank wheatgrass					X	
Agropyron smithii	Western wheatgrass	X		X	X		
Agropyron spicatum	Bluebunch wheatgrass	X	X	X	X		X
Agropyron trachycaulum	Slender wheatgrass					X	X
Agropyron spp.	Wheatgrass					X	
Bouteloua gracilis	Blue grama			X			X
Bromus carinatus	California brome					X	
Bromus inermis	Smooth brome					X	
Calamovilfa longifolia	Prairie sandreed						X
Distichlis spicata	Inland saltgrass					X	
Elymus cinereus	Basin wildrye					X	
Elymus hispidus	Intermediate wheatgrass						X
Festuca idahoensis	Idaho fescue		X	X	X		
Festuca ovina	Sheep fescue						X
Festuca spp.	Fescue						X
Hordeum jubatum	Foxtail barley					X	X

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Perennial Grasses continued							
Koeleria cristata	Prairie junegrass	X	X	X	X		X
Leucopoa kingii	King spikefescue			X			
Melica bulbosa	Onion melic					X	
Oryzopsis hymenoides	Indian ricegrass	X		X			X
Phleum pratense	Timothy						X
Poa canbyi	Canby bluegrass	X					
Poa cusickii	Cusick bluegrass					X	
Poa juncifolia	Alkali bluegrass						X
Poa fendleriana	Mutton bluegrass	X		X	X		
Poa nervosa	Wheeler bluegrass					X	
Poa secunda	Sandberg bluegrass	X	X	X	X		X
Poa spp.	Bluegrass						X
Sitanion hystrix	Bottlebrush squirreltail	X					X
Stipa comata	Needleandthread	X	X	X	X		X
Stipa occidentalis	Western needlegrass					X	
Grasslike Species							
Carex douglasii	Douglas sedge					X	
Carex eleocharis	Needleleaf sedge	X	X	X			X
Carex filifolia	Threadleaf sedge	X	X	X	X		X
Carex nebrascensis	Nebraska sedge						X

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Grasslikes continued							
Carex vallicola	Valley sedge					X	
Carex spp.	Sedge					X	X
Eleocharis palustris	Common spikerush						X
Juncus balticus	Baltic rush					X	
Annual Forbs							
Cleome serrulata	Rocky mountain bee plant					X	
Collinsia parviflora	Blue-eyed Mary					X	
Cordylanthus ramosus	Bushy birdbeak						X
Cryptantha torreyana	Minerscandle					X	
Descurainia spp.	Tansymustard					X	
Eriogonum cernuum	Wild buckwheat					X	
Gayophytum diffusum	Groundsmoke					X	
Kochia scoparia	Fireweed summercypress	X				X	
Lappula redowskii	Bluebur stickseed					X	
Linanthus septentrionalis	Flaxflower					X	
Lithophragma glabrum	Woodlandstar					X	
Machaeranthera canescens	Aster					X	
Melilotus officinalis	Yellow sweetclover						X
Monolepis nuttalliana	Nuttall monolepis	X				X	

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Annual Forbs continued							
Orthocarpus luteus	Yellow owlclover		X			X	X
Rumex salicifolius	Dock					X	
Salsola kali	Common Russian thistle					X	
Sisymbrium altissimum	Tumbling hedgemustard					X	
Streptanthella longirostris	Straepanthelia					X	
Perennial Forbs							
Achillea millefolium	Western yarrow						X
Agoseris glauca	Pale Agoseris					X	
Allium textile	Prairie onion					X	X
Antennaria rosea	Rose pussytoes	X	X	X	X	X	X
Antennaria umbrinella	Umber pussytoes					X	
Arenaria hookeri	Hooker sandwort	X	X	X	X	X	X
Arenaria congesta	Ballhead sandwort				X	X	
Arenaria nuttallii	Nuttall sandwort					X	
Arnica cordifolia	Heartleaf arnica					X	
Aster chilensis	Pacific aster					X	
Astragalus miser	Weedy milkvetch					X	
Melilotus officinalis	Yellow sweetclover						X
Astragalus sericoleucus	silky milkvetch						X
Astragalus spatulatus	Spoonleaf milkvetch					X	X

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Perennial Forbs continued							
Astragalus spp.	Milkvetch	X					X
Balsamorhiza incana	Hoary balsamroot					X	
Balsamorhiza sagittata	Arrowleaf balsamroot					X	
Calochortus nuttallii	Sego lily						X
Castilleja flava	Indian paintbrush					X	
Castilleja linariifolia	Wyoming indian paintbrush					X	X
Cerastium arvense	Starry cerastium	X				X	
Cirsium arvense	Canada thistle						X
Cirsium canescens	Prairie thistle					X	
Cirsium spp.	Thistle	X		X			
Cirsium vulgare	Bull thistle						X
Chenopodium album	Common lambsquarter						X
Crepis acuminata	Tapertip hawksbeard					X	X
Crepis modocensis	Yellowstone hawksbeard					X	
Comandra pallida	Pale bastardtoadflax		X			X	
Cryptantha celosioides	Buttecandle						X
Cryptantha sericea	Minerscandle					X	
Cryptantha spp.	Cryptantha					X	X
Delphinium nelsonii	Nelson's Larkspur					X	

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Perennial Forbs continued							
Delphinium spp.	Larkspur						X
Draba oligosperma	Snowbank draba					X	
Epilobium ciliatum	Willowherb					X	
Eremogone congesta	Balhead sandwort						X
Erigeron caespitosus	Tufted fleabane					X	
Erigeron compositus	Cutleaf daisy						X
Erigeron eatonii	Eaton fleabane					X	
Erigeron ochroleucus	Buff fleabane						X
Eriogonum flavum	Alpine golden buckwheat						X
Eriogonum ovalifolium	Cushion wild buckwheat	X				X	
Eriogonum umbellatum	Sulfur wild buckwheat					X	X
Eriogonum spp.	Buckwheat						X
Erysimum capitatum	Coast wallflower	X				X	
Fritillaria atropurpurea	Purplespot fritillary					X	
Geranium richardsonii	Richardson geranium					X	
Geranium viscosissimum	Sticky geranium					X	
Geum triflorum	Prairiesmoke sieversia					X	
Grindelia squarrosa	Curlycup gumweed	X				X	X
Haplopappus acaulis	Stemless goldenweed					X	X

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Perennial Forbs continued							
Heterotheca villosa	Hairy goldenaster					X	
Heuchera parviflora	Littleleaf alumroot					X	
Hymenoxys acaulis	Stemless actinea					X	
Ipomopsis aggregata	Skyrocket gilia					X	X
Ivesia gordonii	Gordon's Ivesia					X	
Leptodactylon pungens	Granite pricklygila		X			X	
Lesquerella alpina	Bladderpod					X	
Lewisia rediviva	Bitterroot					X	X
Liatris punctata	Dotted gayfeather					X	
Linum lewisii	Blue flax						X
Lithospermum incisum	Narrowleaf stoneseed						X
Lithospermum ruderale	Gromwell					X	
Lomatium dissectum	Lomatium					X	
Lomatium triternatum	Nineleaf Lomatium					X	
Lupinus argenteus	Silvery lupine					X	X
Lupinus sericeus	Silky lupine						
Lygodesmia juncea	Rush skeletonplant					X	
Machaeranthera grindelioides	Spiny goldenweed					X	
Mahonia repens	Creeping barberry					X	
Mertensia ciliata	Mountain bluebells					X	

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Perennial Forbs continued							
Mertensia lanceolata	Lanceleaf bluebells			X		X	
Mertensia spp.	Bluebells						X
Mentha arvensis	Wild mint						X
Orobanche fasciculata	Purple broomrape						X
Penstemon humilis	Low penstemon					X	
Penstemon laricifolius	Beardtongue					X	
Penstemon radicosis	Matroot penstemon					X	
Penstemon paysoniorum	Payson's beardtongue						X
Penstemon spp.	Penstemon species						X
Phacelia hastata	Spearhead phacelia						X
Phlox andicola	Prairie phlox						X
Phlox hoodii	Hoods phlox	X	X	X		X	X
Potentilla effusa	Saskatchewan cinquefoil					X	
Potentilla hippiana	Woolly cinquefoil						X
Potentilla ovina	Sheep cinquefoil					X	X
Potentilla spp.	Cinquefoil						X
Pteryxia hendersonii	Fernparsley					X	
Physaria species	twinpod						X
Rumex spp.	Dock					X	
Sedum lanceolatum	Wormleaf stonecrop		X		X	X	X

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Perennial Forbs continued							
Senecio canus	Groundsel					X	
Senecio integerrimus	Lambstongue groundsel					X	
Smilacina stellata	Starry falsesolomonseal					X	
sphaeromeria capitata	Rock tansy						X
Stenotus acaulis	Stemless goldenweed						X
Stephanomeria runcinata	Desert wire lettuce						X
Taraxacum officinale	Common dandelion					X	
Thermopsis rhombifolia	Prairie thermopsis	X		X		X	X
Townsendia spp.	Townsendia					X	
Trifolium andinum	Clover					X	X
Trifolium gymnocarpon	Hollyleaf clover						X
Viola spp.	Violet					X	
Zigadenus venenosus	Meadow deathcamas			X		X	
Half-Shrubs							
Artemisia frigida	Fringed sagewort	X	X	X		X	X
Artemisia pedatifida	Birdfoot sagewort	X				X	
Atriplex gardneri	Gardner saltbush					X	
Ceratoides lanata	Common winterfat	X				X	
Eriogonum spp.	Wild buckwheat					X	
Gutierrezia sarothrae	Broom snakeweed						X

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Half-Shrubs continued							
Paronychia sessiliflora	creeping nailwort						X
Shrubs							
Amelanchier alnifolia	Saskatoon serviceberry			X		X	
Amelanchier utahensis	Serviceberry					X	
Artemisia cana	Silver sagebrush						X
Artemisia nova	Black sagebrush	X	X	X	X	X	X
Artemisia tridentata	Big sagebrush	X	X	X	X		X
Artemisia tridentata ssp. tridentata	Basin big sagebrush					X	
Artemisia tridentata ssp. vaseyana	Mountain big sagebrush					X	
Artemisia tridentata ssp. wyomingensis	Wyoming big sagebrush					X	
Chrysothamnus nauseosus	Rubber rabbitbrush	X	X	X	X	X	X
Chrysothamnus viscidiflorus	Douglas rabbitbrush	X	X	X	X	X	X
Holodiscus dumosus	Ocean spray						
Juniperus communis	Common juniper					X	
Juniperus scopulorum	Rocky Mountain juniper						X
Prunus virginiana	Common chokecherry					X	
Purshia tridentata	Antelope bitterbrush			X	X	X	X
Ribes setosum	Currant					X	X

Scientific Name	Common Name	Sagebrush-Grass Affected Area (1981 survey)	Sagebrush-Grass Control Area (1981 survey)	Limber Pine-Big Sagebrush Affected Area (1981 survey)	Limber Pine-Big Sagebrush Control Area (1981 survey)	Additional Species found within the project area (1981 survey)	2010 Species Observed within the project area
Shrubs continued							
Ribes cereum	Wax currant					X	X
Rosa woodsii	Woods rose					X	
Salix exigua	Coyote willow					X	
Salix boothii	Booth's willow						X
Symphoricarpos albus	Common snowberry	X		X	X	X	X
Tetradymia canescens	Spineless horsebrush						X
Succulents							
Opuntia polyacantha	Plains pricklypear					X	X
Trees							
Betula occidentalis	Water birch						X
Juniperus osteosperma	Utah juniper				X	X	
Pinus flexilis	Limber pine				X	X	X
Populus deltoides	Eastern cottonwood						X
Populus tremuloides	Quacking aspen					X	X

ADDENDUM D8-B

VEGETATION COVER SUMMARIES

Titan Uranium Project
North Crooks Gap Study 1981
Report: Cover Summary

Site Id: Sagebrush-Grass Affected Area

Name: Titan Uranium

Comm. Type/Form: Baseline Cover
Sample Date: August 1980

Sample Method: Point Intercept
Sample Size: 30.5 Meter Transect
Number of Samples: 30
Report Date: 08/02/2010

Species	Cover Total	Cover Mean
Grasses		
Agropyron dasystachyum	20	0.7
Agropyron smithii	10	0.3
Agropyron spicatum	55	1.8
Koeleria cristata	25	0.8
Oryzopsis hymenoides	25	0.8
Poa fendleriana	65	2.2
Poa secunda	30	1.0
Sitanion hystrix	5	0.2
Stipa comata	25	0.8
Sub-total	260	8.6
Grass-like		
Carex eleocharis	15	0.5
Carex filifolia	85	2.8
Sub-total	100	3.3
Annual Forbs		
Kochia scoparia	5	0.2
Monolepis nuttalliana	5	0.2
Sub-total	10	0.3
Perennial Forbs		
Antennaria rosea	5	0.2
Arenaria hookeri	5	0.2
Astragalus spp.	5	0.2
Cerastium arvense	10	0.3
Cirsium spp.	5	0.2
Eriogonum ovalifolium	5	0.2
Erysimum capitatum	10	0.3
Grindelia squarrosa	20	0.7
Phlox hoodii	35	1.2
Thermopsis rhombifolia	10	0.3
Sub-total	110	3.7

Titan Uranium Project
North Crooks Gap Study 1981
Report: Cover Summary

Site Id: Sagebrush-Grass Affected Area

Name: Titan Uranium
Comm. Type/Form: Baseline Cover
Sample Date: August 1980

Sample Method: Point Intercept
Sample Size: 30.5 Meter Transect
Number of Samples: 30
Report Date: 08/02/2010

Species	Cover Total	Cover Mean
Half-Shrubs		
Artemisia frigida	25	0.8
Sub-total	25	0.8
Perennial Shrubs		
Artemisia nova	65	2.2
Artemisia tridentata	370	12.3
Chrysothamnus nauseosus	80	2.7
Chrysothamnus viscidiflorus	95	3.2
Symphoricarpos albus	5	0.2
Sub-total	615	20.6
Total Vegetation	1120	37.3
Litter	685	22.8
Rock	70	2.3
Bare Ground	1125	37.5
Vegetation, Litter, Rock (Total Cover)	1875	62.5

*Numbers do not always sum up correctly due to rounding within the summarization.

Titan Uranium Project
North Crooks Gap Study 1981
Report: Cover Summary

Site Id: Sagebrush-Grass Control Area

Name: Titan Uranium

Comm. Type/Form: Baseline Cover
Sample Date: August 1980

Sample Method: Point Intercept
Sample Size: 30.5 Meter Transect
Number of Samples: 29
Report Date: 08/02/2010

Species	Cover Total	Cover Mean
Grasses		
Agropyron spicatum	95	3.3
Festuca idahoensis	5	0.2
Koeleria cristata	45	1.5
Poa secunda	115	4.0
Sub-total	260	9.0
Grass-like		
Carex eleocharis	10	0.3
Carex filifolia	65	2.2
Sub-total	75	2.5
Annual Forbs		
Orthocarpus luteus	5	0.2
Sub-total	5	0.2
Perennial Forbs		
Antennaria rosea	40	1.4
Arenaria hookeri	30	1.0
Comandra pallida	15	0.5
Leptodactylon pungens	15	0.5
Phlox hoodii	35	1.2
Sedum lanceolatum	10	0.3
Sub-total	145	5.0

Titan Uranium Project
North Crooks Gap Study 1981
Report: Cover Summary

Site Id: Sagebrush Grass Control Area

Name: Titan Uranium

Comm. Type/Form: Baseline Cover
Sample Date: August 1980

Sample Method: Point Intercept
Sample Size: 30.5 Meter Transect
Number of Samples: 29
Report Date: 08/02/2010

Species	Cover Total	Cover Mean
Half-Shrubs		
Artemisia frigida	10	0.3
Sub-total	10	0.3
Perennial Shrubs		
Artemisia nova	275	9.5
Artemisia tridentata	180	6.2
Chrysothamnus nauseosus	10	0.3
Chrysothamnus viscidiflorus	115	4.0
Sub-total	580	20.0
Total Vegetation	1075	37.1
Litter	1020	35.2
Rock	45	1.5
Bare Ground	760	26.2
Vegetation, Litter, Rock (Total Cover)	2140	73.8

*Numbers do not always sum up correctly due to rounding within the summarization.

Titan Uranium Project
North Crooks Gap Study 1981
Report: Cover Summary

Site Id: Limber Pine-Big Sagebrush Affected Area

Name: Titan Uranium
Comm. Type/Form: Baseline Cover
Sample Date: August 1980

Sample Method: Point Intercept
Sample Size: 30.5 Meter Transect
Number of Samples: 30
Report Date: 08/02/2010

Species	Cover Total	Cover Mean
Grasses		
Agropyron smithii	15	0.5
Agropyron spicatum	150	5.0
Bouteloua gracilis	5	0.2
Festuca idahoensis	60	2.0
Koeleria cristata	15	0.5
Leucopoa kingii	15	0.5
Oryzopsis hymenoides	20	0.7
Poa secunda	60	2.0
Stipa comata	5	0.2
Sub-total	345	11.5
Grass-like		
Carex eleocharis	5	0.2
Carex filifolia	15	0.5
Sub-total	20	0.7
Perennial Forbs		
Antennaria rosea	80	2.7
Arenaria hookeri	35	1.2
Mertensia spp.	5	0.2
Phlox hoodii	25	0.8
Thermopsis rhombifolia	5	0.2
Zigadenus venenosus	10	0.3
Sub-total	160	5.3

Titan Uranium Project
North Crooks Gap Study 1981
Report: Cover Summary

Site Id: Limber Pine Big Sagebrush Affected Area

Name: Titan Uranium
Comm. Type/Form: Baseline Cover
Sample Date: August 1980

Sample Method: Point Intercept
Sample Size: 30.5 Meter Transect
Number of Samples: 30
Report Date: 08/02/2010

Species	Cover Total	Cover Mean
Half-Shrubs		
Artemisia frigida	15	0.5
Sub-total	15	0.5
Perennial Shrubs		
Artemisia nova	60	2.0
Artemisia tridentata	380	12.7
Chrysothamnus nauseosus	45	1.5
Chrysothamnus viscidiflorus	100	3.3
Purshia tridentata	105	3.5
Symphoricarpos albus	50	1.7
Sub-total	740	24.7
Succulents		
Opuntia polyacantha	5	0.2
Sub-total	5	0.2
Total Vegetation	1285	42.8
Litter	590	19.7
Rock	325	10.8
Bare Ground	800	26.7
Vegetation, Litter, Rock (Total Cover)	2200	73.3

*Numbers do not always sum up correctly due to rounding within the summarization.

Titan Uranium Project
North Crooks Gap Study 1981
Report: Cover Summary

Site Id: Limber Pine Big Sagebrush Control Area

Name: Titan Uranium
Comm. Type/Form: Baseline Cover
Sample Date: August 1980

Sample Method: Point Intercept
Sample Size: 30.5 Meter Transect
Number of Samples: 30
Report Date: 08/02/2010

Species	Cover Total	Cover Mean
Grasses		
Agropyron spicatum	75	2.5
Festuca idahoensis	345	11.5
Koeleria cristata	25	0.8
Poa secunda	45	1.5
Stipa comata	5	0.2
Sub-total	495	16.5
Grass-like		
Carex filifolia	5	0.2
Sub-total	5	0.2
Perennial Forbs		
Antennaria rosea	50	1.7
Arenaria congesta	5	0.2
Arenaria hookeri	65	2.2
Sedum lanceolatum	5	0.2
Sub-total	125	4.2
Perennial Shrubs		
Artemisia nova	175	5.8
Artemisia tridentata	280	9.3
Chrysothamnus nauseosus	5	0.2
Chrysothamnus viscidiflorus	45	1.5
Juniperus osteosperma	10	0.3
Purshia tridentata	10	0.3
Symphoricarpos albus	45	1.5
Sub-total	570	19.0
Total Vegetation	1195	39.9
Litter	850	28.3
Rock	205	6.8
Bare Ground	750	25.0
Vegetation, Litter, Rock (Total Cover)	2250	75.0

*Numbers do not always sum up correctly due to rounding within the summarization.

ADDENDUM D8-C

VEGETATION PRODUCTION SUMMARIES

Titan Uranium Project
North Crooks Gap Study 1981
Report: Production Summary

Site Id: Sagebrush-Grass Affected Area
Name: Titan Uranium
Comm. Type/Form: Baseline Production
Sample Date: August 1980

Sample Method: Quadrats
Sample Size: 1 sq.m.
Number of Samples: 18
Report Date: 08/2/2010

Species	Mean	LBS/acre	Relative (%)
Grasses			
Agropyron dasystachyum	1.23	10.97	2.37
Agropyron smithii	0.63	5.62	1.21
Agropyron spicatum	9.08	81.01	17.46
Koeleria cristata	2.24	19.99	4.31
Oryzopsis hymenoides	0.03	0.27	0.06
Poa canbyi	0.30	2.68	0.58
Poa fendleriana	2.53	22.57	4.87
Poa secunda	1.17	10.44	2.25
Sitanion hystrix	0.07	0.62	0.13
Stipa comata	0.49	4.37	0.94
Sub-total	17.77	158.54	34.18
Grasslikes			
Carex eleocharis	0.17	1.52	0.33
Carex filifolia	0.94	8.39	1.81
Sub-total	1.12	9.99	1.81
Annual Forbs			
Miscellaneous	0.02	0.18	0.04
Sub-total	0.02	0.18	0.04
Perennial Forbs			
Eriogonum ovalifolium	0.48	4.28	0.92
Miscellaneous	0.67	5.98	1.29
Sub-total	1.16	10.36	2.23
Half-Shrubs			
Artemisia frigida	0.89	7.94	1.71
Ceratoides lanata	0.20	1.78	0.38
Sub-total	1.09	9.72	2.10
Shrubs			
Artemisia nova	6.45	57.55	12.41
Artemisia tridentata	19.99	178.35	38.45
Chrysothamnus nauseosus	1.06	9.46	2.04

Titan Uranium Project
North Crooks Gap Study 1981
Report: Production Summary Continued

Site Id: Sagebrush-Grass Affected Area
Name: Titan Uranium
Comm. Type/Form: Baseline Production
Sample Date: August 1980

Sample Method: Quadrats
Sample Size: 1 sq.m.
Number of Samples: 18
Report Date: 08/2/2010

Species	Mean	LBS/acre	Relative (%)
Chrysothamnus viscidiflorus	3.20	28.55	6.16
Symphoricarpos albus	0.13	1.16	0.25
Sub-total	30.83	275.07	59.30
Total Production	51.99	463.86	99.65

*Percent Relative Cover does not equal 100% due to rounding factors within the summed numbers

Titan Uranium Project
North Crooks Gap Study 1981
Report: Production Summary

Site Id: Sagebrush-Grass Control Area
Name: Titan Uranium
Comm. Type/Form: Baseline Production
Sample Date: August 1980

Sample Method: Quadrats
Sample Size: 1 sq.m.
Number of Samples: 16
Report Date: 08/2/2010

Species	Mean	LBS/acre	Relative (%)
Grasses			
Agropyron spicatum	9.31	83.06	23.76
Koeleria cristata	2.01	17.93	5.13
Poa secunda	2.40	21.41	6.13
Stipa comata	0.98	8.74	2.50
Sub-total	14.69	131.06	37.53
Grasslikes			
Carex filifolia	3.05	27.21	7.79
Sub-total	3.05	27.21	7.79
Perennial Forbs			
Miscellaneous	2.51	22.39	6.41
Sub-total	2.51	22.39	6.41
Half-Shrubs			
Artemisia frigida	0.14	1.25	0.36
Sub-total	0.14	1.25	0.36
Shrubs			
Artemisia nova	13.00	115.99	33.19
Artemisia tridentata	2.72	24.27	6.94
Chrysothamnus nauseosus	0.16	1.43	0.41
Chrysothamnus viscidiflorus	2.90	25.87	7.40
Sub-total	18.78	167.56	47.94
Total Production	39.17	349.47	100.03

*Percent Relative Cover does not equal 100% due to rounding factors within the summed numbers

Titan Uranium Project
North Crooks Gap Study 1981
Report: Production Summary

Site Id: Limber Pine-Big Sagebrush Affected Area
Name: Titan Uranium
Comm. Type/Form: Baseline Production
Sample Date: August 1980

Sample Method: Quadrats
Sample Size: 1 sq.m.
Number of Samples: 18
Report Date: 08/2/2010

Species	Mean	LBS/acre	Relative (%)
Grasses			
Agropyron dasystachyum	0.51	4.55	0.79
Agropyron smithii	0.67	5.98	1.03
Agropyron spicatum	9.78	87.26	15.06
Festuca idahoensis	5.61	50.05	8.64
Hesperochlea kingii	3.25	29.00	5.00
Koeleria cristata	1.63	14.54	2.51
Oryzopsis hymenoides	0.39	3.48	0.60
Poa fendleriana	0.61	5.44	0.94
Poa secunda	3.36	29.98	5.17
Stipa comata	0.10	0.89	0.15
Sub-total	25.92	231.26	39.89
Grasslikes			
Carex eleocharis	0.01	0.09	0.02
Carex filifolia	0.02	0.18	0.03
Sub-total	0.03	0.27	0.05
Annual Forbs			
Miscellaneous	0.87	7.76	1.34
Sub-total	0.87	7.76	1.34
Perennial Forbs			
Cirsium spp.	0.09	0.80	0.14
Miscellaneous	4.54	40.51	6.99
Sub-total	4.63	41.31	7.13
Shrubs			
Artemisia nova	2.29	20.43	3.53
Artemisia tridentata	22.98	205.03	35.38
Chrysothamnus nauseosus	0.66	5.89	1.02
Chrysothamnus viscidiflorus	3.56	31.76	5.48
Purshia tridentata	2.63	23.46	4.05
Symphoricarpos albus	1.38	12.31	2.12
Sub-total	33.50	298.89	51.58

Titan Uranium Project
North Crooks Gap Study 1981
Report: Production Summary Continued

Site Id: Limber Pine-Big Sagebrush Affected Area
Name: Titan Uranium
Comm. Type/Form: Baseline Production
Sample Date: August 1980

Sample Method: Quadrats
Sample Size: 1 sq.m.
Number of Samples: 18
Report Date: 08/2/2010

Species	Mean	LBS/acre	Relative (%)
Total Production	64.94	579.48	99.98

*Percent Relative Cover does not equal 100% due to rounding factors within the summed numbers

Titan Uranium Project
North Crooks Gap Study 1981
Report: Production Summary

Site Id: Limber Pine Big Sagebrush Control Area
Name: Titan Uranium
Comm. Type/Form: Baseline Production
Sample Date: August 1980

Sample Method: Quadrats
Sample Size: 1 sq.m.
Number of Samples: 18
Report Date: 08/2/2010

Species	Mean	LBS/acre	Relative (%)
Grasses			
Agropyron smithii	0.33	2.94	0.78
Agropyron spicatum	2.72	24.27	6.40
Festuca idahoensis	17.23	153.73	40.51
Koeleria cristata	0.56	5.00	1.32
Poa fendleriana	0.67	5.98	1.58
Poa secunda	0.56	5.00	1.32
Sub-total	22.07	196.91	51.89
Annual Forbs			
Miscellaneous	0.15	1.34	0.35
Sub-total	0.15	1.34	0.35
Perennial Forbs			
Miscellaneous	0.89	7.94	2.09
Sub-total	0.89	7.94	2.09
Shrubs			
Artemisia nova	3.26	29.09	7.67
Artemisia tridentata	13.03	116.25	30.64
Chrysothamnus nauseosus	0.87	7.76	2.05
Chrysothamnus viscidiflorus	1.73	15.44	4.07
Symphoricarpos albus	0.53	4.73	1.25
Sub-total	19.42	173.27	45.66
Total Production	42.53	379.45	100.00

ADDENDUM D8-D

VEGETATION DENSITY SUMMARIES

Titan Uranium Project
North Crooks Gap Study 1981
Report: Density Summary

Site Id: Sagebrush-Grass Affected Area
Name: Titan Uranium
Comm. Type/Form: Baseline Density
Sample Date: August 1980

Sample Method: Transect
Sample Size: 30.5 Meter Transect
Number of Samples: 30
Report Date: 08/02/2010

	Mean	Range	Total Samples
Shrubs			
Artemisia nova	13.0	2-27	62
Artemisia pedatifida	4.0	3-6	3
Artemisia tridentata	18.3	3-69	249
Chrysothamnus nauseosus	32.9	18-61	22
Chrysothamnus viscidiflorus	16.8	5-42	63
Symphoricarpos albus	21.3	19-23	3
Total			402

Titan Uranium Project
North Crooks Gap Study 1981
Report: Density Summary

Site Id: Sagebrush-Grass Control Area
Name: Titan Uranium
Comm. Type/Form: Baseline Density
Sample Date: August 1980

Sample Method: Transect
Sample Size: 30.5 Meter Transect
Number of Samples: 29
Report Date: 08/02/2010

	Mean	Range	Total Samples
Shrubs			
Artemisia nova	11.0	2-27	516
Artemisia tridentata	18.3	3-52	261
Chrysothamnus nauseosus	14.6	7-21	10
Chrysothamnus viscidiflorus	12.4	4-29	318
Total			1,105

Titan Uranium Project
North Crooks Gap Study 1981
Report: Density Summary

Site Id: Limber Pine-Big Sagebrush Affected Area
Name: Titan Uranium
Comm. Type/Form: Baseline Density
Sample Date: August 1980

Sample Method: Transect
Sample Size: 30.5 Meter Transect
Number of Samples: 30
Report Date: 08/02/2010

	Mean	Range	Total Samples
Shrubs			
Amelanchier alnifolia	46.8	35-61	4
Artemisia nova	15.6	5-45	34
Artemisia tridentata	34.3	5-97	281
Chrysothamnus nauseosus	34.1	7-69	42
Chrysothamnus viscidiflorus	22.3	5-56	107
Purshia tridentata	23.4	5-63	47
Symphoricarpos albus	25.1	5-80	90
Total			605

Titan Uranium Project
North Crooks Gap Study 1981
Report: Density Summary

Site Id: Limber Pine Big Sagebrush Control Area
Name: Titan Uranium
Comm. Type/Form: Baseline Density
Sample Date: August 1980

Sample Method: Transect
Sample Size: 30.5 Meter Transect
Number of Samples: 30
Report Date: 08/02/2010

	Mean	Range	Total Samples
Shrubs			
Artemisia nova	16.7	3-42	245
Artemisia tridentata	38.9	1-98	331
Chrysothamnus nauseosus	20.0	7-41	3
Chrysothamnus viscidiflorus	19.0	2-61	144
Juniperus communis	65.0	--	1
Juniperus osteosperma	80.5	67-94	2
Purshia tridentata	29.5	9-44	15
Ribes cereum	60.0	--	1
Symphoricarpos albus	19.2	4-49	86
Total			828

ADDENDUM D8-E

TREE DBH AND HEIGHT DATA

Titan Uranium Project
North Crooks Gap Study 1981
Report: Cover Summary

Site Id: Limber Pine-Big Sagebrush Affected Area
Name: Titan Uranium
Comm. Type/Form: Baseline
Sample Date: August 1981

Sample Method: Point Intercept
Sample Size: Affected Area

Report Date: 08/02/2010

Species	DBH Mean	DBH Range	Height Mean	Height Range	Total Number
Pinus flexilis	15.6	4.0 - 30.7	4.4	2.1 - 9.1	146
Juniperus osteosperma	17	--	5.2*	--	15
Total					161**

*Most individuals less than DBH height (4.5 feet)
**Includes most trees in Congo Pit area and north and south haul roads, but is not a total population count

Titan Uranium Project
North Crooks Gap Study 1981
Report: Cover Summary

Site Id: Limber Pine-Big Sagebrush Control Area
Name: Titan Uranium
Comm. Type/Form: Baseline
Sample Date: August 1981

Sample Method: Point Intercept
Sample Size: Control Area

Report Date: 08/02/2010

Species	DBH Mean	DBH Range	Height Mean	Height Range	Total Number
Pinus flexilis	31.3	20.2 - 48.5	4.2	1.2 - 7.6	25
Juniperus osteosperma	--	--	2.4	0.9 - 6.1	45
Total					70***

***Includes all trees in the Control Area.

APPENDIX D9
ADDENDUM 2011

Sheep Mountain Project – Mine Permit 381C
APPENDIX D-9 – WILDLIFE
2011 ADDENDUM

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Appendix D9 - Wildlife

D9.1 Introduction

This report summarizes wildlife habitat and wildlife use on the Sheep Mountain Project, WDEQ/LQD Mine Permit 381C and was developed on behalf of Titan Uranium USA.

D9.2 Previous Wildlife Surveys and Reports

Wildlife surveys conducted for approval of the original 381C mine permit involved April 1974 surveys and updated observations in 1980. The bulk of the original wildlife surveys were obtained from a survey conducted by Dames and Moore in April 1974 and documented in an Environmental Report prepared for Western Nuclear, Inc. in May 1974. The mine permit also included results of a Wyoming Game and Fish Department (WGFD) study conducted in southcentral Wyoming in 1980. As stated in the permit: It was "assumed that the animal density information for vegetation types in southwest Wyoming can be extrapolated to similar vegetation types in the Crooks Gap Area."

Additional surveys were conducted by Real West Natural Resource Consulting in 2010 and foloow-up surveys in 2011. This permit update documents the results of those surveys and combines the information, where appropriate, with that of the original permit.

D9.3 Site Description and Wildlife Habitats

The Sheep Mountain permit area covers 4,147 acres in Fremont County, Wyoming. Photographs of the site and habitat types are in Attachment A. Sheep Mountain is a small mountain, covering approximately 1,400 acres and extending 2.0 miles east to west and 1.8 miles north to south. Sheep Mountain is located immediately west of the much larger Green Mountain, which extends approximately 11 miles to the west with an expanse north to south of approximately six miles. Both Sheep Mountain and Green Mountain rise above the arid Great Divide Basin, which extends to the south. The higher elevation woodland habitat found on both Sheep and Green mountains create a unique habitat in contrast to the prairie sagebrush grasslands more common in the region.

The western third of the permit area is relatively flat sagebrush prairie at an elevation of 6,730 feet that descends further to the west to Crooks Creek, which flows south to north approximately 0.25 mile west of the permit boundary. The terrain extending to the east is rolling and hilly as it ascends Sheep Mountain, rising to an elevation of 7,895 feet over a distance of just under one mile. From the summit, the terrain descends to an elevation of 7,100 feet to the drainage of Sheep Creek to the northeast and to the open prairie to the southeast. Immediately to the east the terrain descends to a saddle area before rising again to Green Mountain.

The dominant habitat within the permit area is a woodland mix that includes an overstory of limber pine (*Pinus flexilis*) and juniper (*Juniperus scopulorum*) trees. Juniper is also found in the mid shrub story that also includes big sagebrush (*Artemisia tridentata*), mountain mahogany (*Cercocarpus montanus*), and antelope bitterbrush (*Purshia tridentata*). Less abundant are green rabbitbrush (*Chrysothamnus vicidiflorus*), rubber rabbitbrush (*Chrysothamnus nauseosus*), silver sagebrush (*Artemisa cana*), snowberry (*Symphoricarpos albus*), and currant (*Ribes* spp.). The understory supports a mix of grasses and forbs including western wheatgrass (*Agropyron smithii*), sandberg bluegrass (*Poa secunda*), penstemon (*Penstemon* spp.), Hood's phlox (*Phlox hoodii*), common yarrow (*Achillea millefolium*), and spring parsley (*Cymopterus acaulis*). A more through listing of plant species on the site are provided in the vegetation section (Appendix D8).

Sagebrush grassland habitat is found at the lower elevations and lower foothills in the mountain perimeter. In areas of native habitat, the big sagebrush is 12 to 24 inches in height with areal coverage ranging from 30 to 60 percent. Bitterbrush is also prevalent in this shrubland habitat. The understory species are similar to those found in the woodland habitat with the addition of arrowleaf balsamroot (*Balsamorhiza sagittata*), shooting star (*Dodecatheon meadia*), Indian paintbrush *(Castilleja linariifolia*), wild buchwheat (*Eriogonum* spp.), and stonecrop (*Sedum* spp.).

The permit area shows considerable evidence of previous mining activities with varied levels of reclamation. The McIntosh Pit, located in the southwest corner of the permit area, retains water year-round but the site lacks any significant emergent or bank vegetation. The highwalls surrounding the pit are steep and lack vegetation. The Congo Pit area, located in the northeast section of the permit area, has been reclaimed with primarily wheatgrasses (*Agropyron* spp.), as have other disturbance areas such as the Paydirt Pit and other staging areas. The bottom of the Paydirt Pit retains water but lacks any significant emergent vegetation.

D9.4 Methods

The U.S. Fish and Wildlife Service (USFWS) and Wyoming Game and Fish Department (WGFD) were contacted to obtain information on wildlife species and habitats of concern on the claim properties. Their response letters are in Attachment B. In addition, the Wyoming Natural Diversity Database (WYNDD) was accessed to obtain a listing of wildlife reported on the permit area and within a surrounding buffer area (WYNDD 2010).

Amber Travsky, a wildlife biologist with Real West Natural Resource Consulting (Real West) surveyed the permit area on numerous occasions in 2010 and in early June 2011. A listing of survey dates and species targeted are listed in Table D9.1. The surveys were conducted primarily on foot and via 4-wheel drive vehicle and included the entire permit area plus buffer zones that varied from 0.25 to 2.0 miles, depending on the species being targeted.

The species that needed to be addressed by site surveys for individuals and suitable habitat include the black-footed ferret (*Mustela nigripes*), mountain plover (*Charadrius montanus*), greater sage-grouse (*Centrocercus urophasianus*), and all raptor species.

Table D9.1. Wildlife Surveys Conducted by Real West in 2010 and 2011 on the Sheep Mountain permit area and Vicinity.[1]

Survey Dates	Raptor Nests	Sage-grouse (leks)	Mountain Plover
March 25-26		X	
April 8-9		X	
May 1-2	X	X	X
May 28, 29, 30	X		X
June 14-15	X		X
June 10, 2011	X		

[1] General wildlife observations were made during all surveys. Targeted species, based on behavioral and habitat requirements, are indicated in the table.

D9.5 Results

D9.5.1 Threatened and Endangered Species

Those threatened and endangered (T&E) wildlife species that need to be addressed by site surveys for individuals and/or surveys for suitable habitat are listed in Table D9.2. The list includes those species, which according to the USFWS and geographic area, could occur in the region (USFWS correspondence, Attachment B). Federally listed plant species are addressed in Appendix D8-Vegetation.

Table D9.2. Federally Listed Threatened, Endangered, and Candidate Wildlife Species Potentially Occurring Within Fremont County. [1]

Common Name	Scientific name	Status[2]	Key Habitat Characteristics	Potential on site
Mammals				
Black-footed ferret	*Mustela nigripes*	E	Black-tailed prairie dog colonies or complexes > 80 acres.	Unlikely
Birds				
Greater sage-grouse	*Centrocercus urophasianus*	C	Sagebrush steppe habitat	Likely
Whooping crane[3]	*Grus americana*	E	Wetland marshes.	Unlikely
Interior least tern[3]	*Sterna antillarum athalassos*	E	Sandbars along rivers.	Unlikely
Piping plover[3]	*Charadrius melodus*	T	Sandbars along rivers.	Unlikely
Fish				
Pallid sturgeon[3]	*Scaphirhynchus albus*	E	Sand-covered portions of rivers.	Unlikely

[1] List provided by the U.S. Fish and Wildlife Service in correspondence dated March 18, 2010.

[2] Federal Status Definitions:
E = Endangered. T = Threatened C=Candidate

[3]Water depletions in the North Platte River may affect the species and/or critical habitat in downstream reaches in other states.

D9.5.1.1 Black-footed Ferret

The black-footed ferret's original distribution in North America closely corresponded to that of prairie dogs (*Cynomys* spp.) (Fagerstone 1987). According to the USFWS (correspondence in Attachment B), the permit area has previously been block-cleared for ferret surveys. For that reason, no additional surveys would have been required had there been suitable habitat on the site. However, no prairie dog colonies were observed on the site or within 0.5-mile so suitable habitat is lacking. This project will have "no effect" on the black-footed ferret.

D9.5.1.2 Greater Sage-grouse

Sage-grouse inhabit foothills, plains, and mountain slopes where sagebrush is present (American Ornithologists' Union 1983) or a mixture of sagebrush, meadows, and aspen is in close proximity. Sagebrush is present on the permit area, particularly in the lower elevation areas. Sagebrush habitat is plentiful in the surrounding prairie habitat that extends primarily to the north and south from the permit area. Surveys were conducted in March, April and May 2010 to search the permit area and a two mile buffer for previously undocumented sage-grouse leks.

Surveys followed WGFD protocol with the surveys a minimum of 7 days apart and each being conducted from first light to an hour after sunrise. All suitable habitat within the permit area and within two miles was searched each of the three surveys. Due to snow cover and poor driving conditions on the second survey session (April 9, 2010) much of the area was covered by using a spotting scope at the highest access points available. Snow depth prevented extensive driving during that survey and high points were accessed primarily on foot. As time and conditions allowed during the other two surveys, Real West made an effort to visit leks in the vicinity but the primary focus was searching for new leks within the permit area and two-mile buffer.

No historic leks are located on the permit area or within two miles. The nearest documented sage-grouse lek is the East Antelope Lek, located approximately 5.25 miles southwest of the permit boundary. Additional leks in the vicinity and the reported highest number of males observed on the lek by WGFD personnel and by Real West in 2010 are listed in Table D9.3.

Table D9.3 Sage-grouse Leks within the Vicinity of the Sheep Mountain Permit Area.

Name	UTM Location (Zone 13, NAD83)	2010 Status	Peak Male Grouse Observed in 2010[1]	Grouse observed by Real West in 2010	Distance from Permit Area
Nancy Creek	259890mE 4704607mN	Occupied	22	Didn't visit	5.5 mi
Nancy Ck Reservoir	260780mE 4706603mN	Occupied	43	Didn't visit	6.0 mi
Cottonwood Ck	258554mE 4708111mN	Occupied	0	Didn't visit	8.0 mi
Spring Creek	283723nE 4699867mN	Occupied	46	Didn't visit	9.3 mi
Lost Alkali	254355mE 4690450mN	Occupied	0	0	7.0 mi
Lost Arapahoe	254953mE 4686788mN	Occupied	10	0	8.0 mi
East Antelope	2614729mE 4685868mN	Occupied	17	36 males/4 hens	5.25 mi
Bare Ring Butte	2685650mE 4683545mN	Occupied	33	12 males/4 hens	6.0 mi
Harrier	268565mE 4683545mN	Occupied	37	Sign only – too late in morning	9.25 mi
Upper Osborn	273172mE 4677610mN	Occupied	14	Didn't visit	10.5 mi

[1]Data provided by the Wyoming Game and Fish Department (2010).

Wyoming Governor Dave Freudenthal signed Executive Order 2008-2 (Greater Sage-grouse Area Protection) on August 1, 2008, directing state agencies to promote maintenance and enhancement and prevent declines of sage-grouse and their habitats within the designated Core Sage-grouse Areas within Wyoming. This order was superseded on August 18, 2010 with Executive Order 2010-4 which further directed state agencies to promote greater sage-grouse habitat enhancements. The order also provided an updated map of Sage-Grouse Core Areas where addition efforts are recommended to preserve and enhance sage-grouse habitat. As shown in Figure C-1, Attachment C, the permit area is outside any sage-grouse core area, although core areas are located to the north and south of the site.

While suitable habitat is on the site it is limited primarily to the outer boundaries of the permit area. There is the potential for sage-grouse to inhabit the lower elevation sagebrush habitat areas. However, since the site is more than two miles from any sage-grouse lek and it is outside any core area, no stipulations are required.

The proposed mining may displace individual sage-grouse to adjoining sagebrush habitat. Due to this potential, the proposed project may adversely impact individuals, but it is not likely to result in a loss of viability on the project area, nor cause a trend to federal listing or a loss of species viability range wide.

D9.5.1.3 North Platte River Species

In Fremont County, concerns with the interior least tern, piping plover, whooping crane, and pallid sturgeon are due to water depletions in the North Platte River. They are listed for counties in Wyoming only because reduced water flow may affect the species and/or critical habitat in downstream reaches in other states. Because the proposed project will not result in any water depletions to the North Platte River system, no impacts to these species will occur.

D9.5.2 Species of Concern

Species of special interest due to their consideration to be listed as Threatened or Endangered or, in the case of raptors, their protection under the Migratory Bird Treaty Act, are discussed in more detail below. Also discussed is the bald eagle, a species recently delisted as a threatened species but still under protection by the Bald and Golden Eagle Protection Act.

D9.5.2.1 Bald Eagle

Winter roosting habitat for bald eagles most commonly includes areas close to (within 4 km) of coastal areas, bays, rivers, lakes, or other bodies of water that reflect the general availability of primary food sources including fish, waterfowl, and seabirds (Andrew and Mosher 1982, Green 1985, Campbell et al. 1990). Bald eagles preferentially roost in conifers or other sheltered sites in winter in some areas and they typically select larger, more accessible trees (Buehler et al. 1991, 1992). While woodland habitat is present on much of the permit area and along the creek bottoms, the area lacks any significant water source or high carrion area that would provide food sources for wintering bald eagles. While bald eagles may temporarily roost on the site and in the vicinity, the proposed mining is unlikely to affect this species.

D9.5.2.2 Mountain Plover

On May 11, 2011 the USFWS determined that the mountain plover is not threatened or endangered throughout all or a significant portion of its range. This ground nesting species is

typically found in areas of short (less than four inches) vegetation on slopes of less than five percent. Any short grass, very short shrub, or cushion plant community could be considered plover nesting habitat (Parrish et al. 1993), however, mountain plovers prefer shortgrass prairie with open, level or slightly rolling areas dominated by blue grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*) (Dinsmore 1981, Kantrud and Kologiski 1982).

The permit area is primarily rolling to hilly terrain and lacks significant flat terrain. However the reclaimed area of the Congo Pit has patches of bare ground and areas of low vegetative cover; in addition it is fairly flat but adjacent to hilly terrain. While minimal in size and supporting denser vegetation than is found on typical mountain plover habitat, this area was searched for mountain plovers during three site visits between May 1 and June 15, following mountain plover search protocol. No mountain plovers were observed. While it's possible that mountain plovers occasional pass through the area, it is unlikely they would nest on the permit area due to the minimal available suitable habitat; therefore, the proposed mining is unlikely to affect this species.

D9.5.2.3 Other Migratory Birds – McIntire Pit Use

The McIntire Pit was created during past mining activity on the site. The pit is quite deep with a water depth of approximately 245 feet. In the USFWS correspondence (Attachment B), concern was stated about the potential risk of the McIntire Pit to migratory birds. Their letter states that "uranium pit lakes with elevated selenium can pose a risk to migratory birds as waterborne selenium concentrations $\geq$ 2 μg/L are considered hazardous to the health and long-term survival of fish and wildlife." In converting to milligrams per liter, the 2 micrograms per liter equals 0.002 milligrams per liter. In addition, low pH levels would indicate the water is acidic and ingestion by waterfowl and other wildlife could be harmful.

Records of McIntire Pit selenium content were available sporadically from 1990 through 1998 and annually from 1999 through 2010. The selenium level in the McIntire Pit water measured from 0.004 to 0.005 milligrams per liter from 1999 through 2010. Previous to 1999 it measured from 0.002 to 0.005 with the lowest level (0.002) being reported in 1993. The water pH from 1998 thorough 2010 ranged from 7.89 to 8.46, putting the pH just slightly below the neutral level of 7.0. It was 8.3 in 2010, making it slightly alkaline.

Waterfowl use of the pit was monitored during every site visit conducted by Real West in 2010. The pit was ice-free by the May 2, 2010 visit and five Canada geese (*Branta canadensis*) were observed on the pit water. During subsequent observations on May 29, May 30, June 14 and

June 15, no additional waterfowl were observed on the pond or along the shoreline. The pit lacks any significant bank or emergent vegetation. There are highwalls rising above the pit, though, that provide nesting habitat for bank and violet-green swallows (*Riparian riparia* and *Tachycineta thalassina*) that are very numerous at the site.

Titan is bonded to reduce the highwall slope along half of the highwall, the north and west slopes, to a 3:1 slope and revegetate per the original approved reclamation plan. It is possible the reclamation will be reclaimed through the Wyoming Department of Environmental Quality – Abandoned Mine Lands Division. If that occurs, it is likely the pit would be substantially backfilled and if an impoundment were left it would be fed by surface water. The most likely plan would include a flow-through without an impoundment since there is already an impoundment to the south.

D9.5.3 BLM Sensitive Species

In addition to federally listed species, the BLM has established a list of sensitive species that warrant special attention on BLM-administered lands. Habitat descriptions and the potential for these species (when not covered in previous sections) to occur on the permit area are listed in Table D9.4. Those species that have the potential to occur on the site or in the vicinity are discussed further.

Table D9.4. BLM Sensitive Species within the Lander Resource Area and their potential on the Sheep Mountain site.

Species	Habitat Preference	Potential for Occurrence on Permit Area
Mammals		
Spotted Bat *Euderma maculatum*	Cliffs over perennial water, basin-prairie shrub	Possible
Long-eared Myotis *Myotis evotis*	Conifer and deciduous forests, caves and mines	Possible
Townsend's Big-eared Bat *Corynorhinus townsendii*	Forests, basin-prairie shrub, caves and mines	Possible

Table D9.4. BLM Sensitive Species within the Lander Resource Area and their potential on the Sheep Mountain site.

Species	Habitat Preference	Potential for Occurrence on Permit Area
White-tailed Prairie Dog *Cynomys leucurus*	Basin-prairie shrub, grasslands	Possible but not found
Pygmy rabbit *Brachylagus idahoensis*	Dense sagebrush with sandy soils	Possible
Swift Fox *Vulpes velox*	Grasslands	Unlikely
Birds		
White-faced Ibis *Plegadis chihi*	Marshes, wet meadows	Unlikely
Trumpeter Swan *Cygnus buccinators*	Lakes, ponds, rivers	Unlikely
Northern Goshawk *Accipter gentiles*	Conifer and deciduous forests	Possible
Ferruginous Hawk *Buteo regalis*	Basin-prairie shrub, grassland, rock outcrops	Possible
Peregrine Falcon *Falco peregrinus*	Tall cliffs	Unlikely
Long-billed Curlew *Numenius americanus*	Grasslands, plains, foothills, wet meadows	Unlikely
Burrowing Owl *Athene cunicularia*	Grasslands, basin-prairie shrub	Unlikely
Sage Thrasher *Oreoscoptes montanus*	Basin-prairie shrub, mountain foothill shrub	Possible
Loggerhead Shrike *Lanius ludovicianus*	Basin-prairie shrub, mountain foothill shrub	Possible
Brewer's Sparrow *Spizella breweri*	Basin-prairie shrub	Possible
Sage Sparrow *Amphispiza bilineata*	Basin-prairie shrub, mountain foothill shrub	Possible
Amphibians		
Northern Leopard Frog *Rana pipiens*	Beaver ponds, permanent water in plains and foothills	Possible

Table D9.4. BLM Sensitive Species within the Lander Resource Area and their potential on the Sheep Mountain site.

Species	Habitat Preference	Potential for Occurrence on Permit Area
Spotted Frog *Rana luteiventris*	Ponds, sloughs, small streams	Unlikely
Great Basin Spadefoot *Spea intermountana*	Spring seeps, permanent and temporary waters	Possible
Boreal Toad *Bufo boreas boreas*	Pond margins, wet meadows, riparian areas	Possible
Fish		
Yellowstone cutthroat trout *Oncorhynchus clarkia bouvieri*	Yellowstone drainage, small mountain streams, large rivers	Unlikely

D9.5.3.1 Spotted Bat

These bats are very uncommon in Wyoming but they are associated with many different habitats, ranging from low deserts to evergreen forest (Clark and Stromberg 1987). Due to cliff habitat in the vicinity of the site, there is the potential that the bats would inhabit the area.

D9.5.3.2 Long-eared Myotis

Long-eared myotis are found in a wide variety of habitats, from grasslands and conifer forests, to humid coastal and montane forests (Manning and Jones 1989). Clark and Stromberg (1987) report that in Wyoming, long-eared myotis are common in ponderosa pine (*Pinus ponderosa*) and occasionally have been captured in spruce-fir (*Picea -Abies*) forests at higher elevations. These bats were also captured in drier habitats along sand dunes and bluffs, containing various forbs and shrubs (e.g., sage, rushes, greasewood, and juniper). Suitable habitat is in the permit area and vicinity; therefore, this species is possible in the area.

D9.5.3.3 Townsend's Big-eared Bat

Maternity and hibernation colonies for the Townsend's big-eared bat are typically in caves and mine tunnels (NatureServe 2011). These bats prefer relatively cold places for hibernation, often

near entrances and in well-ventilated areas. While limited in the area, habitat for this species is in the vicinity; therefore, there is the potential for the species on the site.

D9.5.3.4 White-tailed Prairie Dog

This loosely colonial species inhabits open shrublands, semidesert grasslands, and open valleys. It lives at higher elevations and in meadows with more diverse grass and herb cover than do black-tailed prairie dogs (NatureServe 2011). Suitable habitat is in the area, primarily within the lower elevation shrublands on the permit area. However, no burrows were found on the site and this species currently does not inhabit the area.

D9.5.3.5 Pygmy Rabbit

Pygmy rabbits typically occur in areas of tall, dense sagebrush cover, and are highly dependent on sagebrush to provide both food and shelter throughout the year (Katzner et al. 1997). There are two main features of pygmy rabbit habitat: thick sagebrush and deep soils. Usually borrows are found in the taller and thicker big sagebrush in an area, with a height of about thigh-high to chest-high (Keinath and McGee 2004). While sagebrush is present on the lower elevations of the permit area, it generally is of lower density that the habitat preferred by this species but there is the possibility that they inhabit the area due to dense sagebrush in the vicinity but outside the permit area.

D9.5.3.6 Northern Goshawk

This is a forest hawk species. In general northern goshawks breed in mature montane forests, preferring areas with large diameter trees, closed canopies, and open understories (Kennedy 2003). While suitable habitat is very limited on the permit area, it is present to the east on Green Mountain. Occurrence of this species on the permit area would be highly incidental, unpredictable, and limited to migrants passing through the area.

D9.5.3.7 Ferruginous Hawk

Ferruginous hawks require large expanses of native, semiarid open grassland and shrub-steppe that support populations of rodent prey and that have minimal human disturbance during the nesting period (Travsky and Beauvais 2005). In general ferruginous hawks do not require trees

for nesting, as they will nest on buttes, rocky outcroppings, power poles and other man-made structures, and in open areas on the ground.

While suitable habitat is limited on the permit area, nesting habitat is abundant in the vicinity. While it is unlikely this species will nest on the permit area it is possible that it would forage on the site.

D9.5.3.8 Sage Thrasher

This species is found in tall sagebrush and greasewood (Dorn and Dorn 1990). It is a somewhat common summer resident in Wyoming. Suitable habitat is present on the permit area and the species could occur in the area.

D9.5.3.9 Loggerhead Shrike

This species prefers relatively open country with scattered trees and shrubs, savanna, desert scrub (southwestern U.S.), and, occasionally, open woodland; it often perches on poles, wires or fenceposts (AOU 1983). Suitable hunting perches are an important part of the habitat (Yosef and Grubb 1994). Suitable habitat is present on the site and it's possible this species occurs in the area.

D9.5.3.10 Brewer's Sparrow

Brewer's sparrows are sagebrush obligates, their Great Basin range being concordant with the range of sage shrub-steppe (Faulkner 2010). Within Wyoming they reach their highest density in large, undisturbed, homogeneous stands of sage shrub-steppe in the southwestern and central basins of Wyoming. While suitable habitat is limited on the permit area, it is common in the vicinity and this species could occur in the area.

D9.5.3.11 Sage Sparrow

Sage sparrows are sagebrush obligates, preferentially occupying areas of dense and tall sagebrush with little or no herbaceous groundcover (Faulkner 2010). While such habitat is very limited on the permit area, habitat is present in the vicinity and this species could occur in the area.

D9.5.3.12 Northern Leopard Frog

In Wyoming this species is relatively common throughout the state. It is found in or near permanent water in the plains, foothills and montane zones (Baxter and Stone 1980). Preferred habitats are swampy cattail marshes on the plains and beaver ponds in the foothills and montane zones. Suitable habitat is present in the pond along the southern permit boundary and it's been known to be along Crook's Creek, west of the permit area.

D9.5.3.13 Great Basin Spadefoot

In Wyoming this species inhabits sagebrush communities at lower elevations, mostly in the Wyoming Basin and the Green River valley (Baxter and Stone 1980). This species may utilize some permanent waters in addition to temporary waterholes for breeding. Suitable habitat is present in the pond along the southern permit boundary; therefore, this species could occur in the area.

D9.5.3.14 Boreal Toad

Boreal toads inhabit wet areas in the foothills, montane and subalpine zones (Baxter and Stone 1980). In Wyoming this species is restricted to mountains and foothills and to relatively moist conditions. While suitable habitat is very limited on the permit area, there is the potential for this species in the pond located on the southern permit boundary.

D9.5.4 Big Game

Four big game species occur in the permit area including pronghorn antelope (*Antilocapra americana*), mule deer (*Odocoileus hemionus)*, elk (*Cervus canadensis*), and moose (*Alces alces*). Figure C-2, Attachment C, shows the location of crucial big game range in the vicinity of the permit area. The area is also utilized by wild horses with a small group of four horses being observed on the permit area repeatedly during the 2010 wildlife surveys.

The permit area is outside any crucial winter range for big game species. As stated in the WGFD correspondence (Attachment B), there is the potential that the area will be designated as crucial-winter-yearlong range for mule deer in the future.

The Sheep Mountain Project includes the Congo Pit, a proposed open pit development, and the re-opening of the existing Sheep Underground mine. Surface disturbance activities including the proposed heap leach plant, Congo Pit and spoil piles are all proposed for areas of previous disturbance. The habitat in these areas is comprised primarily of monoculture grassland that provides minimal wildlife forage benefit. Other facilities include existing roads and the Sheep I and Sheep II vent shafts. These roads are already present, as are the disturbed areas surrounding the vent shafts.

In 2010, the road from Sheep I to Sheep II was removed by contouring to match the existing natural terrain and reseeded. This reclamation project covered 14.9 acres. While the return to a more native species mix will take some time, the reclamation will eventually supplement the available wildlife forage.

Mining operations are expected to occur over a period of approximately 11 years. Once mining operations cease, reclamation will commence including reduction of highwalls on the Congo Pit and revegetation of all disturbed areas.

While there is the potential to displace big game due to traffic and other human activity, loss of native forage habitat will be minimal since disturbance will occur primarily in the same areas previously disturbed by mining. While displacement is possible, big game are known to habituate to non-threatening human activity and are expected to continue to occupy the area where most of the suitable native vegetation will remain undisturbed.

D9.5.5 Raptors

Six raptor nests were observed by Real West during 2010 and 2011 surveys on the permit area or within one-mile of the site. The nest locations are shown on the aerial photograph in Figure C-2, Attachment C and they are listed in Table D9.5.

No active raptor nests were located within the permit area. One stick nest (Unk 6) in good condition was observed in the east-central portion of the permit area. Since the nest was not located until after the nesting season, its activity status for 2010 was unknown. It was located in 2011 and was inactive. Due to the size of the nest it was likely once used either by red-tailed hawks (*Buteo jamaicensis*) or golden eagles (*Aquila chrysaetos*).

Table D9.5. Raptor Nests Located on the Sheep Mountain Permit Area and within 0.5-mile during 2010 and 2011 Surveys by Real West Natural Resource Consulting.

Species Nest ID	UTM Location (Zone 13, NAD83)		Legal Location			Status		Nest Condition In 2011	Substrate
	Easterly	Northerly	T R	1/4 1/4	Sec	2010	2011		
GHO 1	267493	4692706	28 92	SWSE	33	Active	Inactive	Good	Aspen
RTHA 2	267400	4692767	28 92	SWSE	33	Inactive	Active	Good	Aspen
Unk 3	266842	4695985	28 92	NWSW	21	Inactive	Inactive	Poor	Snag
Unk 4	266911	4695929	28 92	SWSW	21	Inactive	Inactive	Very Poor	Snag
GHO 5	266368	4694545	28 92	NESE	29	Inactive	Inactive	Good	Building
UNK 6	268999	4696090	28 92	NWSE	22	Unknown	Inactive	Good	Snag

The only active nest observed in 2010 was approximately 0.4 miles south of the permit area in an aspen tree along an unnamed creek bottom. The nest was occupied by great horned owls (*Bubo virginianus*) with one young owlet observed during the May 29, 2010 survey. This nest was inactive in 2011. A second inactive nest, also in an aspen tree, was located approximately 125 yards east of the active nest. This second nest was in good condition and in 2011 it was active with nesting red-tailed hawks.

Within the permit area, two nests were located on the west-facing slope of Sheep Mountain. These nests, identified as Unk 3 and Unk 4, were in poor to very poor condition and likely had not been used for some time. One large nest, identified as GHO 5, is inside the abandoned shop

building immediately north of the McIntire Pit. This building will be removed as part of the site reclamation but no nest removal will occur during the nesting season if the nest is active.

The final nest, Unk 6, was previously mentioned as a potential red-tail hawk or golden eagle nest, based on nest size and substrate. This is a large stick nest within a pine tree snag.

With the exception of the great-horned owls located in the nest south of the permit area, the only raptors observed during any of the wildlife surveys in 2010 was a red-tailed hawk observed flying south of the McIntosh Pit and over the small reservoir. The red-tail hawks using RTHA 2 nest were the only raptors observed on the site during the 2011 survey.

Additional raptor species expected to forage and/or nest in area based on habitat and geographic area include golden eagles, Swainson's hawks (*Buteo swainsoni*), American kestrels (*Falco sparverius*) and merlins (*Falco columbarius*). These species utilize woodland habitat. Northern harriers (*Circus cyaneus*) nest in dense grassland, which is a very limited habitat on and in the vicinity of the permit area. Numerous rock outcrops are present along the northwest-facing slope that overlooks the Congo Pit. These outcrops were closely inspected for potential nests, primarily by ferruginous hawks and prairie falcons (*Falco mexicanus*) but no evidence of nesting by these species was observed. Rough-legged hawks (*Buteo lagopus*) likely winter in the area, although they were not observed during site surveys.

Annual nesting raptor surveys will be conducted to monitor nest status on the permit area and within one-mile. No construction would occur within 0.5-mile of any active raptor nest.

D9.5.6 Waterfowl and Shorebirds

Suitable habitat for waterfowl or shorebirds is present on the permit area at the McIntosh Pit, the reclaimed Paydirt Pit and a reclaimed reservoir along the permit southern boundary. As mentioned in Section 4.2.3, only a few Canada geese were observed on the McIntosh Pit during the site surveys. The bottom of the Paydirt Pit has been reclaimed but standing water was present in the pit bottom by mid June in 2010. Due to the lack of emergent vegetation and minimal bank vegetation, use of this small pit by waterfowl is likely limited to brief stop-overs. It is unlikely that waterfowl or shorebirds nest at either location.

The nearest body of water with established emergent and bank vegetation is the reservoir, covering approximately 7 acres, along the south permit boundary. This reservoir was

constructed following and as a result of previous mining activities. The site is popular as a fishing site and anglers were observed at the reservoir during all summer survey periods in 2010. Killdeer (*Charadrius vociferus*) were frequently observed and heard at the reservoir along with green-winged teal (*Anas carolinensis*) and common mergansers (*Mergus merganser*). Additional waterfowl and shorebirds likely use the site.

Due to the prevalence of similar habitat in the vicinity of the permit area, while individual animals may be disturbed during mining operations, the proposed mining is not expected to impact any waterfowl or shorebird population.

D9.5.7 Passerine Birds

In 2010 twenty point-count sample points were established to identify passerine bird use of the site. At each sample point, the biologist recorded all birds observed and/or heard during a 10-minute period. All surveys were conducted from dawn to 11 a.m. during favorable weather conditions. The point-count locations are shown on the aerial photograph in Figure C-4, Attachment C and the locations are listed in Table C-5, Attachment C.

A total of 21 passerine bird species were observed or heard during the surveys, as listed in Table D9.6. The most common passerine bird within the permit area is the chipping sparrow followed by the gray jay and then the mountain chickadee. Additional passerine bird species were observed during random observations and these are included in the wildlife species list provided in Table D-1, Attachment D.

Due to the prevalence of similar habitat in the vicinity of the permit area, while individual birds may be disturbed during mining operations, the proposed mining is not expected to impact any passerine bird population.

D9.5.8 Reptiles and Amphibians

Creeks and bodies of water on and immediately adjacent to the permit area were searched for amphibians, particularly the northern leopard frog (*Rana pipiens*). This species is present in Crook's Creek, located approximately 0.25-mile west of the permit boundary. Boreal chorus frogs (*Pseudacris maculata*) are also present along the creek and in the small reservoir located along the southern permit boundary. No amphibian species were seen or heard at the McIntosh

Table D9.6. Passerine birds observed and heard during 2010 point-count surveys.

Common Name	Scientific Name	Total Observed	Mean Observed
Chipping sparrow	*Spizella passerina*	39	1.95
Gray jay	*Perisoreus canadensis*	15	0.75
Mountain chickadee	*Parus gambeli*	8	0.40
Mourning dove	*Zenaida macroura*	7	0.35
Oregon junco	*Junco hyemalis oreganus*	7	0.35
Violet-green swallow	*Tachycineta thalassina*	6	0.30
Cliff swallow	*Petrochelidon pyrrhonata*	5	0.25
Common crow	*Corvus brachyrhynchos*	5	0.25
Red-shafted flicker	*Colaptes auratus*	4	0.20
Brewer's sparrow	*Spizella breweri*	3	0.15
Vesper sparrow	*Pooecetes gramineus*	3	0.15
American robin	*Turdus migratorius*	2	0.10
Brewer's blackbird	*Euphagus cyanocephalus*	2	0.10
House wren	*Troglodytes aedon*	2	0.10
Mountain bluebird	*Sialia currucoides*	2	0.10
Western wood peewee	*Contopus sordidulas*	2	0.10
Yellow warbler	*Dendroica petechia*	2	0.10
Audubon's warbler	*Dendroica coronata*	1	0.05
Horned lark	*Eremophila alpestris*	1	0.05
Ruffed grouse	*Bonasa umbellus*	1	0.05
Western meadowlark	*Surnella neglecta*	1	0.05

Pit or Paydirt Pit. Due to the lack of impacts to the wetland habitats that support amphibian species, this project is not expected to impact any amphibian populations.

During site surveys no reptile species were observed on the site or in the vicinity. Reptile species expected in the area include the northern sagebrush lizard (*Sceloporus graciosus*), short-horned lizard (*Phrynosoma douglassi*), wandering garter snake (*Thamnophis elegans*), and prairie rattlesnake (*Crotalus viridis*). Due to the presence of similar habitats in the vicinity, the proposed mining is not expected to impact any reptile populations.

D9.5.9 Fish

The only known fishery within the permit area is the small reservoir on the southern boundary of the project area. This reservoir was created following uranium mining further to the south. The reservoir is stocked with trout and it attracts a steady flow of anglers through the summer months.

Wyoming Game and Fish Department sampling along Crooks Creek in previous years resulted in the capture of one brook trout (*Salvelinus fontinalis*) in the upper section of the creek as it flows through Crooks Gap. This species is likely more common downstream in the creek, although Crooks Creek does not flow all the way to the Sweetwater River; it submerges and disappears prior to intercepting the river.

Other species captured in Crooks Creek at Crooks Gap included creek chub (*Semotilus atromaculatus*), long nosed dace (*Rhinichthys cataractae*) and white sucker (*Catostomus commersoni*).

D9.5.10 Other Wildlife

All wildlife observed during the 2010 wildlife surveys are indicated in Table D-1, Attachment D. Also included are those species listed in the original permit as potentially occurring in the project area. In addition, the Wyoming Natural Diversity Database (WYNDD) was accessed to obtain a listing of wildlife reported on the permit area and within a surrounding buffer area covering the entire township and ranges that include the permit area (WYNDD 2010).

During 2010 wildlife surveys 9 mammal and 30 avian species were observed on the permit area or within one mile. The original permit application listed 62 mammal and 172 avian species as potentially occurring in the area. The WYNDD database listed three mammal and 12 avian species as having been reported in the area.

D9.6 Mitigation Measures

Potential impacts and mitigation measures for wildlife on the permit area are listed in Table D9.7. Mining activities will result in “no effect” to the black-footed ferret or North Platte River species. There is the potential for individual sage-grouse to be displaced due to the proposed mining; therefore the proposed project may adversely impact individuals, but it is not likely to

result in a loss of viability on the project area, nor cause a trend to federal listing or a loss of species viability range wide.

Table D9.7. Summary of Environmental Consequences and Mitigation Measures for the Sheep Mountain Permit Area.

Resource/Impact	Mitigation
Threatened and Endangered Species: Sage-grouse: No leks within 2 miles; outside sage-grouse core area.	No mitigation needed
Mountain Plover Habitat is minimal; no plovers observed.	No mitigation needed
Big Game No crucial range is present.	No mitigation needed
Raptors Six raptor nests found.	No active construction within 0.5 mile of an active raptor nest during the nesting season (February 1 to July 31 for all raptor species). Annual raptor surveys will be conducted and results submitted in the annual monitoring report submitted to WDEQ.
Waterfowl and Shorebirds Suitable habitat is minimal.	No mitigation needed
Passerine Birds Prairie species common; habitat is plentiful in the area.	No mitigation needed
Amphibians and Reptiles Amphibian habitat will not be disturbed. Habitat is present for reptile species but suitable habitat is plentiful in the area.	No mitigation needed
Fish No bodies of water will be altered due to the proposed mining.	No mitigation needed
Other Wildlife Prairie species expected; habitat is plentiful in the area.	No mitigation needed

Six raptor nests are within the permit area or within 1-mile of the boundary. No construction would occur within 0.5-mile of any active raptor nest.

No big game crucial range is present on the permit area, although there is the potential for habitat in the area to be designated as crucial in the future. Due to the loss of minimal natural vegetation, the project will minimally result in disturbance to big game forage areas. Reclamation of currently disturbed habitats will result in long-term improvements to big game available forage.

D9.7 LITERATURE CITED

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ATTACHMENT A

Site and Habitat Photographs

Figure A-1. Mixed woodland habitat is dominant on Sheep Mountain with a mix of limber pine and juniper and an understory of sagebrush, bitterbrush and mountain mahogany.

Figure A-2. Sagebrush grassland habitat is common on the lower elevation areas around the mountain perimeter and foothills.

Figure A-3. The steep hillsides of Sheep Mountain show evidence of previous mining with remnants of old roads.

Figure A-4. Sandstone outcrops are present on the north side of Sheep Mountain.

Figure A-5. Dense woodland habitats with patches of aspen are found in small seep areas on Sheep Mountain.

Figure A-6. The Paydirt Pit was reclaimed with a small pond in the bottom of the old pit.

Figure A-7. The Congo Pit area was previously mined and reclaimed with mostly grasses.

Figure A-8. The McIntosh Pit contains water year-round but lacks emergent or bank vegetation. The site is frozen over through the winter months.

Attachment B

Correspondence from:
Wyoming Game and Fish Department
U.S. Fish and Wildlife Service

WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4610

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March 17, 2010

WER 12068
Real West Natural Resource Consulting
Permitting Requirements for Reopening a
Uranium Mine on Sheep Mountain Permit # 381C
Titan Uranium USA and BRS Inc
Fremont County

Amber Travsky
Owner/Wildlife Biologist
Real West Natural Resource Consulting
1116 Albin Street
Laramie, WY 82072

Dear Ms. Travsky:

The staff of the Wyoming Game and Fish Department has reviewed the permitting requirements for reopening a uranium mine on Sheep Mountain Permit # 381C for Titan Uranium USA and BRS Inc in Fremont County. We offer the following comments for your consideration.

Terrestrial Considerations:

About 2/3 of the permit area contains winter (WIN) range for the Green Mountain Elk Herd Unit, and winter range protections should be applied (Lander BLM applies seasonal stipulations to ALL winter ranges for elk, not just crucial ranges in the current Resource Management Plan). Sheep Mountain has one of the highest concentrations of mule deer observed in Deer Hunt Area 96 during classification flights conducted annually in November or December (post-hunting season). The Department is planning a review of all big game seasonal ranges in the South Lander Wildlife Biologist District, which should occur in Spring/Summer 2010. Based on preliminary data reviews of this site, it is likely that the Department will recommend Crucial Winter-Yearlong (CRUWYL) designation for the entire project and surrounding areas. Although mule deer may leave this area during extremely harsh winters, recent winter observations indicate this project site is extremely important to deer during most winters. The project site is also traversed by migration corridors for mule deer and pronghorn. As such, the Department recommends all mining activities be prohibited from November 15 to April 30 each winter to eliminate potential disturbance to wintering elk and mule deer.

The mine area is partially located within a sage-grouse core area as identified by the Governor's Sage-Grouse Implementation Team in 2008. Sage Grouse Implementation Team stipulations

should be applied on State Land in Section 16, T28N, R92W. For BLM land in the rest of the permit area, sage-grouse core area stipulations should be applied as per BLM IM WY-2010-012 issued on January 4, 2010. Lek surveys should be expanded to include all leks within 11 miles of the project boundary as per this BLM IM. Sage-grouse use of the permit area is most likely to occur in late summer and fall. In addition, searches for new leks should be conducted each spring prior to any mining activity within 3 miles of the project site.

The Department recommends a development plan that does not exceed the current disturbed acres of the permit. Reclamation should only be considered successful when at least 70% of the area exhibits re-vegetation to conditions at least as good as found within the project area. A site inventory of existing plant species (shrubs, grasses, and forbs) should be conducted prior to mining activity and reclamation plans should incorporate a seed mixture or seedlings to accomplish vegetation recovery as rapidly as possible.

This proposed uranium mine at Sheep Mountain lies entirely within the South Lander Biologist District, but the document makes no mention of where ore from the mine would be hauled for processing. This appears to be a major omission of the document, as construction, upgrade, and use of haul roads could present major impacts to wildlife from this project. Other uranium mine proposals in the Green Mountain area have historically included plans to haul ore south to the old Union 76 Mill in the Red Desert. If that is the plan for this mine, impacts to wildlife, particularly sage-grouse, could be significant. Most, if not all of the haul roads would likely lie within occupied sage-grouse habitats within core areas. Increased fragmentation of these core areas would be a major concern.

Aquatic Considerations:

Western Nuclear Pond is located along the periphery of the project area: R92W, T28N, S32 (UTM: 266,664E; 4,693,097N; Z13; NAD27). This is a 10-acre pond managed as a basic yield fishery by annually stocking brook trout and rainbow trout. The pond is located on private land; however, the mine owner has allowed unrestricted public access since 1990. No formal access agreement has ever been made. Fishing opportunities are limited in this portion of the region and we would like to encourage the current land owners to continue allowing fishermen access. If they are interested and willing, we would be happy to discuss the creation of a formal agreement or easement to insure continued access for the future.

We have no other specific aquatic concerns relative to the proposal to reopen this uranium mine.

Thank you for the opportunity to comment. If you have any questions or concerns, please contact Kevin Johnson, Lander Region Fisheries Supervisor, at 307-332-7723 Ext. 227 or Tom Ryder, Lander Wildlife Management Coordinator, 307-332-2372.

Sincerely,

for John Emmerich
Deputy Director

JE: MF: gfb

cc: USFWS
Kevin Johnson, Lander Region
Tom Ryder, Lander Region

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

MAR 18 2010

In Reply Refer To:
ES-61411/WY10SL0158

Ms. Amber Travsky
Owner/Wildlife Biologist
Real West Natural Resource Consulting
1116 Albin Street
Laramie, WY 82072

Dear Ms. Travsky:

Thank you for your letter of February 18, 2010, received in our office on February 19, regarding the proposed reopening of a uranium mine by Titan Uranium USA and BRS Inc. The mine is located in Sections or parts of Sections 16, 20, 21, 22, 27, 28, 29, 32, and 33, T28N, R92W in Fremont County.

You have requested information regarding species listed under the Endangered Species Act of 1973, as amended (Act), 16 U.S.C. 1531 *et seq*. In response to your request, the U.S. Fish and Wildlife Service (Service) is providing you with recommendations for protective measures for threatened and endangered species in accordance with the Act. We are also providing recommendations concerning migratory birds in accordance with the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, and the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668. Wetlands are afforded protection under Executive Orders 11990 (wetland protection) and 11988 (floodplain management), as well as section 404 of the Clean Water Act. Other fish and wildlife resources are considered under the Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 *et seq.*, and the Fish and Wildlife Act of 1956, as amended, 16 U.S.C. 742a-742j.

In accordance with Section 7(c) of the Act, we have determined that the following species or their designated habitat may be present in the proposed project area. We would appreciate receiving information as to the current status of each of these species within the proposed project area.

Species/Critical Habitat	Scientific Name	Status	Habitat
Blowout Penstemon	*Penstemon haydenii*	Endangered	Sand dunes or blowouts
Greater Sage-grouse	*Centrocercus urophasianus*	Candidate	Sagebrush steppe

Platte River Species (Interior Least Tern, Pallid Sturgeon, Piping Plover, Western Prairie Fringed Orchid, Whooping Crane)	 *Sternula antillarum* *Scaphirhynchus albus* *Charadrius melodus* *Platanthera praeclara* *Grus americana*	 Endangered Endangered Threatened Threatened Endangered	Downstream riverine habitat of the Platte River system
Platte River Species Critical Habitat	Designated for whooping crane in Nebraska in riverine habitat of the Platte River system (50 CFR 17.95(b))		

Please note we did not include the black-footed ferret (*Mustela nigripes*) on a list of species that may be present within or near the Project area because that area has previously been block-cleared from the need for ferret surveys. However, we encourage project proponents to protect all prairie dog complexes or towns for their value to the prairie ecosystem and the many species that rely on them. We further encourage you to analyze potentially disturbed prairie dog towns for their value to future black-footed ferret reintroduction. If prairie dog towns may be impacted by the proposed project please contact our office to discuss protective measures.

Blowout penstemon: Blowout penstemon (*Penstemon haydenii*) is a perennial herb with stems less than 12 inches tall. The inflorescence is 2-6 inches long and has 6-10 compact whorls of milky-blue to pale lavender flowers. Blowout penstemon was listed as endangered on October 1 1987. Blowout penstemon is known from multiple populations in western Nebraska (Fertig 2001). The plant's current known range in Wyoming consists of the Ferris dunes area in northwest Carbon County where the plant is restricted to two habitat types: steep, northwest facing slopes of active sand dunes with less than 5 percent vegetative cover; and on north facing sandy slopes, on the lee side of active blowouts with 25-40 percent vegetative cover. Known populations in Wyoming are found between 6680-7440 feet (Fertig 2001). However, recent surveys have indicated that systematic surveys may be warranted in some lower elevations (below 6700 feet) in Wyoming where active sand blowout features occur (BLM 2005, Fertig 2001).

Blowouts are formed as strong winds deposit sands from the windward side of a dune to the leeward side and result in a sparsely vegetated crater-like depression. Associated vegetation includes blowout grass, thickspike wheatgrass, lemon scurfpea, Indian ricegrass and western wheatgrass. Threats to the plant occur when sand dunes are removed or overly disturbed by vehicular traffic. Surveys should be conducted from mid-June to early-July when flowering occurs by knowledgeable botanists trained in conducting rare plant surveys. The Service does not maintain a list of "qualified" surveyors but can refer those wishing to become familiar with the blowout penstemon to experts who can provide training/services.

Greater sage-grouse: The greater sage-grouse (*Centrocercus urophasianus*) is a candidate for listing as threatened under the Endangered Species Act. Greater sage-grouse are dependent on sagebrush habitats year-round. Habitat loss and degradation, as well as loss of population connectivity have been identified as important factors contributing to the decline of greater sage-

grouse populations rangewide (Braun 1998, Wisdom *et al.* 2002). Presently greater sage-grouse occur in 11 western states. Wyoming contains some of the largest populations of greater sage-grouse across the species range, making Wyoming particularly important to greater sage-grouse conservation.

The State of Wyoming has adopted a "Core Population Area Strategy" Executive Order 2008-2 to ensure greater sage-grouse conservation. The recommendations of the State Sage-grouse Implementation Team and State of Wyoming's Greater sage-grouse "Core Population Area Strategy" Executive Order 2008-2 clearly state that development of any type in the most important sage-grouse habitats (core areas and associated seasonal habitats) is done only when no decline of the species can be demonstrated. Executive Order 2008-2 further states the burden of proof for showing development does not affect sage-grouse rests with the industry or proponent in question, and any research they feel is necessary to convey this, should be conducted outside of core areas.

The proposed project is located in an area designated by the State of Wyoming as a core sage-grouse population area. We recommend you pursue additional consultation with the state of Wyoming on its recent core area strategy as it relates to this project.

Platte River Species: If the proposed action may lead to consumptive use of water or have the potential to affect water quality in the Platte River System, there may be impacts to threatened and endangered species inhabiting the downstream reaches of this river system. For more information on how to seek ESA coverage for water-related activities through the Platte River Recovery Implementation Program, please visit our web site at: http://www.fws.gov/platteriver

Migratory Birds

The MBTA, enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations, and does not require intent to be proven. Section 703 of the MBTA states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means or in any manner, to ... take, capture, kill, attempt to take, capture, or kill, or possess ... any migratory bird, any part, nest, or eggs of any such bird..." The BGEPA prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing.

Work that could lead to the take of a migratory bird or eagle, their young, eggs, or nests (for example, if you are going to erect new roads, or power lines in the vicinity of a nest), should be coordinated with our office before any actions are taken. Enclosed please find our general recommendations for the protection of bald eagles and other raptor species. We strongly encourage project proponents to fully implement the protective measures described in the enclosure in order to help ensure compliance with the MBTA and the BGEPA. We are also available to assist you in developing a project specific plan to address the MBTA and BGEPA concerns.

Removal or destruction of such nests, or causing abandonment of a nest, could constitute violation of one or both of the above statutes. Removal of any active migratory bird nest or nest tree is prohibited. For golden eagles, inactive nest permits are limited to activities involving resource extraction or human health and safety. Mitigation, as determined by the local Service field office, may be required for loss of these nests. No permits will be issued for an active nest of any migratory bird species, unless removal of an active nest is necessary for reasons of human health and safety. Therefore, if nesting migratory birds are present on, or near the project area, timing is a significant consideration and needs to be addressed in project planning.

If nest manipulation is proposed for this project, the project proponent should contact the Service's Migratory Bird Office in Denver at 303-236-8171 to see if a permit can be issued for this project. No nest manipulation is allowed without a permit. If a permit cannot be issued, the project may need to be modified to ensure take of a migratory bird or eagle, their young, eggs or nest will not occur.

Species of Concern

Mountain plover: The Service has agreed to reopen the comment period in 2010 on the proposed rule to list the mountain plover as a threatened species (67 FR 72396, December 5, 2002) and to complete a new final determination on the proposal by May 1, 2011. Once the comment period is reopened and pending the completion of the new final determination, the mountain plover will be proposed for listing. Section 7(a)(4) of the Act, requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of any species proposed for listing. Federal action agencies may also request a conference on any proposed action that may affect a species proposed for listing.

We encourage project planners to develop and implement protective measures should mountain plovers occur within project areas. Measures to protect the mountain plover from further decline may include: (1) avoidance of suitable habitat during the plover nesting season (April 10 through July 10), (2) prohibition of ground disturbing activities in prairie dog towns, and (3) prohibition of any permanent above ground structures that may provide perches for avian predators or deter plovers from using preferred habitat. Suitable habitat for nesting mountain plovers includes grasslands, mixed grassland areas and short-grass prairie, shrub-steppe, plains, alkali flats, agricultural lands, cultivated lands, sod farms, and prairie dog towns. We encourage you to develop protective measures with an assurance of implementation should mountain plovers be found within the project areas.

Pit Lake Water Quality

Uranium pit lakes with elevated selenium can pose a risk to migratory birds as waterborne selenium concentrations $\geq$ 2 ug/L are considered hazardous to the health and long-term survival of fish and wildlife (Lemly 1996). Additionally, water with more than 20 ug/L is considered hazardous to aquatic birds (Skorupa and Ohlendorf 1991). Chronic effects of selenium manifest themselves in immune suppression to birds (Fairbrother et al. 1994) which can make affected

birds more susceptible to disease and predation. Selenium toxicity will also cause embryonic deformities and mortality (Skorupa and Ohlendorf 1991, See et al. 1992, Ohlendorf 2002)

Wildlife use and the risk presented by inorganic contaminants in the pit lake is unknown. Water contained in pit lakes may be nutrient-poor or may contain elevated concentrations of contaminants which may restrict productivity. Pit lakes are typically deep with steep sides, thereby limiting riparian and shallow lentic habitat. However, benches and ramps in the mine pit, along with erosion of pit walls, may provide limited areas where shallow lentic or riparian communities can become established. Wildlife using pit lakes may be exposed to hazardous levels of environmental contaminants in pit lakes. In an extreme case (Berkeley Pit near Butte, Montana), a large-scale avian die-off has been attributed to poor quality pit lake water. In this incident, the death of 342 snow geese was attributed to acute metal toxicosis and sulfuric acid exposure resulting from exposure to, and consumption of poor quality pit water. Birds landing in acidic ponds (pH < 2) can ingest this water which causes severe trauma to their gastrointestinal tracts and eventual death. The acidic water also removes natural oils from the birds' feathers causing them to die by drowning or hypothermia.

Under less extreme conditions, exposure to inorganic contaminants may occur through exposure to water and consumption of contaminated foods from the pit lake. In the latter, bioaccumulation and biomagnification become important factors affecting contaminant uptake. If submerged aquatic vegetation and/or aquatic invertebrates are present in pit lakes with high waterborne selenium concentrations, extremely high dietary levels of this contaminant can be available to aquatic migratory birds. Ramirez and Rogers (2000) documented selenium concentrations ranging from 434 to 508 ug/g in pondweed (*Potamogeton vaginatus*) collected from a uranium mine wastewater storage reservoir that had waterborne selenium concentrations ranging from 260 to 350 ug/L.

Recommendations:
The Service requests the following information in order to better evaluate the risks to migratory birds from contaminants in the pit lake:

- aquatic migratory bird use of the pit lake;
- presence or absence of aquatic vegetation and/or aquatic invertebrates in the pit lake;
- pH of the pit lake water;
- water quality (metals, salts) of the pit lake water;
- ongoing or planned remediation of the pit lake; and
- if applicable, ongoing or planned measures to prevent migratory bird mortality/exposure to pit lake water.

For our internal tracking purposes, the Service would appreciate notification of any decision made on this project (such as issuance of a permit or signing of a Record of Decision or Decision Memo). Notification can be sent in writing to the letterhead address or by electronic mail to FW6_Federal_Activities_Cheyenne@fws.gov.

We appreciate your efforts to ensure the conservation of Wyoming's fish and wildlife resources. If you have questions regarding this letter or your responsibilities under the Act and/or other

authorities or resources described above, please contact Pete Ramirez of my office at the letterhead address or phone (307) 772-2374, extension 236.

Sincerely,

Scott Hicks

for Brian T. Kelly
Field Supervisor
Wyoming Field Office

Enclosure

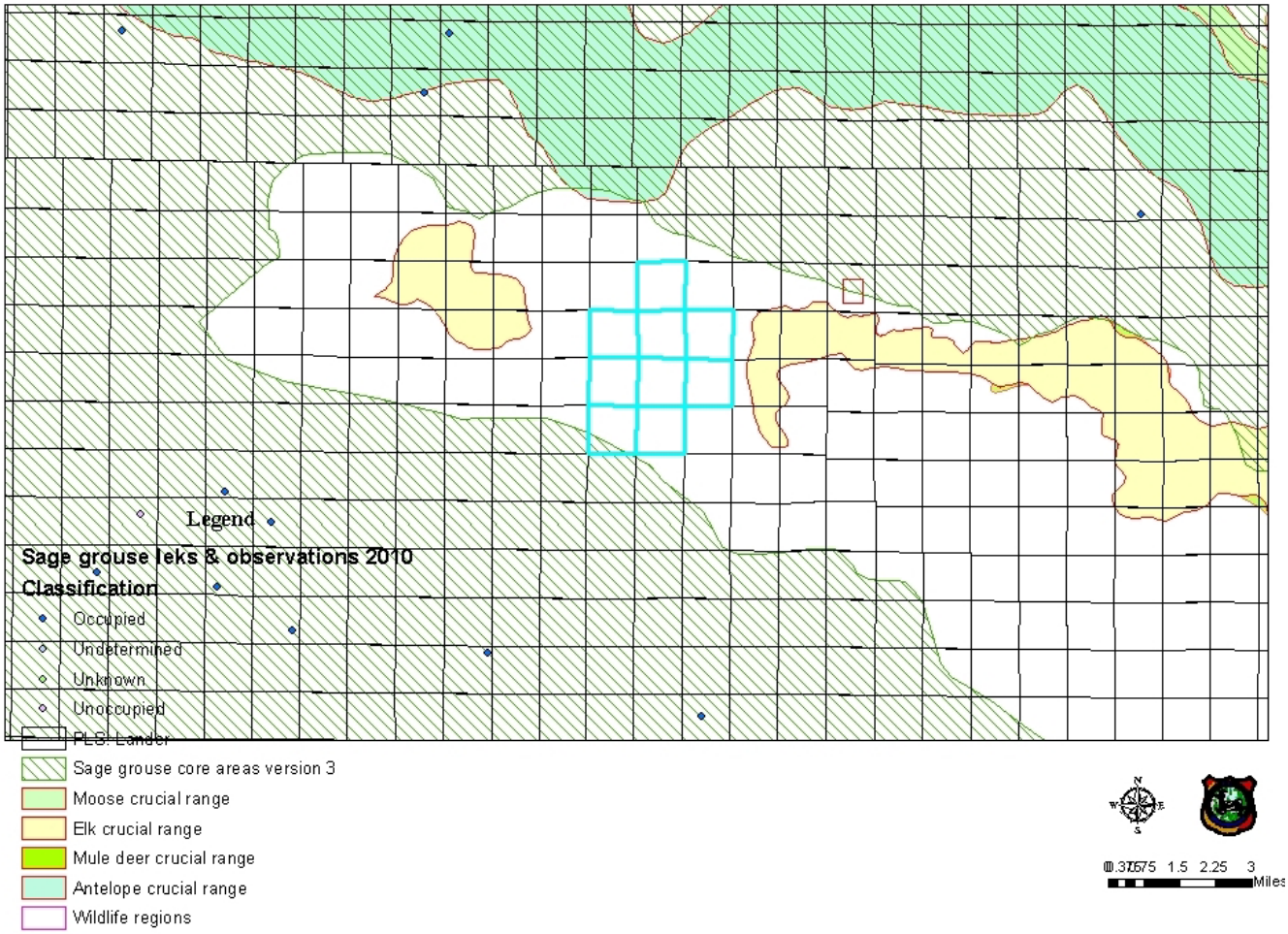
cc: WGFD, Non-game Coordinator, Lander, WY (B. Oakleaf)
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (M. Flanderka)

ATTACHMENT C

Maps of the Permit Area

Figure C-1. Sage-grouse core areas, shown in green, are located to the north and south of the permit area, whose general location is in red. The permit area is outside any sage-grouse core area.

Figure C-2. Big game crucial ranges, sage-grouse core area, and sage-grouse lek locations in the vicinity of the permit area (sections indicted in blue). Map was provided by the Wyoming Game and Fish Department on November 24, 2010.



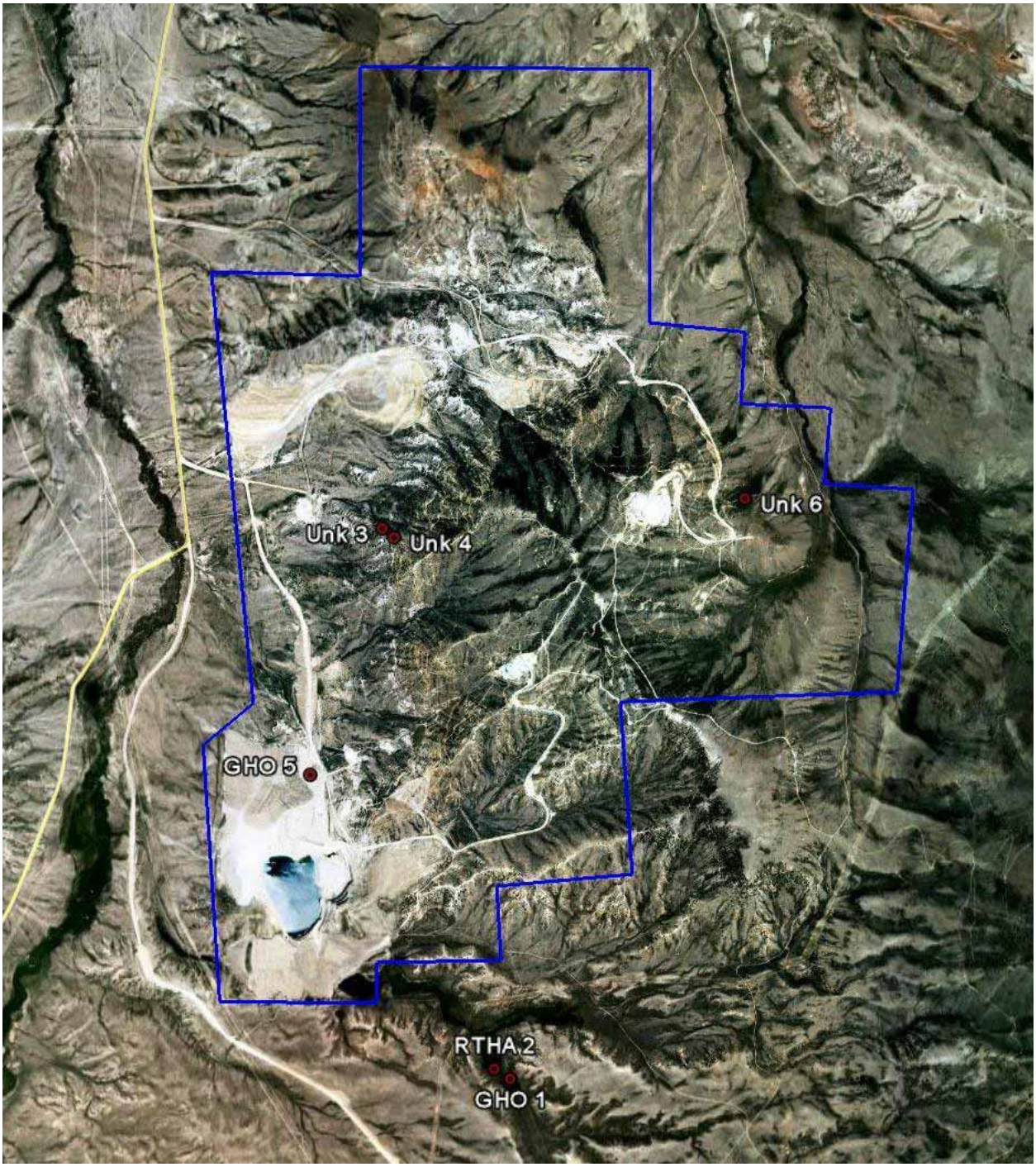


Figure C-3. Raptor nest locations identified by Real West Natural Resource Consulting during surveys in 2010 and 2011 on the Sheep Mountain project area and in the vicinity.

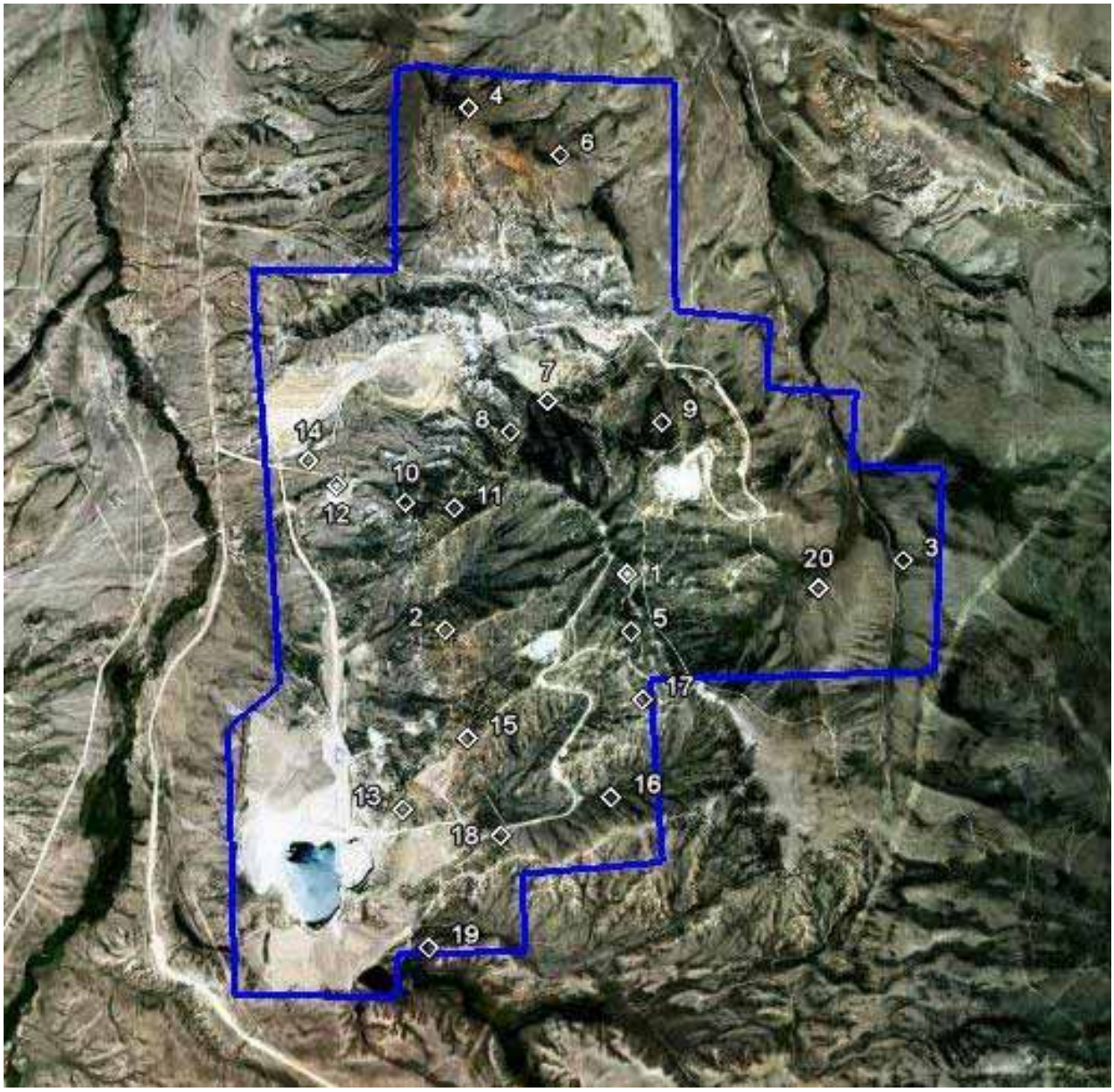


Figure C-4. Passerine Bird Transect Locations.

Table C-5. Passerine Bird Point Count Locations.

Point Number	Location (NAD 83, Zone 13)		Habitat
	Easting	Northing	
1	268106	4695511	sage-conifer
2	267042	4695247	sage-confer
3	269730	4695568	woodland
4	267249	4698402	mixed
5	268124	4695475	mixed
6	267792	4698123	mixed
7	267673	4696594	mixed
8	267450	4696404	rock outcrop
9	268345	4696420	dense wood
10	266810	4696021	mixed
11	267113	4695953	mixed
12	266388	4696158	sage grass
13	266773	4694227	grass/cushion
14	266214	469319	sage
15	267156	4694619	mixed
16	267972	4694257	sage
17	268170	4694799	wooded
18	267332	4694062	sage
19	266899	4693441	mixed
20	269221	4695416	mixed

ATTACHMENT D

Wildlife Observed or Expected on the Sheep Mountain Permit Area

Table D-1. Wildlife species observed or expected on the Sheep Mountain Project Area.

Common Name	Scientific Name	Observed by Real West in 2010 or 2011	Reported in the Original Permit[1]	Reported in the Area on the WYNDD[2]
Mammals				
Masked shrew	*Sorex cinereus cinereus*		X	
Vagrant shrew	*Sorex vagrans*		X	
Merriam's shrew	*Sorex merriami leucogenys*		X	
Dwarf shrew	*Sorex nanus*		X	
Water shrew	*Sorex palustris navigator*		X	
Little brown myotis	*Myotis lucifugus carrissima*		X	
Small-footed myotis	*Myotis subulatus subulatus*		X	
Long-legged myotis	*Myotis volans interior*		X	
Long-eared myotis	*Myotis evotis evotis*		X	
Silver-haired bat	*Lasionycteris noctivagans*		X	
Hoary bat	*Lasiurus cinereus cinereus*		X	
Spotted bat	*Plecotus inaculatum pallescens*		X	
Big brown bat	*Eptesicus fuscus pallidus*		X	
Eastern cottontail	*Sylvilagus floridanus similis*		X	
Desert cottontail	*Sylvilagus audubonii baileyi*	X	X	
Snowshoe rabbit	*Lepus americanus*		X	
White-tailed jackrabbit	*Lepus townsendii*	X	X	
Pygmy rabbit	*Brachylagus idahoensis*			X
Least chipmunk	*Eutamias minimus*	X	X	
Yellow-bellied marmot	*Marmota flaviventris*		X	
Richardson's ground squirrel	*Spermophilus richardsonii elegans*	X	X	X
Thirteen-lined ground squirrel	*Spermophilus tridecemlineatus*		X	
Golden-mantled ground squirrel	*Spermophilus latralis*		X	
Black-tailed prairie dog	*Cynomys ludovicianus*		X	
White-tailed prairie dog	*Cynomys leucurus*		X	
Red squirrel	*Tamiasciurus hudsonicus*		X	
Wyoming pocket gopher	*Thomomys clusius*			X
Northern pocket gopher	*Thomomys talpoides*		X	
Olive-backed pocket mouse	*Perognathus fasciatus*		X	

Common Name	Scientific Name	Observed by Real West in 2010 or 2011	Reported in the Original Permit[1]	Reported in the Area on the WYNDD[2]
Ord's kangaroo rat	*Dipodomys ordii*		X	
Beaver	*Castor canadensis*		X	
Western harvest mouse	*Reithrodontomys megalotis*		X	
Deer mouse	*Peromyscus maniculatus*		X	
Northern grasshopper mouse	*Onychomys leucogaster*		X	
Bushy-tailed wood rat	*Neotoma cinerea*		X	
Gapper's red-backed vole	*Cleithrionomys gapperi*		X	
Heather vole	*Phenacomys intermedius*		X	
Montane vole	*Microtus montanus*		X	
Long-tailed vole	*Microtus longicaudus*		X	
Prairie vole	*Microtus ochrogaster*		X	
Sagebrush vole	*Lagurus curtatus*		X	
Muskrat	*Ondatra zibethicus*		X	
Western jumping mouse	*Zapus princeps princeps*		X	
Porcupine	*Erthizon dorsatum*		X	
Coyote	*Canis latrans*	X	X	
Red fox	*Vulpes vulpes*		X	
Swift fox	*Vulpes velox*		X	
Black bear	*Ursus americanus*		X	
Ermine	*Mustela erminea*		X	
Long-tailed weasel	*Mustela frenata*		X	
Mink	*Mustela vison*		X	
Badger	*Taxidea taxus*		X	
Spotted skunk	*Spilogale putorius*		X	
Striped skunk	*Mephitis mephitis*		X	
Mountain lion	*Felis concolor*		X	
Lynx	*Lynx Canadensis*		X	
Bobcat	*Lynx rufus*		X	
Elk	*Cervus Canadensis*	X	X	
Mule deer	*Odocoileus hemionus*	X	X	
White-tailed deer	*Odocoileus verginianus*		X	
Moose	*Alces alces*	Sign	X	
Pronghorn antelope	*Antilocapra americana*	X	X	
Bison	*Bison bison*		X	
Bighorn sheep	*Ovis canadensis*		X	
Birds				
Common loon	*Gavia immer*		X	
Western grebe	*Aechmophorus occidentalis*		X	
Horned grebe	*Podiceps auritus*		X	
Eared grebe	*Podiceps nigricollis*		X	
Pied-billed grebe	*Podilymbus pediceps*		X	

Common Name	Scientific Name	Observed by Real West in 2010 or 2011	Reported in the Original Permit[1]	Reported in the Area on the WYNDD[2]
American white pelican	*Pelecanus erythrorhynchos*		X	X
American bittern	*Botaurus lentiginosus*		X	
Great blue heron	*Ardea Herodias*		X	
Black-crowned night heron	*Nycticorax nycticorax*		X	
Snowy egret	*Egretta thula*		X	
White-faced ibis	*Plegadis chihi*		X	
Common merganser	*Mergus merganser*	X	X	
Hooded merganser	*Lephodytes cucullatus*		X	
Lesser snow goose	*Chen caerulescens*		X	
Canada goose	*Branta Canadensis*	X	X	
Whistling swan	*Olor columbianus*		X	
Trumpeter swan	*Olor buccinators*		X	
Green-winged teal	*Anas crecca*	X	X	
Blue-winged teal	*Anas discors*		X	
Cinnamon teal	*Anas cyanoptera*		X	
Pintail	*Anas acuta*		X	
Mallard	*Anas platyrhynchos*	X	X	
Gadwall	*Anas strepetera*		X	
American widgeon	*Anas Americana*		X	
Shoveler	*Anas clypeata*		X	
Greater scaup	*Aythya marila*		X	
Lesser scaup	*Aythya affinis*		X	
Ringnecked duck	*Aythya collaris*		X	
Canvasback	*Aythya valisneria*		X	
Redhead	*Aythya Americana*		X	
Bufflehead	*Bucephala albeola*		X	
Barrow's goldeneye	*Bucephala islandica*		X	
American goldeneye	*Bucephala clangula*		X	
Ruddy duck	*Oxyura jamaicensis*		X	
Turkey vulture	*Cathartes aura*		X	
Sharp-shinned hawk	*Accipter striatus*		X	
Cooper's hawk	*Accipter cooperii*		X	
Goshawk	*Accipter gentilis*		X	
Red-tailed hawk	*Buteo jamaicensis*	X	X	
Swainson's hawk	*Buteo swainsoni*		X	
Rough-legged hawk	*Buteo lagopus*		X	
Ferruginous hawk	*Buteo regalis*		X	X
Golden eagle	*Aquila chrysaetos*		X	X
Bald eagle	*Haliaeetus leucocephalus*		X	
Peregrine falcon	*Falco peregrinus*		X	
Prairie falcon	*Falco mexicanus*		X	
Kestrel	*Falco sparverius*	X	X	
Northern harrier	*Circus cyaneus*		X	

Common Name	Scientific Name	Observed by Real West in 2010 or 2011	Reported in the Original Permit[1]	Reported in the Area on the WYNDD[2]
Greater sage grouse	*Centrocercus urophasianus*		X	X
Ruffed grouse	*Bonasa umbellus*	X		
Sharp-tailed grouse	*Pedioecetes phasianellus*		X	
Sandhill crane	*Grus canadensis*	Vocalization	X	X
Sora	*Porzana carolina*		X	
American coot	*Fulica americana*		X	
Mountain plover	*Charadrius montanus*		X	X
Killdeer	*Charadrius vociferus*		X	
Black-bellied plover	*Pluvialis squatarola*		X	
Wilson's snipe	*Capella gallinago*		X	
Stilt sandpiper	*Micropalama himaatopus*		X	
Baird's sandpiper	*Clidris bairdii*		X	
Least sandpiper	*Calidris minutilla*		X	
Semi-palmated sandpiper	*Calidris pusilllus*		X	
Sanderling	*Calidris alba*		X	
Greater yellowlegs	*Tringa melanoleuca*		X	
Lesser yellowlegs	*Tringa flavipes*		X	
Western solitary sandpiper	*Tringa solitaria*		X	
Western willet	*Catoptrophorus semipalmatus*		X	
Long-billed curlew	*Numenius americanus*		X	
American avocet	*Recurvirostra americana*		X	
Wilson's phalarope	*Steganopus tricolor*		X	
Northern phalarope	*Lobipes lobatus*		X	
Herring gull	*Larus argentatus*		X	
California gull	*Larus californicus*		X	
Ring-billed gull	*Larus delawarensis*		X	
Franklin's gull	*Larus pipixcan*		X	
Bonaparte's gull	*Larus philadelphia*		X	
Black tern	*Chlidonias niger*		X	
Common tern	*Sterna hirundo*		X	
Mourning dove	*Zenaida macroura*	X	X	
Long-eared owl	*Asio otus*		X	
Short-eared owl	*Asio flammeus*		X	X
Great horned owl	*Bubo virginianus*	X	X	
Burrowing owl	*Speotyto cunicularia*		X	
Poor-will	*Phalaenoptilus nuttallii*		X	
Common nighthawk	*Chordeiles minor*	X	X	
White-throated swift	*Aeronautes saxatalis*		X	
Broad-tailed humming bird	*Selasphorus platycoreus*		X	
Rufous humming bird	*Selasphorus rufus*		X	
Belted kingfisher	*Megaceryle alcyon*		X	

Common Name	Scientific Name	Observed by Real West in 2010 or 2011	Reported in the Original Permit[1]	Reported in the Area on the WYNDD[2]
Common flicker	*Colaptes auratus*	X	X	
Cassin's kingbird	*Tyrannus vociverans*		X	
Western kingbird	*Tyrannus verticalis*		X	
Say's phoebe	*Sayornis saya*		X	
Western wood pewee	*Contopus sordidulas*	X	X	
Horned lark	*Eremophila alpestris*	X	X	
Tree swallow	*Tridoproene bicolor*		X	
Violet green swallow	*Tachycineta thalassina*	X	X	
Cliff swallow	*Petrochelidon pyrrhonata*	X	X	
Barn swallow	*Hirundo rustica*	X	X	
Rough-winged swallow	*Stelgidopteryx ruficollis*		X	
Gray jay	*Perisoreus canadensis*	X	X	
Black-billed magpie	*Pica hunsonia*	X	X	
Common crow	*Corvus brachyrhynchos*	X	X	
Pinon jay	*Gymnorhinus cyanocephalus*		X	
Clark's nutcracker	*Nucifraga columbiana*		X	
Mountain chickadee	*Parus gambeli*	X	X	
Plain titmouse	*Parus isornatus*		X	
Rock wren	*Salpinctes obsoletus*		X	
Canyon wren	*Catherpea mexicanus*		X	
House wren	*Troglodytes aedon*	X	X	
Catbird	*Dumetella carolinensis*		X	
Sage thrasher	*Oreoscoptes montanus*		X	X
Brown thrasher	*Taxostoma rufum*		X	
American robin	*Turdus migratorius*	X	X	
Townsend's solitaire	*Myadestes townsendi*		X	
Swainson's thrush	*Catharus ustulata*		X	
Veery	*Catharus fuscescens*		X	
Mountain bluebird	*Sialia currucoides*	X	X	
Golden-crowned kinglet	*Regulus satrapa*		X	
Ruby-crowned kinglet	*Regulus calendula*		X	
Blue-gray gnatcatcher	*Polioptila caerulea*		X	
Water pipit	*Anthus spinoletta*		X	
Bohemian waxwing	*Bombycilla garralus*		X	
Northern shrike	*Lanius excubitor*		X	
Loggerhead shrike	*Lanius ludovicianus*		X	X
Red-eyed vireo	*Vireo olivaceus*		X	
Warbling vireo	*Vireo gilvus*		X	
Solitary vireo	*Vireo solitarius*		X	
Black-and-white warbler	*Maiotilta varia*		X	
Orange-crowned warbler	*Vermivora celata*		X	
Yellow warbler	*Dendroica petechia*	X	X	
Audubon's warbler	*Dendroica coronata*	X	X	
Black-throated gray	*Dendroica nigrescens*		X	

Common Name	Scientific Name	Observed by Real West in 2010 or 2011	Reported in the Original Permit[1]	Reported in the Area on the WYNDD[2]
warbler				
Townsend's warbler	*Dendroica townsendi*		X	
Northern waterthrush	*Seiurus noveboracensis*		X	
MacGillivray's warbler	*Oporornis tolmiei*		X	
Yellowthroat	*Geothlypis trichas*		X	
Yellow-breasted chat	*Icteria virens*		X	
Wilson's warbler	*Wilsonia pusilla*		X	
House sparrow	*Passer domesticus*		X	
Boblink	*Dolichonyx oryziborus*		X	
Western meadowlark	*Surnella neglecta*	X	X	
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*		X	
Red-winged blackbird	*Aeglaius phoeniceus*		X	
Brown-headed cowbird	*Molothrus ater*		X	
Bullock's oriole	*Icterus galbula*		X	
Brewer's blackbird	*Euphagus cyanocephalus*	X	X	
Black-headed grosbeak	*Pheucticus melanocephalus*		X	
Lazuli bunting	*Passerina amoena*		X	
Lark bunting	*Calamospiza melanocorys*		X	
Green-tailed towhee	*Chlorura chlorura*		X	
Evening grosbeak	*Hesperiphona vespertina*		X	
Cassin's purple finch	*Cerpodacus cassinii*		X	
House finch	*Carpodacus mexicanus*		X	
Rufous-sided towhee	*Pipilo erythrophthalmus*		X	
Gray-crowned rosy finch	*Leucosticte tephrocotis*		X	
Common redpoll	*Acanthis flammea*		X	
Western goldfinch	*Spinus psaltria*		X	
Snow bunting	*Plectrophenax nivalis*		X	
Lapland longspur	*Calcarius lapponicus*		X	
Western vesper sparrow	*Pooecetes gramineus*	X	X	
Savannah sparrow	*Passerculus sandwichensis*		X	
Western grasshopper sparrow	*Ammodramus savannarum*		X	
Lark sparrow	*Choadestes grammacus*		X	
White-crowned sparrow	*Zonotrichia leucophrys*		X	
Clay-colored sparrow	*Spizella pallida*		X	
Chipping sparrow	*Spizella passerina*	X		
Brewer's sparrow	*Spizella breweri*	X	X	X
Song sparrow	*Melospiza melodia*		X	
Dark-eyed junco	*Junco hyemalis*		X	
Oregon junco	*Junco hyemalis oreganus*	X	X	
Sage sparrow	*Amphispiza belli*		X	X
Grasshopper sparrow	*Ammodramus*			X

Common Name	Scientific Name	Observed by Real West in 2010 or 2011	Reported in the Original Permit[1]	Reported in the Area on the WYNDD[2]
	savannarum			
Lincoln's sparrow	*Melospiza lincolnii*		X	
Gray-headed junco	*Junco caniceps*		X	

[1]Reported as potentially being on the site in the original mine pemit.

[2]Wyoming Natural Diversity Database. 2010. Data compilation for A. Travsky, completed October 12, 2010. Unpublished report. Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming.

APPENDIX D10
ADDENDUM 2011

Sheep Mountain Project – Mine Permit 381C

APPENDIX D-10 – RADIOLOGY
2011 ADDENDUM

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Appendix D10 - Baseline Radiological Survey Characteristics

D10.1 Introduction

This report summarizes baseline gamma levels and commensurate Radium 226 levels in soils for the Sheep Mountain Project, WDEQ/LQD Mine Permit 381C and was developed on behalf of Titan Uranium USA.

The data presented herein, is that portion of the overall radiological characterization of the site applicable to WDEQ regulatory guidance with respect to baseline gamma levels and Radium 226 soils concentrations. The data was generated and complied by Tetra Tech Inc.

The radiological surveys completed meet or exceed the criteria set forth in the WDEQ/LQD Guideline No. 3, Radiological Survey with respect to density and extent of the gamma survey. The objective of the baseline radiological survey and sampling is to:

1. Establish the nature of the pre-mining radiological environment.
2. Detect and document areas having anomalous radiation.
3. Establish pre-mining concentrations of radio nuclides in the surface materials of the lands to be affected in order to establish a goal for reclamation.

Previous gamma surveys, completed and approved for Mine Permit 381C, utilized hand-held discrete measurements on a grid basis and only addressed the proposed area of disturbance. Current surveys better define the baseline Natural Occurring Radiological Materials (NORM) and Technically Enhanced Natural Occurring Radiological Materials (TENORM)

The objective of the baseline investigation was to assess existing conditions at the site, including evaluation of the spatial distribution of baseline gamma exposure rates and soil radionuclide concentrations, prior to uranium extraction activities. Based on these findings, in concert with soils and overburden characterization and material handling procedures for the mine, specific goals with respect to post-reclamation gamma levels are proposed.

D10.2 Gamma Surveys

A field investigation was performed by Tetra Tech engineers during August 14, 2010 through August 17, 2010; additionally, a follow-up study was conducted October 19, 2010 through October 21, 2010. Activities included recording of gamma exposure rates, correlation with dose rates, and collection of soil samples to develop a correlation between radiation levels and soil radium-226 concentrations.

The gamma surveys utilized GPS-based scanning system technologies to record baseline gamma exposure rates ranging over the entire site. Unlike discrete grid-based measurements, these current-technology scanning systems efficiently develop a detailed characterization of gamma exposure rates over large areas. The system can be mounted in configurations including backpacks, off-highway vehicles (OHVs) and trucks, and has been used to characterize a larger number of former uranium mine and mill sites and

newly proposed uranium recovery sites. Both OHC's and backpack surveys were completed for the Sheep Mountain Project. The GPS-based radiation scanning data set meets or exceeds the criteria set forth in the WDEQ/LQD Guideline No. 3, Radiological Survey and the guidance outlined in USNRC Regulatory Guide 4.14.

The gamma scanning equipment employs adjustable systems with Ludlum 44-10 two-inch sodium iodide (NaI) gamma radiation detectors and paired GPS receivers mounted well away from the vehicles. The two-inch NaI detectors are coupled to Ludlum 2350-1 rate meters. The permanently paired systems are factory calibrated by Ludlum Inc., and report gamma exposure rate (μR/h) as a function of detector count rate. The detector systems are calibrated using a cesium-137 source. Simultaneous GPS and gamma radiation exposure rate data are transmitted every second for each system. Data are recorded on netbook PCs using proprietary software (ComReader©, Tetra Tech, 2007). System configuration includes 8-foot spacing between detectors, with each detector positioned roughly 3.5 feet above the ground to avoid obstructions.

Based on previous experience in the field using similar system configurations, lateral NaI detector response to significantly above-background planar (non-point) gamma sources at the ground surface is estimated to extend to roughly 3-5 feet, giving each detector an estimated "field of view" up to 10 feet in diameter. This does not imply that a detector can discriminate gamma radiation from a small point source five feet away, but does suggest that photons from larger source areas are likely to be detected at that distance. The sensitive track width for each vehicle's two-detector system is therefore estimated to be 18 feet. Vehicle scanning speeds at the Sheep Mountain Project generally ranged between 2 and 10 mph depending on the roughness of the terrain, with an average speed of approximately 5 mph.

Target coverage for the Sheep Mountain Project was 100 m spacing between the scan vehicles (10 m scan tracks). Practical considerations such as steep terrain and natural obstructions often influenced actual courses traversed by the vehicles. Due to the difficult terrain at this site, large portions were scanned using the backpack mounted systems. Where study areas were selected to develop correlations with soil samples, scan density was increased to 100% (vehicle track spacing less than 18 feet).

D10.3 Gamma/Soil Radionuclide Correlation

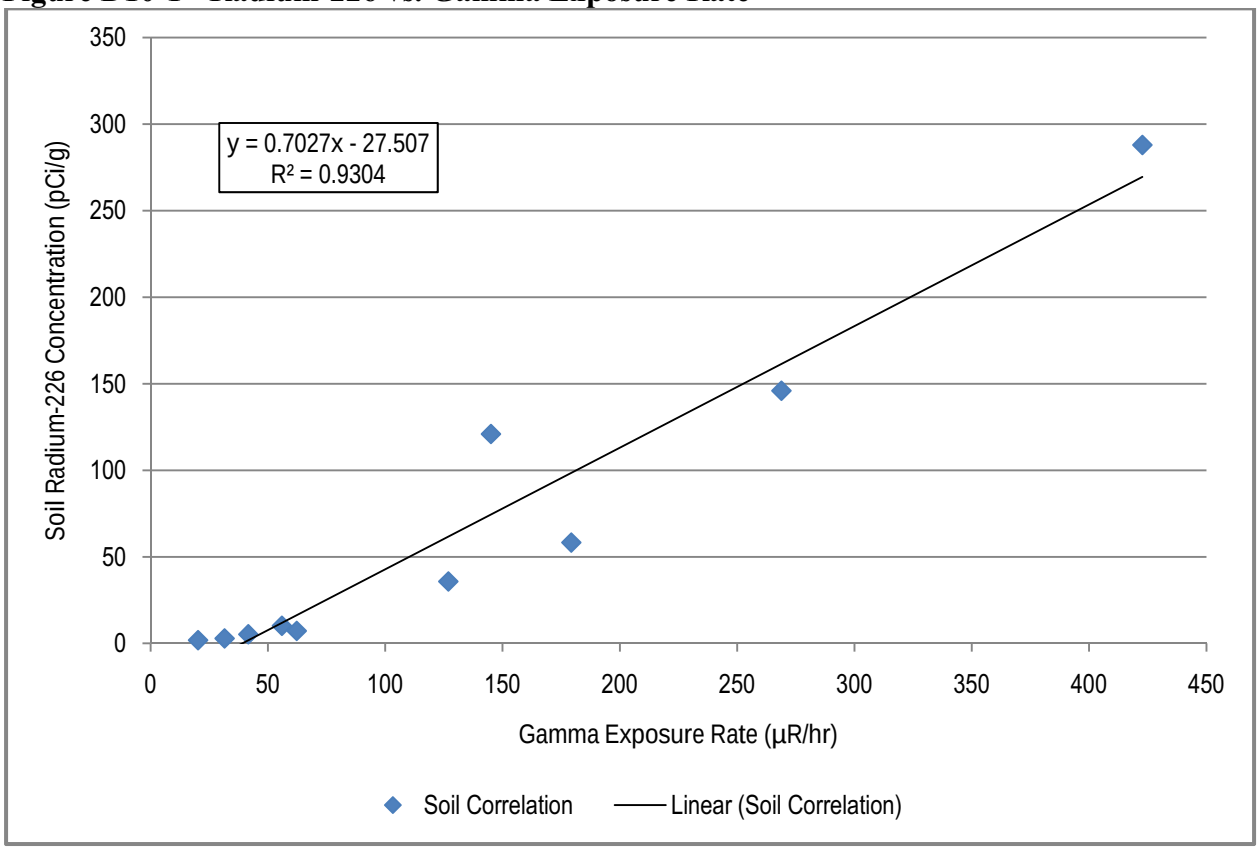
The principal radiological parameters of concern, based on potential health effects, are Radium 226 and its immediate daughter product Radon 222. Since Radon is a gas which readily disperses in an open air environment, the radiological parameter most commonly evaluated in soils and/or mine spoils is Radium 226. As radioactive materials by definition decay and emit radioactive particles and/or energy, the general levels of radioactivity can readily be measured by passive detection devices. For the evaluation of Radium 226 levels, a hand held scintillation counter is a commonly used field instrument. The field measurements can then be correlated with laboratory analyses to quantitatively estimate Radium 226 concentrations in near surface materials. Depending on the statistical strength of the relationship between gamma readings and radium-226 concentrations in surface soils, such correlations can be used to estimate near-surface soil

concentrations across the entire site, based on the gamma survey results. As subsequently discussed, the Gamma/Radium 226 correlations for the Sheep Mountain Project was strong indicating that field gamma measurements can be utilized to reasonably estimate Radium 226 concentrations in the soil.

Correlation soil sampling was conducted via composite sampling over 100 square meter plots (10 x 10 meter). Sample locations were selected by inspection of the gamma radiation survey data, covering the exposure rate range measured onsite. Within each plot, nine soil sub-samples were collected to a depth of approximately 15 cm, then composited into a single sample representative of the plot. GPS coordinates were taken at the center of each sampling plot and recorded. Samples were sent to Inter-Mountain Laboratories (IML) in Sheridan, Wyoming for analysis of radium-226 via gamma spectrometry after radon daughter equilibration. Samples were dried and homogenized prior to canning and analysis.

The gamma/radium-226 correlation analysis results shown in Figure D10-1 demonstrate a strong correlation between radium-226 soil concentration and gamma exposure rate for the soil correlation plots analyzed. Based on these correlations, approximately 70 Micro Rem per Hour (MicroR/Hr) measured in the field would equate to approximately 20 pCi/gm (pico-Curies per gram) Radium 226 at the surface.

Figure D10-1 - Radium-226 vs. Gamma Exposure Rate



Soil samples were extracted at locations selected to cover the range of common exposure rates found onsite. The Sheep Mountain Project had a wide range of exposure rates. Table D10-1 provides the summary data for the radium and gamma exposure rates for each soil correlation plot location.

Table D10-1 - Radium-226 Correlation Concentrations

Soil Correlation Plot ID	Radium-226 (pCi/g)	Exposure Rate (µR/hr)
SM SOILCORR1	5.27	42
SM SOILCORR2	58.3	179
SM SOILCORR3	7.24	62
SM SOILCORR4	121	145
SM SOILCORR5	35.8	127
SM SOILCORR6	2.91	32
SM SOILCORR7	146	269
SM SOILCORR8	288	423
SM SOILCORR9	1.86	20
SM SOILCORR10	10.2	56

D10. 4 Quality Assurance and Control Methods

Prior to the gamma radiation survey, instrument comparison QC measurements were performed at background exposure rates for all NaI detectors available to survey the Sheep Mountain project area. Instruments also meeting on-site field QC criteria are then considered qualified to replace instruments that fail in the field. Data developed using any qualified instruments are suitable for use in this report.

Field check results**:** For normally distributed data, over 99% of measurements are expected to fall within ±3 standard deviations of the mean (these are the control limits). Background, field strip and check source standard deviation values are calculated twice daily at the same locations; daily QC plots incorporate results to date. If a detector exceeds control limits on any QC check (background, field strip, or source check), it is replaced with a qualified spare system and sent back to the manufacturer for evaluation, repair and recalibration.

The daily field strip check, during which data are collected along the same 100 meter strip each morning and evening, provides an indication of total measurement uncertainty for an entire scanning system (OHV, GPS and detector systems). Note that the Ludlum 2350 data logger system employs a calibration factor to internally convert detector counts per minute to a gamma exposure rate. The calculated gamma exposure rate, directly proportional to the measured count rate, is transmitted by the data logger to the scanning system portable PC. No record of count rate is retained by the system, but count rate can

be calculated using the instrument-specific calibration factor. Factory calibration sheets for each instrument used on the Sheep Mountain Project are available upon request.

D10.5 Baseline Gamma Survey Results

A survey of baseline gamma radiation exposure rates was performed by Tetra Tech field engineers August 14, 2010 through August 17, 2010; additionally, a follow-up study was conducted October 19, 2010 through October 21, 2010. Raw data were reviewed during and following field work and faulty points removed via an automated program plus inspection. A total of 186,899 valid gamma radiation exposure data points, paired with WAAS-corrected GPS data, were collected. Summary statistics for the valid data, including a frequency histogram of the gamma exposure rates, are provided in Figure D10-2.

Exposure rates ranged from 12.9 to 1138 µR/hr, with a standard deviation of 42.3 µR/hr. Figure D10-2 shows a normal distribution of count rates, with a mean of 50.8 uR/hr. The survey data are mapped in Figure D10-3 to illustrate exposure rate variations seen over the entire site. Gamma exposure rates observed at the soil correlation plot locations ranged between 20.2 µR/hr and 423 µR/hr, with a standard deviation of 128 µR/hr.

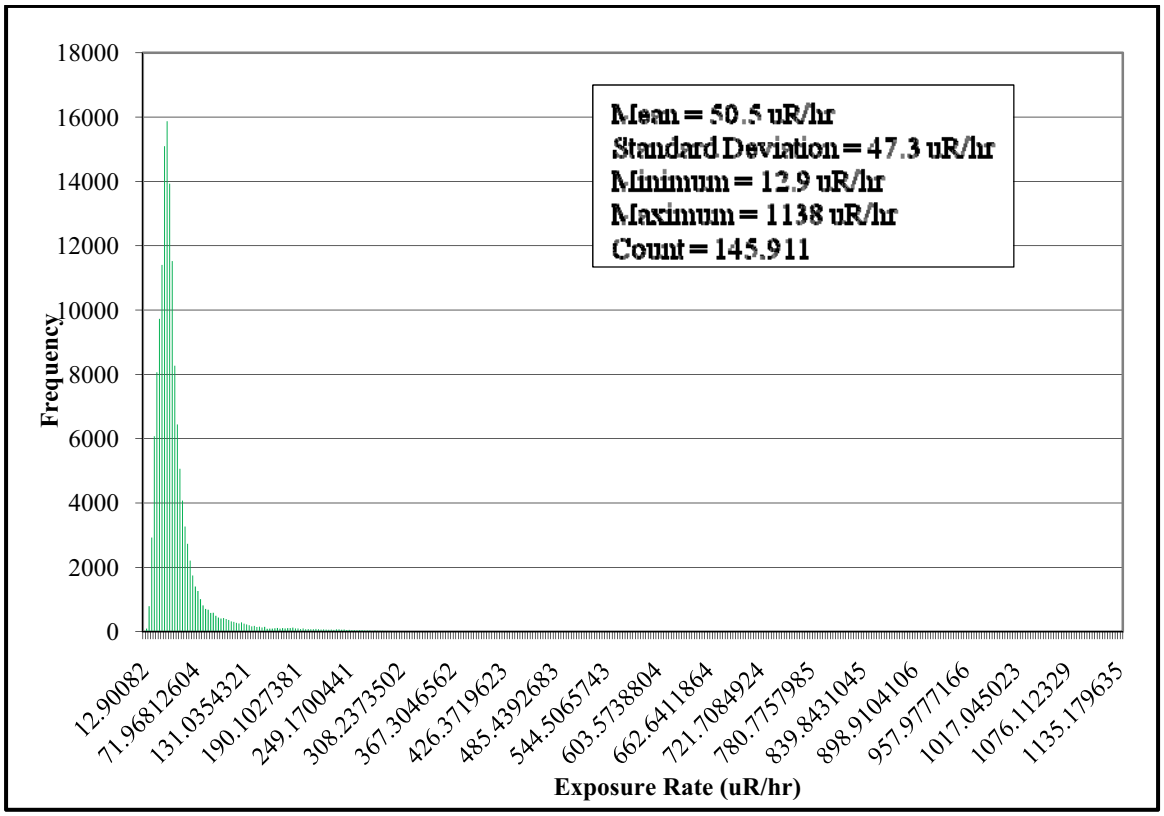
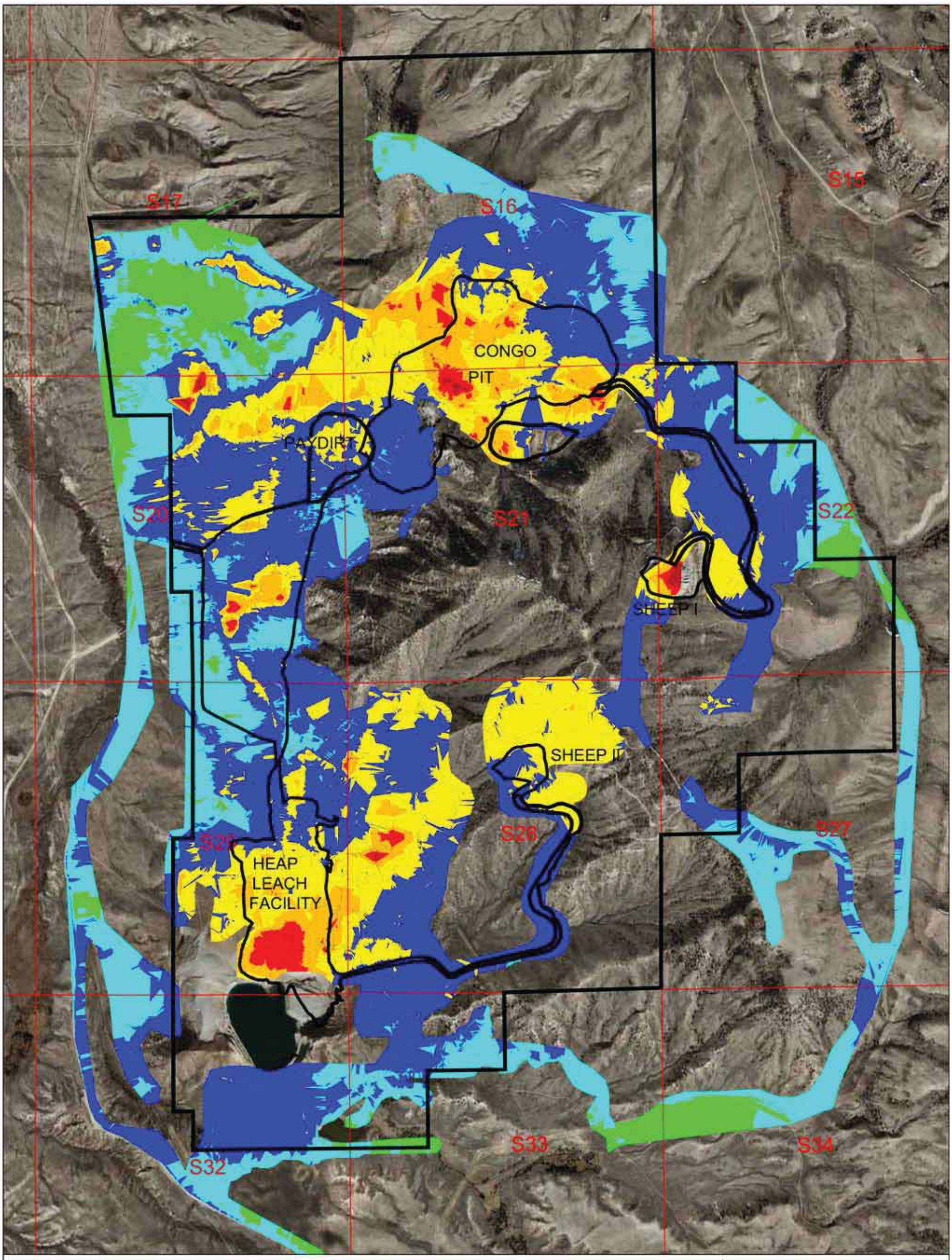


Figure D10-2 Histogram for Gamma Exposure Rates



LEGEND

SECTION LINE

PERMIT BOUNDARY

MAXIMUM AREA OF DISTURBANCE

GAMMA EXPOSURE RATE (uR/hr)

- <25
- 25-35
- 35-50
- 50-75
- 75-150
- 150-300
- >300

T.28N., R.92W.

1,500' 0 750' 1,500'

1 inch = 1,500'

BRS ENGINEERING	SURFACE GAMMA MAP SCALE: 1"=1,500' DATE: 5/26/11 DRAWN BY: CDS	SHEEP MOUNTAIN MINES MINE PERMIT 381 C	REVISION DATE: 06/15/11 CAD FILENAME: LP2008/PERMITING/RADIOLOGY FIG DWG. NUMBER: D10-3

TITAN URANIUM USA INC

D10.6 Gamma Survey Conclusions

The 2010 baseline gamma survey of the proposed Sheep Mountain Project provides a detailed characterization of existing gamma exposure rates, and a method to estimate dose rates over the entire permit area. In general the site shows relatively high radiological background gamma due to both NORM and TENORM concentrations of Radium 226 and other radionuclides in the near surface soils. Elevated NORM is due to outcropping of mineralization. Elevated TENORM reflects the more than 30 years of historical mining and exploration in the vicinity. The discovery of uranium mineralization at Sheep Mountain was a direct result of elevated surface gamma levels (NORM).

As discussed in Appendix D5, Geology and Overburden, the uranium mineralization within Sheep Mountain Project is hosted by the Tertiary Battle Spring Formation (Tbs) The Battle Spring Formation was deposited unconformably within a broad synclinal valley which plunges approximately 10 degrees from northwest to southeast. The Battle Spring and associated mineralization at Sheep Mountain is bounded to the east by the western flank of the Sheep Mountain Syncline and to the west by the Spring Creek Anticline. To the north the Battle Spring is exposed by erosion. To the south the Battle Spring is continues into the northern portions of the Great Divide Basin. Within the project area surficial geologic exposures include:

- Quaternary alluvial and colluvial deposits mapped as;
    - Qal - Quaternary Alluvium
    - Qf –Quaternary Floodplain
- Tertiary Battle Spring Formation (Eocene);
    - Tb Member B (Upper)
    - Tb Member A (Lower)
- Tf - Tertiary Fort Union (Paleocene)
- Kc – Cretaceous Cody Shale

The Sheep Mountain Project is bounded on three sides (north, east and west) Fort Union or Cody Shale. Both Crooks Creek to the west and Sheep Creek to the east are underlain by Cody Shale. Along the northern limit Sheep Mountain mineralized zones of the Battle Spring outcrop.

Referring to Figure D10-3, portions of Mine Permit 381C in which the surface is underlain by Cody Shale, Fort Union, and/or Quaternary alluvial and colluvial deposits derived from these formations exhibit the lowest background gamma levels and are generally less than 50 µR/hr. In contrast, areas which are underlain by Battle Spring and/or Quaternary alluvial and colluvial deposits derived from the Battle Spring exhibit background levels in excess of 50 µR/hr with natural outcrop areas, NORM, exhibiting levels in excess of 75 µR/hr. TENORM levels are related to historic mine operations and may include mine spoils, low grade ore stockpiles, and surface mines. Current existing TENORM levels exceed 150 µR/hr in most cases.

D10.7 Mine Reclamation Goals

While there are not specific numeric standards for mine reclamation with respect to surficial radiological concentrations, it is proposed that the guidance developed by the Wyoming Department of Environmental Quality, Abandoned Mine Lands Division (AML) be employed for future mining and reclamation activities at the Sheep Mountain Project under WDEQ Mine Permit 381C. Current AML practice is reclaim mine lands for unrestricted use based on an assessment of radiological health risks. Based on the findings of "Radiological Risk Assessment for Various Abandoned Mine Lands Clean-Up Criteria", Hersloff and Johnson, et al, 1988, prepared for the State of Wyoming, Abandoned Mine Lands Program, a surface clean up criteria of 20 pCi/g Radium 226 has been employed by AML. For the Sheep Mountain Project, as previously discussed, a near surface soils/overburden concentration of 20 pCi/g Radium 226 would equate to approximately 70 μR/hr. Where local conditions and such factors as availability of cover and topsoil affect the ability to meet this goal, principals of ALARA will be employed.

This approach was undertaken by AML with respect to mine reclamation projects within the project area including the Paydirt (west of the Congo Pit) and Sun Heald (east of the Heap Leach Facility) areas. The Paydirt reclamation resulted in surface gamma levels of 75 μR/hr or less. At Sun Heald the reclaimed surface exhibits higher gamma levels.

Appendix D5, Geology and Overburden, characterizes the mine spoils and overburden which will be excavated in the development of the Congo Pit and the associated selective materials handling methodology which will be employed during mining and reclamation operations in order to meet the proposed mine reclamation goal of 20 pCi/g Radium 226 equating to approximately 70 μR/hr. When implemented this procedure will reduce surface gamma levels in areas such as the Congo Pit and Heap Leach facility from level well in excess of 70 μR/hr to 70 μR/hr or less.