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2.7 HYDROLOGY

2.7.1 Surface Water

2.7.1.1 Drainages

Data Sources

Drainage basin and surface water characteristics were determined by obtaining and analyzing publically available Geographic Information Systems (GIS) datasets. The U.S. Geological Survey (USGS), in conjunction with the United States Environmental Protection Agency (EPA), have created the National Hydrography Dataset (NHD). The NHD is a "comprehensive set of digital spatial data that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells. Within the NHD, surface water features are combined to form "reaches," which provide the framework for linking water-related data to the NHD surface water drainage network." Data from the NHD were obtained at a 1:24,000 scale representing the highest resolution dataset that the USGS has to offer.

Surface Drainage

The Ludeman Proect area and the two-mile buffer around the project boundary are located in the north-eastern portion of the Middle North Platte-Casper Basin, Hydrologic Unit Code (HUC) 10180007. The Ludeman Project area and two mile buffer drain into the North Platte River, directly south of the Ludeman Project area and within the two mile buffer (Figure 2.7-1).

There are three watersheds within the two-mile buffer, including the Ludeman Project area; Box Elder Creek, North Platte River-Sand Creek and Sage Creek (Figure 2.7-1). Sage Creek watershed flows through eastern portion the Ludeman Project area. Little Sand Creek and Running Dutchman Ditch sub-watersheds drain the remainder of the license area which are both part of the North Platte River-Sand Creek Watershed. (Figure 2.7-2).

Sage Creek is an intermittent stream which flows through the eastern part of the Ludeman Project area and drains the majority of the license area into the North Platte River. Sage Creek watershed within the Ludeman Project area has been sub-divided into five distinct drainages. Little Sand Creek is an intermittent stream which has two drainages which flow through the western part of the Ludeman Project area and drain to the North Platte River. The remaining southern part of the license area drains into the Running Dutchman Ditch then to the North Platte River.

The North Platte River flows from west to east through Casper, WY, Douglas, WY and then through Orin, WY. After Orin, WY it enters the Glendo Reservoir in Wyoming and then the Guernsey Reservoir in Wyoming then flows southeast to Nebraska. In Nebraska the confluence of the North Platte and South Platte create the Platte River which flows east into the Missouri River.

The elevation of the Ludeman Project area ranges from approximately 5,000 feet to 5,300 feet above mean sea level. The two mile buffer has elevations up to 5,600 feet and as low as 4,800 feet above mean sea level.

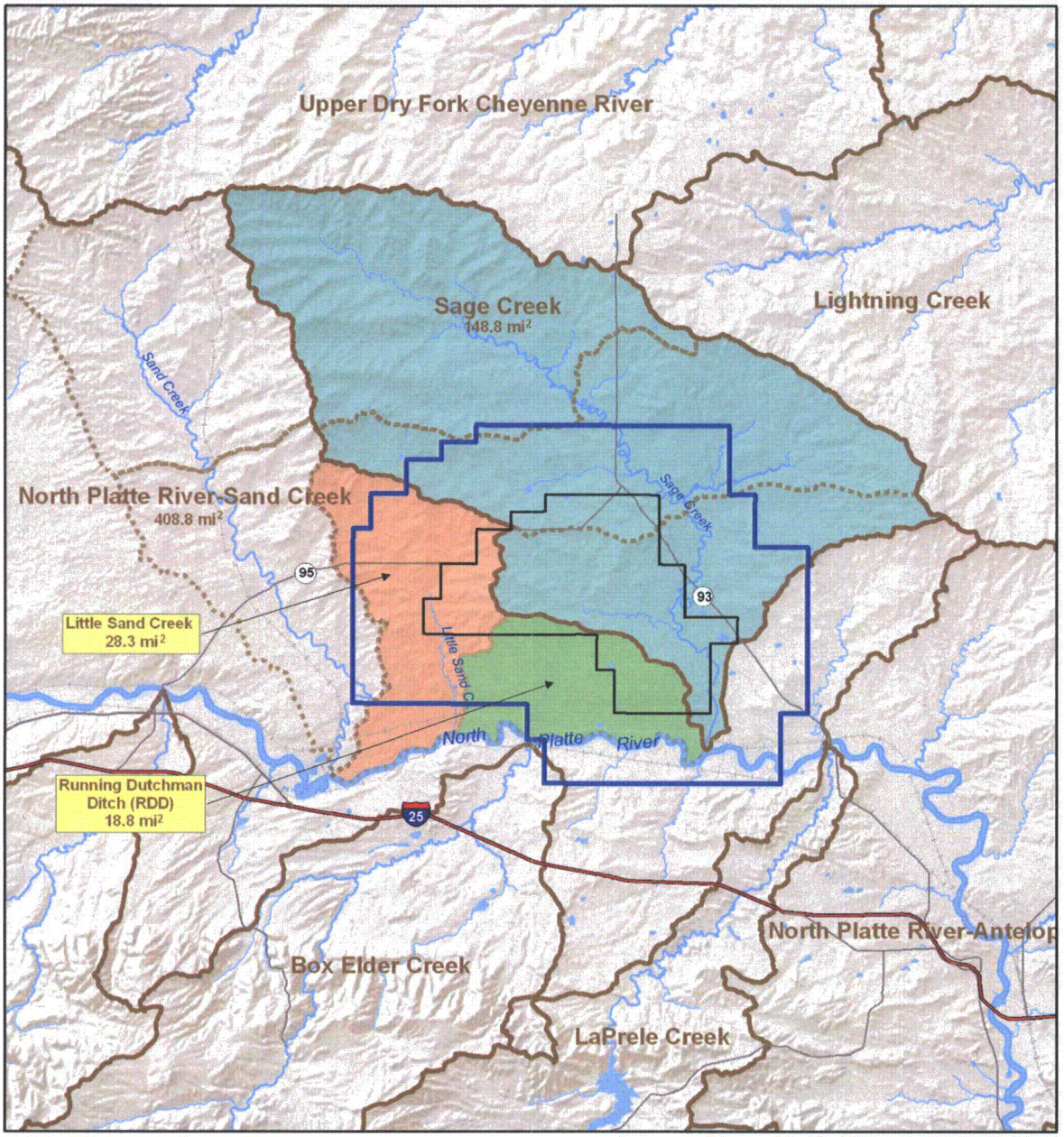
Waterbodies identified within the project boundary were either depressions within ephemeral drainages, behind dikes in ephemeral drainages, or isolated depressions. None of the waterbodies contained flowing water. Approximately 29.3 acres of waterbodies were identified (195 individual waterbodies). The waterbodies identified ranged in size from 28 square feet to 5.1 acres. The majority of the larger waterbodies are diked drainages used to water livestock. In early spring the waterbodies generally contained ponded water; by late summer the majority of the smaller waterbodies were dry. Several of the waterbodies that contained water in late summer had an additional water source such as groundwater pumped via windmill.

There are two larger areas within the project boundary that contain water; Gilbert Lake in the eastern portion of the project boundary (Section 30 T34N, R72W) and an unnamed area in the northern portion of the project boundary (Section 5 T34N, R73W). Gilbert Lake is a diked depression and the unnamed area is an isolated depression. In August of 2008 both areas held water in only a portion of the diked or depressed area. In the Gilbert Lake area, the depth of the water was approximately 6-inches and there was more than 5 percent vegetation cover therefore Gilbert Lake was identified as a wetland. The Gilbert Lake wetland area was approximately 16 acres. In the unnamed area the depth of water was approximately 1-foot. This area also contained more than 5 percent vegetation cover and was categorized as a wetland of approximately 4.8 acres. A summary of wetlands and waterbodies found within the project limits is provided in Addendum 2.8G.

Drainage Areas

There are three watersheds within the two-mile buffer; Box Elder Creek, North Platte River-Sand Creek and Sage Creek. The Box Elder Creek watershed is in the two mile buffer on the southern most area which drains approximately 202 square miles, of which 6 square miles are within the two mile buffer zone (Figure 2.7-1). The North Platte River-Sand Creek watershed drains approximately 409 square miles, of which 75 square miles are within the two miles project area buffer. The northern area is drained by the Sage Creek watershed which drains approximately 149 square miles, of which 74 square miles are within the two mile buffer.

Figure 2.7-1 Watersheds



There are two watersheds within the Ludeman Project area; North Platte River-Sand Creek and Sage Creek (Figure 2.7-1). Sage Creek watershed drains the largest northeastern portion of the Ludeman Project area. North Platte River-Sand Creek watershed is focused on Little Sand Creek and Running Dutchman Ditch as sub-watersheds which drain the western and southern portions of the project area.

Sage Creek watershed has a total drainage area of 148.8 square miles and a channel length of 37.6 miles. The maximum elevation is 5,900 feet and the minimum is 4,900 feet at the confluence with the North Platte. The average slope of the section is 0.5 percent.

Sage Creek watershed has been broken down into five major drainage areas within the Ludeman Project area SAGE-10, SAGE-11, SAGE-12, SAGE-13 and SAGE-20. SAGE-10 is the collector for SAGE-11, -12 and -13 which drains into the main reach of Sage Creek. SAGE-20 collects the drainage from the north east corner of the Ludeman Project area (Figure 2.7-2).

SAGE-11 is the southern most drainage in of the three streams which drain into SAGE-10 and is 0.18 miles downstream of the confluence of SAGE-12 and SAGE-13. SAGE-11 has a total drainage area of 1.96 square miles and a channel length of 2.72 miles. The maximum elevation is 5,300 feet and the minimum is 5,090 feet at the confluence. The average slope of the section is 1.46 percent.

SAGE-12 is located in between SAGE-11 and SAGE-13 and drains into SAGE-10 at the same spot as SAGE-13. SAGE-12 has a total drainage area of 3.33 square miles and a channel length of 3.17 miles. The maximum elevation is 5,290 feet and the minimum is 5,100 feet at the confluence. The average slope of the section is 1.14 percent.

SAGE-13 is the northern most drainage which drains into SAGE-10. SAGE-13 has a total drainage area of 2.34 square miles and a channel length of 2.6 miles. The maximum elevation is 5,280 feet and the minimum is 5,100 feet at the confluence. The average slope of the section is 1.31 percent.

SAGE-10 connects with the the main reach of Sage Creek 4.60 miles upstream of where Sage Creek meets the North Platte River. SAGE-10 has a total drainage area of 3.75 square miles and a channel length of 4.25 miles. The maximum elevation is 5,100 feet and the minimum is 4,980 feet at the confluence. The average slope of the section is 0.53 percent.

SAGE-20 drainage is located in the northeast portion of the Ludeman Project area. SAGE-20 has a total drainage area of 2.22 square miles and a channel length of 2.70 miles. The maximum elevation is 5,280 feet and the minimum is 5,080 feet at the confluence. The average slope of the section is 1.40 percent.

Little Sand Creek sub-watershed, part of the larger North Platte River-Sand Creek watershed, drains the majority of the west side of the Ludeman Project area through two branches of Little Sand Creek designated SAND-10 and SAND-20. SAND-10 meets Little Sand Creek 4.81 miles upstream from were Sand Creek meets the North Platte River. SAND-20 flows into Sand Creek 0.94 miles upstream from where SAND-10 meets Sand Creek.

Little Sand Creek sub-watershed has a total drainage area of 28.3 square miles and a channel length of 8.39 miles. The maximum elevation is 5,400 feet and the minimum is 4,940 feet at the confluence with the North Platte. The average slope of the section is 1.0 percent.

SAND-20 has a total drainage area of 5.16 square miles and a channel length of 2.81 miles. The maximum elevation is 5,280 feet and the minimum is 5,140 feet at the confluence. The average slope of the section is 0.94 percent.

SAND-10 has a total drainage area of 0.8 square miles and a channel length of 1.36 miles. The maximum elevation is 5,240 feet and the minimum is 5,120 feet at the confluence. The average slope of the section is 1.67 percent.

The Running Dutchman Ditch sub-watershed is within the larger North Platte River-Sand Creek watershed and drains the southern portion of the license area into the North Platte River. RD-10 is the most southern drainage area of the Running Dutchman Ditch which is within the North Platte floodplain. RD-10 has a total drainage area of 3.33 square miles and a channel length of 1.9 miles. The maximum elevation is 5,020 feet and the minimum is 4,900 feet at the confluence. The average slope of the section is 1.20 percent.

The remaining areas within the Ludeman Project area do not contribute significant concentrated flow to any drainages. The eastern portion of the Ludeman Project area is taken into account with the Little Sand Creek estimated peak flow. The western portion the Ludeman Project area is accounted for in the Sage Creek watershed peak flow estimate.

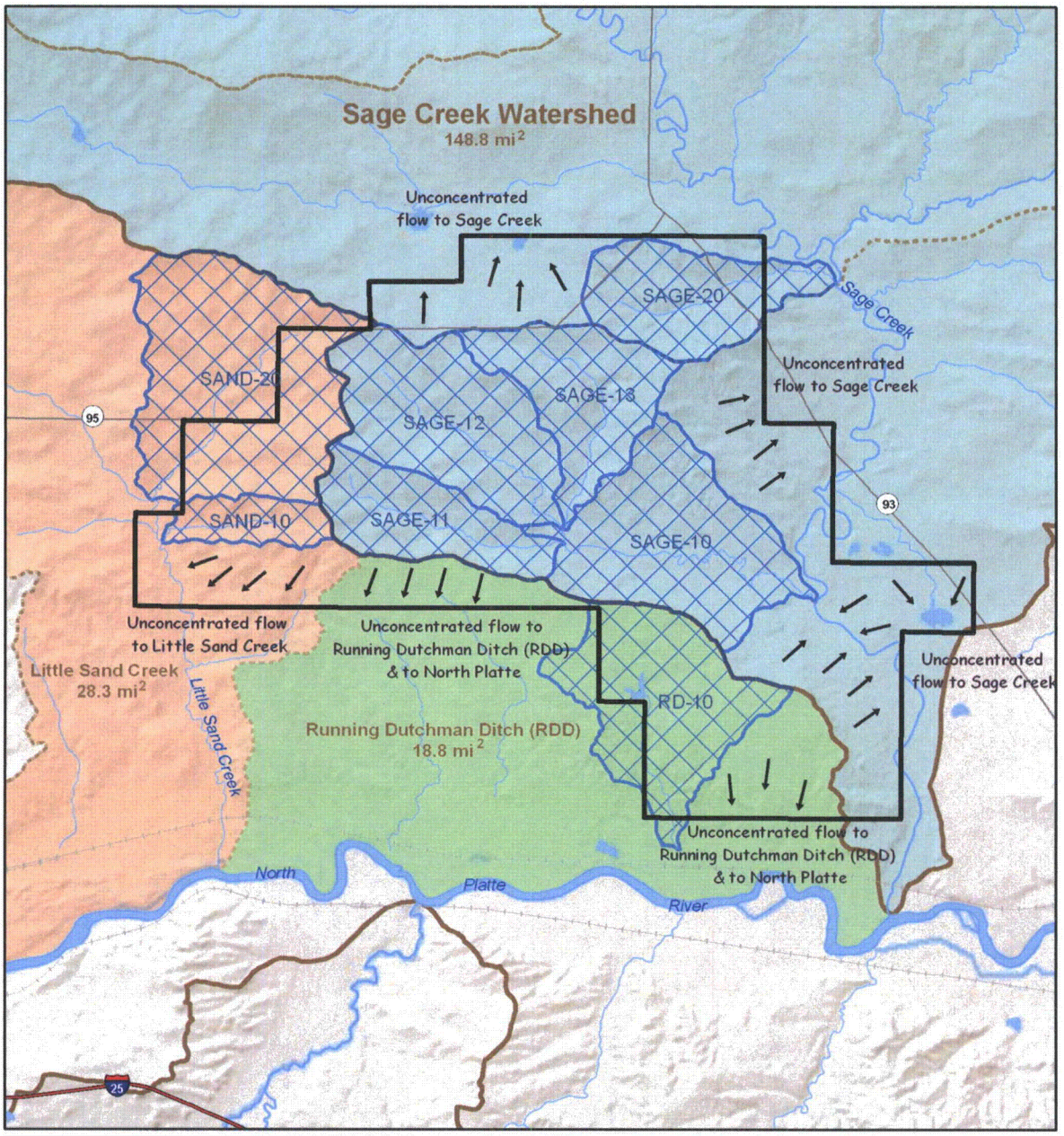
Table 2.7-1 Main Sub-Drainages Characteristics

Drainage Name	Drainage Area ($miles^2$)	Channel Length (miles)	Elevation Difference (ft)	Change In Elevation (ft)	Slope (ft/ft)
SAGE-10	3.75	4.25	5100 - 4980	120	0.0053
SAGE-11	1.96	2.72	5300 - 5090	210	0.0146
SAGE-12	3.33	3.17	5290 - 5100	190	0.0114
SAGE-13	2.34	2.60	5280 - 5100	180	0.0131
SAGE-20	2.22	2.70	5280 - 5080	200	0.0140
SAND-10	0.80	1.36	5240 - 5120	120	0.0167
SAND-20	5.16	2.81	5280 - 5140	140	0.0094
RD-10	3.33	1.90	5020 - 4900	120	0.0120

Table 2.7-2 Watershed Characteristics

Sub-Watershed Name	Drainage Area ($miles^2$)	Channel Length (miles)	Elevation Difference (ft)	Change In Elevation (ft)	Slope (ft/ft)
SAGE CREEK Watershed	148.8	37.56	5900-4900	1000	0.005042
NPR-LITTLE SAND Sub-Watershed	28.3	8.39	5400-4940	460	0.010384

Figure 2.7-2 Drainages



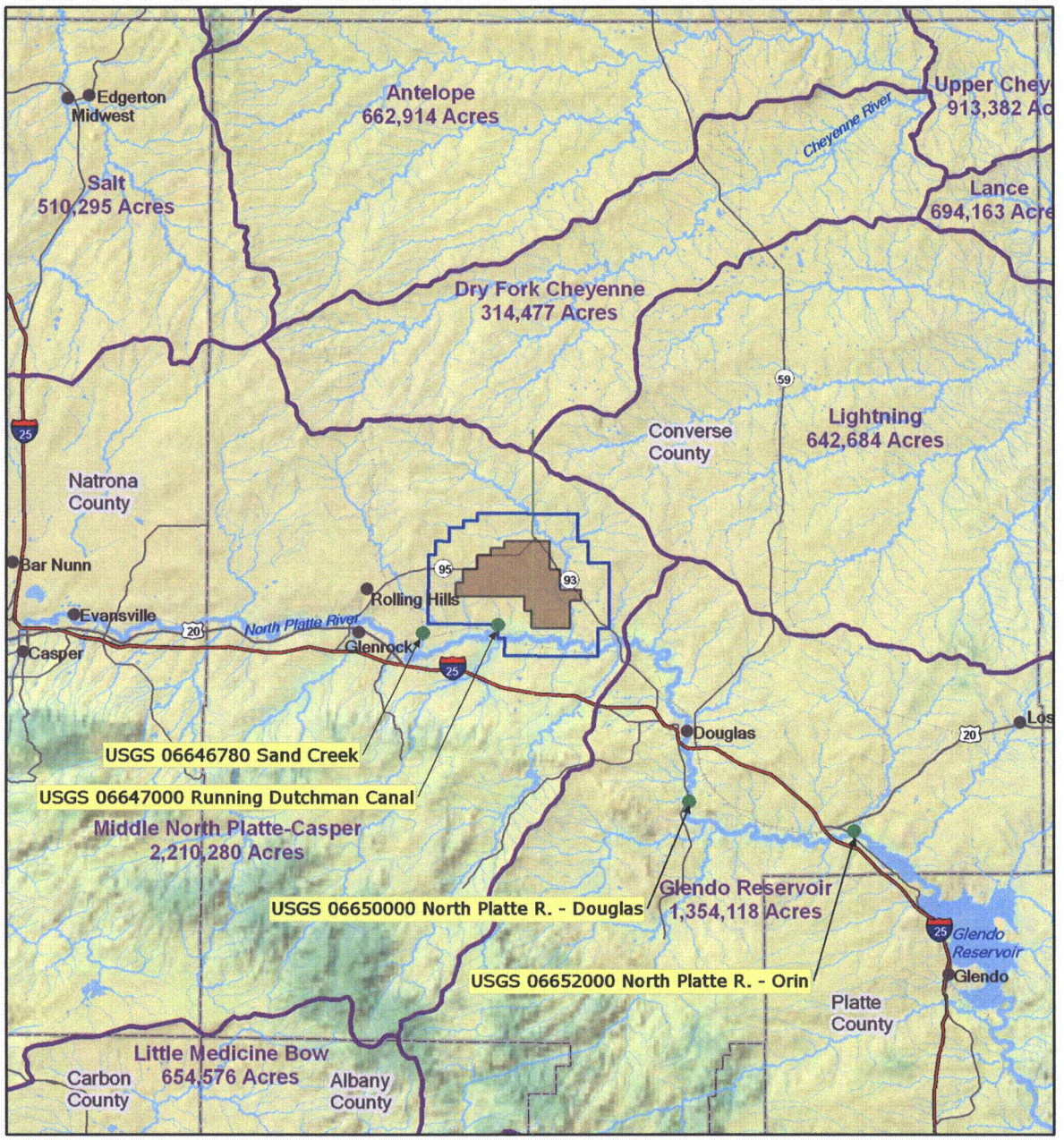
There are no automated data collection sites within the Ludeman Project area or the two mile buffer (Figure 2.7-1). The nearest automated real time stream gauge is Orin, WY gauge (USGS 06652000) which is approximately 40 miles downstream on the North Platte. There are historical data from three pertinent sites; 'Running Dutchman Canal', 'Sand Creek' and 'North Platte River - Douglas'. The Running Dutchman Canal gauge is within the two-mile buffer and is located south of the project boundary, just east of Running Dutchman Ditch's diversion point from the North Platte, as shown on Figure 2.7-3. The Sand Creek gauge, near Glenrock, receives run off from the west edge of the two mile buffer. Sand Creek and Running Dutchman Canal gauges are located within the Middle North Platte-Casper Basin (HUC 10180007). The 'North Platte River - Douglas' gauge is a site on the North Platte River downstream of the project area.

Running Dutchman Canal gauging station (USGS 06647000) is located within the two mile buffer and recorded the flow from the North Platte to the Running Dutchman Ditch. The data is limited to June 1, 1935 through September 30, 1950. The historical daily mean discharge for this gauge is an average flow of 8.2 cfs and a median flow of 7.5 cfs. The maximum daily mean flow was 53 cfs on July 24, 1942. Running Dutchman Canal has no data for peak flow and no recorded data for annual peak flows (USGS, 2008).

The Sand Creek gauging station (USGS 06646780) displays historical data from Sand Creek which flows directly through the west section of the two mile buffer. Data was collected at this gauge from September 9, 1977 to October 5, 1981. The historical daily mean discharge for this gauge is an average daily flow of 0.64 cfs and median flow of 0.016 cfs. The maximum average daily flow from this historical period was 278 cfs on May 18, 1978. The historical annual peak discharge measurements from May 17, 1978 through August 16, 1981 produced an average peak flow of 259 cfs and the median peak flow was 241 cfs. The historical annual peak flows ranged from 10 cfs to 546 cfs; the maximum peak flow was recorded on August 17, 1979 (USGS, 2008).

Data was collected at the 'North Platte River -Douglas' gauging station (USGS 06650000) from April 1, 1919 to September 30, 1959. The historical daily mean discharge for this gauge is an average flow of 1,563 cubic feet per second (cfs) and a median flow of 1,500 cfs. The maximum average daily flow from this period was 16,600 cfs on September 28, 1923. The historical annual peak discharge measurements from May 30, 1929 through October 2, 1958 produced an average peak flow of 7,582 cfs and the median peak flow was 7,250 cfs. The historical peak flows ranged from 3,230 cfs to 16,700 cfs; the maximum annual peak flow was recorded on July 13, 1937 (USGS, 2008).

Figure 2.7-3 Watershed Two-Mile Project Area Buffer with Gauge Locations



2.7.1.2 Flood Frequency

The data from the 'North Platte River - Douglas' (USGS 06650000) and 'North Platte River - Orin' stations (USGS 06652000) were analyzed for flood reoccurrence. The Douglas gauge is approximately 20 miles and the Orin gauge is approximately 40 miles downstream from the license area. A Log-Pearson Type III distribution was used for the flood reoccurrence in accordance with USGS Bulletin 17B. The Log-Pearson Type III distribution predicts a typical return interval for extreme flood stage events. There were not enough sample points to calculate an accurate skew (30 samples from the Douglas gauge and 50 samples from the Orin gauge). A skew calculated with a low number of sample points will be unnaturally influenced by extreme data points. A general area skew of zero was referenced from 'Generalized Skew Coefficients of Logarithms of Annual Maximum Stream flow' in the place of a calculated skew (USGS Bulletin 17B).

Log-Pearson III flood frequency analysis revealed a flood that has the mobility of occurring once every 10 years (10 percent chance) has a magnitude of approximately 10,897 cfs at the Douglas gauge and 12,843 cfs at the Orin gauge. Similarly, a flood that has the probability of occurring once every 100 years (1.0 percent chance) has a magnitude of 15,297 cfs at the Douglas gauge and 23,973 cfs at the Orin gauge. These results come from a smaller than optimal sample size for long-term extrapolation of the data particularly the Douglas gauge. The 10-year return interval is exponentially more accurate than the 100-year return interval. The 100-year return interval is for theoretical evaluation purposes only and not as an accurate estimate. This can be visualized on Figure 2.7-4 where the density of available data points drops off and the Log-Pearson III line is predicting the 100-year return interval.

Figure 2.7-4 Flood Frequency for North Platte River at Douglas, WY

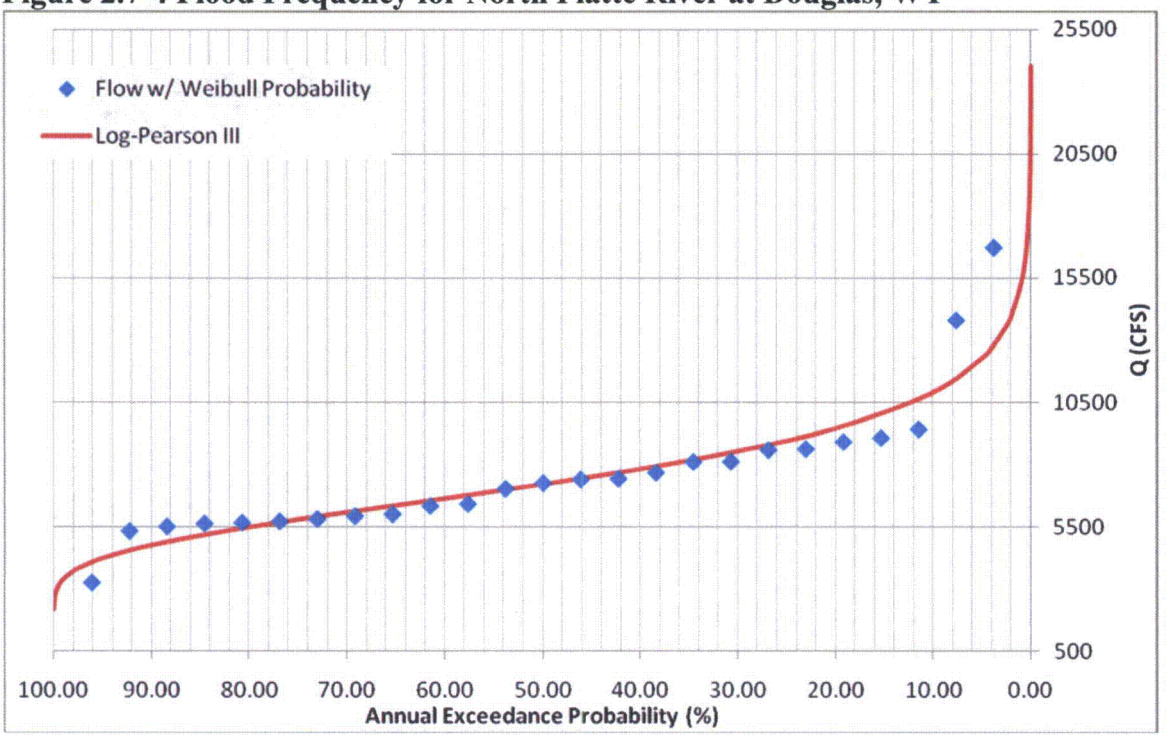
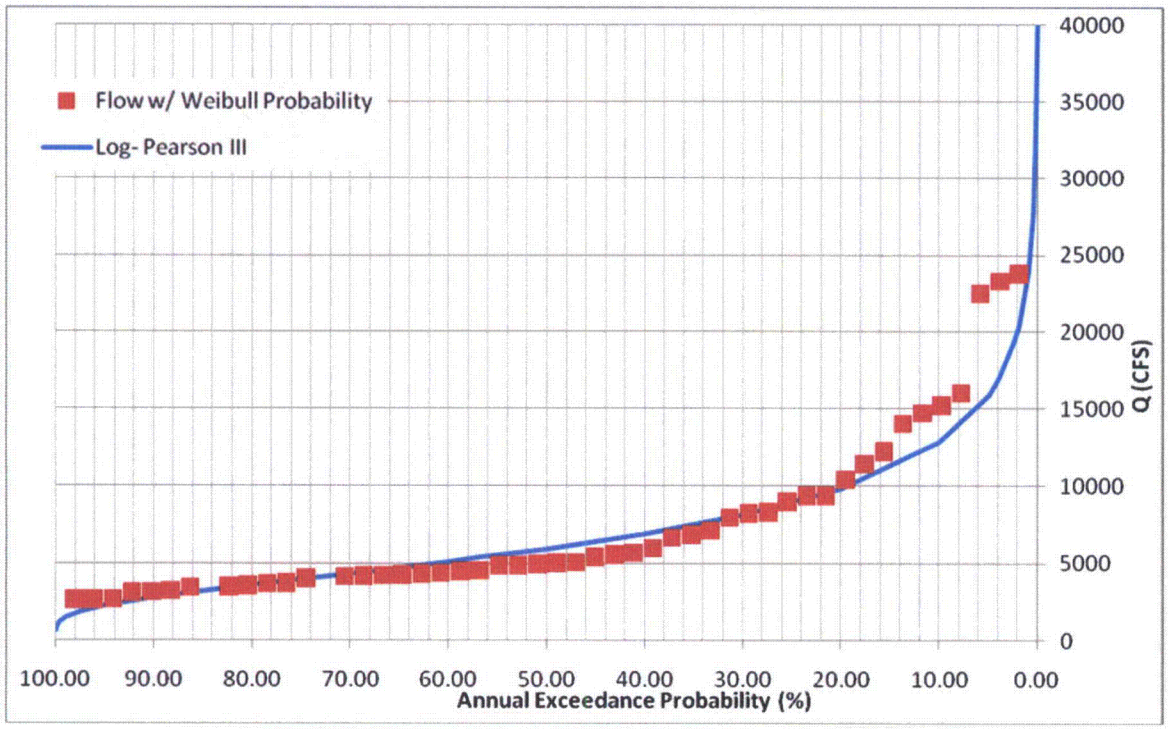


Figure 2.7-5 Flood Frequency for North Platte River at Orin, WY



The location of the proposed satellite facilities in relation to FEMA 100-year flood insurance maps are provided on Figures 2.7-6, 2.7-7 and 2.7-8 below. Zone A is the 100 year flood extent. The satellite facilities are located on high, flat ground. The higher elevation makes the facilities less likely to be effected during a flood event. Runoff in these areas will consist primarily of overland sheet flow. The satellite facilities area will be graded and sloped to direct runoff away from building foundations in all directions. The approximate locations of the satellite facilities, ore bodies and wells are in Addendum 2.7-B. The extent of the FEMA 100-Year Flood elevation near Gilbert Lake may inundate surface areas of production wellfields. Production wells in any such areas will be appropriately sealed, as will all wells, to prevent transport of surface flows to subjacent geologic formations. Additionally, operational changes, such as the shut-down of production flows to and from an inundated wellfield may be necessary if flood flows prevent routine operations and maintenance evaluations necessary to ensure that no leaks or system problems are occurring. Normal operations could resume upon receding of the flood waters and/or the ability to verify normal operations.

Figure 2.7-6 FEMA 100-yr Flood Map for Peterson Plant Site

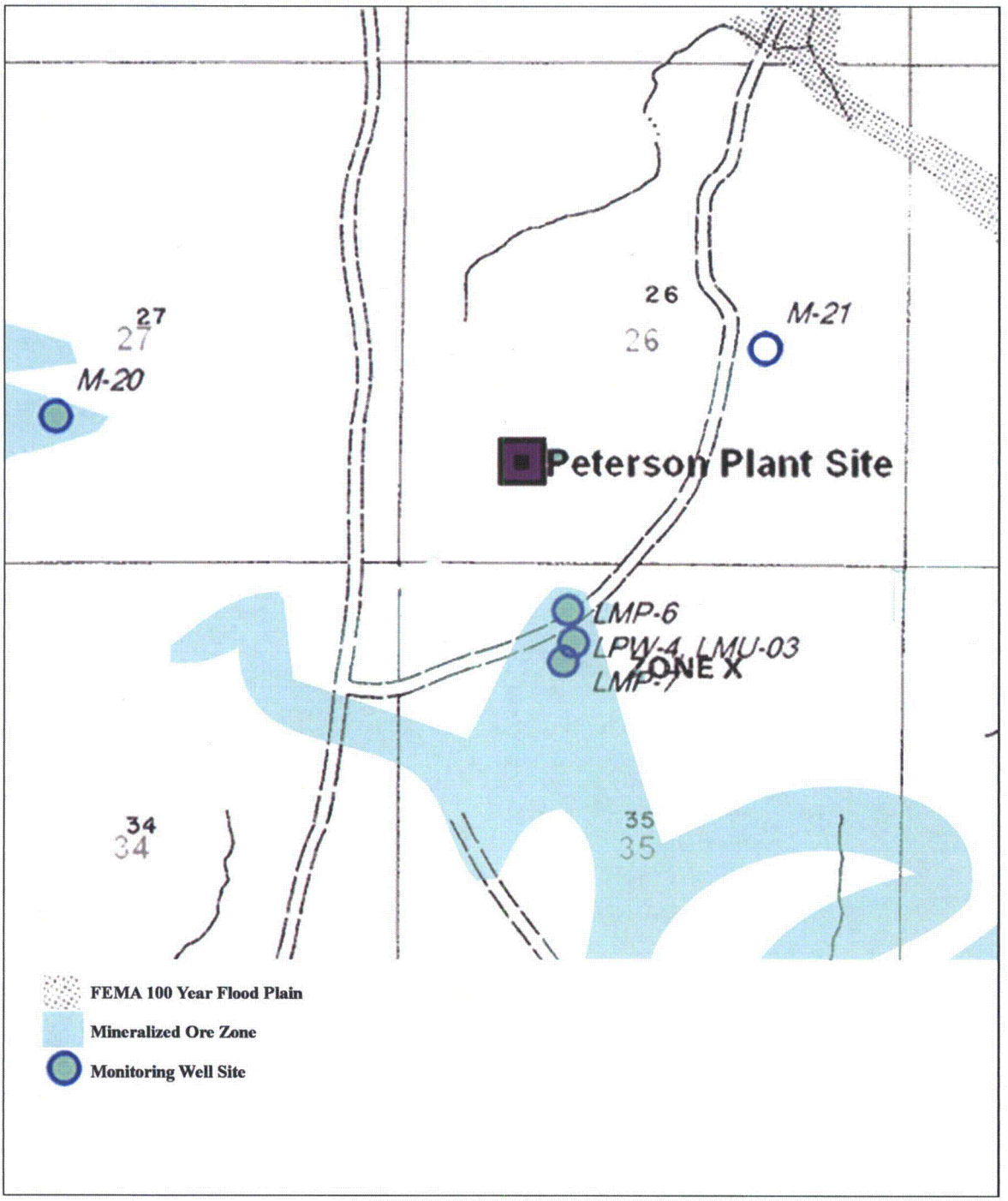


Figure 2.7-7 FEMA 100-yr Flood Map for North Platte Plant Site

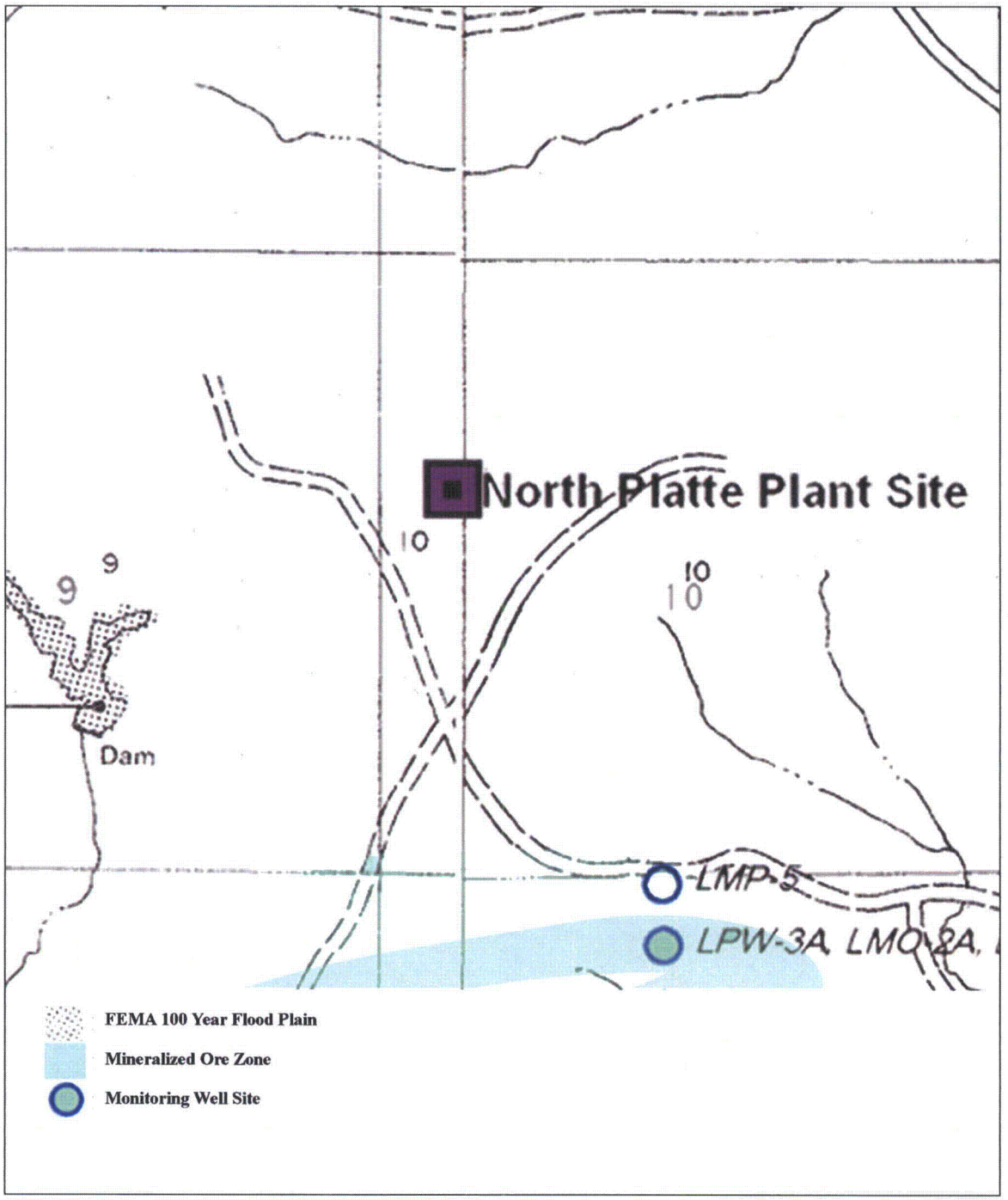
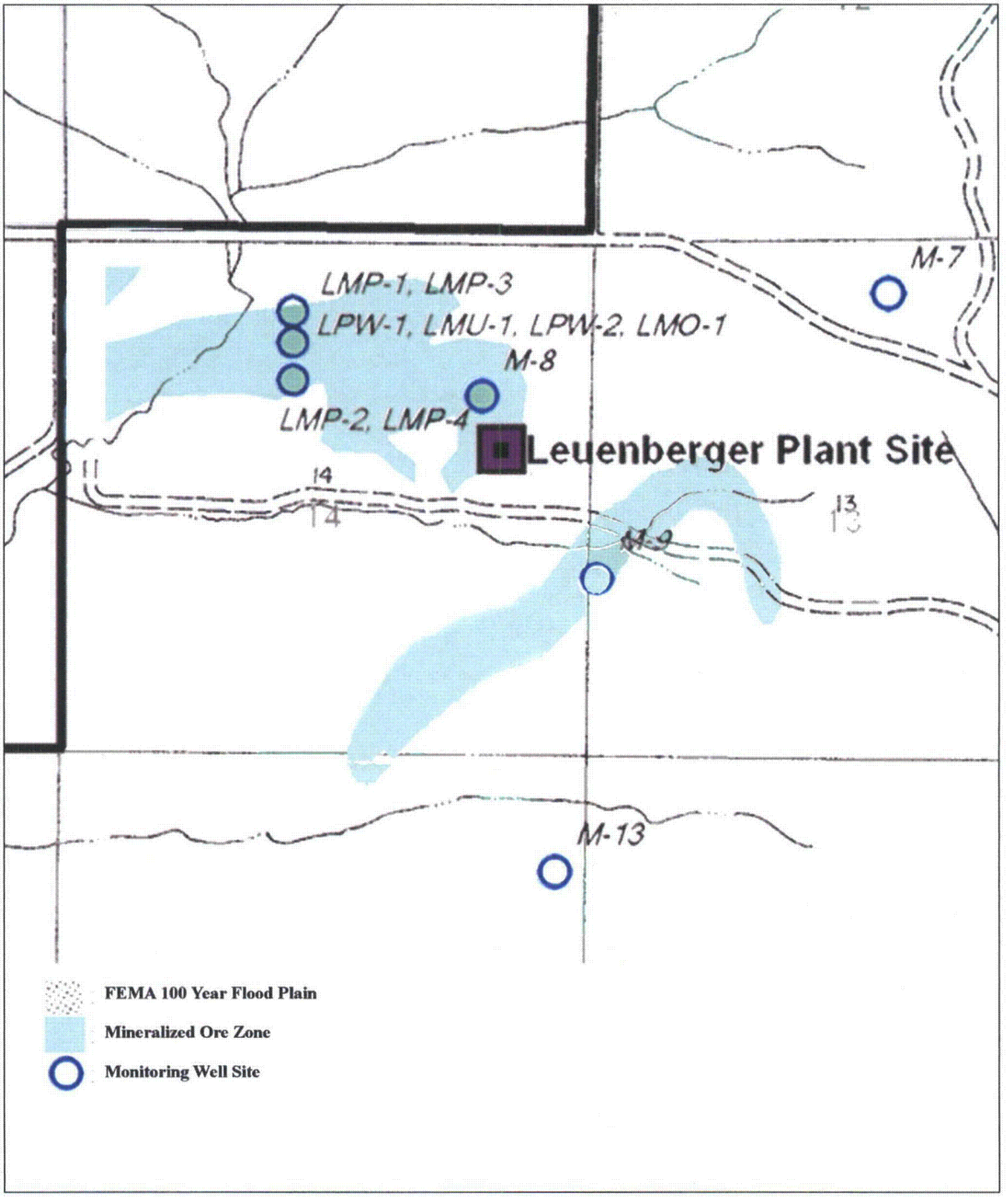


Figure 2.7-8 FEMA 100-yr Flood Map for Leuenberger Plant Site



2.7.1.3 Precipitation

According to data from the Western Regional Climate Center, the mean annual precipitation from 1941 through 2007 is 12.02 inches. The average annual precipitation for Glenrock, WY from 2001 to 2006 ranged from 4.24 to 8.22 inches (WRCC website). Several months have data missing. However, the data does indicate lower than normal precipitation levels. Recorded data was not available for 2007 or 2008, but discussions with residents of Casper and Glenrock indicated that there was more precipitation in 2008 than in previous years. The majority of the stream flow occurs from snow melt runoff. Large summer storms have the potential to create high runoff volumes as-well.

Storm return intervals with corresponding storm durations were tabulated with isopluvial, lines of equal precipitation, maps from two sources; NOAA Atlas 2 Volume II – Wyoming (NOAA 1973) and Rainfall Frequency Atlas Of the United States (1961). The NOAA Atlas 2 maps have a higher resolution, however the NOAA Atlas 2 maps were only available for the precipitation of the 6hr and 24hr storm durations. The Rainfall Frequency Atlas Of the United States was the source of data for all other storm durations.

Table 2.7-3 presents return intervals for two-year, five-year, ten-year, 25-year, 50-year and 100-year storms with durations of 0.5, one, two, three, six, 12 and 24 hours. The six-hour and 24-hour storms were estimated using state wide maps rather than a more general map of the United States.

Table 2.7-3 Return Intervals and Storm Durations near Ludeman Project area (inches).

Duration	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
0.5 Hr*	0.6	0.8	1.0	1.2	1.4	1.6
1 Hr*	0.8	1.0	1.3	1.5	1.8	2.0
2- Hr*	0.9	1.2	1.4	1.8	2.0	2.4
3 Hr*	1.0	1.4	1.6	2.0	2.3	2.5
6 Hr**	1.05	1.50	1.70	2.10	2.40	2.70
12 Hr*	1.4	1.9	2.3	2.6	3.1	3.4
24 Hr**	1.40	1.80	2.20	2.70	3.00	3.30

***Rainfall Frequency Atlas Of The United States (1961)**
****NOAA Atlas 2 Volume II – Wyoming (1973)**

2.7.1.4 Surface Water Runoff

Peak flows were estimated using three different methods: Soil Conservation Service (SCS) TR-55 graphical method, SCS Unit Hydrograph, and USGS Peak-Flow Characteristics of Wyoming Streams.

- TR-55 graphical method estimates peak flows for the sub-watersheds using drainage area, stream length, average stream slope, total rainfall and curve number. This method is applicable for small drainage areas with time to concentration between 0.1 and 10 hours. This method is a standard method for many smaller watersheds which can take into account overland flow, concentrated flow and confined flow by changing time to concentration. A SCS Type II storm was used for the peak unit discharge and concentrated flow was assumed as it is modeled from the standard precipitation intensity – duration relationships in the Western US.

- SCS unit hydrograph method estimates peak flow from a hydrograph for the water shed using the watershed's drainage area, stream length, average stream slope, total rainfall and curve number. This method derives a hydrograph for the given parameters and applies a precipitation run-off volume based on a SCS Ttype II storm and can be applicable for those areas with a time to concentration greater than ten hours. A unit hydrograph can be applied to any size watershed by changing the time to concentration and above parameters. The Kirpich equation was used for our estimates because the flows were mainly concentrated, similar to the TR-55 Method. This method is similar to the accepted TR-20 method.

- USGS Peak Flow Estimates In Wyoming is a state wide areal regression approach for estimating peak flows in Wyoming Streams. This approach breaks Wyoming into six hydrological areas determined by their use, terrain and if the peak flow is from snow runoff or a precipitation event. Since this method was derived from averaging larger gauged streams it is most accurate for larger watersheds (Miller 2003).

2.7.1.4.1 TR-55

The TR-55 graphical method is based on the following parameters: drainage area, stream length, average stream slope, total rainfall and curve number. The drainage area, stream length and average slope were calculated from GIS maps for each watershed and sub-watershed and are provided in Table 2.7-1. The rainfall for a 24 hour storm with a 10-year return interval is 2.2 inches, 25-year is 2.7 inches, 50-year is 3.0 inches and 100-year is 3.3 inches. An average curve number is applicable to all the watersheds and sub-watersheds.

The Ludeman Project area soil is mostly made up of well drained sandy loam soils. The vegetative cover is grassland or range with continuous forage for grazing. The hydrologic condition is fair with 30 percent to 75 percent ground cover. The hydrologic soil group was estimated to be in class B due to the sandy loam soils. This results in an estimated average curve number of 69 for the Ludeman Project area.

2.7.1.4.2 SCS Unit Hydrograph

The major sub-watershed and watershed which flow through the Ludeman Project area are Little Sand Creek and Sage Creek respectively. Sage Creek's main reach flows through the eastern section of the Ludeman Project area. Little Sand Creek flows through the far west side of the Ludeman Project area. Peak flows for these watersheds were estimated using a dimensionless unit hydrograph. A standard shape factor of 0.75 and the Kirpich equation, for time to concentration, were used. The event evaluated was a 24-hour SCS type II storm.

The parameters were taken from the longest reach of the main channel and the total watershed area. It is assumed that all the tributaries have similar time to concentrations and the curve numbers are uniform across the basin. As with any hydrologic measurement the larger the area the less accurate the estimate will be.

The SCS unit hydrograph estimate for the peak flow from a 24-hour, 100-year event for Sage Creek at the confluence with the North Platte was 5,794 cfs. For a 24-hour, 50-year event for Sage Creek the flow was 4,591 cfs.

The SCS unit hydrograph estimate for the peak flow from a 24-hour, 100-year event for Little Sand Creek at the confluence with the North Platte was 4,726 cfs. For a 24-hour, 50-year event for Little Sand Creek the flow was 3,694 cfs.

2.7.1.4.3 USGS Peak Flow Estimates In Wyoming

The Ludeman Project area is located in Region 3 (Miller 2003), Eastern Basins and Eastern Plains. It was determined that this region's characteristic which most affects flows is the drainage area and the soil type. The drainages vary between four different groups therefore a weighted average was taken for each separate drainage as listed in the soil column of Table 2.7-5 (Miller 2003). The specific margin of error is tabulated in Table 2.7-4; each return interval has a separate error associated with it.

Table 2.7-4 Errors associated with USGS Peak Flow Estimates in Wyoming

Equation	SE_E (percent)	SE_P (Percent)
$QPK_{(2)} = 2.28*(Area^{0.402})*(Soil^{2.9})$	94	98
$QPK_{(5)} = 10.1*(Area^{0.407})*(Soil^{2.6})$	58	61
$QPK_{(10)} = 21.9*(Area^{0.41})*(Soil^{2.44})$	48	51
$QPK_{(25)} = 48.8*(Area^{0.416})*(Soil^{2.27})$	43	46
$QPK_{(50)} = 80.9*(Area^{0.423})*(Soil^{2.16})$	44	48
$QPK_{(100)} = 127*(Area^{0.432})*(Soil^{2.05})$	47	51
* Equations for the estimation of peak flows in Wyoming Hydrologic Region Three (Miller 2003). SE_E is the standard error of the estimate and SE_P is the standard error of the prediction, in percent.		

Table 2.7-5 Summary of Peak Flows of Drainages

Characteristics			TR-55 Method CN = 69				SCS Unit Hydrograph		USGS Peak Flow Estimates In Wyoming (Miller 2003)					
Basin	Drainage Area (mi^2)	Soil	10-yr (cfs)	25-yr (cfs)	50-yr (cfs)	100-yr (cfs)	50-yr (cfs)	100-yr (cfs)	$QPK_{(2)}$ (cfs)	$QPK_{(5)}$ (cfs)	$QPK_{(10)}$ (cfs)	$QPK_{(25)}$ (cfs)	$QPK_{(50)}$ (cfs)	$QPK_{(100)}$ (cfs)
SAGE-10	3.75	3.35	86	164	224	292	-	-	132	401	719	1315	1927	2680
SAGE-11	1.96	3.7	86	167	243	320	-	-	134	399	703	1258	1815	2482
SAGE-12	3.33	3.35	117	235	323	432	-	-	126	382	685	1252	1832	2546
SAGE-13	2.34	3	101	205	282	372	-	-	79	248	453	842	1244	1743
SAGE-20	2.22	3	90	183	253	334	-	-	77	243	443	823	1216	1704
SAND-10	0.8	3.35	55	111	155	207	-	-	69	214	382	692	1002	1375
SAND-20	5.16	3	189	380	518	691	-	-	110	343	626	1169	1738	2453
RD-10	3.33	3.7	165	335	468	613	-	-	168	495	873	1569	2271	3121
SAGE CREEK	148.8	3	-	-	-	-	4591	5794	451	1346	2485	4735	7203	10482
NPR-LITTLE SAND	28.3	3.35	-	-	-	-	2978	3811	309	913	1647	3049	4531	6417

Table 2.7-5 summarizes the three methods used for the drainages and Watersheds in the Ludeman Project area.

The flows for the larger drainages are within the error range of the SCS unitless dimensionless hydrograph method. The smaller drainages exhibit greater variability.

The USGS's peak flow estimates are based around large areal assumptions which make them better estimates for larger drainages.

With a curve number of 69 the depth of runoff (inches) for a 24-hr storm is 0.84 inches for 100-year storm, 0.67 inches for 50-year storm, 0.52 inches for 25-year storm and 0.29 inches for a 10-year storm. The total runoff created by the 19,888 acres of the Ludeman Project area for a 24 hour storm is approximately 1,392 acre-feet for a 100-year storm, 1,110 acre-feet for a 50-year year, 862 acre-feet for a 25-year storm and 481 acre-feet for a 10-year storm.

2.7.2 Ground Water

This section addresses the regional and local groundwater hydrology, including hydrostratigraphy, ground water flow patterns, hydraulic gradient and aquifer parameters. The discussion is based on information from investigations performed within the Powder River Basin, including the Hydrologic Test Report found in Appendix A of this application, data from previous applications for a site within the Ludeman Project area, and geologic information presented in Section 2.6. Surface and groundwater site baseline water quality conditions are discussed in Section 2.7.3; groundwater rights in Addendum 2.7-A; and local groundwater use is discussed in Section 2.2.3.2 of this application.

2.7.2.1 Regional Hydrogeology

The Ludeman Project area is located in the southwesterm portion of the Powder River Basin, approximately two miles north of the east-flowing North Platte River and approximately 34 miles east of Casper, Wyoming. The Ludeman Project area lies within the Northern Great Plains Aquifer System (Whitehead, 1996). The Northern Great Plains Aquifer System contains overlapping aquifers in the Lower Tertiary, Upper and Lower Cretaceous, and Upper and Lower Paleozoic rocks. Figure 2.7-9 provides a generalized stratigraphic column of the hydrostratigraphic units of the Northern Great Plains Aquifer System.

2.7.2.1.1 Ground Water Flow

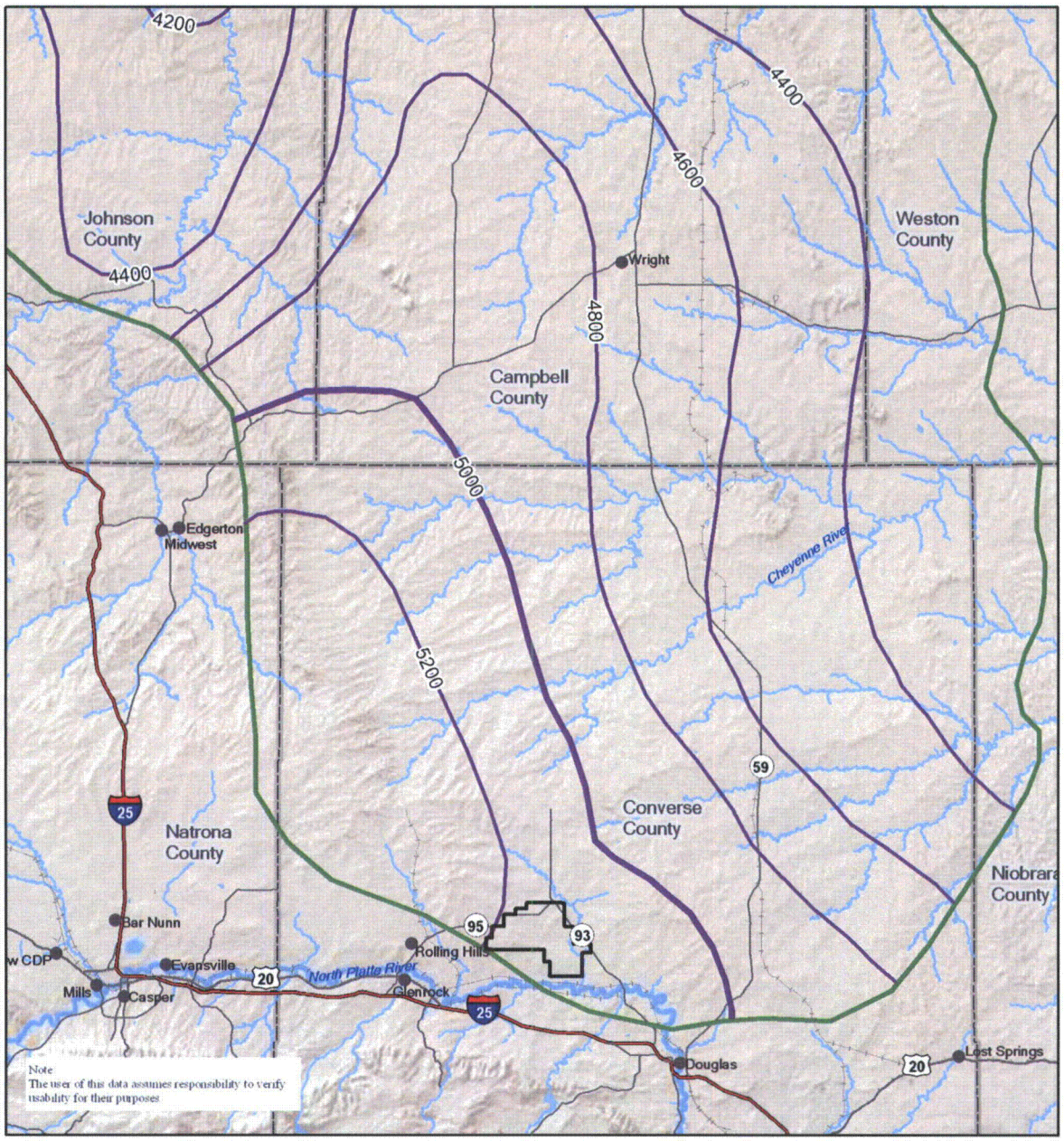
Regional movement of water in the Northern Great Plains aquifer system comes from recharge areas at high altitudes, down the dip of the aquifers and then upward to discharge into shallower aquifers or to the land surface. The regional direction of flow in the deep, confined aquifers follows long flow paths and trends from southwest to northeast (Whitehead, 1996). Historical studies have stated that regional groundwater systems (e.g., the Wasatch, Fort Union, and deeper aquifers) generally flow to the northern portion of the Powder River Basin and discharge via unknown locations in Montana (Lowry & Wilson, 1986, and Rankl & Lowry, 1990). A generalized

potentiometric surface map for the Lower Tertiary Unit (Fort Union and Wasatch formations) of the Northern Great Plains Aquifer system is shown in Figure 2.7-10. On a semi-regional scale, groundwater flow occurs to the northeast. In the vicinity of the Ludeman Project area, flow in the shallow groundwater system is to the northeast and the east.

Figure 2.7-9 Generalized Stratigraphic Column

ERA	SYSTEM, SERIES AND OTHER SUBDIVISIONS			STATIGRAPHIC UNIT		HYDROGEOLOGIC UNIT
Cenozoic	Quaternary			Alluvium		Not Included As An Aquifer System
	Tertiary	Pliocene	Upper	(Absent in Powder River Basin)		
		Miocene				
		Oligocene	Lower	White River Formation		
		Eocene		Wasatch Formation		Lower Tertiary Aquifers
		Paleocene		Fort Union Formation		
Mesozoic	Cretaceous		Upper	Lance Formation		Upper Cretaceous Aquifers
				Fox Hills Sandstone		
				Lewis Shale		Confining Unit
				Mesaverde Formation		
			Lower	Steele Shale		
				Cody Shale		
				Frontier Formation*		
				Mowry Shale		
				Muddy Sandstone*		
				Thermopolis Shale		
				Inyan Kara Group	Fall River Formation	Lower Cretaceous Aquifers
					Lakota Formation	
	Jurassic			Morrison Formation		Confining Unit
				Sundance Formation*		
				Gypsum Spring Formation		
	Triassic			Chugwater Formation		
Paleozoic	Permian			Goose Egg Formation		
	Pennsylvania			Tensleep Sandstone	Minnelusa Formation	Upper Paleozoic Aquifers
				Amsden Formation		
	Mississipian			Madison Formation		
* Can be a local source of groundwater where permeable						

Figure 2.7-10 Regional Potentiometric Surface



After D.H. Dobmeyer, 1985

LEGEND

WY - Potentiometric Contour

- Limit of Ft. Union Aquifer
- Major Contour
- Intermediate Contour
- County Boundary
- Ludeman License Area

0 7.5 15 Miles

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2.7.2.1.2 Recharge

Most of the recharge to the aquifer system is either from precipitation or snowmelt. Much of the discharge from the aquifer system is by upward leakage of water into shallower aquifers where the hydraulic head in the shallower aquifer is less than that of a deeper aquifer.

On a semi-regional scale, recharge to the Lower Tertiary aquifers in the vicinity of the Ludeman Project area generally occurs at the formation outcrops along the southwestern and western edges of the Powder River Basin, associated with the Casper Arch and Laramie Mountain uplifts. Some recharge to the shallow aquifer systems may also originate from localized infiltration of precipitation.

2.7.2.1.3 Aquifers

On a regional scale, the aquifers and confining units generally occur in the Lower Tertiary, Upper Cretaceous, Lower Cretaceous and in the Upper Paleozoic age sediments. Figure 2.7-9 shows the stratigraphic relationship of the Lower Tertiary, Upper and Lower Cretaceous aquifers and the regional aquitards for the western portion of the Powder River Basin.

The Upper Paleozoic and Lower Cretaceous aquifers are separated from the overlying younger aquifers by major confining units in the Upper and Lower Cretaceous sediments. Therefore, for purposes of this application, only hydrostratigraphic units of Lower Tertiary/Upper Cretaceous age containing aquifers are described. The hydrostratigraphic units of interest within the southwest Powder River Basin are depicted in Figure 2.7-9. The regional characteristics for each of these hydrostratigraphic units, from shallowest to deepest are provided below.

Wasatch Formation (Eocene)

The Wasatch formation is a arkosic fine- to very coarse-grained sandstone with siltstones, claystones and coals. The Wasatch formation was deposited as a mixture of alluvial, fluvial and paludal environments. The contact between the Fort Union formation and the Wasatch formation occurs about threes mile north of the Ludeman Project area, however erosional remnants of the Wasatch exist within the license boundary. There are commonly multiple water-bearing sands within the Wasatch formation. Groundwater within the Wasatch aquifers is typically under confined (artesian) conditions, although locally unconfined conditions exist. Hodson et al (1973) reported that wells completed in the Wasatch typically yield 10 to 50 gpm in the north part of the basin but yields are generally greater in the south part of the basin with yields as high as 500 gpm possible

Fort Union Formation (Paleocene)

The Paleocene Fort Union formation lies stratigraphically below the Wasatch formation and overlies the Lance formation. reaching a maximum thickness of approximately 3,500 feet within the Powder River Basin. The Fort Union formation is described as continental and shallow non-marine deposits of sandstone, carbonaceous shale and coal. Outcrops of the Fort Union formation encircle most of the basin, including in the Ludeman Project area, and the beds dip basinward. The Lebo member of the Fort Union formation is the stratigraphic unit that hosts the uranium mineralization of the Ludeman Project. The Fort Union formation is also a major source of coal within the Powder River Basin and the United States and is extensively exploited for coal bed methane reserves. Water is generally produced from sandstone, jointed coal and clinker beds with maximum yields on the order of 150 gpm. Permitted water wells producing from the Fort Union in the vicinity of the license area yield approximately two to 40 gpm.

Lance Formation (Late Cretaceous)

The Lance formation underlies the Fort Union formation and consists predominately of very fine-to fine-grained lenticular, clayey, calcareous sandstone. Shale, coal and lignite beds are present within the formation, which has a typical thickness of 1,000 to 3,000 feet. Due to the minimal hydrologic data in the Power River Basin, it is assumed that the direction of groundwater flow is generally to the north, similar to that of the overlying Fort Union and Wasatch formations. The Lance formation outcrops a few miles to the southwest of the Ludeman Project area.

Fox Hills Sandstone (Late Cretaceous)

The Fox Hills Sandstone underlies the Lance formation and overlies the Lewis Shale confining unit and therefore is the basal aquifer unit within the Lower Tertiary/Upper Cretaceous aquifer sequence in the Powder River Basin. The Fox Hills Sandstone consists of fine to medium grained sandstone beds deposited in a marine environment. The Fox Hills Sandstone is described by Weimer (1961) as a lithogenetic unit consisting of a series of individual sands bodies, sometimes several miles wide and hundreds of miles long. The Fox Hills Sandstone has been recognized in the northwestern part of the basin, but is generally poorly developed and unmapped along the western side of the basin (Gill 1966). Wells completed in the Fox Hills Sandstone have yields that typically range from 5 to 50 gallons per minute. Locally, this formation can yield over 200 gallons per minute, although lower yields are typically available in the western portion of the basin (Hodson 1973).

The Lower Tertiary-Upper Cretaceous aquifer sequence (Wasatch to Fox Hills Sandstone) is at least 7,000 feet thick in Converse County (Taylor 1968).

Lewis Shale (Late Cretaceous)

The Lewis Shale underlies the Fox Hills Sandstone and overlies the Mesaverde formation, and is considered the major aquitard between the Upper and Lower Cretaceous aquifer systems in the Powder River Basin. This unit is described by Hodson et al. (1973) as predominately shale with sandy shale zones and lenses of fine-grained sandstone. Thickness of this unit is approximately 450 to 500 feet in the southwest part of the basin.

2.7.2.2 Site Hydrogeology

Uranium One has conducted an on-going field investigation to collect site-specific geohydrologic data (lithologic, geophysical, water level, water quality) across the Ludeman Project area. The installation of monitor wells, and recently completed hydrologic testing (presented in Appendix A of this application), as well as information from historical pumping tests (References), were used to evaluate hydrologic properties of the aquifers of interest and to assess hydraulic characteristics of the confining units.

2.7.2.2.1 Monitoring Well Locations

As part of baseline water quality observations, Uranium One installed 23 monitoring wells throughout the Ludeman Project area (Figure 2.7-13). In addition, 16 wells were installed for hydrologic testing to evaluate the production aquifers (Figure 2.7-11). Addendum 2.7C summarizes the well completion information for all monitoring wells and hydrologic test wells.

LUDEMAN PROJECT AREA

GLENROCK - ROSS ROAD

GLENROCK - ROSS ROAD (HWY 95)

LMP-3
LMP-1
LMO-1
LMU-1
LPW-2
LPW-1
LMP-4
LMP-2
PROJECT BOUNDARY
T34N, R74W
LEUENBERGER TEST AREA

LMP-5
LMO-2A
LMU-2A
LPW-3A
M11
NORTH PLATTE TEST AREA
T34N, R73W
PROJECT BOUNDARY
HWY 95
T34N, R72W

T34N, R73W

LMP-6
PETERSON TEST AREA
LPW-4
Existing Well
LMU-3
Existing Well
LMP-7
PROJECT BOUNDARY
T34N, R73W

WELL SYMBOLS
- 110 Sand
- 100 Sand
- 90 Sand
- 80 Sand
- 70 Sand
- 60 Sand
- Ore Bodies

N

1/2 MILE 0 1 MILE

VERIFY SCALE

SCALE 1": 1 MILE

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KLW		

LUDEMAN PROJECT AREA AND PUMPING TEST MONITORING AREAS

LUDEMAN REGIONAL AQUIFER TEST

CONVERSE COUNTY, WY

PREPARED FOR:

URANIUM ONE
CASPER, WY

REV. #	DESCRIPTION	BY	DATE
0	INITIAL DRAFT		04/17/09

FIGURE 2.7-11

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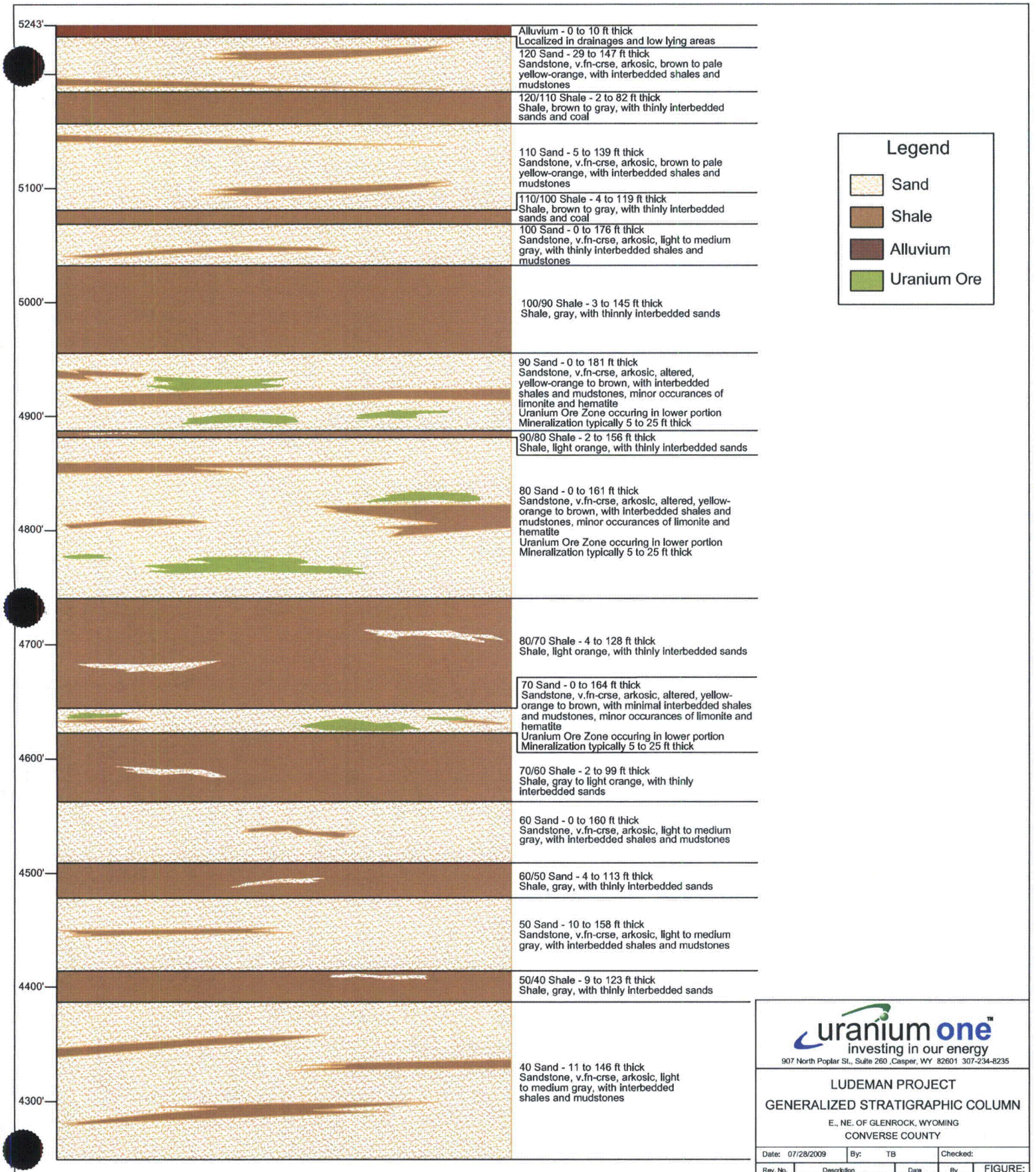

Note: Based on Type Log Figure 2.6-17

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LUDEMAN PROJECT

GENERALIZED STRATIGRAPHIC COLUMN

E., NE. OF GLENROCK, WYOMING

CONVERSE COUNTY

Date: 07/28/2009	By: TB	Checked:

Rev. No.	Description	Date	By

FIGURE: 2.7-12

2.7.2.2.2 Hydrostratigraphic Units

Uranium One exploration nomenclature designates the hydrostratigraphic units in the project area by decreasing numbers with depth, as illustrated in Figure 2.7-12, the generalized stratigraphic section of the Ludeman Project area. Geologic descriptions of the hydrostratigraphic units are also shown in Figure 2.7-12. Isopach maps illustrating the thickness and distribution of the hydrostratigraphic units in the Project area can be seen in Section 2.6 of this application.

110 Sand (Overlying Aquifer)

The 110 Sand is five to 139 feet thick, averaging about 65 feet in thickness, and has been eroded in the south-eastern part of the project area (Figure 2.6-32). The 110 Sand aquifer is confined (as defined by a water level equal to or above the top of sand) in the northwestern and north-central parts of the project area. Monitor Wells M-7 and LMO-1 are completed in the 110 Sand. The 110 Sand is considered unconfined where this sand outcrops in the central part of the project area.

110/100 Shale (Confining Unit)

The overlying confining layer (110/100 Shale) is areally extensive, covering the entire region and ranges from four to 119 feet in thickness within the project area. The 110/100 Shale confines the overlying 110 Sand aquifer from the 100 Sand.

100 Sand (Overlying Aquifer)

The 100 Sand is approximately zero to 175 feet thick, averaging about 45 feet in thickness. The 100 Sand lies below the 110/100 confining layer and generally exists in confined conditions except where this sand outcrops in the southeastern part of the project area (Figure 2.6-30). Monitor Wells LMO-2A, M-6 and M-13 are completed in the 100 Sand.

100/90 Shale (Confining Unit)

The overlying confining layer (100/90 Shale) is aerially extensive, covering the entire region and ranges from three to 120 feet in thickness within the project area (Figure 2.6-29). The 100/90 Shale confines the overlying 100 Sand aquifer from the underlying production zone 90 Sand.

90 Sand (Production Zone)

The 90 Sand is located below the 100/90 Shale and occurs from the surface to approximately 370 feet below ground level (Figure 2.6-28). The 90 Sand is not contiguous in the project area and upper parts of the 90 Sand outcrop in some locations in the southeastern portions of the project area. The 90 Sand averages almost 90 feet in thickness, with a range of zero to 144 feet, and has been identified to have five to 20 feet of mineralized zone. Confining conditions exist for the production zone 90 Sand throughout the majority of the project area, except in certain locations where the upper tongues of the 90 Sand are exposed at the surface. Monitor Wells M-2, M-3, M-4, M-24, LPW-2, LPW4, LLMP-3, LMP-4, LMP-6 and LMP-7 are completed in the 90 Sand.

90/80 Shale

The 90/80 Shale is laterally extensive across the Project area, and ranges from five feet to almost 170 feet in thickness (Figure 2.6-27). The 90/80 Shale and acts as a confining unit between the overlying 90 Sand and the underlying 80 Sand, where the 80 Sand is present. The 80/70 and 90/80 Shales coalesce in the locations where the 80 Sand is not present, as shown in Figures 2.6-25 and 2.6-27.

80 Sand (Production Zone)

The 80 Sand occurs at depths of approximately 120 to 550 feet from the surface in the northern, eastern and western portions of the license area (Figure 2.6-26). The 80 Sand is not continuous and is anywhere from zero to approximately 161 feet thick with pinch-outs present in the south-east and east-central portions of the project area. The 80 Sand has an average thickness of approximately 40 feet and contains an economically mineralized zone of approximately five to 25 feet. Two monitor wells completed in the 80 Sand are flowing artesian wells (M-12, M-17), indicating the saturated, confined condition of this production zone sand. The 80 Sand is fully confined within the project area and the following monitor wells were completed in the 80 Sand: M-5, M-8, M-12, M-17, M-19, M-26, LPW-1, LMP-1, LMP-2 and LMU-3.

80/70 Shale

The 80/70 Shale thickness ranges from five feet to almost 140 feet in the project area, is laterally extensive and acts as a confining unit between the overlying 80 Sand and underlying 70 Sand (Figure 2.6-25). The 80/70 and 90/80 Shales coalesce in the locations where the 80 Sand is not present.

70 Sand (Production Zone)

The 70 Sand is laterally extensive and is confined condition within the project area. It ranges in thickness from approximately 13 to 164 feet with an average thickness of 50 feet, and ranges in depth from 170 to almost 700 feet below the ground surface in the project area (Figure 2.6-24). A mineralized zone of approximately 5 to 25 feet exists in the 70 Sand. The 70 Sand is fully confined within the project boundary. Other monitor wells completed in the 70 Sand are M-9, M-10, M-11, M-14, M-15, M-16, M-18, M-20, M-21, M23, LMU-1 and LPW-3A

70/60 Shale (Underlying Confining Unit)

The underlying confining layer (70/60 Shale) occurs throughout the area and ranges in thickness from about 100 feet to a minimum of two feet in the southeastern and east-central parts of the project area (Figure 2.6-23). The 70/60 Shale is the confining unit between the overlying production zones and the underlying 60 Sand aquifer.

60 Sand (Underlying Aquifer)

The 60 Sand is mostly continuous through the Ludeman Project area with the exception of a pinchout in the east-central part of the project area (Figure 2.6-22). The 60 Sand lies at an approximate depth of 275 feet below ground surface in the southern end of the project area while, in the northern extent of the project, the depth of the sand body can be 775 feet below ground surface. Within the project area, the 60 Sand is approximately 10 to 100 feet thick, with an average thickness of 35 feet. The underlying 60 Sand aquifer exists under hydrostratigraphic confinement in the Ludeman Project area; Monitor Well LMU-2A is completed in the 60 Sand.

2.7.2.3 Potentiometric Surface, Ground Water Flow Direction and Hydraulic Gradient

A regional potentiometric surface map of the Lower Tertiary units (Fort Union and Wasatch formations) in the southern Powder River Basin (Lobmeyer, 1985) is presented in Figure 2.7-10. Based on the general potentiometric surface contour elevations and on the boundary of the Fort Union formation presented in this map, the indication is that the general direction of groundwater flow is trending toward the east and northeast in the vicinity of the Ludeman Project area.

The water level values from the project monitor wells used to generate the overlying and underlying aquifer sands and production zone sands potentiometric surface maps were from measurements made during the months of November and December 2008, as these

measurements best represented the available data. The water level data used to generate the following potentiometric surface maps is found in Addendum 2.7C.

The water level data from the 60 Sand is limited to one well, Monitor Well M-14 in Section 20, T34N, R73W, in the east-central portion of the project area. A potentiometric surface could not be generated using the single data point.

Figure 2.7-13 is a potentiometric surface map of the 70 Sand, which is the deepest production zone aquifer in the Ludeman Project area. The potentiometric surface of the 70 Sand in the east-central part of the project area suggests an east-southeast groundwater flow direction. Another relative "high area" of the potentiometric surface of the 70 Sand occurs in the area around Monitor Well M-15 (Sections 23-24, T34N, R73W). The groundwater flow direction and gradient appear to vary by location relative to the 70 Sand potentiometric surface high area. Minimal data from the western part of the project area in the 70 Sand indicate a possible southeasterly groundwater flow direction. Water level data from Monitor Well LMU-1 was not used in the construction of the potentiometric surface of the 70 Sand (see discussion in Section 7). Water level data from monitor wells in the southeastern portion of the project area indicate a general southeastern flow with a variable gradient. In the far southeast near the Peterson test site the groundwater flow gradient is approximately .0015 ft/ft (8 ft/mile).

A potentiometric surface map of the 80 Sand production zone within the project area is presented in Figure 2.7-14. Water level data from the monitor wells in the western part of the project area show a general east-northeast direction of groundwater flow within the 80 Sand with an approximate gradient of 0.0055 ft/ft (29 ft/mile). However a high in the potentiometric surface occurs in the northern area, indicating groundwater flow away from the high area near Monitor Well M-5. It should be noted that the water level data from the two artesian wells in the eastern part of the project area (Monitor Wells M-12 and M-17 in Sections 14 and 23, T34N, R73W) were not used to generate a potentiometric surface in the vicinity of these wells, only the elevation of the wells are listed on the map. Water level data from two monitor wells (M-19 and LMU-3) located in the southeastern part of the project area indicate the groundwater flow is toward the east with a gradient of approximately 0.0006 ft/ft (3 ft/mile).

A potentiometric surface map of the uppermost production zone sand (90 Sand) is shown in Figure 2.7-15. Water level data in the northwest part of the project area indicate a northeastern groundwater flow direction, with an approximate gradient of 0.0063 ft/ft (33 ft/mile). However, water level data from Monitor Well M-3 in the northern portion of Ludeman indicates a relative "high area" of the potentiometric surface of the 90 Sand, with an easterly flow direction from the high area and a gradient of 0.0115 ft/ft (61 ft/mile). In this high area of the 90 Sand potentiometric surface, the groundwater flow direction and gradient appear to vary by location relative to the M-3 Monitor Well location. In the southeastern part of the project area, monitor well data generally indicate

a southeasterly groundwater flow direction, with an approximate gradient of 0.0066 ft/ft (35 ft/mile).

Figure 2.7-16 is a potentiometric surface map of the 100 Sand, which is the overlying aquifer in the majority of the project area. Water level data from Monitor Wells M-13, M-6 and LMO-A indicate a general north-northeast groundwater flow in the 100 Sand, with a groundwater gradient of approximately 0.0108 ft/ft (57 ft/mile).

Figure 2.7-17 is a potentiometric surface map of the overlying 110 Sand aquifer within the project area using the water level data from two monitor wells (LMO-1, M-7) in the western portion (Leuenberger test site) of the project area (Sections 13 and 14, T34N, R74W). At the Leuenberger test site, the 110 Sand is the designated overlying aquifer due to a pinchout of the 100 Sand in the area. Based solely on the two data points, the general direction of groundwater flow within the 110 Sand of the far western portion of the project area is towards the east, with the groundwater gradient at approximately 0.0104 ft/ft (55 ft/mile).

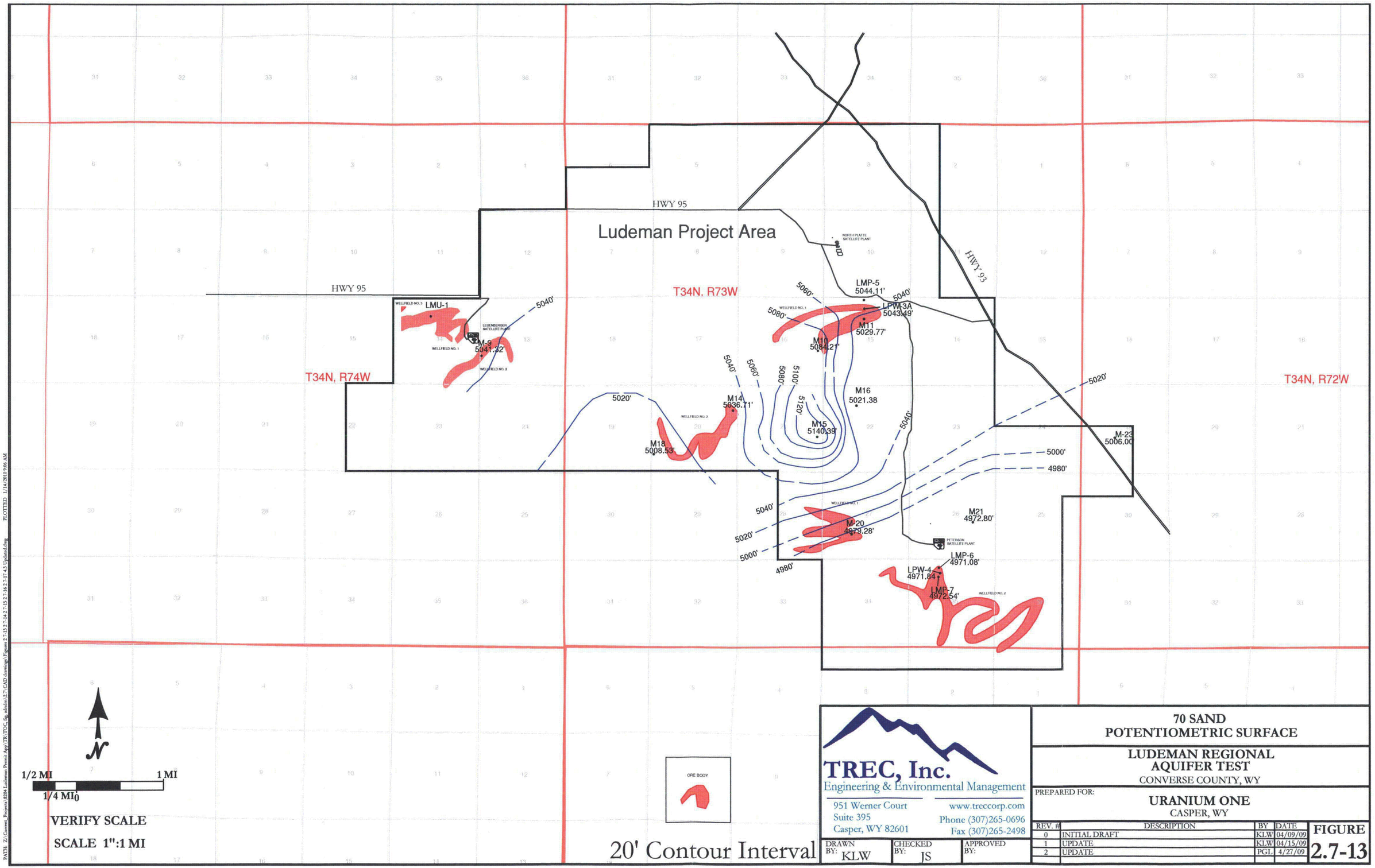
The potentiometric surface of the overlying 110 Sand is approximately 30 to 40 feet higher than the upper most production zone 90 Sand in the western part of the project area, indicating that the two sands are not in hydrologic communication. The 110 Sand has the potential to drain into the 90 Sand if an artificial conduit was created between the two Sands (i.e. improperly completed well).

The potentiometric surface of the overlying 100 Sand is approximately 40- 60 feet lower than the upper most production zone 90 Sand in the northwestern part of the project area (in the vicinity of Monitor Well M-6 in Section 12, T34N, R74W, indicating that the two sands are not in hydrologic communication.

The potentiometric surfaces of the 90 Sand and the 80 Sand are at similar elevations in the western part of the project area, however the 90 Sand is approximately 100 feet higher than that of the 80 Sand in the northern part of the project area. And in the southeastern area, the 80 Sand potentiometric surface is approximately five feet higher than the 90 Sand in the southern portion of the project area. These differences in potentiometric surface elevations, along with geologic cross sections and confining test results indicate that these two sands are not contiguous and are not in hydraulic communication.

The potentiometric surface of the 70 Sand, depending upon location and where water elevation data is available, is generally 5 to 60 feet lower than the 80 Sand (southeastern and western parts of the project area) suggesting that the 70 Sand is not in communication with the 80 Sand.

Water level data from pumping tests at the North Platte area show that the 60 Sand potentiometric surface is approximately 10 feet higher than that of the 70 Sand in that area. This information points toward hydraulic isolation of the two sands.



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70 SAND POTENTIOMETRIC SURFACE

LUDEMAN REGIONAL AQUIFER TEST

CONVERSE COUNTY, WY

PREPARED FOR:

URANIUM ONE
CASPER, WY

REV. #	DESCRIPTION	BY	DATE
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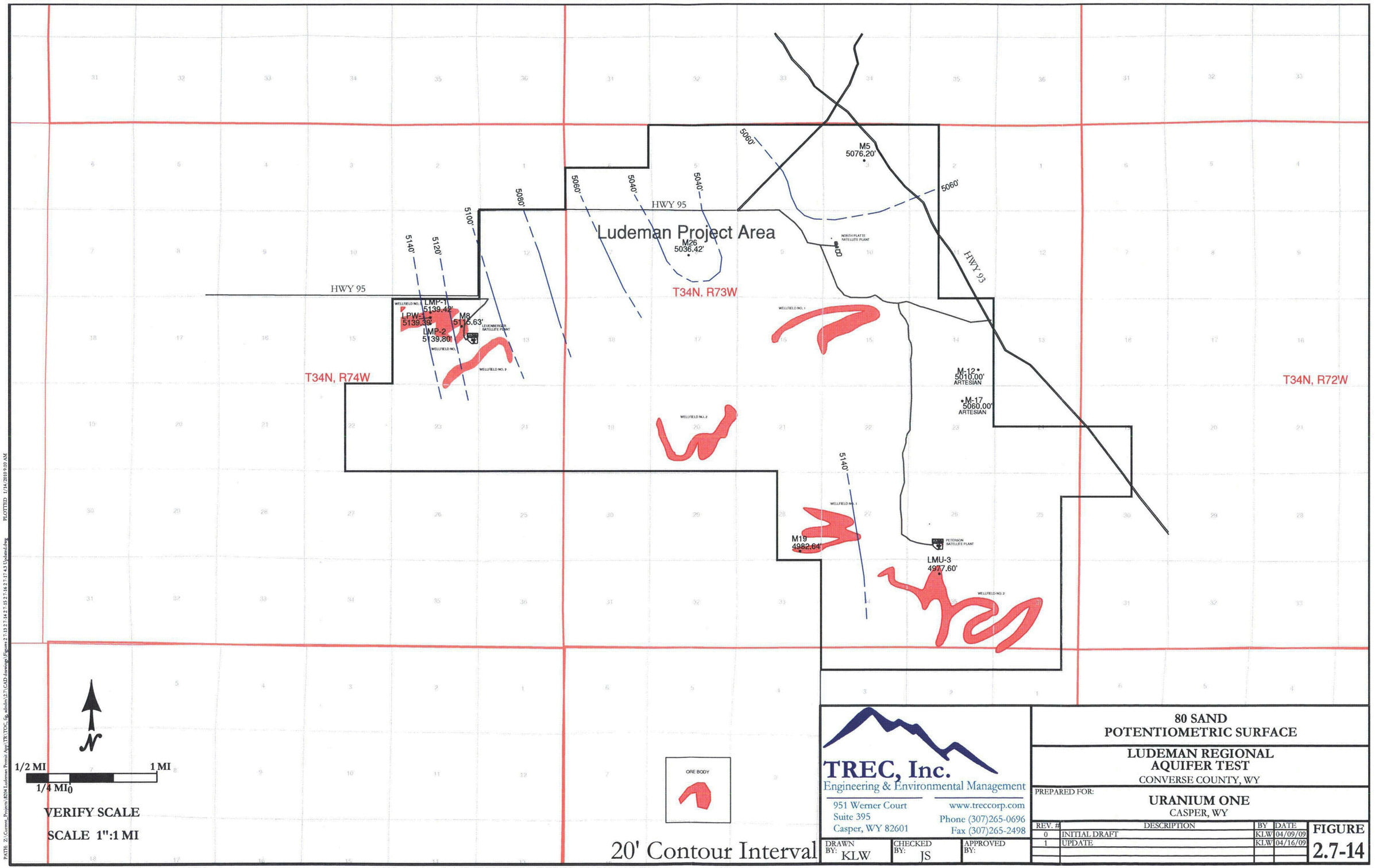
1	UPDATE	KLW	04/15/09
2	UPDATE	PGL	4/27/09

FIGURE 2.7-13



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KLW	JS	

80 SAND POTENTIOMETRIC SURFACE

LUDEMAN REGIONAL AQUIFER TEST

CONVERSE COUNTY, WY

PREPARED FOR:

URANIUM ONE
CASPER, WY

REV. #	DESCRIPTION	BY	DATE
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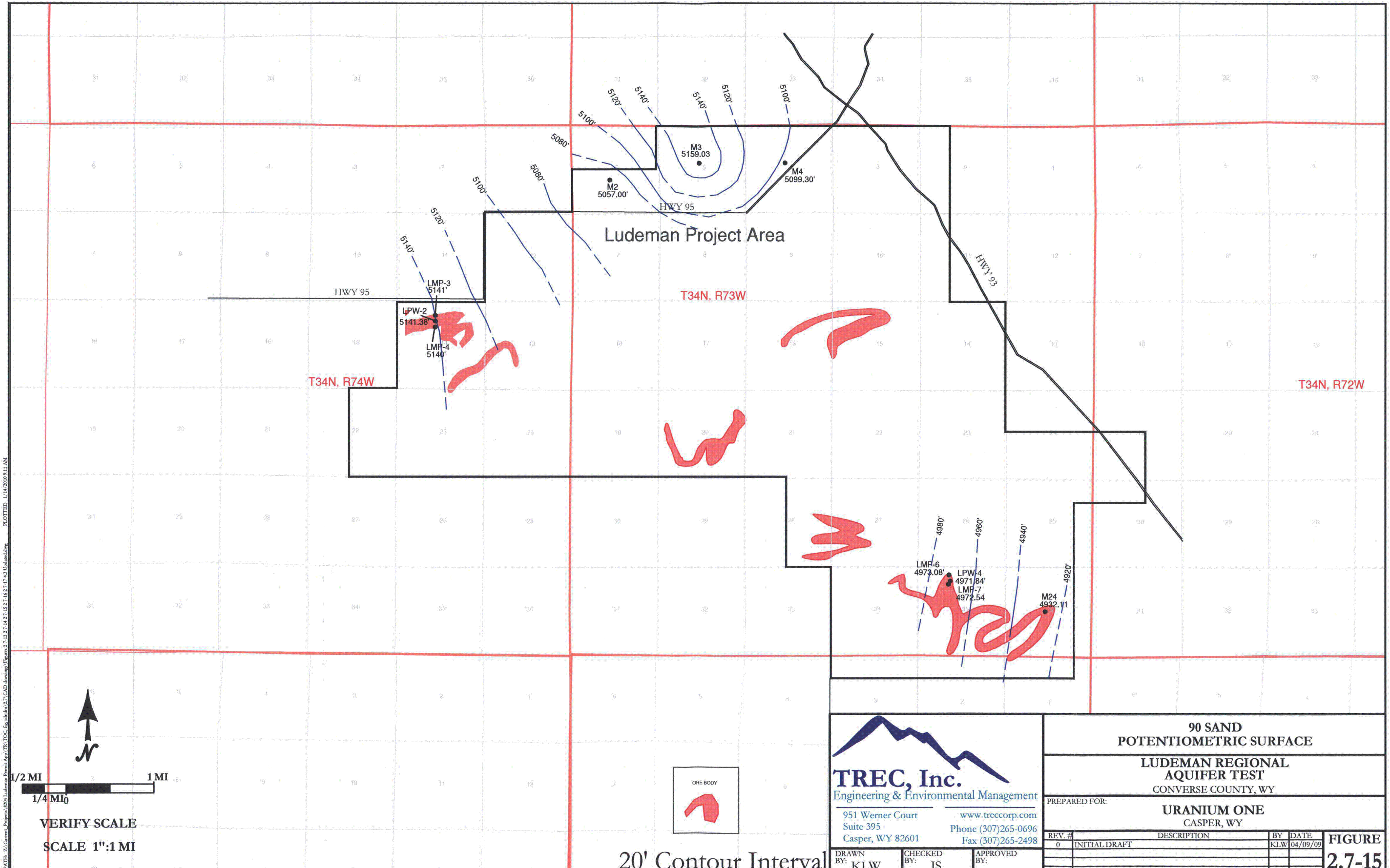
1	UPDATE	KLW	04/16/09

FIGURE 2.7-14



90 SAND POTENTIOMETRIC SURFACE

LUDEMAN REGIONAL AQUIFER TEST

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REV. #	DESCRIPTION	BY	DATE
0	INITIAL DRAFT	KLW	04/09/09

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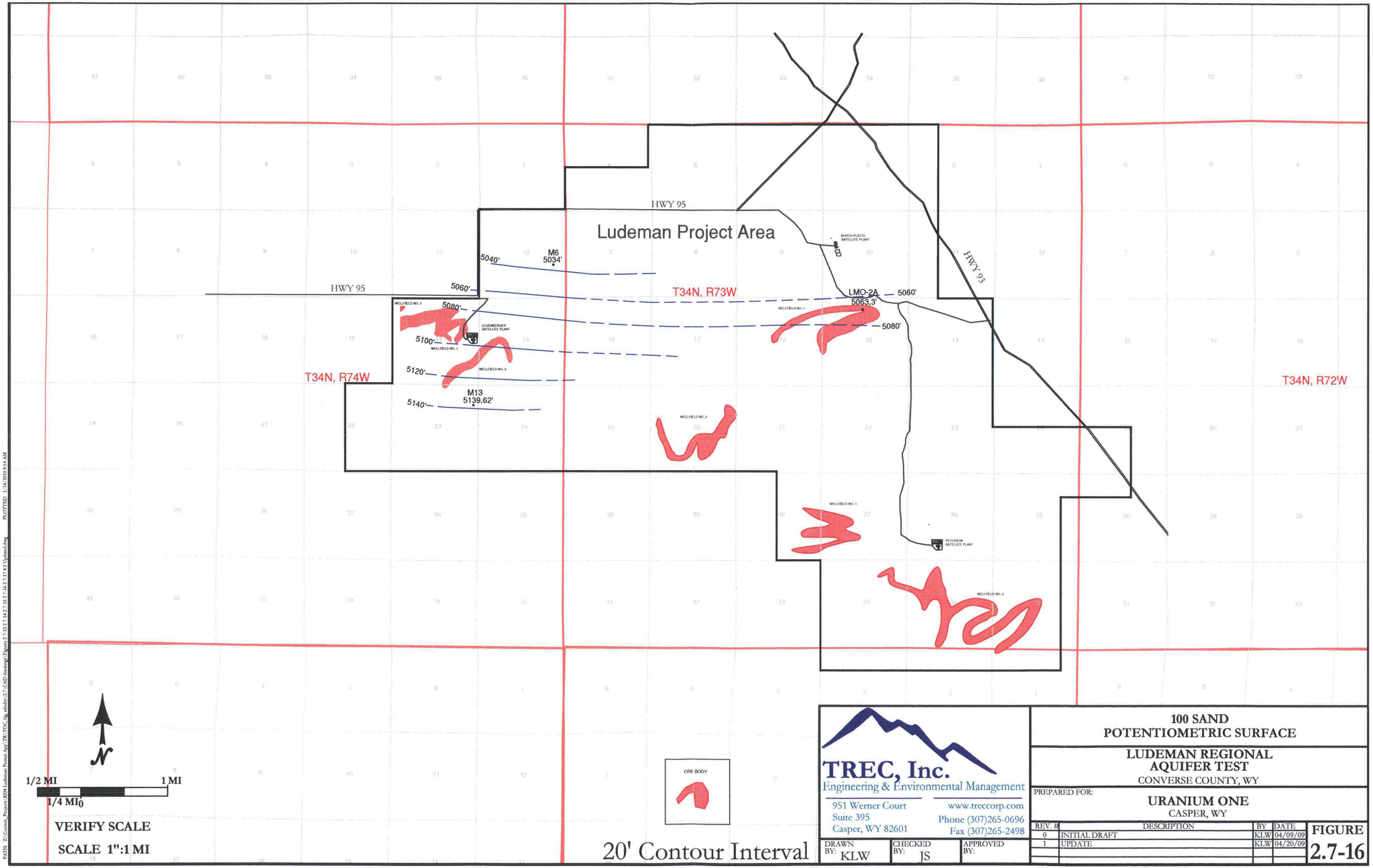
FIGURE 2.7-15



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DRAWN BY:	CHECKED BY:	APPROVED BY:
KLW	JS	

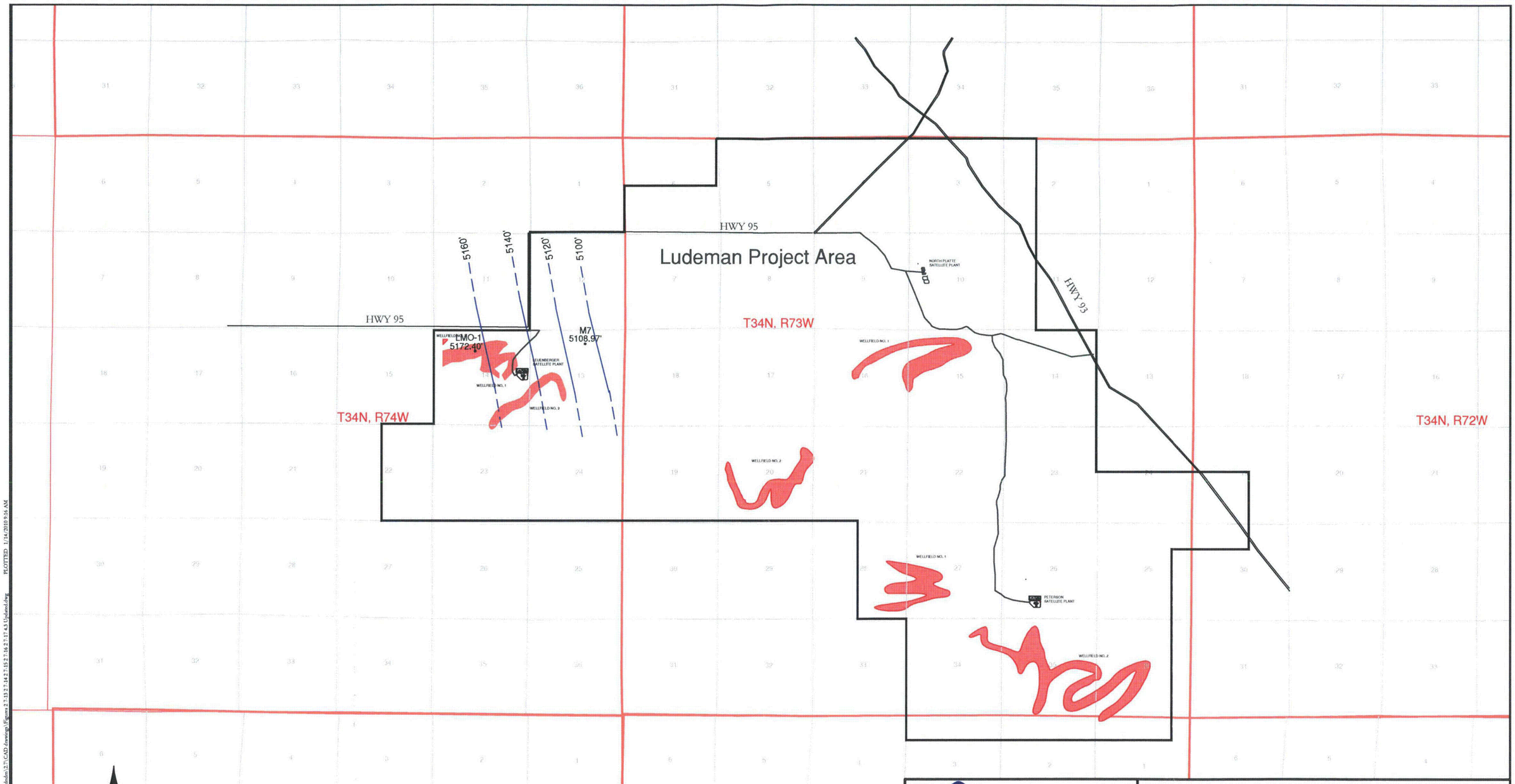
100 SAND
POTENTIOMETRIC SURFACE

LUDEMAN REGIONAL AQUIFER TEST
CONVERSE COUNTY, WY

PREPARED FOR:
URANIUM ONE
CASPER, WY

REV. #	DESCRIPTION	BY	DATE
0	INITIAL DRAFT	KLW	04/09/09
1	UPDATE	KLW	04/20/09

FIGURE 2.7-16



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110 SAND POTENTIOMETRIC SURFACE

LUDEMAN REGIONAL AQUIFER TEST

CONVERSE COUNTY, WY

PREPARED FOR:

URANIUM ONE
CASPER, WY

REV. #	DESCRIPTION	BY	DATE
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FIGURE 2.7-17

2.7.2.4 Site Specific Aquifer Properties

The Fort Union – Lebo member aquifer properties within the Ludeman Project area are estimated from historic and recent pumping tests. Historic pumping tests were conducted in three portions of the Ludeman Project area to determine the feasibility of uranium extraction by ISR recovery.

Historic Pumping Tests

A series of aquifer tests were conducted on the Ludeman Project area during the late 1970s and early 1980s to assess hydraulic characteristics of the production zone sands, as well as the overlying and underlying hydrostratigraphic units. Past aquifer testing was performed by the TETON-NEDCO joint venture at the Leuenberger site, by Envirosphere Company at the Peterson site, and by Uranium Resources, Inc (URI) at the URI North Platte site. (see Figure 2.7-18). The testing is summarized below:

The TETON-NEDCO joint venture hydrogeologic analysis of the Leuenberger site included nine aquifer tests. Four pumping tests were conducted to determine aquifer characteristics of the receiving strata (geologic strata containing the production zone). Two research and development (R&D) five-spot tests were conducted, in part, to determine if the claystones above and below the production zones behave as competent hydraulically confining layers. Three recovery tests were conducted to estimate hydraulic conductivity; one in the 110 Sand aquifer (100 Sand interpreted to be absent in the test area) and two in the basal aquifer 70 Sand. The tests and their results are described below:

Pumping Tests:

- 90 Sand: TETON-NEDCO conducted a pumping test at the Leuenberger site beginning June 26, 1979 at well PN5-L317 with wells PN5-L313, PN5-L319, PN5-L320, PN5-L572, PN5-L573 and PN5-L574 as observation wells. These wells are located within the 90 Sand aquifer. In addition, well PN5-L570 was monitored during the test in the 110 Sand aquifer and PN5-L307 was used to monitor the 80 Sand. Well PN5-L317 was pumped for 36.5 hours or 1.52 days at an average constant discharge rate of 43.1 gallons per minute (gpm). The distance from pumping well to the observation wells are as follows: PN5-L313; 295.35 feet, PN5-L319; 297.90 feet, PN5-L320; 248.80 feet, PN5-L572; 98.3 feet, PN5-L573; 67.50 feet and PN5-L574; 81.10 feet.

  Drawdown in the observation wells at the time of pump shut off are as follows: PN5-L313; 32.17 feet, PN5-L319; 30.45 feet, PN5-L320; 31.79 feet, PN5-L572; 50.39 feet, PN5-L573; 48.55 feet and PN5-L574; 39.34 feet. Theis and Cooper-Jacob analysis methods resulted in the following average values: Transmissivity

(T) = 700 gpd/ft, storativity (S) = 8.3 x 10^{-5}, and hydraulic conductivity (k) = 1.9 ft/day.

The underlying and overlying observation wells showed negligible response due to pumping. Drawdown in monitoring wells PN5-L570 and PN5-L307 was 0.08 feet and 0.21 feet respectively.

- 80 Sand: A pumping test was conducted by TETON-NEDCO at the Leuenberger test site beginning February 21, 1979 at well PN5-L301 with wells PN5-L305, PN5-L306, PN5-L307 and PN5-L308 as observation wells. These wells were located within the 80 Sand aquifer. In addition, well PN5-L302 was monitored during the test in the 90 Sand and PN5-L314 was used to monitor the basal aquifer 70 Sand. Well PN5-L301 was pumped for 48 hours or 2 days at a constant discharge rate of 44 gpm. The distance from the pumping well to the observation wells are as follows: PN5-L305: 297.20 feet, PN5-L306: 95.20 feet, PN5-L307: 196.80 feet and PN5-L308: 57.10 feet.

  Drawdown in the observation wells at the time of pump shut-off were as follows: PN5-L305: 127.60 feet, PN5-L306: 24.38 feet, PN5-L307: 41.48 feet and PN5-L308: 28.92 feet. Theis and Cooper-Jacob analysis methods resulted in the following average values: T = 410 gpd/ft, S = 2.6 x 10^{-4}, and k = 1.9 ft/day.

  The TETON-NEDCO permit application reported that the underlying and overlying observation wells showed no response due to pumping. Drawdown data was not provided.

- 80 Sand: TETON-NEDCO conducted a second pumping test at the Leuenberger site beginning July 21, 1980 at well PN5-LMM6 with wells PN5-LMM8 and PN5-LMM9 as observation wells. These wells were located within the 80 Sand aquifer. In addition, well PN5-LNM3 was monitored during the test in the 90 Sand and well PN5-LBM2 was used to monitor the basal aquifer 70 Sand. Well PN5-LMM6 was pumped for 96 hours or four days at an average constant discharge rate of 29.8 gpm. The distance from pumping well to the observation wells are as follows: PN5-LMM8: 499.68 feet and PN5-LMM9: 246.05 feet.

  Drawdown in the observation wells at the time of pump shut off for PN5-LMM8 and PN5-LMM9 were 33.13 and 50.40 feet respectively. Theis and Cooper-Jacob analysis methods resulted in the following average values: T = 290 gpd/ft, S = 6.5 x 10^{-5}, and k = 0.6 ft/day.

  The underlying and overlying observation wells showed negligible response due to pumping. Drawdown in monitoring wells PN5-LNM3 and PN5-LBM2 was -0.11 feet and -0.38 feet respectively.

- 80 Sand: A third pumping test was conducted by TETON-NEDCO at the Leuenberger site beginning July 29, 1980 at well PN5-LMM10 with wells PN5-LMM3, PN5-LMM4 and PN5-LMM7 as observation wells. These wells were located within the 80 Sand ore-body. In addition, well PN5-LNM4 was monitored during the test in the 90 Sand and well PN5-LBM1 was used to monitor the basal aquifer 70 Sand. Well PN5-LMM6 was pumped for 96 hours or four days at an average constant discharge rate of 26.3 gpm. The distance from pumping well to the observation wells are as follows: PN5-LMM3: 798.9 feet, PN5-LMM4: 40.2 feet, and PN5-LMM7: 642.5 feet.

  Drawdown in the observation wells at the time of pump shut off are as follows: PN5-LMM3: 19.29 feet, PN5-LMM4: 79.49 feet, and PN5-LMM7: 30.99 feet. Theis and Cooper-Jacob analysis methods resulted in the following average values: $T = 260$ gpd/ft, $S = 2.6 \times 10^{-4}$, and $k = 0.6$ ft/day.

  The underlying and overlying observation wells showed negligible response due to pumping. Drawdown in monitoring wells PN5-LNM4 and PN5-LBM1 was -0.52 feet and -0.57 feet respectively.

The results from the pumping test conducted at the Leuenberger test site by TETON-NEDCO indicate that the 100-feet-thick claystone between the 110 Sand aquifer and the 90 Sand aquifer (the 100 Sand is interpreted to be absent at the test site) and the 50- to 75-feet-thick claystone (90/80 Shale) between the 90 Sand aquifer and the 80 Sand aquifer behave as competent confining layers retarding any measurable hydraulic connection between the aquifers.

R&D Five-Spot Tests:

- Two R&D five-spot wellfield patterns located in the Leuenberger test site were tested by TETON-NEDCO beginning January 22, 1980 with sodium bicarbonate addition in the 80 Sand in one five-spot pattern and in the 90 Sand in the other five-spot pattern. Sodium bicarbonate addition took place on March 14, 1980 for the 90 Sand and on March 17, 1980 for the 80 Sand. The five-spots operated for several months with leach solution circulation rates similar to the proposed commercial operation (40 gpm recovery rates and 39 gpm injection rates). During operation of these patterns, water level data and chemical data were obtained in the basal 70 Sand and 110 Sand to determine if leach solution could migrate to these zones through the claystone overlying the 90 Sand and underlying the 80 Sand. As reported in the TETON-NEDCO permit application, it was anticipated that the claystones would exhibit negligible permeabilities. Monitoring data results were contained in quarterly reports (dated April 9, 1980 and July 9, 1980) submitted to the US NRC and the Wyoming DEQ and were not available.

Recovery Tests:

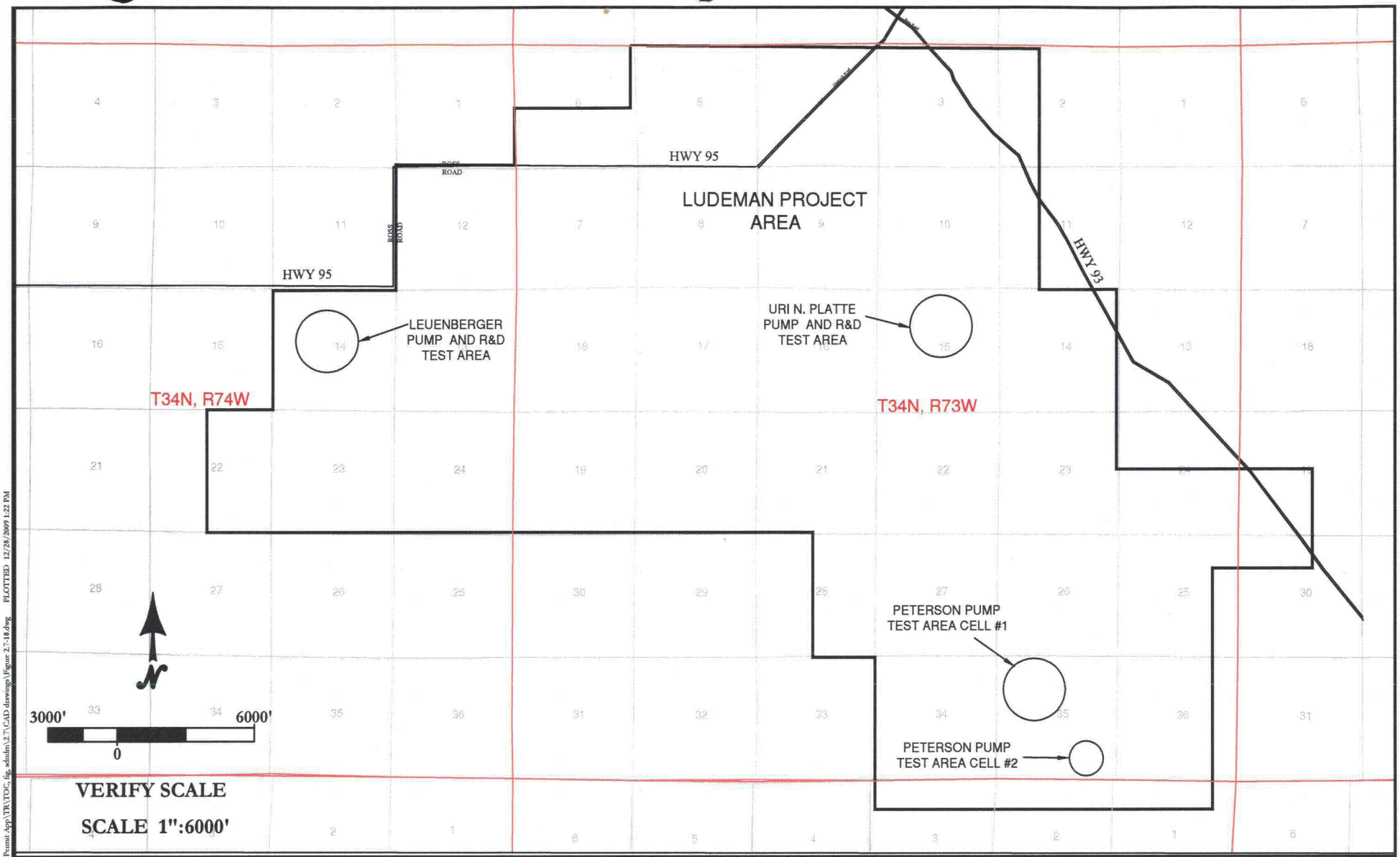
- 110 Sand: One recovery test was conducted at the Leuenberger site by TETON-NEDCO in the 110 Sand aquifer. Well LAP-1 was pumped August 27, 1981 for 100 minutes at an average rate of 19 gpm. The results indicated a transmissivity of approximately 620 gpd/ft.

- Basal Sand 70: TETON-NEDCO conducted two basal aquifer recovery tests at the Leuenberger test site which were performed on July 14, 1980 and July 18, 1980 to estimate the hydraulic conductivity of the basal aquifer. Well PN5-LBM2 was pumped on July 14, 1980 for 100 minutes at a rate of 15.2 gpm and the results indicated a transmissivity of approximately 120 gpd/ft. Well PN5-LBM1 was pumped on July 18, 1980 for 110 minutes at a rate of 28.6 gpm and the results indicated a transmissivity of approximately 540 gpd/ft

The Enviroshphere hydrogeologic analysis of the Peterson site included two aquifer tests of the "B" (90) and the "D2" (80) Sands. Two 24-hour pumping tests were conducted and water levels and discharge rates were monitored. The tests were performed on November 13, 1979 and December 3, 1979. Details of the tests and analysis of the test results are contained in a report entitled, "Hydrologic Analysis, Cell 1 and Cell 2." However, this report was not available for review.

In 1980, Uranium Resources Inc. retained Hydro-Engineering to conduct a pumping test at the URI North Platte site. The pumping test began on November 7, 1980 and lasted 69.6 hours or 2.9 days. The pumping well was designated as P-1 and was pumped at an average of 9.7 gpm. There were ten observation wells, NPMW-1 through 6 and I-1 through 4, located in the 2ab Sand which according to the available URI North Platte ISR Mining Application states that "The stratigraphic beds of concern extend to a depth of 610 to 620 feet from the surface in the area of review." Accompanying cross sections were not available for review, but the sand layer under review was most likely the 70 Sand. This is based solely on review of current Uranium One cross sections. Observation wells NPMW-1 through MPMW-6 followed a typical five-spot pattern and were located approximately 200 feet from the pumping well. Observation wells I-1 through I-4 were the proposed injection wells in the five-spot pattern and ranged from 35 to 39 feet from the pumping well. In addition, wells NPDM-1, NPMS-1, NPMS-2, and NPMS-3 were used to monitor the 1 (probable equivalent of the 100 Sand), 2c (probable equivalent of the 90 Sand), 3 (probable equivalent of the 70 Sand) and 4 (probable equivalent of the 60 Sand) Sands, respectively.

The transmissivity, storativity and hydraulic conductivity, based on the Theis equation, and total drawdown (DD) for each well in the 2ab Sand (70 Sand) are provided in Table 2.7-6.



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LUDEMAN PROJECT

CONVERSE COUNTY, WY

PREPARED FOR:
URANIUM ONE
CASPER, WY

DRAWN BY: KLW
CHECKED BY: JS
APPROVED BY:

HISTORICAL PUMPING TEST LOCATIONS

REV. #	DESCRIPTION	BY	DATE
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FIGURE 2.7-18

Table 2.7-6 70 Sand Historic Pumping Test Results

70 Sand				
Well No.	**T (gpd/ft)**	**S**	**k (ft/day)**	**Drawdown (DD) (ft)**
NPMW-1	410	5.0×10^{-5}	2	14.47
NPMW-2	440	9.9×10^{-5}	2.6	12.29
NPMW-3	460	1.2×10^{-4}	1.9	11.29
NPMW-4	430	7.9×10^{-5}	1.7	13.5
NPMW-5	430	4.8×10^{-5}	1.5	13.44
NPMW-6	430	4.8×10^{-5}	2.1	14.16
I-1	430	4.8×10^{-5}	2.9	23.34
I-2	410	1.3×10^{-5}	2.5	27.91
I-3	430	5.3×10^{-5}	2.9	22.81
I-4	410	1.0×10^{-5}	3	28.1

2008 Pump Tests

In 2008, Uranium One and TREC conducted pumping tests in the Ludeman Project area in the 70, 80 and 90 Sands. The test were designed to meet the following objectives:

- Demonstrate hydraulic communication between the production zones (70, 80 and 90 Sands) Pumping wells and the surrounding monitor wells;
- Assess the hydrologic characteristics of the production zone aquifers within the test areas;
- Evaluate the presence or absence of hydrologic boundaries in the production zone within the Ludeman Project area; and,
- Demonstrate sufficient confinement between the production zone and the overlying and underlying sands for the purposes of ISR mining.

Four separate tests were designed to fully characterize the aquifers of the production zones. For each separate test a pumping well was centrally located within each mineralized zone

with two monitor wells located within the same mineralized zone at varying distances from the pumping well. Overlying and underlying monitor wells were located in very close proximity to the pumping well. Four separate wells were utilized as pumping wells -- LPW-1 (80 Sand, Leuenberger Site), LPW-2 (90 Sand, Leuenberger Site), LPW-3A (70 Sand, North Platte Site) and LPW-4 (90 Sand, Peterson Site). Locations of pump tests LPW-1, LPW-2, LPW-3A AND LPW-4 are shown in Figures 2.7-19 to 2.7-22 respectively. Table 2.7-7 summarizes the pumping test parameters. Details regarding the pump test procedures and results are provided in Appendix A of this application.

Table 2.7-7 SUMMARY OF 2008 LUDEMAN PUMPING TESTS

Test No.	Pumping Well	Duration (minutes)	Duration (days)	Recovery (minutes)	Recovery (days)	Flow Meter Rate Avg. 1 (gpm)	Flow Meter Rate Avg. 2 (gpm)	Avg Flow Rate Bucket Test (gpm)	Comments
1	LPW-1	4320	3	11445	7.95	22.48	22.7	26.99	221.91' DD in LPW-1; 27.88' DD in LMP-1, 21.28' DD in LMP-2.
2	LPW-2	4348	3.2	12857	8.9	26.59	26.98	32.18	71.75' DD in LPW-2; 20.20' DD in LMP-3, 20.71' DD in LMP-4.
3	LPW-3A	4992	3.46	12894	8.95	18.16	18.29	22.34	131.70' DD in LPW-3A; 18.32' DD in LMP-5, 15.92' DD in M-11.
4	LPW-4	4350	3.02	11686	8.12	7.59	7.43	8.9	59.68' DD in LPW-4; 19.32' DD in LMP-6, 17.98' DD in LMP-7.

Note: two surface flow meters were utilized for redundancy; DD = drawdown

Results of the four pumping tests including aquifer characteristics are outlined below and a summary of the aquifer properties is shown on Table 2.7-8.

Leuenberger (LPW-1 80 Sand)

Theis analysis for the 80 Sand pumping test resulted in an average transmissivity (T) value of 70.0 ft^2/day. Based on an average unit thickness of 66.25 feet, the average hydraulic conductivity (K) is 1.1 ft/day and an average storativity (S) value of $7.75x10^{-5}$ which is unitless. Drawdown (DD) due to pumping was observed in LPW-1, LMP-1 and LMP-2. Appendix A – the hydrologic test report - Table 6-1 summarizes the LPW-1 80 Sand test including pumping well and observation well information.

Leuenberger (LPW-2 90 Sand)

Theis analysis for the 90 Sand pumping test resulted in an average transmissivity (T) value of 94.6 ft^2/day. Based on an average unit thickness of 48.75 feet, the average hydraulic conductivity (K) is 1.9 ft/day and an storativity (S) value of $5.57x10^{-5}$ which is unitless. Drawdown (DD) due to pumping was observed in LPW-2, LMP-3 and LMP-4. Appendix A Table 6-2 summarizes the LPW-2 90 Sand test including pumping well and observation well information.

North Platte (LPW-3A 70 Sand)

Theis analysis for the 70 Sand pumping test resulted in an average transmissivity (T) value of 96.4 ft^2/day. Based on an average unit thickness of 42.75 feet, the average hydraulic conductivity (K) is 2.3 ft/day and an average storativity (S) value of $5.08x10^{-5}$ which is unitless. Drawdown due to pumping was observed in LPW-3A, LMP-5 and M-11. Appendix A - Table 6-3 summarizes the LPW-3A 70 Sand test including pumping well and observation well information.

Peterson (LPW-4 90 Sand)

Theis analysis for the 90 Sand pumping test resulted in an average transmissivity (T) value of 16.3 ft^2/day. Based on an average unit thickness of 37.20 feet, the hydraulic conductivity (K) is 0.44 ft/day and a storativity (S) value of $7.02x10^{-5}$ which is unitless. Drawdown due to pumping was observed in LPW-4, LMP-6 and LMP-7. Appendix A - Table 6-4 summarizes the LPW-4 90 Sand test including pumping well and observation well information.

10 11 12 7

(Y 95)

LMP-1

M6

LMO-1

LMU-1

M7

M8

LPW-2

LPW-1

PUMPING WELL

15 14 13 18

M9

LMP-2

LEUENBERGER
TEST AREA

PROJECT BOUNDARY

T34N, R74W

M13

23

WELL SYMBOLS

- 110 Sand
- 100 Sand
- 90 Sand
- 80 Sand
- 70 Sand
- 60 Sand
- Ore Bodies

N

1/8 MI 1/4 MI
1/16 MI 0

VERIFY SCALE

SCALE 1":1/4 MI

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PUMPING TEST MONITOR WELLS
LEUENBERGER LPW-1 80 SAND

LUDEMAN PROJECT
CONVERSE COUNTY, WY

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FIGURE 2.7-19

10 11 12 7

Y 95)

LMP-3

LMO-1

LMU-1

M8

LPW-2

PUMPING WELL

15 14 13 18

LMP-4

M6

M7

M9

PROJECT BOUNDARY

T34N, R74W

LEUENBERGER
TEST AREA

M13

23

N

1/8 MI 1/4 MI
1/16 MI 0

VERIFY SCALE

SCALE 1":1/4 MI

WELL SYMBOLS

- 110 Sand
- 100 Sand
- 90 Sand
- 80 Sand
- 70 Sand
- 60 Sand
- Ore Bodies

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PUMPING TEST MONITOR WELLS
LEUENBERGER LPW-2 90 SAND

LUDEMAN PROJECT
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FIGURE 2.7-20

9

10

11

LMP-5

LMO-2A

LMU-2A

16

15

14

LPW-3A

PUMPING WELL

M10

M11

NORTH PLATTE

TEST AREA

M12

T34N, R73W

M16

21

M15

22

PROJECT BOUNDARY

HWY 93

N

1/8 MI 1/4 MI

1/16 MI 0

VERIFY SCALE

SCALE 1":1/4 MI

WELL SYMBOLS

- 110 Sand
- 100 Sand
- 90 Sand
- 80 Sand
- 70 Sand
- 60 Sand
- Ore Bodies

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PUMPING TEST MONITOR WELLS
NORTH PLATTE LPW-3A 70 SAND

LUDEMAN PROJECT
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CASPER, WY

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1	UPDATE	KLW	04/20/09

FIGURE 2.7-21

28 27 26 25

M21

LMP-6

PETERSON
TEST AREA

M20

M19

LPW-4
PUMPING WELL

Existing Well

LMU-3

PROJECT BOUNDARY

Existing Well

M24

33 34 35 36

LMP-7

T34N, R73W

OW1

3 2

N

1/8 MI 1/4 MI
1/16 MI 0

VERIFY SCALE

SCALE 1":1/4 MI

WELL SYMBOLS

- 110 Sand
- 100 Sand
- 90 Sand
- 80 Sand
- 70 Sand
- 60 Sand
- Ore Bodies

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PUMPING TEST MONITOR WELLS
PETERSON LPW-4 90 SAND

LUDEMAN PROJECT
CONVERSE COUNTY, WY

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FIGURE 2.7-22

Table 2.7-8 Summary of Ludeman Aquifer Properties, 2008

Aquifer Properties from the 2008 Pumping Tests	
Pump Test	**Representative Value**
Leuenberger LPW-1 80 Sand	
Trasmissivity (T;ft2/day)	70
Hydraulic Conductivity (k;ft/day)	1.1
Net Sand Thickness (h;feet)	66.25
Storativity (S)	7.75E-05
Leuenberger LPW-2 90 Sand	
Trasmissivity (T;ft2/day)	94.6
Hydraulic Conductivity (k;ft/day)	1.9
Net Sand Thickness (h;feet)	48.75
Storativity (S)	5.57E-05
North Platte LPW-3A 70 Sand	
Trasmissivity (T;ft2/day)	96.4
Hydraulic Conductivity (k;ft/day)	2.3
Net Sand Thickness (h;feet)	42.75
Storativity (S)	2.08E-05
Peterson LPW-4 90 Sand	
Trasmissivity (T;ft2/day)	16.3
Hydraulic Conductivity (k;ft/day)	0.44
Net Sand Thickness (h;feet)	37.2
Storativity (S)	7.02E-05

Based on the results of the four pumping tests that were conducted within the Ludeman Project area, observation wells in the overlying and underlying aquifers showed little to no response during the pumping periods within all three pumping test areas (four tests) when the associated production zone was being pumped. The results indicate that the confining units between the production zone sands, and the overlying and underlying confining units act as barriers to vertical hydrologic flow due to the very low vertical hydraulic conductivity of the confining units.

The potentiometric surface of the overlying 110 Sand is approximately 30 feet higher than the upper most production zone 90 Sand in the Leuenberger test area. The potentiometric surface differences support the pumping test results and demonstrate hydrologic isolation between the 110 and 90 Sands.

The potentiometric surface of the 90 Sand is approximately at the same elevation as that of the 80 Sand in the Leuenberger test area, but is about five lower that the 80 Sand potentiometric surface at the Peterson test area. However the 90 Sand is approximately 100 feet higher than that of the 80 Sand in the northern part of the project area. The pumping test results, potentiometric surfaces and geologic data (discontinuous lateral extent of the 80 and 90 Sands) indicate hydrologic isolation of the two sands.

The potentiometric surface of the 70 Sand, depending upon location and where water elevation data is available, is generally 5 to 60 feet lower than the 80 Sand (southeastern and western parts of the project area). The difference in potentiometric surface levels support the pumping test results and demonstrate the hydrologic isolation of the 70 Sand and the 80 Sand.

The underlying 60 Sand potentiometric surface level is approximately 14 feet higher than the 70 Sand potentiometric surface at the North Platte test site. Hydrologic confinement between the underlying 60 Sand and the 70 Sand, demonstrated by pumping tests, is supported by potentiometric surface data.

The potentiometric surface levels in the overlying 110 and 100 Sands, the production zone 90, 80 and 70 Sands, and the underlying 60 Sand support the pumping tests and geologic information that each sand is in hydrologic isolation. No water level changes of concern were observed in any of the overlying or underlying wells during the testing indicating adequate confinement of the production zones.

The testing objectives were met. The test results demonstrate that:

- The 70, 80 and 90 Sand monitor wells located in the proximity of the pumping wells are in communication, demonstrating that the 70, 80 and 90 Sand production zones have hydraulic continuity in the probable mining areas. While communication was not demonstrated over the entire Ludeman Project area, geologic information clearly demonstrates that the 70 and 90 Sands are contiguous sand bodies across the Project area. The 80 Sand is not contiguous, as there are pinch-outs present in various locations within the Ludeman Project area. Additional (mine unit) scale testing, required by NRC and WDEQ, will demonstrate communication throughout each mine unit between the pumping well(s) and the monitor well ring;

- On a regional scale, the 70, 80 and 90 Sands have been adequately characterized with respect to hydrogeologic conditions within the test area at the Ludeman Project;

- Adequate confinement exists between the 70, 80 and 90 Sands production zones and the overlying and underlying sands throughout the Ludeman Project area;

- Adequate hydrostratigraphic confinement exists between the 70, 80 and 90 Sand production zones and the underlying 60 Sand throughout the proposed wellfields. Mine-unit scale testing will demonstrate the validity of the recommended approach(s) for mining and monitoring; and,

- Sufficient testing has been conducted to date at the Ludeman Project to proceed with a WDEQ-LQD Permit to Mine application and a NRC license amendment application.

Possible Effect of ISR Mining on North Platte River

Due to the distance of the Ludeman Project area from the North Platte River (greater than one mile to the closest mineable ore body in Section 35, T34N, R73W), a regional north-northeast structural dip away from the river, a general low-angle stratigraphic dip of the production zone sands toward the north away from the river, and general groundwater flow of the production zone sands toward the east and southeast, there does not appear to be potential mining impacts on the North Platte. Additionally, the ISR mining procedures that will result in removal of approximately one percent more groundwater than is reinjected to control groundwater flows in the wellfield will further limit the potential for mining impacts to the river. Details of the groundwater impact analysis are found in Appendix A-1.

2.7.3 Water Quality

2.7.3.1 Surface Water Quality

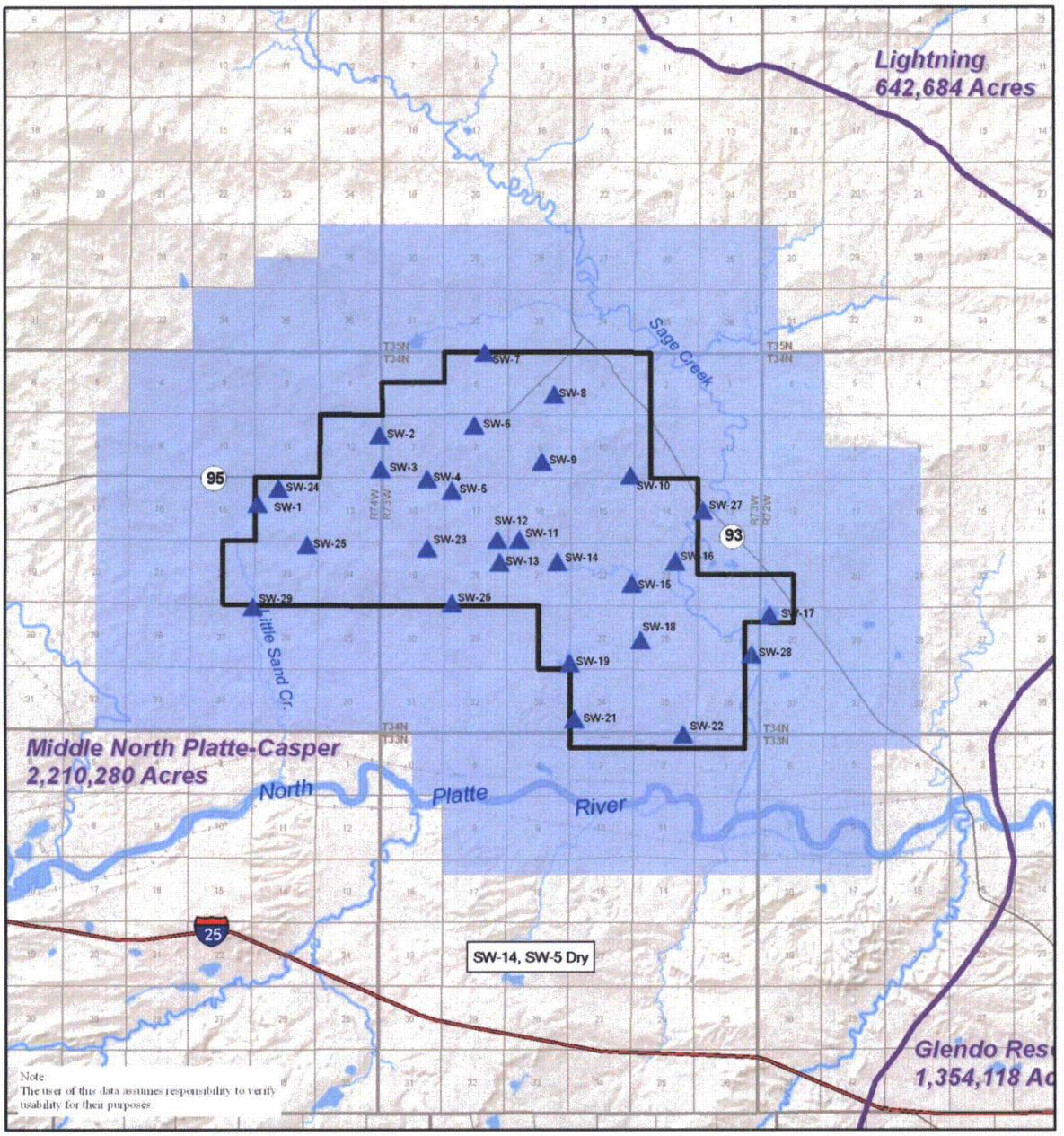
Within the Ludeman Project area, surface water samples were collected from 28 sampling locations in 2008. All locations are existing stock ponds or areas in drainages where ponding occurs. Locations of sample sites are shown on Figure 2.7-23 for Ludeman Project area. The parameters included in the surface water baseline water quality monitoring program are listed in Table 2.7-9. Tables showing the sampling results for all locations are included in Addendum 2.7-D. Table 2.7-10 lists the overall average concentrations detected in the surface water samples. Detection limit values were used for averaging non-detectable results. USGS historic surface water samples were collected in 1978 and 1981 from Sand Creek gauge (USGS 06646780) (USGS 2008). Sand Creek gauge is not located in the license area however.

Sampling locations upstream of any Ludeman facility or wellfield are SW-7, SW-8, SW-6, SW-2, SW-3, SW-4, SW-5, SW-23, SW-25 and SW-27. The remaining sampling locations are located downstream of either a facility or wellfield.

Table 2.7-9 Surface Water Monitoring Parameters

Surface Water Parameters						
Parameter	Units	Test		Parameter	Units	Test
A/C Balance (± 5)	%	Calculation		Zinc (DIS)	mg/L	E200.8
Anions (DIS)	meq/L	Calculation		Iron (TOT)	mg/L	E200.7
Bicarbonate as HCO3 (DIS)	mg/L	A2320 B		Manganese (TOT)	mg/L	E200.7
Carbonate as CO3 (DIS)	mg/L	A2320 B		Gross Alpha (DIS)	pCi/L	E900.0
Cations (DIS)	meq/L	Calculation		Gross Alpha MDC (DIS)	pCi/L	E900.0
Chloride (DIS)	mg/L	A4500-Cl B		Gross Alpha precision (±)	pCi/L	E900.0
Conductivity (DIS)	umhos/cm	A2510 B		Gross Beta (DIS)	pCi/L	E900.0
Fluoride (DIS)	mg/L	A4500-F C		Gross Beta MDC (DIS)	pCi/L	E900.0
pH (DIS)	s.u.	A4500-H B		Gross Beta precision (±)	pCi/L	E900.0
Solids, Total Dissolved Calculated (DIS)	mg/L	Calculation		Lead 210 (DIS)	pCi/L	E909.0M
Solids, Total Dissolved TDS @ 180 C (DIS)	mg/L	A2540 C		Lead 210 MDC (DIS)	pCi/L	E909.0M
Solids, Total Suspended TSS @ 105 C (DIS)	mg/L	A2540 D		Lead 210 precision (±)	pCi/L	E909.0M
Sulfate (DIS)	mg/L	A4500-SO4 E		Polonium 210 (DIS)	pCi/L	RMO-3008
Turbidity (DIS)	NTU	A2130 B		Polonium 210 precision (±)	pCi/L	RMO-3008
Nitrogen, Ammonia as N (DIS)	mg/L	E350.1		Radium 226 (DIS)	pCi/L	E903.0
Nitrogen, Nitrate+Nitrite as N (DIS)	mg/L	E353.2		Radium 226 MDC (DIS)	pCi/L	E903.0
Aluminum (DIS)	mg/L	E200.7		Radium 226 precision (±)	pCi/L	E903.0
Arsenic (DIS)	mg/L	E200.8		Radium 228 (DIS)	pCi/L	RA-05
Barium (DIS)	mg/L	E200.7		Radium 228 MDC (DIS)	pCi/L	RA-05
Boron (DIS)	mg/L	E200.7		Radium 228 precision (±)	pCi/L	RA-05
Cadmium (DIS)	mg/L	E200.8		Thorium 230 (DIS)	pCi/L	E907.0
Calcium (DIS)	mg/L	E200.7		Thorium 230 precision (±)	pCi/L	E907.0
Chromium (DIS)	mg/L	E200.7		Lead 210 (SUS)	pCi/L	E909.0M
Copper (DIS)	mg/L	E200.8		Lead 210 MDC (SUS)	pCi/L	E909.0M
Iron (DIS)	mg/L	E200.7		Lead 210 precision (±)	pCi/L	E909.0M
Lead (DIS)	mg/L	E200.8		Polonium 210 (SUS)	pCi/L	RMO-3008
Magnesium (DIS)	mg/L	E200.7		Polonium 210 precision (±)	pCi/L	RMO-3008
Manganese (DIS)	mg/L	E200.7		Radium 226 (SUS)	pCi/L	E903.0
Mercury (DIS)	mg/L	E200.8		Radium 226 MDC (SUS)	pCi/L	E903.0
Molybdenum (DIS)	mg/L	E200.7		Radium 226 precision (±)	pCi/L	E903.0
Nickel (DIS)	mg/L	E200.7		Radium 228 (SUS)	pCi/L	RA-05
Potassium (DIS)	mg/L	E200.7		Radium 228 MDC (SUS)	pCi/L	RA-05
Selenium (DIS)	mg/L	E200.8		Radium 228 precision (±)	pCi/L	RA-05
Silica (DIS)	mg/L	E200.7		Thorium 230 (SUS)	pCi/L	E907.0
Sodium (DIS)	mg/L	E200.7		Thorium 230 precision (±)	pCi/L	E907.0
Uranium (DIS)	mg/L	E200.8		Uranium (SUS)	mg/L	E200.8
Vanadium (DIS)	mg/L	E200.8		TDS Balance (0.80 - 1.20)	dec. %	Calculation

Figure 2.7-23 Surface Water Sampling Site Locations



LEGEND

- Surface Water Sites
- Fourth Level Watershed
- Two Mile Buffer
- Ludeman License Area

0 2.75 5.5 Miles

Source:
Wyoming State Engineers Office
Wyoming Oil and Gas Conservation Commission

PREPARED FOR URANIUM ONE

TREC, Inc.
Engineering & Environmental Management
951 Werner Court
Suite 395
Casper, WY 82601
www.treccorp.com
Phone (307) 265-0696
Fax (307) 265-2498

A trilinear diagram was developed to assess baseline water type (Figure 2.7-24). Although the data showed some variability, surface water in the region is of the calcium bicarbonate or calcium sulfate type. An assessment was made of the monitoring parameters to determine the general surface water quality. Total dissolved solids (TDS) varied in the 24 surface water sampling sites. The maximum concentration was 8650 mg/L at SW-16, and a minimum concentration of 46.0 mg/L was sampled at SW-8. The average TDS over the 24 sampling sites was 626 mg/L. The wells with higher TDS also had higher concentrations of sodium, sulfate and conductivity; SW-1, SW-6, SW-12, SW-16 and SW-17. Iron concentrations also varied within the sampling sites. A maximum concentration of 14.1 mg/L was detected at SW-2, and a minimum below the undetectable limit of 0.300 mg/L, with an average iron concentration of 1.44 mg/L for all 24 sites. Radium 226 was also detected at all 24 surface water sampling sites. A maximum concentration was 0.560 pCi/L at SW-16, a minimum of 0.100 pCi/L at various sites, with an average dissolved radium 226 concentration of 0.281 pCi/L. Additionally, an average gross alpha value of 3.28 pCi/L for the 24 sites suggests the presence of radionuclides in the surface water.

Figure 2.7-24 Surface Water Trilinear Diagram

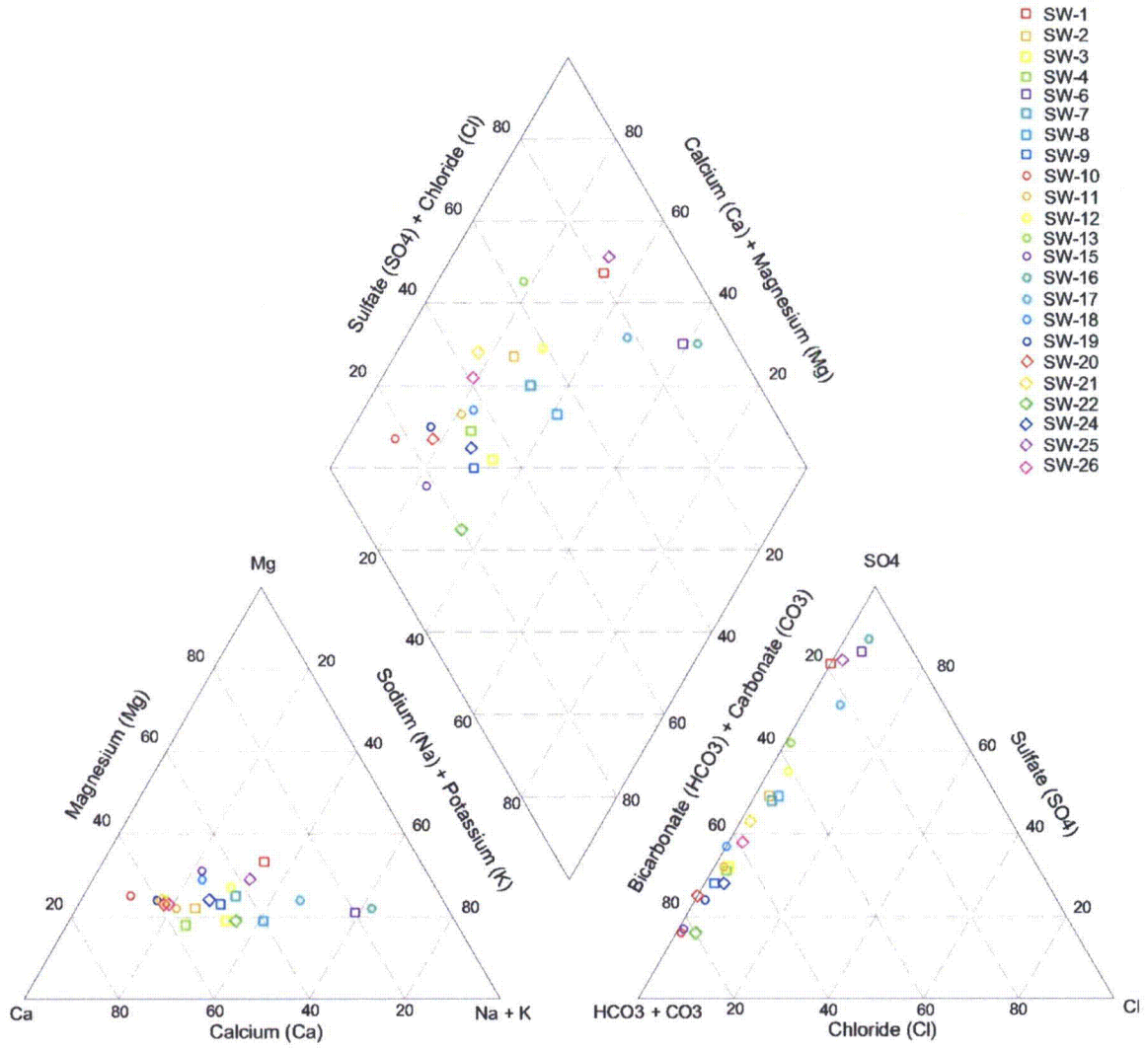


Table 2.7-10 Average Surface Water Quality for Ludeman Project Area

Surface Water Quality Averages								
Parameter	Units		2nd Qtr 2008	3rd Qtr 2008	4th Qtr 2008	1st Qtr 2009		Overall Average
A/C Balance (±5)	%		10.52	9.05	-1.43	2.34		5.12
Anions (DIS)	meq/L		10.80	7.46	16.58	8.18		10.76
Bicarbonate as HCO3 (DIS)	mg/L		118.75	117.20	150.54	117.78		126.07
Carbonate as CO3 (DIS)	mg/L		3.08	3.85	4.15	3.72		3.70
Cations (DIS)	meq/L		10.64	7.78	16.70	8.15		10.82
Chloride (DIS)	mg/L		15.39	11.10	25.23	13.67		16.35
Conductivity (DIS)	umhos/cm		856.97	611.10	1293.00	705.56		866.66
Fluoride (DIS)	mg/L		0.21	0.23	0.27	0.23		0.23
pH (DIS)	s.u.		7.16	6.78	7.61	7.77		7.16
Solids, Total Dissolved Calculated (DIS)	mg/L		698.86	496.65	1105.54	579.94		720.25
Solids, Total Dissolved TDS @ 180 C (DIS)	mg/L		909.33	714.15	1414.46	614.22		913.04
Solids, Total Suspended TSS @ 105 C (DIS)	mg/L		188.11	253.60	189.77	220.83		213.08
Sulfate (DIS)	mg/L		400.83	247.00	636.08	276.17		390.02
Turbidity (DIS)	NTU		509.26	512.80	455.97	151.56		407.40
Nitrogen, Ammonia as N (DIS)	mg/L		0.33	0.65	0.49	0.30		0.44
Nitrogen, Nitrate+Nitrite as N (DIS)	mg/L		0.06	0.08	0.40	0.44		0.24
Aluminum (DIS)	mg/L		1.79	0.27	0.17	0.27		0.62
Arsenic (DIS)	mg/L		0.01	0.01	0.00	0.00		0.01
Barium (DIS)	mg/L		0.11	0.11	0.10	0.10		0.10
Boron (DIS)	mg/L		0.13	0.12	0.13	0.10		0.12
Cadmium (DIS)	mg/L		0.01	0.01	0.01	0.01		0.01
Calcium (DIS)	mg/L		61.08	47.20	76.00	47.61		57.97
Chromium (DIS)	mg/L		0.05	0.05	0.05	0.05		0.05
Copper (DIS)	mg/L		0.01	0.01	0.01	0.02		0.01
Iron (DIS)	mg/L		2.04	0.96	0.19	0.22		0.85
Lead (DIS)	mg/L		0.01	0.00	0.00	0.00		0.00
Magnesium (DIS)	mg/L		31.86	21.10	52.00	26.65		32.90
Manganese (DIS)	mg/L		0.12	0.07	0.11	0.07		0.09
Mercury (DIS)	mg/L		0.00	0.00	0.00	0.00		0.00
Molybdenum (DIS)	mg/L		0.10	0.10	0.10	0.10		0.10
Nickel (DIS)	mg/L		0.08	0.05	0.05	0.05		0.06
Potassium (DIS)	mg/L		15.64	14.25	19.85	12.11		15.46
Selenium (DIS)	mg/L		0.00	0.00	0.00	0.00		0.00
Silica (DIS)	mg/L		7.72	15.52	8.82	6.23		9.57
Sodium (DIS)	mg/L		103.81	75.05	187.23	81.88		111.99
Uranium (DIS)	mg/L		0.01	0.01	0.01	0.04		0.02
Vanadium (DIS)	mg/L		0.10	0.10	0.10	0.10		0.10
Zinc (DIS)	mg/L		0.04	0.01	0.03	0.03		0.03

Table 2.7-10 Average Surface Water Quality for Ludeman Project Area (Continued)

Parameter	Units		2nd Qtr 2008	3rd Qtr 2008	4th Qtr 2008	1st Qtr 2009		Overall Average
Gross Alpha (DIS)	pCi/L		18.40	23.71	28.91	84.74		38.94
Gross Alpha MDC (DIS)	pCi/L		3.22	2.69	5.95	3.54		3.85
Gross Alpha precision (±)	pCi/L		2.41	2.88	5.44	5.06		3.95
Gross Beta (DIS)	pCi/L		16.64	19.55	30.60	26.29		23.27
Gross Beta MDC (DIS)	pCi/L		5.48	4.01	9.00	5.26		5.93
Gross Beta precision (±)	pCi/L		2.95	2.73	5.88	3.58		3.78
Lead 210 (DIS)	pCi/L		0.25	0.79	0.35	1.68		0.77
Lead 210 MDC (DIS)	pCi/L		9.47	12.85	5.39	4.57		8.07
Lead 210 precision (±)	pCi/L		6.31	7.67	3.22	2.73		4.98
Polonium 210 (DIS)	pCi/L		0.34	0.40	0.37	0.39		0.37
Polonium 210 precision (±)	pCi/L		0.66	0.78	0.47	0.45		0.59
Radium 226 (DIS)	pCi/L		0.70	1.02	0.44	0.17		0.58
Radium 226 MDC (DIS)	pCi/L		0.27	0.27	0.32	0.20		0.26
Radium 226 precision (±)	pCi/L		0.24	0.28	0.23	0.14		0.22
Radium 228 (DIS)	pCi/L		0.47	0.60	0.74	0.34		0.54
Radium 228 MDC (DIS)	pCi/L		1.21	1.22	1.63	1.29		1.34
Radium 228 precision (±)	pCi/L		0.74	0.74	1.01	0.78		0.81
Thorium 230 (DIS)	pCi/L		0.05	0.16	0.16	0.04		0.10
Thorium 230 precision (±)	pCi/L		0.18	0.20	0.48	0.14		0.25
Lead 210 (SUS)	pCi/L		0.68	1.77	0.61	1.94		1.25
Lead 210 MDC (SUS)	pCi/L		13.76	15.92	9.43	4.50		10.90
Lead 210 precision (±)	pCi/L		8.67	9.51	5.63	2.68		6.62
Polonium 210 (SUS)	pCi/L		1.14	1.43	1.42	0.97		1.24
Polonium 210 precision (±)	pCi/L		0.61	0.81	0.97	0.51		0.72
Radium 226 (SUS)	pCi/L		0.24	-0.09	0.43	0.18		0.19
Radium 226 MDC (SUS)	pCi/L		0.47	0.63	0.41	0.23		0.44
Radium 226 precision (±)	pCi/L		0.25	0.34	0.31	0.15		0.26
Radium 228 (SUS)	pCi/L		0.29	-	-	-		0.29
Radium 228 MDC (SUS)	pCi/L		2.60	-	-	-		2.60
Radium 228 precision (±)	pCi/L		1.55	-	-	-		1.55
Thorium 230 (SUS)	pCi/L		0.33	0.29	0.15	0.24		0.25
Thorium 230 precision (±)	pCi/L		0.19	0.30	0.31	0.26		0.26
Uranium (SUS)	mg/L		0.00	0.00	0.00	0.00		0.00
TDS Balance (0.80 - 1.20)	dec. %		2.46	-	-	-		2.46

2.7.3.2 Ground Water Quality

2.7.3.2.1 Regional Ground Water Quality

Water quality within the Powder River Basin ranges from very poor to excellent. Groundwater in the near surface, more permeable aquifers is generally of better quality than groundwater in deeper and less permeable aquifers. However, regional aquifers are present at depth that can provide relatively good quality water. Towards the western part of the Powder River Basin, the Madison Limestone can produce large quantities of acceptable quality water. Overall, water quality tends to degrade moving into the deeper portions of the Powder River Basin.

Sources of water quality data include the National Water Information System, the Wyoming Water Resources Data System and the following authors: Welder and McGreevy, 1966; Fisk, 1967; and Collentine et al., 1981. A short summary of the ground water quality of the major producing aquifers of the Upper Cretaceous and younger formations follows.

Wasatch

Within the Wasatch, TDS ranges from less than 200 to more than 8,000 mg/L but typically ranges between 500 and 1500 mg/L. Sodium sulfate and sodium bicarbonate are the dominant water types for the Wasatch aquifer system.

Fort Union

Water quality for the Fort Union aquifer is described by Hodson (1973) as having TDS values ranging from 200 to more than 3,000 mg/L, but typically is between 500 and 1,500 mg/L. Water type for the Fort Union is predominately sodium bicarbonate to sodium sulfate.

Fox Hills and Lance

TDS levels within the Fox Hills Sandstone are generally higher in the western side of the basin than the eastern side, ranging between 1,000 and 2,000 mg/L. No water type is prevalent. TDS values from the Lance formation range from about 200 to more than 2,000 mg/L but are typically between 500 and 1,500 mg/L (Hodson 1973). TDS levels within the Lance formation average around 1,200 mg/L, ranging from 200 mg/L to 2,800 mg/L (Lowry, 1986).

2.7.3.2.2 Ground Water Monitoring Network and Parameters

There are 11 wells on the site within the production zone which were sampled as well as 26 other monitoring wells spread out around the Ludeman Project area. Monitor wells M-1, M-22 and M-25 were removed by the geologist and well M-23 was not drilled. Two of the wells in the production zone were completed in the underlying aquifer (OW-9 and LMU-2A). Sixteen stock wells were visited as part of the baseline monitoring program. Two of the stock wells (Stock Wells 9 and 14) were not sampled. Fourteen of the stock wells had at least one sample collected.

There are a total of 41 sites sampled for the baseline monitoring program. The locations of the monitor wells that were sampled for water quality are shown on Figures 2.7-25 and a summary of well construction information can be found in Addendum 2.7-C. The location of the stock wells is shown in Figure 2.7-26 and there is not construction information for the stock wells. Sampling summary sheets include information on sampling dates for all wells, and are shown in Addendum 2.7-E. The parameters included in the baseline monitoring program are listed below in Table 2.7-11.

Monitoring well M-15, 70 sand, is the only well upgradient from all production zones.

Figure 2.7-25 Ground Water Monitoring Well Locations

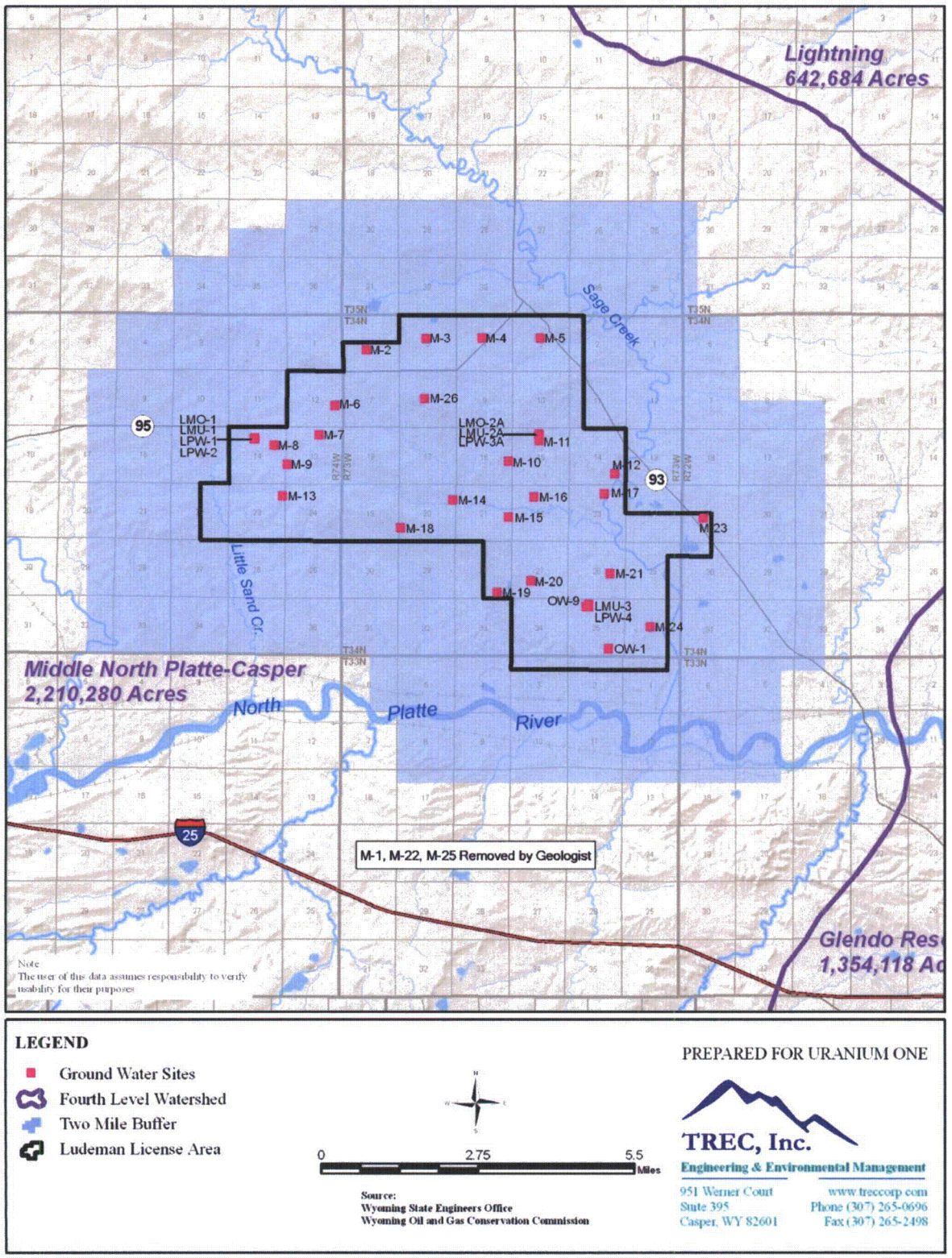


Figure 2.7-26 Stock Well Locations

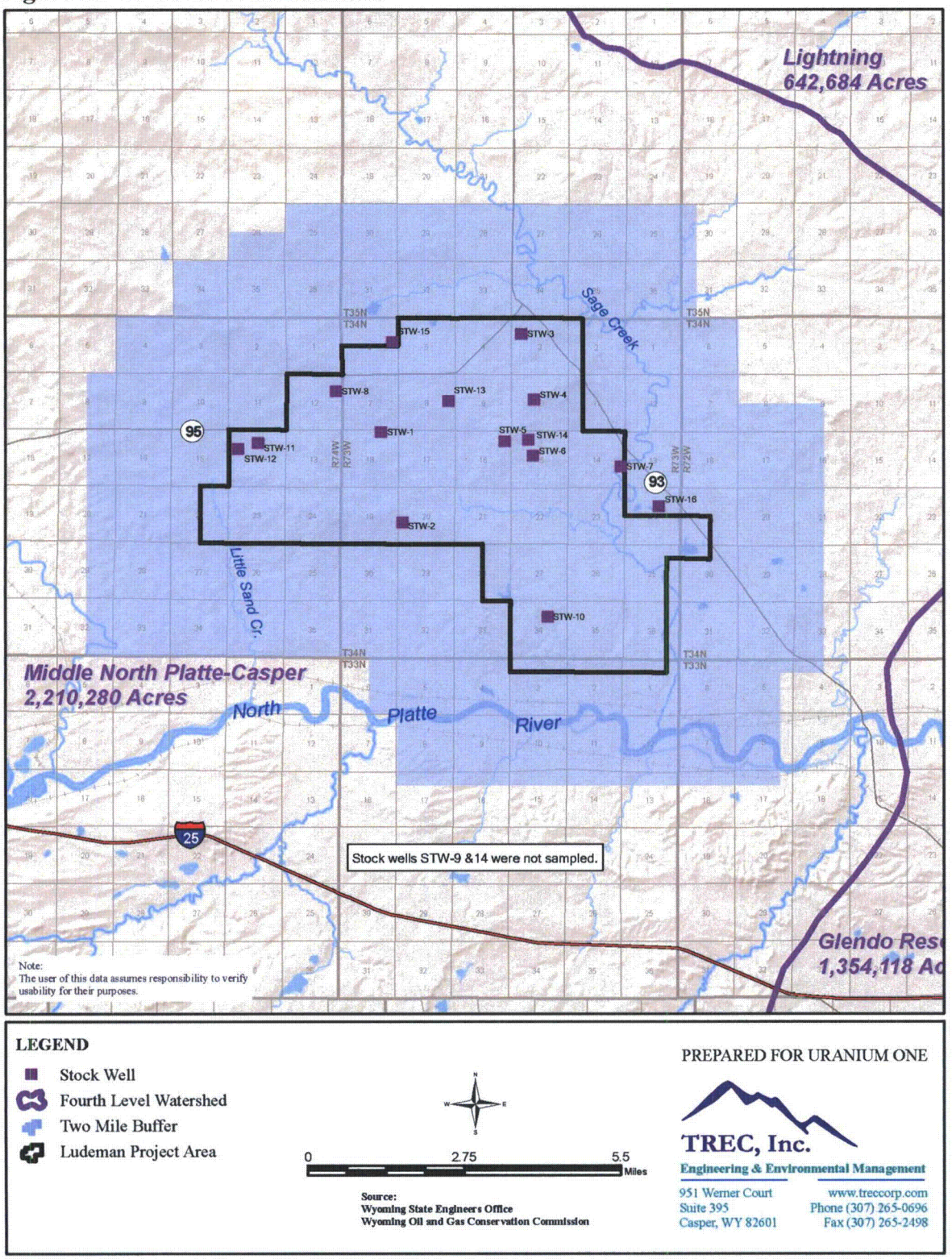


Table 2.7-11 Ground Water Sampling Parameters

Ground Water Sampling Parameters						
Parameter	State	TestNo.		Parameter	State	TestNo.
A/C Balance (±5) (%)	DIS	Calculation		Potassium (mg/L)	DIS	E200.7
Anions (meq/L)	DIS	Calculation		Selenium (mg/L)	DIS	E200.8
Bicarbonate as HCO3 (mq/L)	DIS	A2320 B		Silica (mg/L)	DIS	E200.7
Carbonate as CO3 (mg/L)	DIS	A2320 B		Sodium (mg/L)	DIS	E200.7
Cations (meq/L)	DIS	Calculation		Uranium (mg/L)	DIS	E200.8
Chloride (mg/L)	DIS	A4500-Cl B		Vanadium (mg/L)	DIS	E200.8
Conductivity (umhos/cm)	DIS	A2510 B		Zinc (mg/L)	DIS	E200.8
Fluoride (mg/L)	DIS	A4500-F C		Iron (mg/L)	TOT	E200.7
pH (s.u.)	DIS	A4500-H B		Manganese (mg/L)	TOT	E200.7
Solids, Total Dissolved Calculated (mg/L)	DIS	Calculation		Gross Alpha (pCi/L)	DIS	E900.0
Solids, Total Dissolved TDS @ 180 C (mg/L)	DIS	A2540 C		Gross Alpha MDC (pCi/L)	DIS	E900.0
TDS Balance (0.80 - 1.20) (dec. %)	DIS	Calculation		Gross Beta (pCi/L)	DIS	E900.0
Sulfate (mg/L)	DIS	A4500-SO4 E		Gross Beta MDC (pCi/L)	DIS	E900.0
Nitrogen, Ammonia as N (mg/L)	DIS	E350.1		Lead 210 (pCi/L)	DIS	E909.0M
Nitrogen, Nitrate+Nitrite as N (mg/L)	DIS	E353.2		Lead 210 MDC (pCi/L)		E909.0M
Aluminum (mg/L)	DIS	E200.8		Polonium 210 (pCi/L)	DIS	RMO-3008
Arsenic (mg/L)	DIS	E200.8		Radium 226 (pCi/L)	DIS	E903.0
Barium (mg/L)	DIS	E200.8		Radium 226 MDC (pCi/L)	DIS	E903.0
Boron (mg/L)	DIS	E200.7		Radium 228 (pCi/L)	DIS	RA-05
Cadmium (mg/L)	DIS	E200.8		Radium 228 MDC (pCi/L)	DIS	RA-05
Calcium (mg/L)	DIS	E200.7		Thorium 230 (pCi/L)	DIS	E907.0
Chromium (mg/L)	DIS	E200.8		Lead 210 (pCi/L)	SUS	E909.0M
Copper (mg/L)	DIS	E200.8		Lead 210 MDC (pCi/L)		E909.0M
Iron (mg/L)	DIS	E200.7		Polonium 210 (pCi/L)	SUS	RMO-3008
Lead (mg/L)	DIS	E200.8		Radium 226 (pCi/L)	SUS	E903.0
Magnesium (mg/L)	DIS	E200.7		Radium 226 MDC (pCi/L)	SUS	E903.0
Manganese (mg/L)	DIS	E200.8		Radium 228 (pCi/L)		RA-05
Mercury (mg/L)	DIS	E200.8		Radium 228 MDC (pCi/L)		RA-05
Molybdenum (mg/L)	DIS	E200.8		Thorium 230 (pCi/L)	SUS	E907.0
Nickel (mg/L)	DIS	E200.8		Uranium (mg/L)	SUS	E200.8

2.7.3.2.3 Water Quality Sampling

The 41 wells in the Ludeman Project area were sampled between March 2008 and December 2008 for water quality. The samples were analyzed for the list of constituents described under the current WDEQ/LQD Guideline 8 (March 2005) for uranium mining (Table 2.7-11).

All monitoring and pump test wells have been sampled for 4 quarters as shown in the well sampling summary sheets in Addendum 2.7-E. The initial monitoring and future monitoring of the entire well network, will provide a comprehensive record of water quality that will better define baseline conditions in the proposed mining areas.

Water wells located in the Negley Subdivision were sampled for baseline water quality monitoring. A discussion of the Negley Subdivision wells is found in Section 7.2.5.2 and a sampling summary sheet is shown in Addendum 2.7-E.

Prior to sampling each well, the static water level was measured from the top of casing with an electronic water level reader and recorded. The total depth of each well was then measured with a weighted tape measure and also recorded. With these two known depths and the diameter of the well, the volume of standing water present (casing volume) was determined. Once pumping commenced, the temperature, pH, and conductivity of the water were measured and recorded on field sampling forms at every half-casing volume evacuated. These parameters will reach equilibrium before sampling occurs, which ensures the sampled water is from the aquifer and not water from within the well casing. , A minimum of three casing volumes were evacuated out of the well with a submersible pump before parameter equilibrium was reached and sample collection conducted.

Each bottle was labeled with a permanent marker denoting the project number, the well name, and the date and time of sampling. One bottle was collected and immediately preserved with sulfuric acid, all other bottles were collected unpreserved (raw). Filtering of appropriate samples was conducted at the analytical laboratory. The samples were immediately stored in a cooler to maintain a relatively constant temperature and delivered to Energy Laboratories in Casper, Wyoming to be analyzed for WDEQ/LQD Guideline 8 parameters for uranium mining. Chain of custody documents accompanied the samples to the laboratory.

2.7.3.2.4 Water Quality Analysis

After the samples were analyzed by Energy Laboratories, copies of the results were sent to Uranium One. The summary spreadsheets for groundwater samples are shown in Addendum 2.7-E.

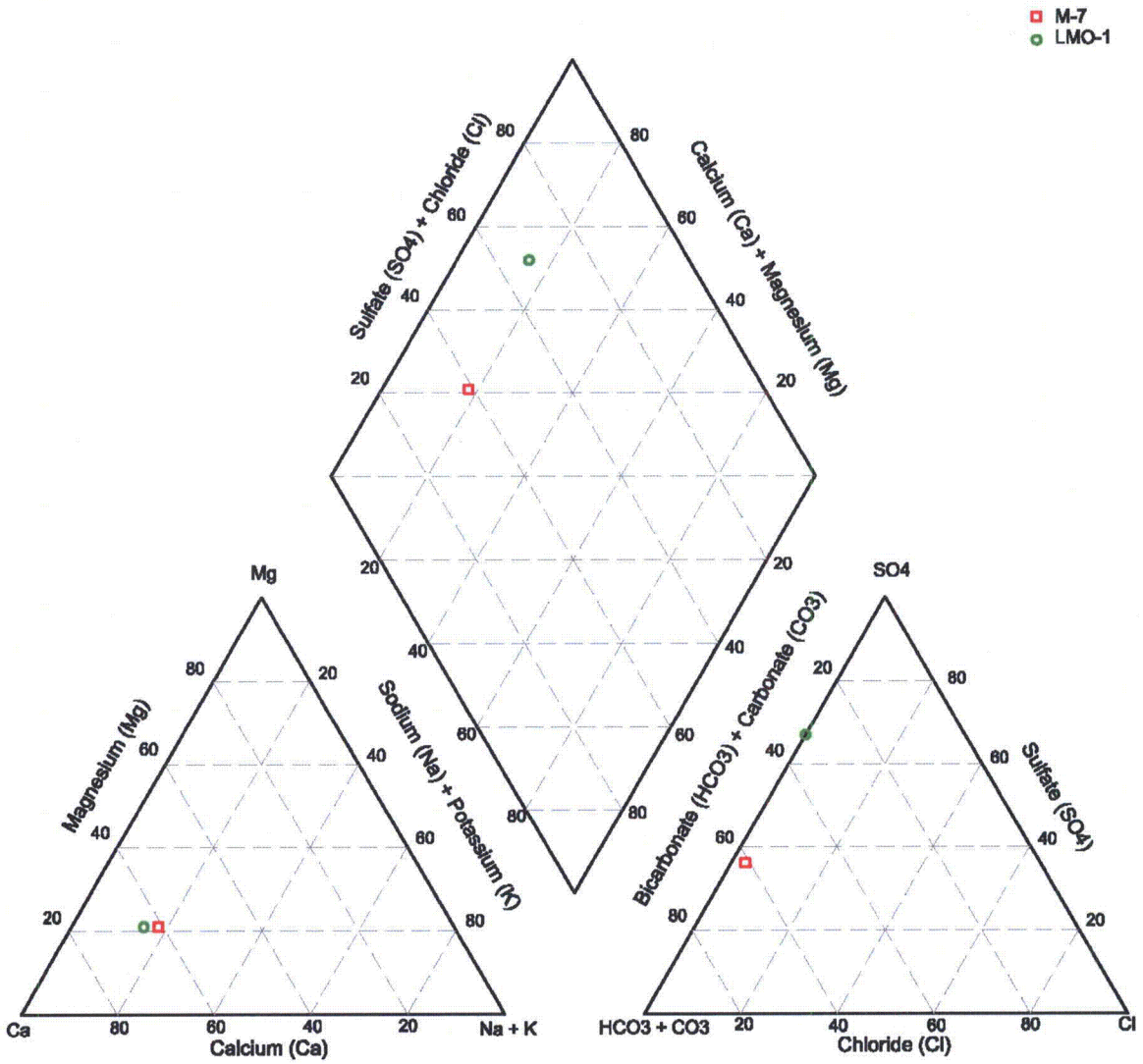
To check the accuracy of the data, and to evaluate indicator parameter trends, the average of each parameter for each well was calculated, if there was more than one data set. Single analyses that deviated largely from other samples of the same well were searched for and noted to identify potential outliers or possible contaminated samples. There were no samples omitted.

To further evaluate baseline water quality, trilinear diagrams of the average major cations and anions were prepared for the Ludeman Project. The trilinear diagrams are presented as in separate figures for each sand 100 through 60 in Figures 2.7-27 through 2.7-32 respectively. The average concentration of major ions (potassium, sodium, calcium, magnesium, chloride, sulfate, and bicarbonate) was used for each monitoring well sampled.

2.7.3.2.5 Water Quality Results

From an assessment of the trilinear diagrams, ground water at the Ludeman Project area is predominantly of the calcium-sulfate type in the upper most aquifers and progressively becomes sodium-bicarbonate type with increasing depth of the aquifer. The higher TDS values are reflected in the higher concentrations of calcium and sulfate. The calcium sulfate enrichment of the water is attributed to the common presence of calcium-magnesium soils and the dissolution of gypsum and anhydrite.

Figure 2.7-27 110 Sand Trilinear Diagram



110 SAND

Figure 2.7-28 100 Sand Trilinear Diagram

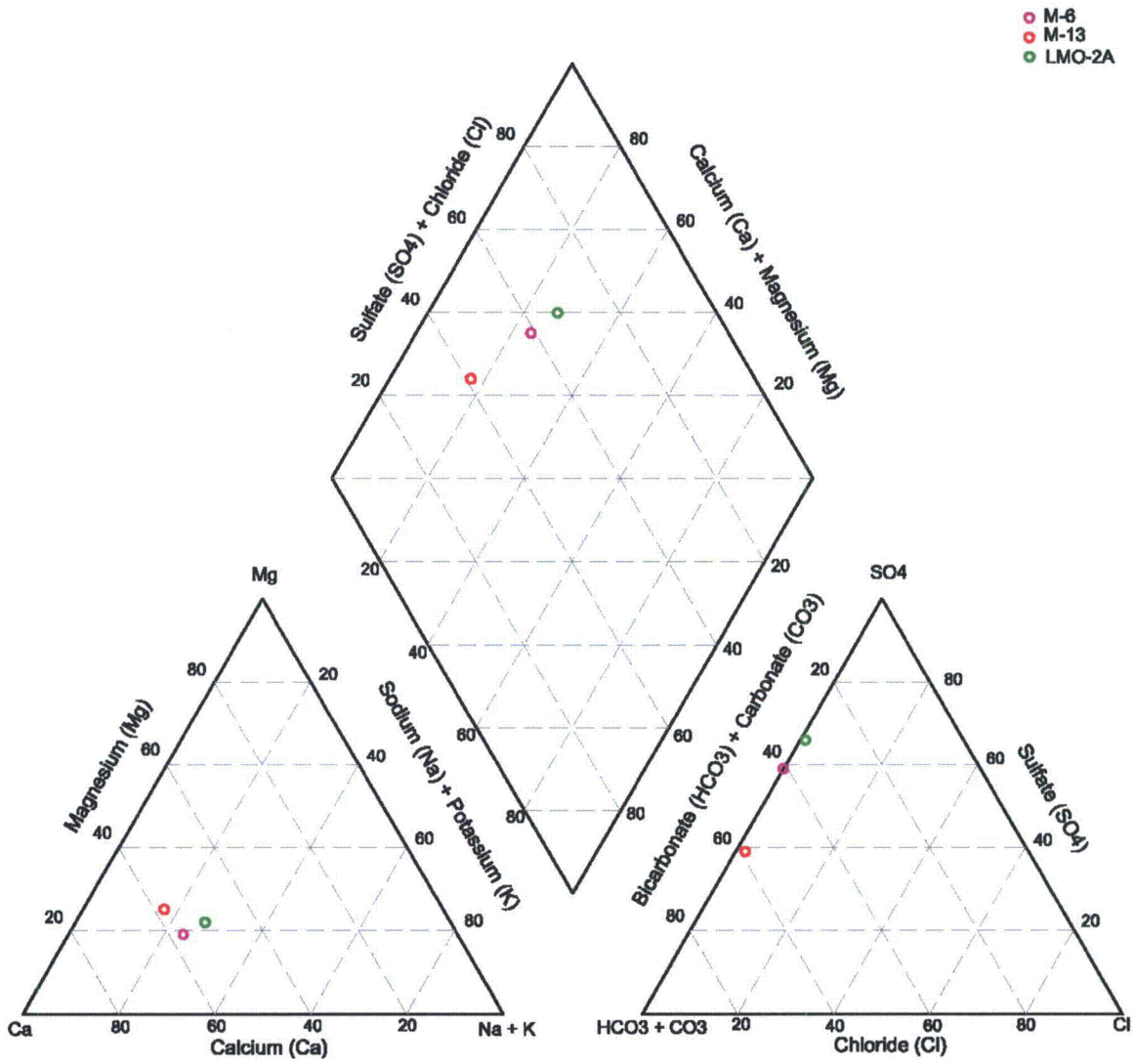


Figure 2.7-29 90 Sand Trilinear Diagram

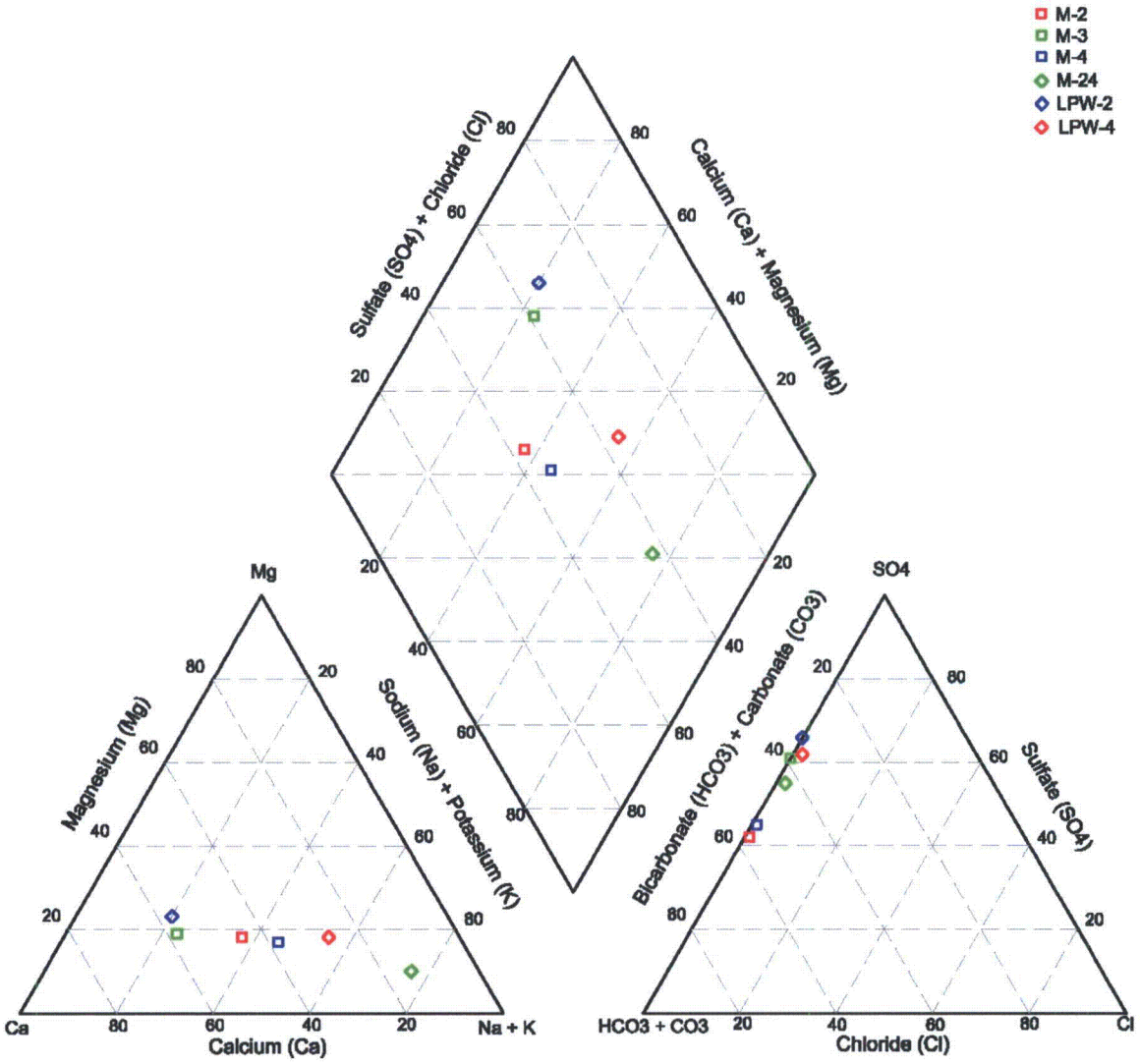


Figure 2.7-30 80 Sand Trilinear Diagram

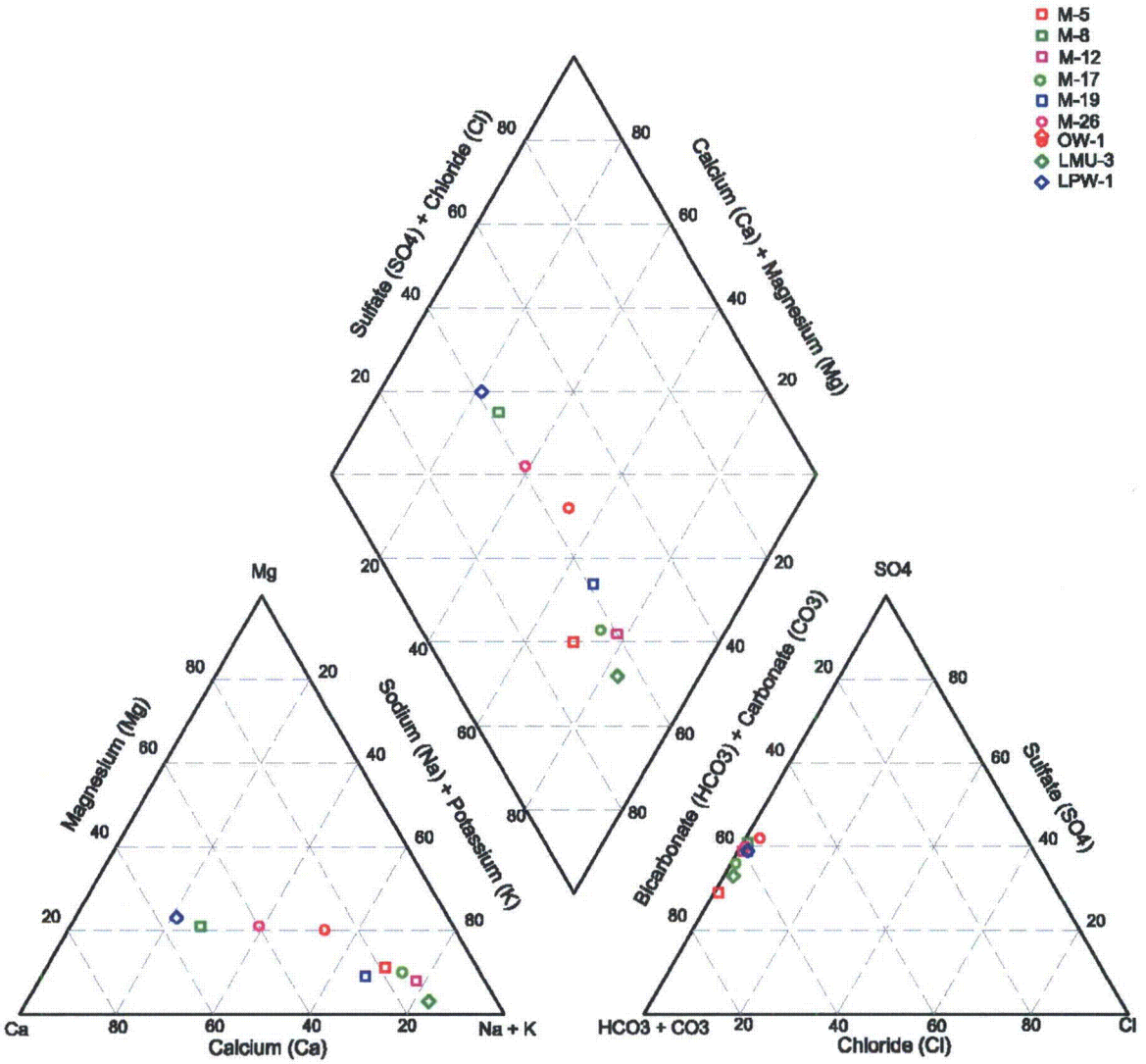
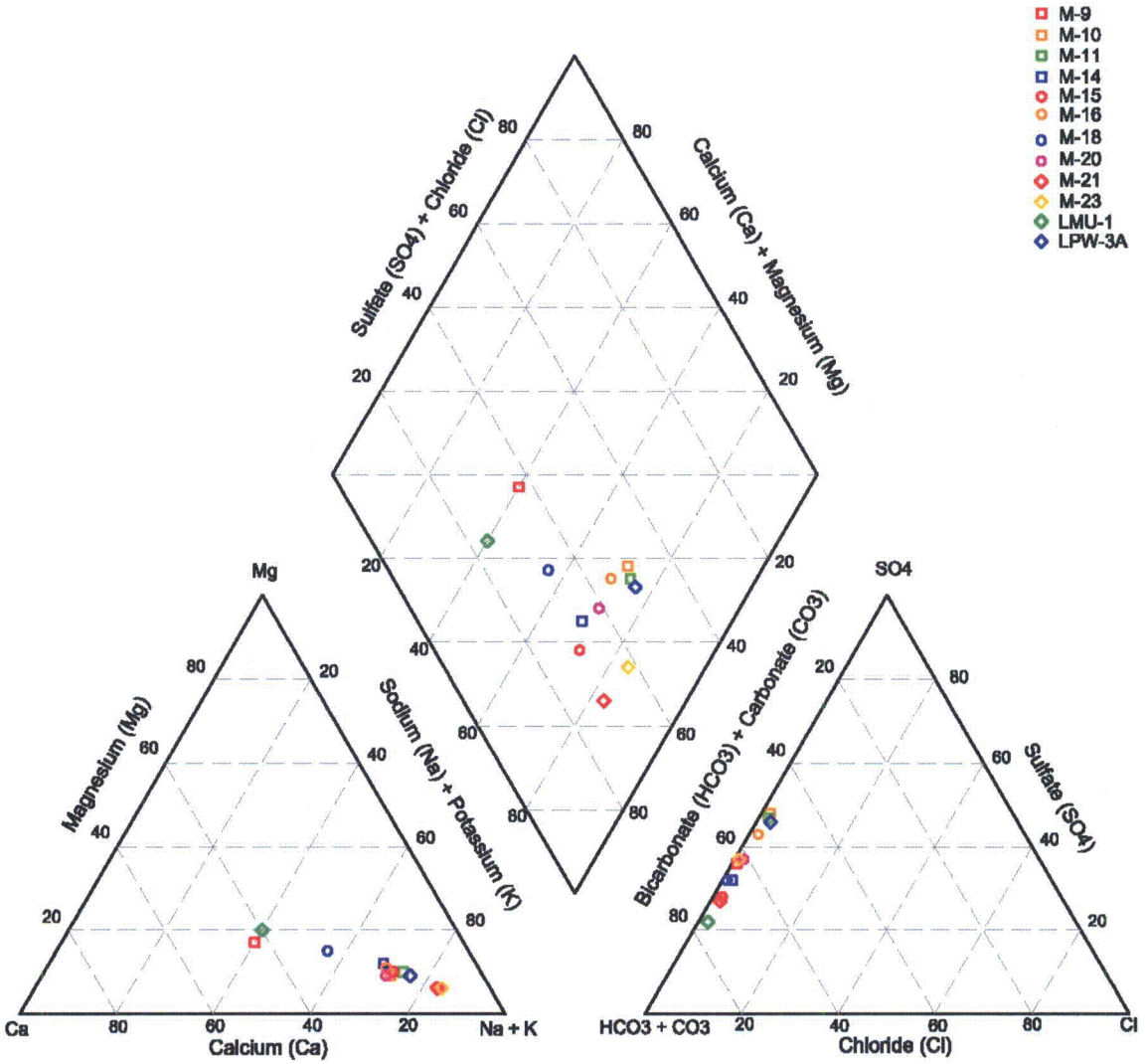


Figure 2.7-31 70 Sand Trilinear Diagram



70 SAND

Figure 2.7-32 60 Sand Trilinear Diagram

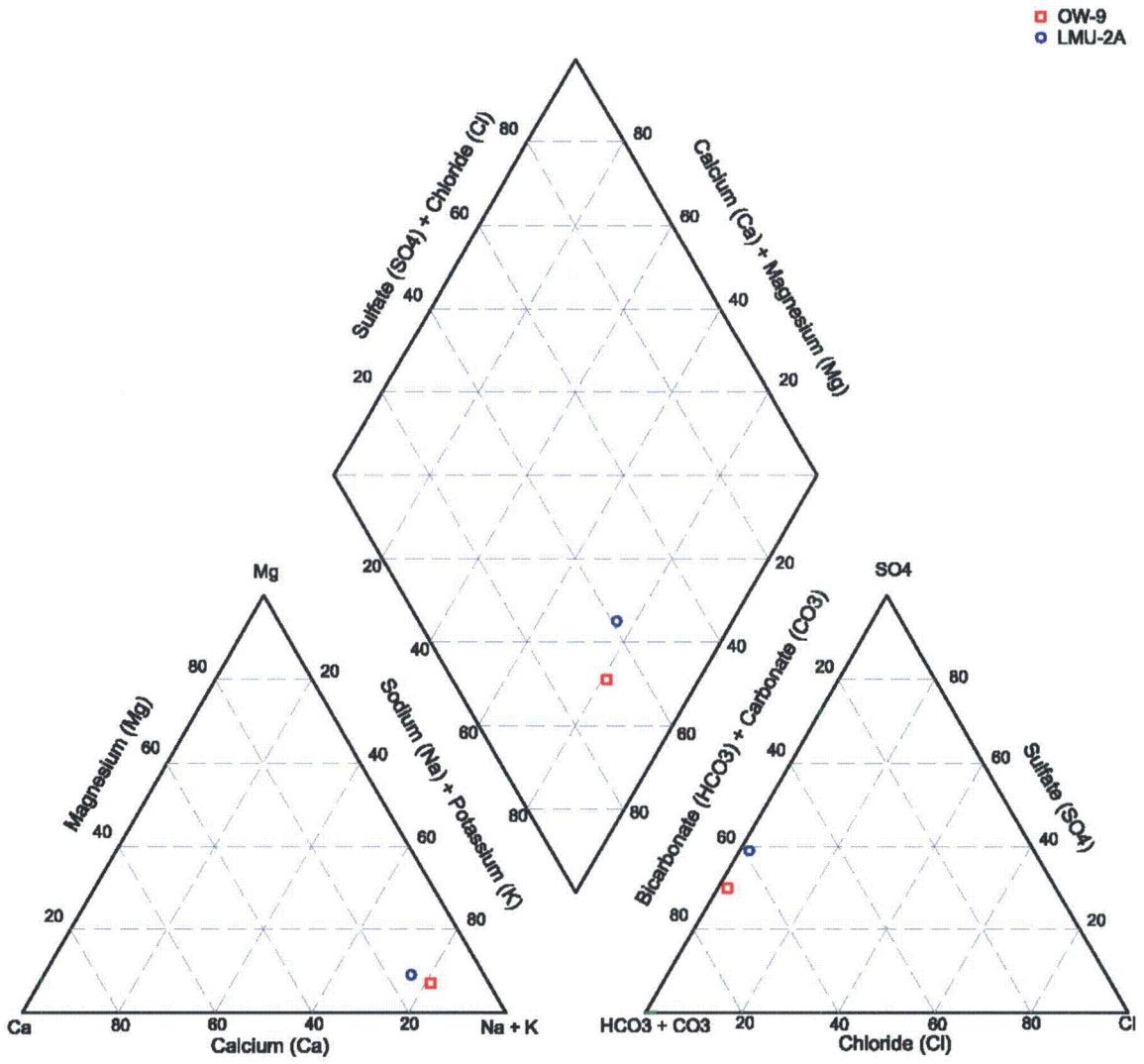


Table 2.7-12 110 Sand Average GW Quality

110 Sand Average GW Quality (M-7, LMO-1)					
Parameter	State	Value	Parameter	State	Value
A/C Balance (± 5) (%)	DIS	0.667	Zinc (mg/L)	DIS	0.021
Anions (meq/L)	DIS	8.10	Iron (mg/L)	TOT	0.038
Bicarbonate as HCO3 (mq/L)	DIS	212.0	Manganese (mg/L)	TOT	0.044
Carbonate as CO3 (mg/L)	DIS	1.00	Gross Alpha (pCi/L)	DIS	46.8
Cations (meq/L)	DIS	8.13	Gross Alpha MDC (pCi/L)	DIS	2.4
Chloride (mg/L)	DIS	3.38	Gross Alpha precision (±) (pCi/L)	-	3.80
Conductivity (umhos/cm)	DIS	721.3	Gross Beta (pCi/L)	DIS	16.5
Fluoride (mg/L)	DIS	0.663	Gross Beta MDC (pCi/L)	DIS	3.28
pH (s.u.)	DIS	7.64	Gross Beta precision (±) (pCi/L)	-	2.24
Solids, Total Dissolved Calculated (mg/L)	DIS	501.0	Lead 210 (pCi/L)	DIS	1.7
Solids, Total Dissolved TDS @ 180 C (mg/L)	DIS	515.5	Lead 210 MDC (pCi/L)	-	5.90
TDS Balance (0.80 - 1.20) (dec. %)	DIS	1.022	Lead 210 precision (±) (pCi/L)	-	3.53
Sulfate (mg/L)	DIS	214.4	Polonium 210 (pCi/L)	DIS	0.275
Nitrogen, Ammonia as N (mg/L)	DIS	0.063	Polonium 210 precision (±) (pCi/L)	-	0.375
Nitrogen, Nitrate+Nitrite as N (mg/L)	DIS	0.855	Radium 226 (pCi/L)	DIS	1.66
Aluminum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	DIS	0.198
Arsenic (mg/L)	DIS	0.002	Radium 226 precision (±) (pCi/L)	-	0.275
Barium (mg/L)	DIS	0.100	Radium 228 (pCi/L)	DIS	1.575
Boron (mg/L)	DIS	0.100	Radium 228 MDC (pCi/L)	DIS	1.15
Cadmium (mg/L)	DIS	0.005	Radium 228 precision (±) (pCi/L)	-	0.771
Calcium (mg/L)	DIS	101.4	Thorium 230 (pCi/L)	DIS	0.031
Chromium (mg/L)	DIS	0.050	Thorium 230 precision (±) (pCi/L)	-	0.141
Copper (mg/L)	DIS	0.011	Lead 210 (pCi/L)	SUS	0.32
Iron (mg/L)	DIS	0.030	Lead 210 MDC (pCi/L)	-	6.57
Lead (mg/L)	DIS	0.001	Lead 210 precision (±) (pCi/L)	-	3.90
Magnesium (mg/L)	DIS	21.13	Polonium 210 (pCi/L)	SUS	0.186
Manganese (mg/L)	DIS	0.040	Polonium 210 precision (±) (pCi/L)	-	0.308
Mercury (mg/L)	DIS	0.001	Radium 226 (pCi/L)	SUS	0.128
Molybdenum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	SUS	0.363
Nickel (mg/L)	DIS	0.050	Radium 226 precision (±) (pCi/L)	-	0.208
Potassium (mg/L)	DIS	9.25	Radium 228 (pCi/L)	-	
Selenium (mg/L)	DIS	0.009	Radium 228 MDC (pCi/L)	-	
Silica (mg/L)	DIS	15.9	Radium 228 precision (±) (pCi/L)	-	
Sodium (mg/L)	DIS	24.9	Thorium 230 (pCi/L)	SUS	0.339
Uranium (mg/L)	DIS	0.019	Thorium 230 precision (±) (pCi/L)	-	0.279
Vanadium (mg/L)	DIS	0.100	Uranium (mg/L)	SUS	0.0003

Table 2.7-13 100 Sand Average GW Quality

100 Sand Average GW Quality (M-6, M-13, LMO-2A)					
Parameter	State	Value	Parameter	State	Value
A/C Balance (± 5) (%)	DIS	0.238	Zinc (mg/L)	DIS	0.011
Anions (meq/L)	DIS	10.09	Iron (mg/L)	TOT	0.264
Bicarbonate as HCO3 (mq/L)	DIS	267.9	Manganese (mg/L)	TOT	0.030
Carbonate as CO3 (mg/L)	DIS	1.17	Gross Alpha (pCi/L)	DIS	1543.5
Cations (meq/L)	DIS	10.02	Gross Alpha MDC (pCi/L)	DIS	3.0
Chloride (mg/L)	DIS	4.17	Gross Alpha precision (±) (pCi/L)	-	19.03
Conductivity (umhos/cm)	DIS	885.5	Gross Beta (pCi/L)	DIS	427.6
Fluoride (mg/L)	DIS	0.347	Gross Beta MDC (pCi/L)	DIS	3.58
pH (s.u.)	DIS	7.76	Gross Beta precision (±) (pCi/L)	-	5.65
Solids, Total Dissolved Calculated (mg/L)	DIS	614.3	Lead 210 (pCi/L)	DIS	55.1
Solids, Total Dissolved TDS @ 180 C (mg/L)	DIS	606.9	Lead 210 MDC (pCi/L)	-	6.00
TDS Balance (0.80 - 1.20) (dec. %)	DIS	0.990	Lead 210 precision (±) (pCi/L)	-	4.06
Sulfate (mg/L)	DIS	266.7	Polonium 210 (pCi/L)	DIS	2.861
Nitrogen, Ammonia as N (mg/L)	DIS	0.170	Polonium 210 precision (±) (pCi/L)	-	1.078
Nitrogen, Nitrate+Nitrite as N (mg/L)	DIS	0.056	Radium 226 (pCi/L)	DIS	732.81
Aluminum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	DIS	0.311
Arsenic (mg/L)	DIS	0.003	Radium 226 precision (±) (pCi/L)	-	4.769
Barium (mg/L)	DIS	0.100	Radium 228 (pCi/L)	DIS	4.267
Boron (mg/L)	DIS	0.100	Radium 228 MDC (pCi/L)	DIS	1.13
Cadmium (mg/L)	DIS	0.005	Radium 228 precision (±) (pCi/L)	-	0.828
Calcium (mg/L)	DIS	108.4	Thorium 230 (pCi/L)	DIS	0.036
Chromium (mg/L)	DIS	0.050	Thorium 230 precision (±) (pCi/L)	-	0.104
Copper (mg/L)	DIS	0.010	Lead 210 (pCi/L)	SUS	26.70
Iron (mg/L)	DIS	0.033	Lead 210 MDC (pCi/L)	-	10.09
Lead (mg/L)	DIS	0.001	Lead 210 precision (±) (pCi/L)	-	6.39
Magnesium (mg/L)	DIS	27.94	Polonium 210 (pCi/L)	SUS	6.778
Manganese (mg/L)	DIS	0.030	Polonium 210 precision (±) (pCi/L)	-	1.981
Mercury (mg/L)	DIS	0.001	Radium 226 (pCi/L)	SUS	15.400
Molybdenum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	SUS	0.353
Nickel (mg/L)	DIS	0.050	Radium 226 precision (±) (pCi/L)	-	0.899
Potassium (mg/L)	DIS	15.36	Radium 228 (pCi/L)	-	0.000
Selenium (mg/L)	DIS	0.001	Radium 228 MDC (pCi/L)	-	0.000
Silica (mg/L)	DIS	13.7	Radium 228 precision (±) (pCi/L)	-	0.000
Sodium (mg/L)	DIS	43.2	Thorium 230 (pCi/L)	SUS	0.243
Uranium (mg/L)	DIS	0.084	Thorium 230 precision (±) (pCi/L)	-	0.190
Vanadium (mg/L)	DIS	0.100	Uranium (mg/L)	SUS	0.0003

Table 2.7-14 90 Sand Average GW Quality

90 Sand Average GW Quality (M-2, M-3, M-4, M-24, LPW-2, LPW-4)					
Parameter	State	Value	Parameter	State	Value
A/C Balance (± 5) (%)	DIS	0.208	Zinc (mg/L)	DIS	0.338
Anions (meq/L)	DIS	8.46	Iron (mg/L)	TOT	0.13
Bicarbonate as HCO3 (mq/L)	DIS	209.9	Manganese (mg/L)	TOT	0.045
Carbonate as CO3 (mg/L)	DIS	2.83	Gross Alpha (pCi/L)	DIS	220.2
Cations (meq/L)	DIS	8.45	Gross Alpha MDC (pCi/L)	DIS	2.6
Chloride (mg/L)	DIS	4.43	Gross Alpha precision (±) (pCi/L)	-	7.23
Conductivity (umhos/cm)	DIS	772.6	Gross Beta (pCi/L)	DIS	63.4
Fluoride (mg/L)	DIS	0.329	Gross Beta MDC (pCi/L)	DIS	3.38
pH (s.u.)	DIS	7.97	Gross Beta precision (±) (pCi/L)	-	2.93
Solids, Total Dissolved Calculated (mg/L)	DIS	525.1	Lead 210 (pCi/L)	DIS	6.6
Solids, Total Dissolved TDS @ 180 C (mg/L)	DIS	502.7	Lead 210 MDC (pCi/L)	-	7.67
TDS Balance (0.80 - 1.20) (dec. %)	DIS	0.963	Lead 210 precision (±) (pCi/L)	-	4.51
Sulfate (mg/L)	DIS	231.3	Polonium 210 (pCi/L)	DIS	0.536
Nitrogen, Ammonia as N (mg/L)	DIS	0.130	Polonium 210 precision (±) (pCi/L)	-	0.542
Nitrogen, Nitrate+Nitrite as N (mg/L)	DIS	0.054	Radium 226 (pCi/L)	DIS	28.79
Aluminum (mg/L)	DIS	0.104	Radium 226 MDC (pCi/L)	DIS	0.244
Arsenic (mg/L)	DIS	0.001	Radium 226 precision (±) (pCi/L)	-	1.050
Barium (mg/L)	DIS	0.100	Radium 228 (pCi/L)	DIS	1.050
Boron (mg/L)	DIS	0.100	Radium 228 MDC (pCi/L)	DIS	1.38
Cadmium (mg/L)	DIS	0.005	Radium 228 precision (±) (pCi/L)	-	0.926
Calcium (mg/L)	DIS	63.6	Thorium 230 (pCi/L)	DIS	0.026
Chromium (mg/L)	DIS	0.050	Thorium 230 precision (±) (pCi/L)	-	0.085
Copper (mg/L)	DIS	0.023	Lead 210 (pCi/L)	SUS	1.82
Iron (mg/L)	DIS	0.035	Lead 210 MDC (pCi/L)	-	7.53
Lead (mg/L)	DIS	0.046	Lead 210 precision (±) (pCi/L)	-	4.99
Magnesium (mg/L)	DIS	17.67	Polonium 210 (pCi/L)	SUS	0.273
Manganese (mg/L)	DIS	0.041	Polonium 210 precision (±) (pCi/L)	-	0.468
Mercury (mg/L)	DIS	0.001	Radium 226 (pCi/L)	SUS	0.515
Molybdenum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	SUS	0.472
Nickel (mg/L)	DIS	0.050	Radium 226 precision (±) (pCi/L)	-	0.310
Potassium (mg/L)	DIS	8.33	Radium 228 (pCi/L)	-	0.000
Selenium (mg/L)	DIS	0.001	Radium 228 MDC (pCi/L)	-	0.000
Silica (mg/L)	DIS	11.1	Radium 228 precision (±) (pCi/L)	-	0.000
Sodium (mg/L)	DIS	82.60	Thorium 230 (pCi/L)	SUS	0.055
Uranium (mg/L)	DIS	0.030	Thorium 230 precision (±) (pCi/L)	-	0.203
Vanadium (mg/L)	DIS	0.100	Uranium (mg/L)	SUS	0.0003

Table 2.7-15 80 Sand Average GW Quality

80 Sand Average GW Quality (M-5, M-8, M-12, M-17, M-19, M-26, OW-1, LPW-1, LMU-3)					
Parameter	State	Value	Parameter	State	Value
A/C Balance (± 5) (%)	DIS	0.735	Zinc (mg/L)	DIS	0.012
Anions (meq/L)	DIS	5.57	Iron (mg/L)	TOT	0.09
Bicarbonate as HCO3 (mq/L)	DIS	199.1	Manganese (mg/L)	TOT	0.026
Carbonate as CO3 (mg/L)	DIS	3.26	Gross Alpha (pCi/L)	DIS	167.6
Cations (meq/L)	DIS	5.65	Gross Alpha MDC (pCi/L)	DIS	1.9
Chloride (mg/L)	DIS	3.37	Gross Alpha precision (±) (pCi/L)	-	5.13
Conductivity (umhos/cm)	DIS	516.5	Gross Beta (pCi/L)	DIS	60.3
Fluoride (mg/L)	DIS	0.513	Gross Beta MDC (pCi/L)	DIS	2.75
pH (s.u.)	DIS	8.05	Gross Beta precision (±) (pCi/L)	-	2.44
Solids, Total Dissolved Calculated (mg/L)	DIS	334.5	Lead 210 (pCi/L)	DIS	10.8
Solids, Total Dissolved TDS @ 180 C (mg/L)	DIS	329.3	Lead 210 MDC (pCi/L)	-	6.91
TDS Balance (0.80 - 1.20) (dec. %)	DIS	0.996	Lead 210 precision (±) (pCi/L)	-	4.26
Sulfate (mg/L)	DIS	100.9	Polonium 210 (pCi/L)	DIS	0.759
Nitrogen, Ammonia as N (mg/L)	DIS	0.194	Polonium 210 precision (±) (pCi/L)	-	0.656
Nitrogen, Nitrate+Nitrite as N (mg/L)	DIS	0.056	Radium 226 (pCi/L)	DIS	41.578
Aluminum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	DIS	0.224
Arsenic (mg/L)	DIS	0.004	Radium 226 precision (±) (pCi/L)	-	1.195
Barium (mg/L)	DIS	0.100	Radium 228 (pCi/L)	DIS	0.790
Boron (mg/L)	DIS	0.100	Radium 228 MDC (pCi/L)	DIS	1.27
Cadmium (mg/L)	DIS	0.005	Radium 228 precision (±) (pCi/L)	-	0.790
Calcium (mg/L)	DIS	33.1	Thorium 230 (pCi/L)	DIS	0.042
Chromium (mg/L)	DIS	0.050	Thorium 230 precision (±) (pCi/L)	-	0.096
Copper (mg/L)	DIS	0.010	Lead 210 (pCi/L)	SUS	2.995
Iron (mg/L)	DIS	0.031	Lead 210 MDC (pCi/L)	-	8.96
Lead (mg/L)	DIS	0.001	Lead 210 precision (±) (pCi/L)	-	5.35
Magnesium (mg/L)	DIS	10.04	Polonium 210 (pCi/L)	SUS	0.439
Manganese (mg/L)	DIS	0.025	Polonium 210 precision (±) (pCi/L)	-	0.501
Mercury (mg/L)	DIS	0.001	Radium 226 (pCi/L)	SUS	0.686
Molybdenum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	SUS	0.363
Nickel (mg/L)	DIS	0.050	Radium 226 precision (±) (pCi/L)	-	0.262
Potassium (mg/L)	DIS	6.69	Radium 228 (pCi/L)	-	0.000
Selenium (mg/L)	DIS	0.001	Radium 228 MDC (pCi/L)	-	2.600
Silica (mg/L)	DIS	9.5	Radium 228 precision (±) (pCi/L)	-	1.500
Sodium (mg/L)	DIS	68.87	Thorium 230 (pCi/L)	SUS	0.087
Uranium (mg/L)	DIS	0.013	Thorium 230 precision (±) (pCi/L)	-	0.165
Vanadium (mg/L)	DIS	0.100	Uranium (mg/L)	SUS	0.0003

Table 2.7-16 70 Sand Average GW Quality

70 Sand Average GW Quality					
(M-9, M-10, M-11,M-14, M-15, M-16, M-18, M-20, M-21, M-23, LMU-1, LPW-3A)					
Parameter	State	Value	Parameter	State	Value
A/C Balance (± 5) (%)	DIS	0.745	Zinc (mg/L)	DIS	0.011
Anions (meq/L)	DIS	5.33	Iron (mg/L)	TOT	0.05
Bicarbonate as HCO3 (mq/L)	DIS	193.4	Manganese (mg/L)	TOT	0.019
Carbonate as CO3 (mg/L)	DIS	3.14	Gross Alpha (pCi/L)	DIS	193.6
Cations (meq/L)	DIS	5.35	Gross Alpha MDC (pCi/L)	DIS	1.8
Chloride (mg/L)	DIS	3.50	Gross Alpha precision (±) (pCi/L)	-	5.39
Conductivity (umhos/cm)	DIS	497.5	Gross Beta (pCi/L)	DIS	65.7
Fluoride (mg/L)	DIS	0.619	Gross Beta MDC (pCi/L)	DIS	2.77
pH (s.u.)	DIS	8.22	Gross Beta precision (±) (pCi/L)	-	2.48
Solids, Total Dissolved Calculated (mg/L)	DIS	319.6	Lead 210 (pCi/L)	DIS	11.0
Solids, Total Dissolved TDS @ 180 C (mg/L)	DIS	305.6	Lead 210 MDC (pCi/L)	-	6.24
TDS Balance (0.80 - 1.20) (dec. %)	DIS	0.953	Lead 210 precision (±) (pCi/L)	-	3.66
Sulfate (mg/L)	DIS	93.0	Polonium 210 (pCi/L)	DIS	0.855
Nitrogen, Ammonia as N (mg/L)	DIS	0.159	Polonium 210 precision (±) (pCi/L)	-	0.697
Nitrogen, Nitrate+Nitrite as N (mg/L)	DIS	0.058	Radium 226 (pCi/L)	DIS	59.357
Aluminum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	DIS	0.234
Arsenic (mg/L)	DIS	0.003	Radium 226 precision (±) (pCi/L)	-	1.335
Barium (mg/L)	DIS	0.100	Radium 228 (pCi/L)	DIS	0.845
Boron (mg/L)	DIS	0.100	Radium 228 MDC (pCi/L)	DIS	1.40
Cadmium (mg/L)	DIS	0.005	Radium 228 precision (±) (pCi/L)	-	0.884
Calcium (mg/L)	DIS	23.1	Thorium 230 (pCi/L)	DIS	0.054
Chromium (mg/L)	DIS	0.050	Thorium 230 precision (±) (pCi/L)	-	0.102
Copper (mg/L)	DIS	0.010	Lead 210 (pCi/L)	SUS	2.472
Iron (mg/L)	DIS	0.030	Lead 210 MDC (pCi/L)	-	9.26
Lead (mg/L)	DIS	0.001	Lead 210 precision (±) (pCi/L)	-	6.22
Magnesium (mg/L)	DIS	7.39	Polonium 210 (pCi/L)	SUS	1.103
Manganese (mg/L)	DIS	0.017	Polonium 210 precision (±) (pCi/L)	-	0.871
Mercury (mg/L)	DIS	0.001	Radium 226 (pCi/L)	SUS	0.469
Molybdenum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	SUS	0.532
Nickel (mg/L)	DIS	0.050	Radium 226 precision (±) (pCi/L)	-	0.351
Potassium (mg/L)	DIS	5.63	Radium 228 (pCi/L)	-	0.000
Selenium (mg/L)	DIS	0.001	Radium 228 MDC (pCi/L)	-	0.000
Silica (mg/L)	DIS	8.7	Radium 228 precision (±) (pCi/L)	-	0.000
Sodium (mg/L)	DIS	79.09	Thorium 230 (pCi/L)	SUS	0.236
Uranium (mg/L)	DIS	0.015	Thorium 230 precision (±) (pCi/L)	-	0.304
Vanadium (mg/L)	DIS	0.100	Uranium (mg/L)	SUS	0.0007

Table 2.7-17 60 Sand Average GW Quality

60 Sand Average GW Quality (OW-9, LMU-2A)					
Parameter	**State**	**Value**	**Parameter**	**State**	**Value**
A/C Balance (±5) (%)	DIS	-0.281	Zinc (mg/L)	DIS	0.012
Anions (meq/L)	DIS	5.75	Iron (mg/L)	TOT	1.20
Bicarbonate as HCO3 (mq/L)	DIS	217.2	Manganese (mg/L)	TOT	0.058
Carbonate as CO3 (mg/L)	DIS	2.00	Gross Alpha (pCi/L)	DIS	14.1
Cations (meq/L)	DIS	5.71	Gross Alpha MDC (pCi/L)	DIS	1.8
Chloride (mg/L)	DIS	4.67	Gross Alpha precision (±) (pCi/L)	-	2.07
Conductivity (umhos/cm)	DIS	526.5	Gross Beta (pCi/L)	DIS	4.3
Fluoride (mg/L)	DIS	0.617	Gross Beta MDC (pCi/L)	DIS	2.63
pH (s.u.)	DIS	8.17	Gross Beta precision (±) (pCi/L)	-	1.65
Solids, Total Dissolved Calculated (mg/L)	DIS	348.6	Lead 210 (pCi/L)	DIS	12.2
Solids, Total Dissolved TDS @ 180 C (mg/L)	DIS	319.4	Lead 210 MDC (pCi/L)	-	4.87
TDS Balance (0.80 - 1.20) (dec. %)	DIS	0.920	Lead 210 precision (±) (pCi/L)	-	3.10
Sulfate (mg/L)	DIS	95.5	Polonium 210 (pCi/L)	DIS	0.454
Nitrogen, Ammonia as N (mg/L)	DIS	0.258	Polonium 210 precision (±) (pCi/L)	-	0.383
Nitrogen, Nitrate+Nitrite as N (mg/L)	DIS	0.071	Radium 226 (pCi/L)	DIS	0.635
Aluminum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	DIS	0.173
Arsenic (mg/L)	DIS	0.003	Radium 226 precision (±) (pCi/L)	-	0.188
Barium (mg/L)	DIS	0.100	Radium 228 (pCi/L)	DIS	0.842
Boron (mg/L)	DIS	0.100	Radium 228 MDC (pCi/L)	DIS	1.21
Cadmium (mg/L)	DIS	0.005	Radium 228 precision (±) (pCi/L)	-	0.783
Calcium (mg/L)	DIS	15.5	Thorium 230 (pCi/L)	DIS	0.179
Chromium (mg/L)	DIS	0.050	Thorium 230 precision (±) (pCi/L)	-	0.133
Copper (mg/L)	DIS	0.010	Lead 210 (pCi/L)	SUS	2.621
Iron (mg/L)	DIS	0.031	Lead 210 MDC (pCi/L)	-	8.20
Lead (mg/L)	DIS	0.001	Lead 210 precision (±) (pCi/L)	-	4.90
Magnesium (mg/L)	DIS	5.71	Polonium 210 (pCi/L)	SUS	0.632
Manganese (mg/L)	DIS	0.042	Polonium 210 precision (±) (pCi/L)	-	0.583
Mercury (mg/L)	DIS	0.001	Radium 226 (pCi/L)	SUS	0.457
Molybdenum (mg/L)	DIS	0.100	Radium 226 MDC (pCi/L)	SUS	0.308
Nickel (mg/L)	DIS	0.050	Radium 226 precision (±) (pCi/L)	-	0.227
Potassium (mg/L)	DIS	4.46	Radium 228 (pCi/L)	-	0.000
Selenium (mg/L)	DIS	0.001	Radium 228 MDC (pCi/L)	-	0.000
Silica (mg/L)	DIS	15.8	Radium 228 precision (±) (pCi/L)	-	0.000
Sodium (mg/L)	DIS	99.54	Thorium 230 (pCi/L)	SUS	0.488
Uranium (mg/L)	DIS	0.005	Thorium 230 precision (±) (pCi/L)	-	0.250
Vanadium (mg/L)	DIS	0.100	Uranium (mg/L)	SUS	0.0009

Sampling results were taken as averages for each sand layer. Tables 2.7-12 through 2.7-17 are the average sampling results for 110 through 60 sands respectively. The detection limit values were used for averaging non-detectable results. A majority of the analyte concentrations of sampled water in the Ludeman Project area are within WDEQ Guideline 8 parameters for agricultural water (Class II). Results of the baseline monitoring program for each well are summarized in tables in Addendum 2.7-E There are some notable variations of sampled data not included in the tri-linear diagrams that are worth discussing.

Total dissolved solids (TDS) vary in the Ludeman Project area. The range of TDS is 274 to 1050 mg/L with an average of 377 mg/L. The TDS has eight sampling instances which were higher than the WDEQ class I of 500 mg/L. TDS is within the WDEQ Class II limit of 2000 mg/L. These results generally indicate Class II ground water from within the Ludeman Project area. However, due to high radium levels, groundwater located within uranium mineralized areas is unsuitable for human or livestock consumption. As a result, these waters can be characterized as Class VI water.

Sulfate levels also vary inside the Ludeman Project area. The range of sulfate is 50.0 to 496 mg/L with an average of 128 mg/L. Sulfate has five sampling instances which were higher than the WDEQ class I of 250 mg/L. Sulfate is within the WDEQ Class II limit of 2000 mg/L.

With a few exceptions, trace elements in the project area met Class I ground water limits, with most being less than applicable detection limits. The exceptions included ammonia, manganese, zinc, and pH. Ammonia concentrations in monitoring wells M-19 and OW-1 in the Ludeman area exceeded the Class I limit of 0.05 mg/L. Concentrations were as high as 0.610 mg/L, which is still well below the Class II limit of 5.0 mg/L. Manganese was detected in nine samples from the project area with concentrations greater than the Class I limit of 0.05 mg/L. Well LMO-1 and LPW-4 were above the limit with both single sampling instances. Well M-3 and OW-1 had two instance of manganese greater than Class I limits. Well OW-9 had three of three samples with manganese greater than Class I limits. The range of manganese is 0.010 to 0.10 mg/L with an average of 0.02 mg/L. The maximum concentration of manganese of 0.10 mg/L is still within the Class II limit of 0.2 mg/L. M-2 had one sample which had zinc concentration of 7.87 mg/L which is greater than the Class I limit of 5 mg/L. The average concentration of zinc was 0.11 mg/L. Lastly, laboratory pH levels were slightly high with an average of 8.18. Thirteen samples from the Ludeman Project area exceeded the Class II limit of 8.5, with a maximum pH of 9.17 on the sample from well LMU-3, which also contained low concentrations of bicarbonate and sulfate in the Ludeman Project area.

The ground water samples were also looked at for EPA Maximum Contaminate Levels (MCL). There were two parameters which had samples greater than their MCL arsenic and uranium. The two instances of arsenic being greater than the MCL standard of 0.01

mg/L were from wells M-13 and LMU-3. The maximum arsenic concentration was 0.025 mg/L with an average of .0041 mg/L. There were 16 samples with concentrations higher than the 0.03 mg/L MCL for Uranium. The uranium had a minimum of 0.0006, maximum of 0.267 mg/L and average of 0.03 mg/L concentration.

Radium was high in 47 of the 83 samples. 90 Sand, 80 Sand and 70 Sand ground water samples analyzed had radium 226 concentrations that exceeded WDEQ's limit of 5 pCi/L. The maximum concentration detected was 1490 pCi/L in well M-13, and the averages for the entire Ludeman Project area was 123 pCi/L. The excessive radium 226 concentrations make the overall ground water in the area Class VI (may be unsuitable for use).

In summary, ground water within the production zone aquifer is generally of the calcium bicarbonate to calcium sulfate type and can be classified as a Type VI water due to the high radium 226. This baseline analysis is intended to evaluate the overall quality of ground water underlying the Ludeman Project area under pre-mining conditions. Additional groundwater sampling is required before excursion control limits and restoration criteria can be established.

2.7.4 References

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Addendum 2.7-A

Ground Water Rights within a 2-Mile Radius of Project Boundary

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P32607W	4/9/1976	GST	33	N	72	W	4	SESE	FLYNN C. JOHNSON	JOHNSON #1	DOM	10	300	8	Unknown	Unknown
P15025P	12/31/1942	GST	33	N	72	W	4	SWSE	HARRY L. RICHARDS	HARTFORD #1	DOM	5	28	6	Unknown	Unknown
P16733W	12/7/1972	GST	33	N	72	W	4	SWSE	WILBUR G. STEELEY	STEELEY #3	DOM,STO	10	75	54	54	75
P181460W	5/25/2007	GSI	33	N	72	W	4	SWSE	MIKE J. PACKARD	PACKARD #2	DOM					
P19733P	9/21/1962	GST	33	N	72	W	4	SWSE	ROY C. & ROSE M. RICHARDS	RICHARDS #1	DOM	25	45	43	Unknown	Unknown
P29404W	4/16/1975	GST	33	N	72	W	4	SWSE	HARRY L. & VIRGINIA L. RICHARDS	RICHARDS #1	DOM	10	63	43	Unknown	Unknown
P31114W	9/2/1975	GST	33	N	72	W	4	SWSE	DELBERT R. & LORRAINE S. BARBER	BARBER #1	DOM	10	60	50	40	50
P33185W	4/26/1976	GST	33	N	72	W	4	SWSE	FLOYD H. & LILLY J. CASE	CASE #1	DOM	6	80	20	20	40
P33456W	5/17/1976	GST	33	N	72	W	4	SWSE	WILLIAM H. PACKARD	PACKARD #1	DOM	10	80	50	50	60
P54628W	11/3/1980		33	N	72	W	4	SWSE	ROSE MARIE RICHARDS	ROSIES MINT #1		8	60	40	50	60
40/2/500W	1/16/2008	UNA	33	N	72	W	5	SWNE	SMITH SHEEP COMPANY	EAST REED PLACE	STO					
P8085P	3/20/1950	GST	33	N	72	W	7	NWSE	MARY KATHERMAN & WILLARD S ROBINSON	MC KIBBEN #1	DOM,STO	10	14	4	Unknown	Unknown
P8086P	11/10/1967	GST	33	N	72	W	8	SWSE	JESS MC KIBBEN	MC KIBBEN #2	DOM,STO	8	125	70		
P67352W	5/10/1984	CAN	33	N	72	W	18	SENW	DAVIS OIL COMPANY	MARBURGER DYER WATER WELL #1	MIS					
P148688W	12/30/2002	GSI	33	N	72	W	18	SWNW	SHIRLEY BAKER & CINDY REYNOLDS	BURKS # 3	STO					
P100997W	11/30/1995	CAN	33	N	73	W	0		MENTER SAND & GRAVEL, INC	MENTER #3 WELL	MON					
P75291W	8/11/1987	GST	33	N	73	W	2	SESE	CARROLL J. LISCO	LISCO #2	DOM,STO	10	20	7	15	18
P126595W	6/27/2000	GST	33	N	73	W	2	SWSE	CARROLL J. LISCO	LISCO #5	DOM,STO	9	30	7	10	18

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P22297P	12/31/1968	GST	33	N	73	W	2	SWSE	EDDIE MOORE	MOORE 2-33-73	DOM	6	45	20	Unknown	Unknown
P49679W	8/16/1979	GST	33	N	73	W	2	SWSE	TOTAL MINERALS CORPORATION	IN SITU HYDROLOGIC TEST WELL #PW-1	MON	0	175	78.9	140	170
P19404P	10/31/1946	GST	33	N	73	W	3	NESW	PACIFIC POWER & LIGHT CO.	MOORE #1 (RANCH HOUSE)	DOM,STO	25	80	20	Unknown	Unknown
P71076W	9/6/1985	CAN	33	N	73	W	4	NWSE	VOLLMAN RANCHES	VOLLMAN IRRIGATION #1	IRR					
P19396P	12/31/1954	GST	33	N	73	W	5	NWSE	PACIFIC POWER & LIGHT CO.	HILDEBRAND #1 (JIM WHITING'S HOUSE)	DOM,STO	10	25	7	Unknown	Unknown
P9903W	2/19/1971	GST	33	N	73	W	5	NWSW	L. JOE WHITING	WHITING #7	STO	7	40	32	Unknown	Unknown
P19397P	12/31/1954	GST	33	N	73	W	5	SWSE	PACIFIC POWER & LIGHT CO.	HILDEBRAND #2 (FEED LOT)	DOM,STO	10	24	7	Unknown	Unknown
P56659W	4/14/1981	CAN	33	N	73	W	5	SWSW	L. JOE WHITING	WHITING #9	STO					
P8240P	7/31/1955	GST	33	N	73	W	5	SWSW	L. JOE WHITING	WHITING #4	DOM	6	140	80	Unknown	Unknown
P8241P	9/24/1961	GST	33	N	73	W	5	SWSW	L. JOE WHITING	WHITING #5	STO	8	40	15	Unknown	Unknown
P8242P	3/21/1930	GST	33	N	73	W	5	SWSW	L. JOE WHITING	WHITING #6	DOM	7	100	60	Unknown	Unknown
P8243P	3/21/1955	GST	33	N	73	W	6	NENE	L. JOE WHITING	WHITING #8	STO	6	130	90	Unknown	Unknown
P70121W	4/24/1985	CAN	33	N	73	W	6		WILLIAM E. BARBER	M O #2	STO					
P147434W	10/10/2002	GST	33	N	73	W	9	NWSE	JAMES D./SHIRLEY A. BAKER	BURKS # 1	DOM	15	130	60	100	130
P10597P	7/7/1952	GST	33	N	73	W	9	SWNE	RICHARD J. BURKS	BURKS #1	DOM	13	145	100	105	120
P25898W	2/21/1974	GST	33	N	73	W	11	NENW	JIMMIE D. WHITING	J WHITING #1	DOM,STO	6	22	10	10	20
P150512W	4/22/2003	GST	33	N	73	W	11	NWSE	LOREN THIEL	THIEL # 1	DOM,STO	9	280	15	200	270

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P8238P	2/28/1946	GST	33	N	73	W	11	SENW	ADOLPH O. WHITING	WHITING #1	DOM	6	18	-1	Unknown	Unknown
P8600P	12/31/1939	GST	33	N	73	W	11	SENW	ADOLPH O. WHITING	WHITING #2	STO	6	14	-1	Unknown	Unknown
P22298P	12/31/1968	GST	33	N	73	W	12	NESW	EDDIE MOORE	MOORE 12-33-73	STO	4	50	30	Unknown	Unknown
P98857W	4/24/1995	GST	33	N	73	W	12	NWSW	DAVID L. & LEA ANN THOMPSON	THOMPSON #1 WELL	DOM	15	360	15	337	350
P158104W	4/28/2004	GST	33	N	73	W	18	SWNE	BIXBY HEREFORD COMPANY INC.	BIXBY WELL # TWO	STO	11	160	45	120	160
P180563W	3/26/2007	GSI	33	N	73	W	20	SWSE	GREEN VALLEY	GV 10	STO					
P8084P	3/20/1910	GST	33	N	73	W	22	SWSW	IRVING CARLSON**MARGARET CARLSON	CARLSON #2	STO	6	120	50		
P8239P	7/19/1920	GST	33	N	73	W	23	SENE	ADOLPH O. WHITING	WHITING #3	DOM,STO	4	120	100	Unknown	Unknown
41/1/212W	7/28/2008	UNA	33	N	74	W	1	NWSE	PATRICK S. & JENNIFER J. MCLAGAN	SIEK #1	MIS					
P140809W	11/19/2001	GST	33	N	74	W	1	NWSE	FRANCIS / VICKI HORN	HORN #1	DOM,STO	10	120	15	80	120
P32614W	4/12/1976	GST	33	N	74	W	1	NWSE	GARY D. & MARCIA K. SIEK	SIEK #1	DOM,STO	10	240	11	215	216
P32944W	4/12/1976	CAN	33	N	74	W	1	NWSE	GARY D. & MARCIA K. SIEK	SIEK #2	IRR					
P35850W	1/13/1977	GST	33	N	74	W	1	NWSE	JERRY DEAN & JANET DIANE STREET	STREET #1	DOM	10	119	69	69	93
P108384W	1/2/1998	GST	33	N	74	W	1	SESW	MICHAEL D. & KIMBER L. BLOEM	BLOEM #1	DOM,STO	16	200	35	160	200
P31958W	1/16/1976	CAN	33	N	74	W	1	SESW	GERALD E. & LINDA A. EPPERLY**MICHAEL H. & SALLY H. SARVEY	EPPERLY SARVEY #1	IRR					
P39855W	9/7/1977	CAN	33	N	74	W	1	SESW	ARMIN A. SCHMITT	ARMIN #1	DOM,STO					

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act.	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P40692W	11/3/1977	CAN	33	N	74	W	1	SESW	ROBERT E. & FLORENCE L. DOBBINS	R E DOBBINS #1	DOM					
P84686W	3/28/1991	GST	33	N	74	W	1	SESW	GARY L. & YVONNE M. RITTERHOUSE	RITTERHOUSE #1	DOM	15	80	22	60	80
P36678W	3/23/1977	GST	33	N	74	W	1	SWSE	JOHN P. DESANTI	DESANTI #1	DOM	10	115	20	60	75
P36756W	3/28/1977	GST	33	N	74	W	1	SWSE	RONALD NEWTON HULL	HULL #1	DOM	2	300	20	Unknown	Unknown
P38665W	6/21/1977	GST	33	N	74	W	1	SWSE	GARY B. & JACQUELINE G. OLIVER	OLIVER #1	DOM	6	120	12	Unknown	Unknown
P41934W	2/25/1978	GST	33	N	74	W	1	SWSE	DAVID J. & MARY LOU FOUNTAIN	1 FOUNTAIN	DOM,STO	12	160	16	140	160
P74501W	4/28/1987	CAN	33	N	74	W	1	SWSE	GARY & JACKIE OLIVER	OLIVER #3	DOM,STO					
P87816W	5/14/1992	CAN	33	N	74	W	1	SWSE	DAVID J. & MARY LOU FOUNTAIN	2-FOUNTAIN	DOM					
P101659W	3/1/1996	CAN	33	N	74	W	1	SWSW	RICH KENNERKNECHT	K.K. #2	DOM,STO					
P97973W	11/14/1994	GST	33	N	74	W	1	SWSW	LYNDALE TRUST	LYNDALE #1	DOM	8	80	16	60	80
P99412W	6/9/1995	GST	33	N	74	W	1	SWSW	LYNDALE TRUST	LYNDALE #2 BACKUP	DOM	8	80	14	30	66
P67938W	7/13/1984	GST	33	N	74	W	2	NWSW	JOHN S. & LINDA M. ANDERSON	ANDERSON #2	DOM	18	80	30	20	35
P51520W	3/19/1980	CAN	33	N	74	W	2	SENW	THOMAS W. MILNE	MILNE #1 TEST	MON					
P67937W	7/13/1984	GST	33	N	74	W	2	SENW	JOHN S. & LINDA M. ANDERSON	ANDERSON #1	DOM,STO	15	60	25	20	35
P150513W	4/22/2003	GST	33	N	74	W	2	SESE	JAMES E. TINA M. WILLIAMS	WILLIAMS 1	DOM	10	200	27	155	200
P178734W	12/14/2006	GSI	33	N	74	W	2	SESE	MICHAEL CHROMY	CHROMY #1	DOM					
P55638W	2/21/1981	GST	33	N	74	W	2	SESE	DAV-CAR HOMES	GARY #1	DOM	5	100	60	60	100
P101195W	1/2/1996	GST	33	N	74	W	2	SESW	MIKE BERG	BERG #1	DOM	15	4.5	3	Unknown	Unknown

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P105295W	3/25/1997	GST	33	N	74	W	2	SESW	STEVE SIBREL	SIBREL #2	DOM,STO	15	120	60	60	98
P111141W	7/28/1998	GST	33	N	74	W	2	SESW	JAMES D/PAMALA A ANDERSON	Anderson #1	DOM	10	80	8	Unknown	Unknown
P44821W	8/4/1978	CAN	33	N	74	W	2	SESW	MICHAEL H. SARVEY	SARVEY #1	DOM,STO					
P57192W	6/10/1981	GST	33	N	74	W	2	SESW	MICHAEL H. SARVEY	SARVEY #1	DOM	5	35	18	18	25
P51521W	3/19/1980	CAN	33	N	74	W	2	SWNW	THOMAS W. MILNE	MILNE #2 TEST	MON					
P101658W	3/1/1996	CAN	33	N	74	W	2	SWSE	RICH KENNERKNECHT	K.K. #1	DOM,STO					
P101662W	3/1/1996	GST	33	N	74	W	2	SWSE	STEVE SIBREL	SIBREL #1	DOM,STO	5	10	6	Unknown	Unknown
P118562W	8/30/1999	CAN	33	N	74	W	2	SWSE	RICK KENNERKNEAHT	KK #1	DOM,STO					
P129123W	9/15/2000	GST	33	N	74	W	2	SWSE	JAMES D. & PAMELA A. ANDERSON	ANDERSON NO. 2	DOM,STO	12	8	3	5	8
P141763W	1/9/2002	GST	33	N	74	W	2	SWSE	LARRY & TERA RICE	RICE NO. 2	DOM,STO	20	10	7	Unknown	Unknown
P161806W	8/31/2004	GSI	33	N	74	W	2	SWSE	DOUGLAS AND DEBBY MCCRARY	MCCRARY #1	DOM					
P32267W	1/16/1976	CAN	33	N	74	W	2	SWSE	GERALD E. & LINDA A. EPPERLY**MICHAEL H. & SALLY H. SARVEY	EPPERLY SARVEY #2	IRR					
P45507W	10/23/1978	GST	33	N	74	W	2	SWSE	JEAN ANN GROVES	JAG #1	DOM	7	140	10	80	140
P63955W	5/10/1983	GST	33	N	74	W	3	NESE	TOLMAN LIVESTOCK COMPANY	HILDEBRAND #1	DOM	20	250	55	180	240
P66394W	2/21/1984	GST	33	N	74	W	3	NESE	TOLMAN LIVESTOCK	CARR #1	DOM	20	220	40	120	220
P73154W	8/25/1986	CAN	33	N	74	W	3	SENW	JOE WILLIAMS	WILLIAMS #1	DOM,STO					
P68868W	10/30/1984	GST	33	N	74	W	3	SESE	MIKE AND KARLA LEE	LEE #1	DOM	15	100	40	60	80

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P19401P	12/31/1930	GST	33	N	74	W	4	NWSW	PACIFIC POWER & LIGHT CO.	HILDEBRAND #6 (NORTH OF CLAYTON)	STO	5	100	95	Unknown	Unknown
P87895W	5/14/1992	GST	33	N	74	W	9	NWNW		BV-3	MON	0	84.3	67	67	83
P87887W	5/14/1992	GST	33	N	74	W	9	NWSW		BV-6	MON	0	54.5	51	51	54
P177596W	10/24/2006	GSI	33	N	74	W	9	SENE	DONALD R. WEBER	WEBER #1	DOM					
P37762W	5/9/1977	GST	33	N	74	W	9	SENE	CHARLES R. DAVIS	DAVIS #1	DOM	10	160	50	Unknown	Unknown
P44276W	7/24/1978	GST	33	N	74	W	9	SENE	ROBERT DORR	JOHNSON #1	DOM,STO	12	300	-4	260	280
P59541W	2/20/1982	GST	33	N	74	W	9	SENE	STEPHEN F. OR DONNA M. YOCUM	YOCUM #1	DOM	5	290	39	245	265
P87896W	5/14/1992	GST	33	N	74	W	9	SWNW		BV-4	MON	0	61.4	58	58	61
P112478W	10/28/1998	GST	33	N	74	W	10	NENE	DL/SHARON MANGUS	MANGUS #2	DOM	5	95	38	Unknown	Unknown
P31863W	12/9/1975	GST	33	N	74	W	10	NENE	DANNY L. & SHARON G. MANGUS	MANGUS #1	DOM	7	100	60	70	79
P1782W	1/19/1967	CAN	33	N	74	W	10	SENW	HOWARD E. & ERMA DELL BAILEY	DELL WELL #1	IRR					
P26684W	5/22/1974	GST	33	N	74	W	10	SENW	L. A. OHLER	OHLER #1	DOM	10	40	8	Unknown	Unknown
40/10/495W	1/14/2008	UNA	33	N	74	W	10	SWNW	LYNN AND MARY BUNN	BUNN #1	DOM,STO					
P168615W	6/17/2005	GST	33	N	74	W	12	NWNE	KENNETH & CRISTINA DURBIN	NORTH PLATTE RIVER BASIN	DOM	25	217	30	150	217
P42702W	3/30/1978	CAN	33	N	74	W	12	NWNE	ELEN PETTIT	PETTIT #1	DOM					
P78791W	12/20/1988	GST	33	N	74	W	12	NWNE	RICHARD & FAYETTA FIELDS	FIELDS #1	DOM	10	200	9	160	185
P83645W	9/27/1990	GST	33	N	74	W	12	NWNE	RICHARD & FAYETTA FIELDS	FBU #1	DOM	8	23	11	5	13
39/10/49W	5/22/2006	UNA	33	N	74	W	12	NWSE	BIXBY HEREFORD COMPANY INC.	BIXBY	IRR					

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P150841W	5/2/2003	CAN	33	N	74	W	12	NWSE	BIXBY HEREFORD COMPANY INC.	BIXBY TEST WELL NO. 1	TST	0	45	23	20	40
P179496W	2/7/2007	GSI	33	N	74	W	23	NENW	BIXBY RANCH L.P.	BIXBY 3	DOM,STO					
P5478W	5/4/1970	GST	34	N	72	W	6	SWNE	SMITH LAND COMPANY	SMITH #40	STO	7	180	0	145	175
40/4/500W	1/16/2008	UNA	34	N	72	W	8	NESE	SMITH SHEEP COMPANY	NORTH DE MERRITT'S	STO					
P22073P	12/31/1925	GST	34	N	72	W	9	SESE	JAMES W. & CATHERINE M. STROCK	LYNCH #1	STO	10	200	80	Unknown	Unknown
P49693W	8/16/1979	CAN	34	N	72	W	19	NESW	MALAPAI RESOURCES COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW 8 A	MON					
P49692W	8/16/1979	CAN	34	N	72	W	19	NWSW	MALAPAI RESOURCES COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW 7 A	MON					
P73046W	8/12/1986	GST	34	N	72	W	19	NWSW	COGEMA MINING, INC.	OX RM1	MON	0	270	40	245	270
41/8/229W	8/7/2008	UNA	34	N	72	W	19	SENW	URANIUM ONE dba ENERGY METALS CORPORATION	3472-19-M-23	MON					
P3696P	4/19/1969	GST	34	N	72	W	19	SENW	SMITH SHEEP CO.	SMITH #3	STO	7	163	60	Unknown	Unknown
P49685W	8/16/1979	CAN	34	N	72	W	19	SWSW	MALAPAI RESOURCES COMPANY	IN SITU HYDROLOGIC TEST WELL #PW 1 A	MON					
P49686W	8/16/1979	CAN	34	N	72	W	19	SWSW	MALAPAI RESOURCES COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW 1 A	MON					
P49687W	8/16/1979	CAN	34	N	72	W	19	SWSW	MALAPAI RESOURCES COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW 2 A	MON					
P49688W	8/16/1979	CAN	34	N	72	W	19	SWSW	MALAPAI RESOURCES COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW 3 A	MON					
P49689W	8/16/1979	CAN	34	N	72	W	19	SWSW	MALAPAI RESOURCES COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW 4 A	MON					
P49690W	8/16/1979	CAN	34	N	72	W	19	SWSW	MALAPAI RESOURCES COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW 5 A	MON					
P49691W	8/16/1979	CAN	34	N	72	W	19	SWSW	MALAPAI RESOURCES COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW 6 A	MON					
P3695P	10/8/1950	GST	34	N	72	W	20	NESE	SMITH LAND COMPANY	#2 SMITH	STO	10	130	-1	Unknown	Unknown
P56975W	6/3/1981	CAN	34	N	72	W	20	NWNE	DAVIS OIL COMPANY	MORPHA #1	MIS	80	500	200	365	425

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P67929W	7/2/1984	GST	34	N	72	W	20	NWNE	SMITH SHEEP CO.	SMITH #52	STO	25	500	200	Unknown	Unknown
P27923W	9/17/1974	CAN	34	N	72	W	20	NWNW	AMOCO PRODUCTION COMPANY	MORPHA UNIT WATER WELL #1	IND	25	567	200	508	565
P74624W	5/5/1987	GST	34	N	72	W	28	NESW	USDI BLM CASPER DISTRICT	REED TRAIL #1	STO	10	315	85	280	300
40/3/500W	1/16/2008	UNA	34	N	72	W	31	SWSE	SMITH SHEEP COMPANY	WEST REED	STO					
P3697P	9/24/1954	GST	34	N	72	W	32	SWSW	SMITH LAND COMPANY	#11 SMITH	STO	12	95	45	75	87
P4566W	2/13/1970	GST	34	N	73	W	2	NENE	SMITH LAND COMPANY	SMITH #38	DOM,STO	40	164	40	120	164
P48027W	5/17/1979	GST	34	N	73	W	2	NESW	SMITH SHEEP CO.	HILL TOP #1	DOM	5	220	140	170	200
41/1/228W	8/7/2008	UNA	34	N	73	W	3	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-3-M-5	MON					
P8613W	4/9/1971	GST	34	N	73	W	3	NWNW	SMITH SHEEP CO.	SMITH #44	STO	5	256	125	240	256
41/10/227W	8/7/2008	UNA	34	N	73	W	4	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-4-M-4	MON					
41/9/227W	8/7/2008	UNA	34	N	73	W	5	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-5-M-3	MON					
41/8/227W	8/7/2008	UNA	34	N	73	W	6	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-6-M-2	MON					
P4990P	12/31/1922	GST	34	N	73	W	6	NESE	SMITH LAND COMPANY	SMITH #9	STO	8	90	50	Unknown	Unknown
41/10/229W	8/7/2008	UNA	34	N	73	W	8	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-8-M-26	MON					
P179808W	2/21/2007	GSI	34	N	73	W	9	NESE	ENERGY METALS CORPORATION	WW-347309-1	MIS					
P22299P	12/31/1947	GST	34	N	73	W	9	NESE	EDDIE MOORE	MOORE 9-34-73	STO	5	260	-1	Unknown	Unknown
P61126W	6/10/1982	CAN	34	N	73	W	10	SWSE	URANIUM RESOURCES INC.	MW 7	MON					
P61128W	6/10/1982	CAN	34	N	73	W	10	SWSW	URANIUM RESOURCES INC.	MW 9	MON					

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41/7/228W	8/7/2008	UNA	34	N	73	W	15	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3474-15-M-11	MON					
P51833W	3/31/1980	CAN	34	N	73	W	15	NENW	URANIUM RESOURCES INC.	URI NPMW #5	MON,IND					
P51834W	3/31/1980	CAN	34	N	73	W	15	NENW	URANIUM RESOURCES INC.	URI NPMW #6	MON,IND					
P60274W	4/7/1982	CAN	34	N	73	W	15	NENW	URANIUM RESOURCES INC.	WATER WELL #1	MIS	5	250	100	200	250
P61127W	6/10/1982	CAN	34	N	73	W	15	NENW	URANIUM RESOURCES INC.	MW 8	MON					
P61132W	6/10/1982	CAN	34	N	73	W	15	NENW	URANIUM RESOURCES INC.	MW 13	MON					
P61133W	6/10/1982	CAN	34	N	73	W	15	NENW	URANIUM RESOURCES INC.	MW 14	MON					
P61134W	6/10/1982	CAN	34	N	73	W	15	NENW	URANIUM RESOURCES INC.	MW 15	MON					
P69490W	10/1/1984	GST	34	N	73	W	15	NENW	URANIUM RESOURCES INC.	URI NPMW #5	MON	0	576.5	168	536	575
P69491W	10/1/1984	GST	34	N	73	W	15	NENW	URANIUM RESOURCES INC.	URI NPMW #6	MON	0	571.5	158	530	570
P51828W	3/31/1980	CAN	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NORTH PLATTE PILOT WELL FIELD #1	RES,IND					
P51829W	3/31/1980	CAN	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMW #1	MON,IND					
P51830W	3/31/1980	CAN	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMW #2	MON,IND					
P51831W	3/31/1980	CAN	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMW #3	MON,IND					
P51832W	3/31/1980	CAN	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMW #4	MON,IND					
P51835W	3/31/1980	CAN	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMS #1	MON,IND					
P69486W	10/1/1984	GST	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMW #1	MON	0	566.5	146	515	580
P69487W	10/1/1984	GST	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMW #2	MON	0	566.5	153	526	568
P69488W	10/1/1984	GST	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMW #3	MON	0	575	162	534	575

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P69489W	10/1/1984	GST	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMW #4	MON	0	561.5	158	520	560
P69492W	10/1/1984	GST	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMS #1	MON	0	521.5	160	511	521
P69493W	10/1/1984	GST	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPMS #2	MON	0	244	147	200	244
P69494W	10/1/1984	GST	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NPDM #1	MON	0	619	159	545	575
P69576W	10/1/1984	CAN	34	N	73	W	15	NWNE	URANIUM RESOURCES INC.	URI NORTH PLATTE PILOT WELL FIELD #1	MIS	20	571	159	520	570
P61129W	6/10/1982	CAN	34	N	73	W	15	NWNW	URANIUM RESOURCES INC.	MW 10	MON					
P61130W	6/10/1982	CAN	34	N	73	W	15	NWNW	URANIUM RESOURCES INC.	MW 11	MON					
P61131W	6/10/1982	CAN	34	N	73	W	15	NWNW	URANIUM RESOURCES INC.	MW 12	MON					
P61135W	6/10/1982	CAN	34	N	73	W	15	SENW	URANIUM RESOURCES INC.	MW 16	MON					
P61136W	6/10/1982	CAN	34	N	73	W	15	SENW	URANIUM RESOURCES INC.	MW 17	MON					
P61137W	6/10/1982	CAN	34	N	73	W	15	SWNE	URANIUM RESOURCES INC.	MW 18	MON					
41/6/228W	8/7/2008	UNA	34	N	73	W	16	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-16-M-10	MON					
P14294W	6/15/1972	GST	34	N	73	W	17	NWSE	EDWARD D. MOORE	ED MOORE, SPRING PASTURE WELL #1	STO	4	292	71	251	288
P8612W	4/9/1971	CAN	34	N	73	W	19	NWNW	SMITH SHEEP CO.	SMITH #43	STO					
41/10/228W	8/7/2008	UNA	34	N	73	W	20	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-20-M-14	MON					
41/4/229W	8/7/2008	UNA	34	N	73	W	20	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-20-M-18	MON					
41/1/229W	8/7/2008	UNA	34	N	73	W	21	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-21-M-15	MON					
41/2/229W	8/7/2008	UNA	34	N	73	W	22	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-22-M-16	MON					
41/3/229W	8/7/2008	UNA	34	N	73	W	23	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-23-M-17	MON					
P96396W	8/1/1994	GST	34	N	73	W	24	NWNE	SMITH SHEEP CO.	LAKE PASTURE #1	STO	5	50	26	25	34

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P22300P	12/31/1956	GST	34	N	73	W	24	SWNW	EDDIE MOORE	MOORE 24-34-73	STO	4	40	-1	Unknown	Unknown
41/6/229W	8/7/2008	UNA	34	N	73	W	27	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-27-M-20	MON					
41/5/229W	8/7/2008	UNA	34	N	73	W	28	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-28-M-19	MON					
P4567W	2/13/1970	GST	34	N	73	W	30	SWSE	SMITH SHEEP CO.	SMITH #39	STO	10	265	110	240	265
P71052W	9/6/1985	CAN	34	N	73	W	32	NWSE	VOLLMAN RANCHES	VOLLMAN STOCK #1	STO					
P77601W	7/22/1988	GST	34	N	73	W	34	SWNE	CARROLL J. LISCO**RICHARD K. LISCO	LISCO #3	STO	15	340	128	140	165
P49694W	8/16/1979	GST	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE COMPANY	IN SITU HYDROLOGIC TEST WELLS	MON	0	265	141	220	255
P49695W	8/16/1979	GST	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW-1-B	MON	0	265	140	222	264
P49696W	8/16/1979	GST	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW-2-B	MON	0	270	143	220	260
P49697W	9/10/1979	GST	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW-3-B	MON	0	265	142	215	255
P49698W	8/16/1979	GST	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW-4-B	MON	0	260	140	217	257
P49699W	8/16/1979	GST	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW-5-B	MON	0	260	139	211	251
P49700W	8/16/1979	GST	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW-6-B	MON	0	265	140	218	254
P49701W	8/16/1979	GST	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE COMAPNY	IN SITU HYDROLOGIC MONITOR WELL #OW-7-B	MON	0	265	146	220	255
P49702W	8/16/1979	GST	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW-8-B	MON	0	395	153	341	381
P49703W	8/16/1979	CAN	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW 9 B	MON	0	340	125	283	323
P51105W	2/4/1980	GST	34	N	73	W	35	NENW	ARIZONA PUBLIC SERVICE CO.	IN SITU HYDROLOGIC MONITOR WELL # 0W-10-B	MON	0	200	98.5	180	200

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P73044W	8/12/1986	GST	34	N	73	W	35	NENW	COGEMA MINING, INC.	RW 01	MON	0	252	50	220	250
P73045W	8/12/1986	GST	34	N	73	W	35	NENW	COGEMA MINING, INC.	RM 02	MON	0	249	139	220	249
P77522W	7/7/1988	GST	34	N	73	W	35	NENW	RICHARD K. LISCO**CARROLL J. LISCO	OW 9	STO	15	340	126	Unknown	Unknown
P180989W	1/31/2007	GSI	34	N	73	W	35	SESE	ENERGY METALS CORPORATION** USDI - BLM** STATE BOARD OF LAND COMMISSIONERS	2081WW	MIS					
P49679W	8/16/1979	GST	34	N	73	W	35	SWSE	TOTAL MINERALS CORPORATION	IN SITU HYDROLOGIC TEST WELL #PW-1	MON	0	175	78.9	140	170
P49680W	8/16/1979	CAN	34	N	73	W	35	SWSE	ARIZONA PUBLIC SERVICE COMPANY	IN SITU HYDROLOGIC MONITOR WELL #OW 1	MON	0	175	74.8	127	167
P49681W	8/16/1979	GST	34	N	73	W	35	SWSE	TOTAL MINERALS CORPORATION	IN SITU HYDROLOGIC MONITORWELL #0W-2	MON	0	175	77	140	167
P49682W	8/16/1979	GST	34	N	73	W	35	SWSE	TOTAL MINERALS CORPORATION	IN SITU HYDROLOGIC MONITORWELL #0W-3	MON	0	175	78.2	140	170
P49683W	8/16/1979	GST	34	N	73	W	35	SWSE	TOTAL MINERALS CORPORATION	IN SITU HYDROLOGIC MONITORWELL #0W-4	MON	0	135	75.4	111	126
P49684W	8/16/1979	GST	34	N	73	W	35	SWSE	TOTAL MINERALS CORPORATION	IN SITU HYDROLOGIC MONITORWELL #0W-5	MON	0	245	120	215	233
P51104W	2/4/1980	GST	34	N	73	W	35	SWSE	ARIZONA PUBLIC SERVICE CO.	IN SITU HYDROLOGIC MONITOR WELL #0W-6	MON	0	100	66.2	80	100
P77521W	7/7/1988	GST	34	N	73	W	35	SWSE	RICHARD K. LISCO**CARROLL J. LISCO	OW 1	STO	15	175	74.8	Unknown	Unknown
41/9/229W	8/7/2008	UNA	34	N	73	W	36	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-36-M-24	MON					
P8609P	10/20/1950	GST	34	N	74	W	1	SESE	A.C. LAYTON	LAYTON #4	DOM,STO	2	180	40	150	170
P8608P	1/18/1961	GST	34	N	74	W	1	SWSW	A.C. LAYTON	LAYTON #5	STO	10	215	75	194	215
P8605P	7/31/1942	GST	34	N	74	W	2	SESE	A.C. LAYTON	LAYTON #1	DOM,STO	4	140	40	Unknown	Unknown
P14850W	7/31/1972	GST	34	N	74	W	3	NWSE	WILLIAM R. VOLLMAN	LAYTON #1	STO	10	118	80	100	118

Permit#	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P4565W	2/13/1970	GST	34	N	74	W	4	SENW	SMITH LAND COMPANY	SMITH #37	STO	10	143	100	120	143
P59700W	3/19/1981	GST	34	N	74	W	5	NWNW	ROBERT H. & ANNA MAE KEENAN	KEENAN #36	STO	25	80	45	45	80
P8175P	5/31/1953	GST	34	N	74	W	5	SESE	HENRY J. KEENAN	HENRY KEENAN #5	STO	8	120	60	Unknown	Unknown
P94472W	2/4/1994	GST	34	N	74	W	8	NESW	JOSEPH D. DONA	NORTH DONA #1	STO	3	230	161	195	225
P8171P	3/31/1940	GST	34	N	74	W	9	NESE	HENRY J. KEENAN	HENRY KEENAN #1	DOM,STO	5	160	60	Unknown	Unknown
P8172P	4/30/1953	GST	34	N	74	W	9	NESE	HENRY J. KEENAN	HENRY #2	DOM,STO	5	60	32	Unknown	Unknown
P8173P	4/30/1920	GST	34	N	74	W	9	NESE	HENRY J. KEENAN	HENRY KEENAN #3	DOM,STO	3	41	32	Unknown	Unknown
P38647W	5/25/1977	CAN	34	N	74	W	9	NESW	EUGENE & LOIS EVANOFF	EVANOFF #3	DOM					
P173339W	2/24/2006	GSI	34	N	74	W	9	SENE	PETER F. WOECK, II	WOECK #1	DOM,STO					
P174491W	2/24/2006	GSE	34	N	74	W	9	SESE	PETER F. WOECK, II	WOECK #2	IRR					
P14322P	12/31/1920	GST	34	N	74	W	9	SESW	E.L. EVANOFF	E EVANOFF #1	STO	4	63	23	Unknown	Unknown
P43477W	5/25/1978	CAN	34	N	74	W	9	SESW	BOBBY G. BADLEY	BADLEY #1	DOM,STO					
P75241W	8/3/1987	GST	34	N	74	W	9	SESW	ULYSES H. AND SHARON A. BERNARD	BERNARD #1	DOM,STO	25	240	150	210	225
P14323P	5/31/1965	GST	34	N	74	W	9	SWSW	ULYSES H. & SHARRON A. BERNARD	E EVANOFF #2	DOM	6	206	-1	Unknown	Unknown
P16146W	11/1/1972	CAN	34	N	74	W	9	SWSW	EUGENE L. EVANOFF	EVANOFF #3	DOM					
P30669W	8/12/1975	GST	34	N	74	W	9	SWSW	EUGENE L. EVANOFF	EVANOFF #3	DOM	12	200	100	Unknown	Unknown
P86262W	9/30/1991	GST	34	N	74	W	9	SWSW	TIMOTHY J. & PAMELA L. NELSON	DOLENC #1	DOM,STO					

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act.	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P70764W	7/31/1985	GST	34	N	74	W	10	NWSW	JOE R. KEENAN	KEENAN #4	DOM,STO	24	180	42	92	114
P107287W	8/29/1997	CAN	34	N	74	W	11	NENE	POWER RESOURCES INC.	L-5	MON					
P107288W	8/29/1997	CAN	34	N	74	W	11	NENE	POWER RESOURCES INC.	M-5	MON					
P107289W	8/29/1997	CAN	34	N	74	W	11	NENE	POWER RESOURCES INC.	N-5	MON					
P107290W	8/29/1997	CAN	34	N	74	W	11	NENE	POWER RESOURCES INC.	ID-5	MON					
P24572W	9/20/1973	CAN	34	N	74	W	11	NENE	A. C. LAYTON	A C #1	DOM,STO					
P26415W	4/23/1974	GST	34	N	74	W	11	NESE	ROBERT D. HAUN	KT #1	DOM	12	180	80	120	180
P26463W	4/25/1974	GST	34	N	74	W	11	NESE	EARL G. DOEGE	LUCKY FIVE #1	DOM	5	180	80	120	180
P30262W	6/25/1975	CAN	34	N	74	W	11	NESE	RICHARD C. DEVERAUX	BOBBIE #1	DOM					
P30263W	6/25/1975	CAN	34	N	74	W	11	NESE	RICHARD C. DEVERAUX	JEAN #1	DOM					
P42818W	4/13/1978	GST	34	N	74	W	11	NESE	J. S. NEGLEY	NEGLEY #6	DOM	20	120	85	Unknown	Unknown
P42928W	4/20/1978	GST	34	N	74	W	11	NESE	EARL G. DOEGE	LUCK FIVE #2	DOM	20	180	100	140	175
P46720W	2/28/1979	GST	34	N	74	W	11	NESE	ELMER DOEGE	ELRU #1	DOM	23	180	100	135	175
P8607P	6/28/1946	GST	34	N	74	W	11	NESW	A.C. LAYTON	LAYTON #3	STO	3	114	20	100	110
P107284W	8/29/1997	CAN	34	N	74	W	11	NWNW	POWER RESOURCES INC.	L-4	MON					
P107285W	8/29/1997	CAN	34	N	74	W	11	NWNW	POWER RESOURCES INC.	M-4	MON					
P107286W	8/29/1997	CAN	34	N	74	W	11	NWNW	POWER RESOURCES INC.	N-4	MON					
P161492W	8/25/2004	GSI	34	N	74	W	11	NWSE	JOHN AND MELISSA ALBAUGH	ALBAUGH 1	DOM					
P48627W	6/19/1979	CAN	34	N	74	W	11	SENE	J. PATRICK NEWELL**HAWKY PIXLER		DOM					
P50985W	1/21/1980	GST	34	N	74	W	11	SENE	ROBERT HAYN	KT-2	MON	0	196	66.7	Unknown	Unknown
P83767W	10/11/1990	GST	34	N	74	W	11	SENE	BRADLEY D. ANDERSON	ANDERSON #1	DOM	8	110	60	Unknown	Unknown

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P32804W	4/20/1976	GST	34	N	74	W	11	SENW	MARK A. & ARDITH A. HICKERSON	HICKERSON #1	DOM	6	195	80	150	185
P30264W	6/25/1975	GST	34	N	74	W	11	SESE	MERLE H. DUNHAM	HIGHWAY CORNER #1	DOM	10	180	55	Unknown	Unknown
P30265W	6/25/1975	GST	34	N	74	W	11	SESE	MERLE H. DUNHAM	HIGHWAY CORNER #2	DOM	10	160	45	Unknown	Unknown
P64309W	6/9/1983	GST	34	N	74	W	11	SESE	GARY & KAREN HUXTABLE	HUXTABLE #1	DOM	10	160	80	120	160
P9485P	7/31/1956	GST	34	N	74	W	11	SESE	J.S. NEGLEY	NEGLEY #2	DOM,STO	25	130	60	Unknown	Unknown
P107291W	8/29/1997	CAN	34	N	74	W	11	SESW	POWER RESOURCES INC.	ID-6	MON					
P107292W	8/29/1997	CAN	34	N	74	W	11	SESW	POWER RESOURCES INC.	L-6	MON					
P107293W	8/29/1997	CAN	34	N	74	W	11	SESW	POWER RESOURCES INC.	M-6	MON					
P107294W	8/29/1997	CAN	34	N	74	W	11	SESW	POWER RESOURCES INC.	N-6	MON					
P107295W	8/29/1997	CAN	34	N	74	W	11	SESW	POWER RESOURCES INC.	MP-6	MON					
P40688W	11/2/1977	GST	34	N	74	W	11	SWNE	EVERT L. BOURQUIN	BOURQUIN #2	STO	12	200	170	170	200
P40689W	11/2/1977	GST	34	N	74	W	11	SWNE	EVERT L. BOURQUIN	BOURQUIN #1	DOM	12	125	65	110	115
P9484P	8/31/1922	GST	34	N	74	W	11	SWNE	J.S. NEGLEY	NEGLEY #1	DOM,STO	7	130	80	Unknown	Unknown
P50986W	1/21/1980	GST	34	N	74	W	11	SWSE	EARLENE LAPLANT	LA PLANT #1	MON	0	131	44.9	Unknown	Unknown
41/2/228W	8/7/2008	UNA	34	N	74	W	12	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3474-12-M6	MON					
P4987P	12/31/1945	GST	34	N	74	W	12	SENE	SMITH SHEEP CO.	SMITH #4	STO	10	150	70	Unknown	Unknown
41/3/228W	8/7/2008	UNA	34	N	74	W	13	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3474-13-M7	MON					
41/5/228W	8/7/2008	UNA	34	N	74	W	13	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3474-13-M-9	MON					
P9823W	7/22/1971	GST	34	N	74	W	13	NESE	SMITH SHEEP CO.	SMITH #45 (DEEPENED)	STO	7	180	150	160	180

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
41/4/228W	8/7/2008	UNA	34	N	74	W	14	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3474-14-M-8	MON					
41/8/228W	8/7/2008	UNA	34	N	74	W	14	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3473-14-M-12	MON					
P45766W	10/31/1978	ABA	34	N	74	W	14	NENE	TETON EXPLORATION DRILLING CO., INC.	PN5 L315	MON	0	78	13	Unknown	Unknown
P54200W	5/8/1980	CAN	34	N	74	W	14	NENE	UNC TETON EXPLORATION DRILLING COMPANY	F1 THROUGH F200	IND					
41/1/227W	8/7/2008	UNA	34	N	74	W	14	NENW	URANIUM ONE dba ENERGY METALS CORPORATION	3474-14-LMP-1	MON					
41/10/226W	8/7/2008	UNA	34	N	74	W	14	NENW	URANIUM ONE dba ENERGY METALS CORPORATION	3474-14-LMO-1	MON					
41/3/227W	8/7/2008	UNA	34	N	74	W	14	NENW	URANIUM ONE dba ENERGY METALS CORPORATION	3474-14-LMP-3	MON					
41/5/227W	8/7/2008	UNA	34	N	74	W	14	NENW	URANIUM ONE dba ENERGY METALS CORPORATION	3474-14-LMU-1	MON					
41/6/227W	8/7/2008	UNA	34	N	74	W	14	NENW	URANIUM ONE dba ENERGY METALS CORPORATION	3474-14-LPW-1	MON					
41/7/227W	8/7/2008	UNA	34	N	74	W	14	NENW	URANIUM ONE dba ENERGY METALS CORPORATION	3474-14-LPW-2	MON					
P45751W	10/31/1978	CAN	34	N	74	W	14	NENW	TETON EXPLORATION DRILLING CO., INC.	PN5 L300	MIS	20	78	14.5	35	75
P45763W	10/31/1978	ABA	34	N	74	W	14	NENW	TETON EXPLORATION DRILLING CO., INC.	PN5 L312	MON	0	270	57.5	200	246
P50979W	1/21/1980	ABA	34	N	74	W	14	NENW	TETON EXPLORATION DRILLING CO.	PN5 LOM1	MON	0	85	27	Unknown	Unknown
P50982W	1/21/1980	ABA	34	N	74	W	14	NENW	TETON EXPLORATION DRILLING CO.	PN5 LMM1	MON	0	380	68.5	323	386
P54196W	5/8/1980	CAN	34	N	74	W	14	NENW	UNC TETON EXPLORATION DRILLING COMPANY	B1 THROUGH B224	IND					

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P80350W	7/28/1989	GST	34	N	74	W	14	NENW	CEGB EXPLORATION (AMERICA), INC.	684	MON	0	260.4	65.3	248	260
P25672W	1/22/1974	CAN	34	N	74	W	14	NESE	HARRY G. & EMILY H. REEVES	REEVES #1	DOM					
P107296W	8/29/1997	CAN	34	N	74	W	14	NWNE	POWER RESOURCES INC.	J-7	MON					
P107297W	8/29/1997	CAN	34	N	74	W	14	NWNE	POWER RESOURCES INC.	L-7	MON					
P107298W	8/29/1997	CAN	34	N	74	W	14	NWNE	POWER RESOURCES INC.	N-7	MON					
P107299W	8/29/1997	CAN	34	N	74	W	14	NWNE	POWER RESOURCES INC.	ID-7	MON					
P45752W	10/31/1978	CAN	34	N	74	W	14	NWNE	INC. TETON EXPLORATION CO.	PN5 L301	MON	0	390	62		389
P45753W	10/31/1978	CAN	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN 5 L302	MIS	30	265	61.5	206	266
P45754W	10/31/1978	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5-L303	MON	0	540	-1	450	540
P45755W	10/31/1978	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L304	MON	0	105	30	66	105
P45756W	10/31/1978	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L305	MON	0	400	81	340	398
P45757W	10/31/1978	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 306	MON	0	392	61	315	392
P45758W	10/31/1978	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L307	MON	0	385	58	305	380
P45759W	10/31/1978	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L308	MON	0	395	63	326	387
P45760W	10/31/1978	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L309	MON	0	265	42.5	207	264
P45761W	10/31/1978	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5-L310	MON	0	255	48	200	254
P45762W	10/31/1978	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5-L311	MON	0	215	-1	207	215

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P45764W	10/31/1978	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L313	MON	0	255	70	207	255
P45765W	12/31/1979	GST	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING, INC CO.	PN5-L314	MON	0	540	99	500	Unknown
P48009W	5/14/1979	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L571	MON	0	396	77.8	390	428
P49059W	7/6/1979	GST	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO., INC.	PN5-L578	MON					
P49670W	5/23/1979	CAN	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING COMPANY, INC.	INJECTION-RECOVERY 1 THROUGH 15	IND	2	390	62.5	320	390
P49671W	6/4/1979	CAN	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING COMPANY, INC.	INJECTION-RECOVERY 16 THROUGH 30	IND	2	270	62.5	Unknown	Unknown
P50976W	1/21/1980	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO.	PN5 L572	MON	0	259	66.9	195	259
P50977W	1/21/1980	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING COMPANY	PN5 L578	MON	0	325	99.8	280	318
P50978W	1/21/1980	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO.	PN5 L583	MON	0	141	60.3	133	169
P50981W	1/21/1980	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO.	PN5 LOM3	MON	0	115	45.3	Unknown	Unknown
P50983W	1/21/1980	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO.	PN5 LMM1	MON	0	380	78.8	344	380
P51977W	4/28/1980	CAN	34	N	74	W	14	NWNE	INC. TETON EXPLORATION DRILLING	PN5-L314	MIS	35	617	99	500	Unknown
P54199W	5/8/1980	CAN	34	N	74	W	14	NWNE	UNC TETON EXPLORATION DRILLING COMPANY	E1 THROUGH B640	IND					
P54245W	8/26/1980	ABA	34	N	74	W	14	NWNE	TETON EXPLORATION DRILLING CO.	PN5 LMM3	MON	0	412	103	376	406
P55504W	1/29/1981	CAN	34	N	74	W	14	NWNE	INC. TETON EXPLORATION DRILLING	PN5-LBM3	MIS					
P66957W	4/9/1984	CAN	34	N	74	W	14	NWNE	UNC TETON EXPLORATION DRILLING INC.	PN5-L314	MIS	35	617	99	500	Unknown

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P78113W	9/26/1988	UNA	34	N	74	W	14	NWNE	WILLIAM J. SMITH	PN5 L314	STO,MIS	20	617	99	535	604
P80348W	7/28/1989	GST	34	N	74	W	14	NWNE	CEGB EXPLORATION (AMERICA), INC.	682	MON	0	403.1	93.2	395	403
P54195W	5/8/1980	CAN	34	N	74	W	14	NWNW	UNC TETON EXPLORATION DRILLING COMPANY	A1 THROUGH A720	IND					
P54244W	8/26/1980	ABA	34	N	74	W	14	NWNW	TETON EXPLORATION DRILLING CO.	PN5 LBM2	MON	0	503	109	466	496
P54248W	8/26/1980	ABA	34	N	74	W	14	NWNW	TETON EXPLORATION DRILLING CO.	PN5 LMM6	MON	0	384	70.6	350	376
P54250W	8/26/1980	ABA	34	N	74	W	14	NWNW	TETON EXPLORATION DRILLING CO.	PN5 LMM8	MON	0	367	65	341	361
P54251W	8/26/1980	ABA	34	N	74	W	14	NWNW	TETON EXPLORATION DRILLING CO.	PN5 LMM9	MON	0	359	64.4	332	359
P54254W	8/26/1980	ABA	34	N	74	W	14	NWNW	TETON EXPLORATION DRILLING CO.	PN5 LLNM3	MON	0	270	62.4	243	263
P54201W	5/8/1980	CAN	34	N	74	W	14	SENE	UNC TETON EXPLORATION DRILLING COMPANY	G1 THROUGH G520	IND					
P54243W	8/26/1980	ABA	34	N	74	W	14	SENE	TETON EXPLORATION DRILLING CO.	PN5 LBM1	MON	0	561	160	485	554
P54246W	8/26/1980	ABA	34	N	74	W	14	SENE	TETON EXPLORATION DRILLING CO.	PN5 LMM4	MON	0	411.5	128	399	408
P54252W	8/26/1980	ABA	34	N	74	W	14	SENE	TETON EXPLORATION DRILLING CO.	PN5 LMM10	MON	0	421	128	378	421
P54255W	8/26/1980	ABA	34	N	74	W	14	SENE	TETON EXPLORATION DRILLING CO.	PN5 LMM4	MON	0	317	117	273	311
P80347W	7/28/1989	GST	34	N	74	W	14	SENE	CEGB EXPLORATION (AMERICA), INC.	678	MON	0	403	93	389	403
41/2/227W	8/7/2008	UNA	34	N	74	W	14	SENW	URANIUM ONE dba ENERGY METALS CORPORATION	3474-14-LMP-2	MON					
41/4/227W	8/7/2008	UNA	34	N	74	W	14	SENW	URANIUM ONE dba ENERGY METALS CORPORATION	3474-14-LMP-4	MON					
P45767W	10/31/1978	GST	34	N	74	W	14	SENW	TETON EXPLORATION DRILLING CO., INC.	PN5-L316	MON	0	259	67	198	255

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P45902W	11/13/1978	ABA	34	N	74	W	14	SENW	TETON EXPLORATION DRILLING CO., INC.	PN5 L320	MON	0	262	63	200	246
P49058W	7/6/1979	ABA	34	N	74	W	14	SENW	TETON EXPLORATION DRILLING CO., INC.	PN5 L576	MON	0	375	58	306	370
P54197W	5/8/1980	CAN	34	N	74	W	14	SENW	UNC TETON EXPLORATION DRILLING COMPANY	C1 THROUGH C720	IND					
P54247W	8/26/1980	ABA	34	N	74	W	14	SENW	TETON EXPLORATION DRILLING CO.	PN5 LMM5	MON	0	313	64.4	295	307
P45768W	10/31/1978	ABA	34	N	74	W	14	SWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L317	MON	0	270	68.5	202	265
P45770W	10/31/1978	ABA	34	N	74	W	14	SWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L319	MON	0	260	77	200	267
P48007W	5/14/1979	GST	34	N	74	W	14	SWNE	TETON EXPLORATION DRILLING CO., INC.	PN5-L573	MON	0	280	73	205	259
P48008W	5/14/1979	ABA	34	N	74	W	14	SWNE	INC. TETON EXPLORATION DRILLINC CO.	PN5 L570	MON	0	113	33	60	100
P49055W	7/6/1979	GST	34	N	74	W	14	SWNE	TETON EXPLORATION DRILLING CO., INC.	PN5-L573	MON	0	280	73	Unknown	Unknown
P49056W	7/6/1979	ABA	34	N	74	W	14	SWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L574	MON	0	270	68	Unknown	Unknown
P49057W	7/6/1979	ABA	34	N	74	W	14	SWNE	TETON EXPLORATION DRILLING CO., INC.	PN5 L575	MON	0	390	76	340	377
P50980W	1/21/1980	ABA	34	N	74	W	14	SWNE	TETON EXPLORATION DRILLING CO.	PN5 LOM2	MON	0	140	37	68	96
P50984W	1/21/1980	ABA	34	N	74	W	14	SWNE	TETON EXPLORATION DRILLING CO.	PN5 LNM1	MON	0	275	88.8	226	280
P54202W	5/8/1980	CAN	34	N	74	W	14	SWNE	UNC TETON EXPLORATION DRILLING COMPANY	H1 THROUGH H1040	IND					
P54249W	8/26/1980	ABA	34	N	74	W	14	SWNE	TETON EXPLORATION DRILLING CO.	PN5 LMM7	MON	0	387	109	356	380
P45769W	10/31/1978	ABA	34	N	74	W	14	SWNW	TETON EXPLORATION DRILLING CO., INC.	PN5 L318	MON	0	312	41	270	312

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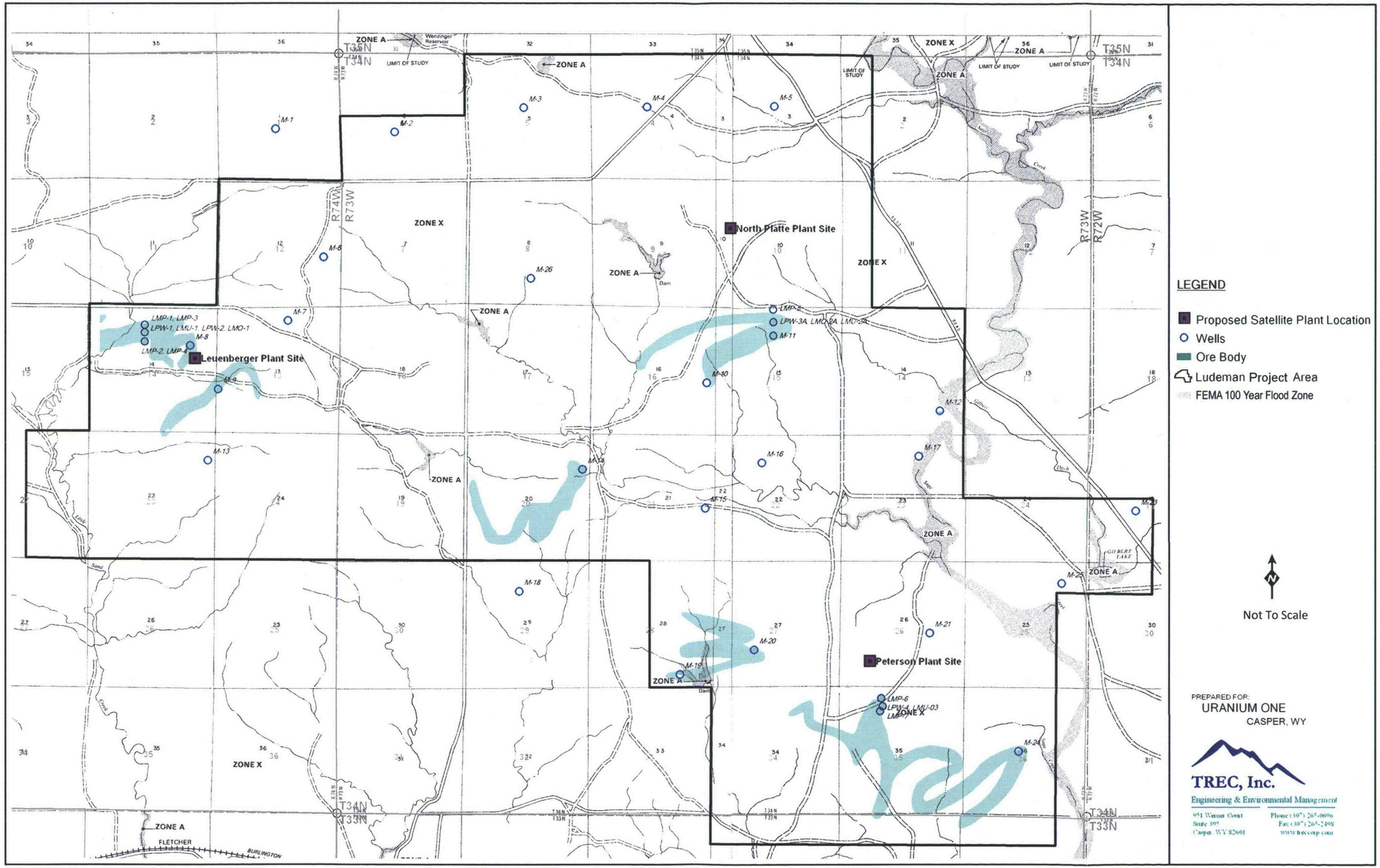
P4988P	12/31/1945	CAN	34	N	74	W	14	SWNW	SMITH SHEEP CO.	SMITH #5	STO	10	145	60	Unknown	Unknown
P54198W	5/8/1980	CAN	34	N	74	W	14	SWNW	UNC TETON EXPLORATION DRILLING COMPANY	D1 THROUGH D520	IND					
P54253W	8/26/1980	ABA	34	N	74	W	14	SWNW	TETON EXPLORATION DRILLING CO.	PN5 LNM2	MON	0	220	37	198	214
P80349W	7/28/1989	GST	34	N	74	W	14	SWNW	CEGB EXPLORATION (AMERICA), INC.	683	MON	0	299.3	34.2	295	299
P49060W	7/6/1979	CAN	34	N	74	W	14	SWSW	TETON EXPLORATION DRILLING CO., INC.	PN5 L579	MON					
P107280W	8/29/1997	CAN	34	N	74	W	15	SWNE	POWER RESOURCES INC.	L-3	MON					
P107281W	8/29/1997	CAN	34	N	74	W	15	SWNE	POWER RESOURCES INC.	M-3	MON					
P107282W	8/29/1997	CAN	34	N	74	W	15	SWNE	POWER RESOURCES INC.	N-3	MON					
P107283W	8/29/1997	CAN	34	N	74	W	15	SWNE	POWER RESOURCES INC.	ID-3	MON					
41/2/72W	5/5/2008	UNA	34	N	74	W	15	SWSE	PETER BENEVIDES	BENEVIDES #1	DOM,STO					
P27740P	8/22/1974	GST	34	N	74	W	15	SWSE	HILDLEBRAND INC.	HILDEBRAND #1	DOM,STO	7	20	15	Unknown	Unknown
P27741P	8/22/1974	GST	34	N	74	W	16	NENE	HILDEBRAND INC.**WYO BOARD OF LAND COMMISSIONERS	HILDEBRAND #2	STO	17	20	15	Unknown	Unknown
P182754W	7/17/2007	GSI	34	N	74	W	16	SWNE	North Finn, LLC** STATE OF WYOMING	STATE DEEP WATER WELL 7-16	IND					
41/9/228W	8/7/2008	UNA	34	N	74	W	23	NENE	URANIUM ONE dba ENERGY METALS CORPORATION	3474-23-M-13	MON					
P55423W	2/10/1981	GST	34	N	74	W	25	NENE	L. JOE WHITING	PACIFIC POWER & LIGHT #4	STO	25	200	45	160	200
P130714W	11/7/2000	CAN	34	N	74	W	26	SWSW	PACIFIC CORP	LITTLE SAND CREEK # 1	STO					
P19400P	12/31/1940	GST	34	N	74	W	32	NWSE	PACIFIC POWER & LIGHT CO.	HILDEBRAND #5 (SAND CREEK)	STO	10	28	20	Unknown	Unknown

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P19403P	12/31/1954	GST	34	N	74	W	35	NENE	PACIFIC POWER & LIGHT CO.	HILDEBRAND #8 (SCHOOL SECTION)	STO	5	118	80	Unknown	Unknown
P19402P	12/31/1945	GST	34	N	74	W	35	SESW	PACIFIC POWER & LIGHT CO.	HILDEBRAND #7 (LITTLE SAND CREEK)	STO	10	28	20	Unknown	Unknown
P22077P	12/31/1925	GST	35	N	72	W	29	SESE	JAMES W. & CATHERINE M. STROCK	DUGAN #1	STO	10	200	80	Unknown	Unknown
P121280W	12/10/1999	GST	35	N	72	W	32	SENE	Roy A Strock	Strock #2	STO	3	149	54	90	139
P22078P	12/31/1925	GST	35	N	72	W	33	SWNW	JAMES W. & CATHERINE M. STROCK	DUGAN #2	STO	10	200	80	Unknown	Unknown
P22076P	12/31/1925	GST	35	N	72	W	33	SWSW	JAMES W. & CATHERINE M. STROCK	CLARK DUGAN #1	STO	10	200	80	Unknown	Unknown
P3699P	3/31/1969	GST	35	N	73	W	15	NWSW	SMITH LAND COMPANY	SMITH #17	STO	7	176	75	160	176
P11831W	12/29/1971	GST	35	N	73	W	16	NWSE	SMITH SHEEP CO.	SMITH #47	STO	10	62	20	29	35
P3700P	10/23/1958	GST	35	N	73	W	21	SWNW	SMITH SHEEP CO.	SMITH #18	STO	7	155	14	138	155
P3698P	3/22/1969	GST	35	N	73	W	23	SWNW	SMITH LAND COMPANY	#15 SMITH	STO	7	308	165	300	308
P77528W	7/13/1988	GST	35	N	73	W	24	SESW	SMITH SHEEP CO.	SPENCER #2	STO	4	320	140	215	295
P4993P	6/10/1954	GST	35	N	73	W	25	SESE	SMITH LAND COMPANY	SMITH #14	STO	10	180	48	Unknown	Unknown
P163068W	10/4/2004	GST	35	N	73	W	26	NWNE	SMITH SHEEP CO.	EAST SHEARING PENS #1	STO	8	220	90	195	200
P89349W	8/27/1992	GST	35	N	73	W	28	NESE	SMITH SHEEP CO.	SOUTH TOMMY #1	STO	3	200	55	140	195
P25039W	11/26/1973	GST	35	N	73	W	29	NENW	SMITH SHEEP CO.	SMITH #48	STO	5	65	35	35	48
P66028W	12/5/1983	CAN	35	N	73	W	29	SENE	DAVIS OIL COMPANY	PASQUE WATER WELL #1	MIS	80	765	390	260	630
P67930W	7/2/1984	GST	35	N	73	W	29	SENE	SMITH SHEEP CO.	SMITH #53	STO	25	720	390	Unknown	Unknown
P38137W	5/17/1977	GST	35	N	73	W	31	NWSW	VOLLMAN RANCHES INC.	WINSINGER #1	STO	4	175	21	110	175
P8606P	6/25/1946	GST	35	N	73	W	31	SWSW	A.C. LAYTON	LAYTON #2	STO	2	94	50	75	90

Permit #	Priority	Status	Township		Range		Sec.	Qtrqtr	Applicant	Facility Name	Uses	Yld Act	Well Depth	Static Depth	Mwbz Top	Mwbz Bottom
P4995P	12/21/1942	GST	35	N	73	W	32	SESW	SMITH SHEEP CO.	SMITH #19	STO	15	60	5	Unknown	Unknown
P4991P	10/4/1965	GST	35	N	73	W	33	NESE	SMITH LAND COMPANY	SMITH #10	STO	12	80	38	Unknown	Unknown
P5729W	5/29/1970	CAN	35	N	73	W	34	NWSW	ROCKY MOUNTAIN ENERGY COMPANY	XRWW #1	IND	20	115	40	85	105
P4992P	6/30/1938	GST	35	N	73	W	35	NWSE	SMITH LAND COMPANY	SMITH #13	STO	10	85	30	Unknown	Unknown
P5002P	10/8/1954	GST	35	N	74	W	13	SESW	SMITH SHEEP CO.	SMITH #29	STO	10	105	55	Unknown	Unknown
P5003P	12/21/1925	GST	35	N	74	W	13	SWSE	SMITH SHEEP CO.	SMITH #30	DOM,STO	8	110	80	Unknown	Unknown
P175290W	6/14/2006	GSI	35	N	74	W	14	NWNW	POWER RESOURCES, INC.	NW/NW 14-35-74 (2 WELLS) - MINE UNIT 15A	MON					
P101889W	3/20/1996	GST	35	N	74	W	22	NESE	SMITH SHEEP CO.	ONIEL #3	STO	5	120	60	85	101
P4998P	4/16/1952	GST	35	N	74	W	22	NESW	SMITH LAND COMPANY	SMITH #24	STO	12	207	140	Unknown	Unknown
P4999P	10/1/1950	GST	35	N	74	W	23	NWSW	SMITH LAND COMPANY	SMITH #25	STO	12	75	35	Unknown	Unknown
P3702P	3/27/1969	GST	35	N	74	W	27	SWSW	SMITH LAND COMPANY	SMITH #22	STO	7	126	75	120	126
P163067W	10/4/2004	GST	35	N	74	W	28	SWSW	SMITH SHEEP CO.	WEST DOWNS #1	STO	8	260	135	215	240
P4997P	3/8/1938	CAN	35	N	74	W	28	SWSW	SMITH LAND COMPANY	SMITH #23	STO	6	180	95	160	178
P8611W	4/9/1971	GST	35	N	74	W	28	SWSW	SMITH SHEEP CO.	SMITH #42	STO	7	103	60	90	103
P163066W	10/4/2004	GSI	35	N	74	W	32	NENE	SMITH SHEEP CO.	CAMPBELL #1	STO	6	300	172	220	280
P8174P	3/31/1941	GST	35	N	74	W	33	SWSW	HENRY J. KEENAN	HENRY KEENAN #4	STO	5	141	85	Unknown	Unknown
P4996P	9/23/1950	GST	35	N	74	W	35	SENW	SMITH LAND COMPANY	SMITH #21	STO	10	135	85	Unknown	Unknown
P3701P	3/18/1952	GST	35	N	74	W	36	NWSE	GAME & FISH COMM., STATE OF WYOMING** SMITH SHEEP CO.	SMITH #20	STO	7	170	60	140	165

Addendum 2.7-B

License Area with FEMA 100 Year Flood Zone and Ore-Bodies



LEGEND

- Proposed Satellite Plant Location
- Wells
- Ore Body
- Ludeman Project Area
- FEMA 100 Year Flood Zone

Not To Scale

PREPARED FOR:
URANIUM ONE
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Engineering & Environmental Management
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Casper, WY 82601
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Addendum 2.7-C

Summary of Monitoring Well Completion

Well ID	Northing	Easting	Township/Range	Section	Elevation TOC (ft; amsl)	Casing Depth (ft;bgs)	Hole Depth (ft;bgs)	Top Screen (ft;bgs)	Bottom Screen (ft;bgs)	Screen Length (ft)	Sand	Casing Type	AMSL DTW	November 2008-December 2008 Static Depth to Water (ft from TOC)	Feet of H2O Above/Below Screen	Top of Sand (Elevation)	Confined / Unconfined
M-2	830484	366906	T34N R73W	6	5280'	400'	600'	380'	400'	20'	90	SDR - 17, 5"	5057.00'	223.00'	157.00'	4900	Confined
M-3	831516	372320	T34N R73W	5	5300'	400'	600'	380'	400'	20'	90	SDR - 17, 5"	5159.03'	140.97'	239.03'	4920	Confined
M-4	831550	377500	T34N R73W	4	5285'	400'	600'	380'	400'	20'	90	SDR - 17, 5"	5099.30'	185.70'	194.30'	4905	Confined
M-5	831585	382925	T34N R73W	3	5200'	400'	600'	380'	400'	20'	80	SDR - 17, 5"	5076.20'	123.80'	256.20'	4820	Confined
M-6	825255	363944	T34N R74W	12	5240'	380'	380'	360'	380'	20'	100	SDR - 17, 5"	5034.00'	206.00'	154.00'	4880	Confined
M-7	822462	362483	T34N R74W	13	5290'	500'	500'	260'	280'	20'	110	SDR - 17, 5"	5108.97'	181.03'	78.97'	5030	Confined
M-8	821501	358296	T34N R74W	14	5235'	600'	600'	390'	420'	30'	80	SDR - 17, 5"	5115.86'	119.14'	270.86'	4845	Confined
M-9	819727	359522	T34N R74W	13	5220'	600'	600'	580'	600'	20'	70	SDR - 17, 5"	5041.32'	178.68'	401.32'	4640	Confined
M-10	820025	380050	T34N R73W	16	5220'	600'	600'	470'	485'	15'	70	SDR - 17, 5"	5084.21'	135.79'	334.21'	4750	Confined
M-11	821946	382852	T34N R73W	15	5200'	570'	570'	550'	570'	20'	70	SDR - 17, 5"	5029.77'	170.23'	379.77'	4650	Confined
M-12	818897	389890	T34N R73W	14	5010'	250'	250'	220'	250'	30'	80	SDR - 17, 5"	artesian	artesian	artesian	4790	Confined
M-13	816755	359099	T34N R73W	23	5300'	230'	230'	210'	230'	20'	100	SDR - 17, 5"	5139.62'	160.38'	49.62'	5090	Confined
M-14	816399	374853	T34N R73W	20	5105'	500'	500'	455'	480'	25'	70	SDR - 17, 5"	5036.71'	68.29'	386.71'	4650	Confined

Well ID		Location	Township/Range	Section	Elevation TOC (ft; amsl)	Casing Depth (ft;bgs)	Hole Depth (ft;bgs)	Top Screen (ft;bgs)	Bottom Screen (ft;bgs)	Screen Length (ft)	Sand	Casing Type	AMSL DTW	November 2008-December 2008 Static Depth to Water (ft from TOC)	Feet of H2O Above/Below Screen	Top of Sand (Elevation)	Confined / Unconfined
M-15	814800	380005	T34N R73W	21	5180'	460'	460'	420'	440'	20'	70	SDR - 17, 5"	5140.39'	39.61'	380.39'	4760	Confined
M-16	816696	382402	T34N R73W	22	5050'	500'	500'	330'	350'	20'	70	SDR - 17, 5"	5021.38'	28.62'	301.38'	4720	Confined
M-17	816997	388900	T34N R73W	23	5060'	500'	500'	330'	370'	40'	80	SDR - 17, 5"	artesian	artesian	artesian	4730	Confined
M-18	813753	370004	T34N R73W	20	5110'	360'	520'	340'	360'	20'	70	SDR - 17, 5"	5008.52'	101.48'	238.52'	4770	Confined
M-19	807845	378952	T34N R73W	20	5035'	360'	360'	200'	220'	20'	80	SDR - 17, 5"	4982.64'	52.36'	147.64'	4835	Confined
M-20	808887	382104	T34N R73W	27	5040'	320'	320'	300'	320'	20'	70	SDR - 17, 5"	4979.28'	60.72'	239.28'	4740	Confined
M-21	809606	389488	T34N R73W	26	5065'	360'	360'	310'	330'	20'	70	SDR - 17, 5"	4972.80'	92.20'	217.80'	4755	Confined
M-23	814735	398152	T34N R72W	19	5040'	298'	360'	280'	295'	15'	70	SDR - 17, 5"	5006.00'	34.00'	246.00'	4760	Confined
M-24	804681	393222	T34N R73W	36	4980'	360'	360'	120'	150'	30'	90	SDR - 17, 5"	4932.11'	47.89'	72.11'	4860	Confined
M-26	825898	372206	T34N R73W	8	5310'	800'	360'	610'	630'	20'	80	SDR - 17, 5"	5036.42'	273.58'	336.42'	4700	Confined
OW-1	806885	387375	T34N R73W	35	4930'	175'	800'	127'	167'	40'	N/A	SDR - 17, 5"	4859.56'	70.44'	56.56'	4803	Confined
OW-9	806704	387481	T34N R73W	35	4930'	274'	338'	274'	314'	40'	N/A	SDR - 17, 5"	4801.38'	128.62'	145.38'	4656	Confined
LPW-1	822080	356445	T34N R74W	14	5194'	325'	420'	327'	347'	20'	80	SDR - 17, 5"	5138.88'	55.12'	271.88'	4867	Confined

Well ID		Location	Township/Range	Section	Elevation TOC (ft; amsl)	Casing Depth (ft;bgs)	Hole Depth (ft;bgs)	Top Screen (ft;bgs)	Bottom Screen (ft;bgs)	Screen Length (ft)	Sand	Casing Type	AMSL DTW	November 2008-December 2008 Static Depth to Water (ft from TOC)	Feet of H2O Above/Below Screen	Top of Sand (Elevation)	Confined / Unconfined
LMU-1 +	822080	356455	T34N R74W	14	5195'	465'	520'	465'	485'	20'	70	SDR - 17, 5"				4730	Confined
LMO-1	822080	356425	T34N R74W	14	5194'	85'	160'	085'	107'	23'	110	SDR - 17, 5"	5172.42'	21.58'	63.42'	5109	Confined
LPW-2	822080	356435	T34N R74W	14	5194'	225'	290'	225'	245'	20'	90	SDR - 17, 5"	5141.38'	52.62'	172.38'	4969	Confined
LPW-3A	822565	382860	T34N R73W	15	5210'	555'	600'	555'	575'	20'	70	SDR - 17, 5"	5043.49'	166.51'	388.49'	4655	Confined
LMU-2A	822565	382870	T34N R73W	15	5210'	725'	800'	725'	745'	20'	60	SDR - 17, 5"	5057.68'	152.32'	572.68'	4485	Confined
LMO-2A	822565	382850	T34N R73W	15	5211'	230'	250'	232'	252'	20'	100	SDR - 17, 5"	5063.59'	147.41'	84.59'	4979	Confined
LPW-4	806525	387485	T34N R73W	35	5111'	237'	260'	237'	257'	20'	90	SDR - 17, 5"	4971.84'	139.16'	97.84'	4874	Confined
LMU-3	806525	387500	T34N R73W	35	5111'	285'	780'	285'	305'	20'	80	SDR - 17, 5"	4977.60'	133.40'	151.60'	4826	Confined
LMP-6*	806855	387430	T34N R73W	35	5104'	230'	280'	232'	247'	15'	90	SDR - 17, 5"	4971.08'		99.08'	4872	
LMP-7*	806320	387385	T34N R73W	35	5107'	220'	260'	223'	243'	20'	90	SDR - 17, 5"	4972.54'		88.54'	4884	
LMP-1*	822380	356440	T34N R74W	14	5211'	350'	420'	350'	370'	20'	80	SDR - 17, 5"	5139.43'		278.43'	4861	
LMP-2*	821700	356450	T34N R74W	14	5209'	328'	420'	328'	350'	22'	80	SDR - 17, 5"	5139.80'		258.80'	4881	
LMP-3*	822390	356435	T34N R74W	14	5210'	245'	290'	245'	270'	25'	90	SDR - 17, 5"	5141.00'		176.00'	4965	
LMP-4*	821700	356435	T34N R74W	14	5209'	225'	290'	225'	245'	20'	90	SDR - 17, 5"	5140.00'		156.00'	4984	

+ Static Water Level data not used due to abnormal rise in water level

*Static Water Level Before Pumping Test

Well ID		Location	Township/Range	Section	Elevation TOC (ft; amsl)	Casing Depth (ft;bgs)	Hole Depth (ft;bgs)	Top Screen (ft;bgs)	Bottom Screen (ft;bgs)	Screen Length (ft)	Sand	Casing Type	AMSL DTW	November 2008-December 2008 Static Depth to Water (ft from TOC)	Feet of H2O Above/Below Screen	Top of Sand (Elevation)	Confined / Unconfined
JS	N/A	NESE	T34N R74W	14													

Note: No information available from SEO on this well

Addendum 2.7-D

Surface Water Quality Sample Data

Uranium One - Wyoming
Sampling Schedule

Ludeman 2008 & 2009

2008													2009											
Location I.D.	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
SW-1				4/24		6/19	7/18				11/3				3/9									
SW-2						6/17	7/31				DRY				3/9									
SW-3				DRY		6/17	DRY				DRY				3/9									
SW-4				DRY		6/17	7/23				DRY				DRY									
SW-5				DRY		DRY	DRY				DRY			DRY										
SW-6				4/21		6/20	7/24				11/10				3/17									
SW-7				4/24		6/30	7/29				DRY				DRY									
SW-8				4/21		6/30	7/23				DRY				3/5									
SW-9				4/5		6/30		8/21			11/10				3/5									
SW-10				4/5		6/30	7/23				11/10				3/2									
SW-11				DRY		6/17	7/24				DRY				DRY									
SW-12				4/5			7/24				11/5				3/16									
SW-13				DRY		6/17	7/24				DRY				3/16									
SW-14				DRY		DRY		DRY			DRY				DRY									
SW-15				DRY		6/18	DRY				DRY				DRY									

Uranium One - Wyoming
Sampling Schedule

Ludeman 2008 & 2009

2008												
Location I.D.	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
SW-16				4/28		6/30	7/23				11/13	
SW-17				4/25		6/30		8/4			NA	
SW-18				DRY		6/18	DRY				DRY	
SW-19				4/29		6/20	7/21				11/13	
SW-20				DRY		6/18	7/21				11/20	
SW-21						6/18	7/21				11/20	
SW-22				4/5			7/21				11/13	
SW-23				4/5		6/20	7/22				11/10	
SW-24				4/21		6/19	7/18				11/3	
SW-25				4/29		6/19	7/18				11/3	
SW-26						6/18	7/22				11/10	
SW-27												
SW-28												
SW-29												

2009												
Location I.D.	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
SW-16			3/19									
SW-17		2/25										
SW-18			DRY									
SW-19			3/27									
SW-20			3/27									
SW-21			3/27									
SW-22			3/19									
SW-23			3/9									
SW-24			3/9									
SW-25			3/9									
SW-26		2/24										
SW-27			DRY			DRY			DRY			DRY
SW-28			3/31			6/30			9/26			DRY
SW-29				4/20				DRY	DRY			DRY

ClientSampID	Collection Date	A/C Balance (± 5) (DIS)	Anions (DIS)	Bicarbonate as HCO3 (DIS)	Carbonate as CO3 (DIS)	Cations (DIS)	Chloride (DIS)	Conductivity (DIS)	Fluoride (DIS)	pH (DIS)	Solids, Total Dissolved Calculated (DIS)	Solids, Total Dissolved TDS @ 180 C (DIS)	Solids, Total Suspended TSS @ 105 C	Sulfate (DIS)	Turbidity	Nitrogen, Ammonia as N (DIS)	Nitrogen, Nitrate+Nitrite as N (DIS)	Aluminum (DIS)	Arsenic (DIS)	Barium (DIS)	Boron (DIS)
		%	meq/L	mg/L	mg/L	meq/L	mg/L	umhos/cm	mg/L	s.u.	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Ludeman-SW-1	4/24/2008	3.84	41.6	507	1	38.6	77	3210	0.6	8.16	2550	2480	74	1490	50	0.05	0.05	0.1	0.007	0.1	0.3
	6/19/2008	1.65	27.5	419	7	28.5	1	2180	0.4	8.31	1730	1610	17	980	17.3	0.18	0.05	0.1	0.010	0.1	0.4
	7/18/2008	0.472	24.3	150	24	24.1	58	2060	0.4	9.04	1550	1520	16	933		0.05	0.05	0.1	0.008	0.1	0.2
	7/22/2008														11.7						
	11/3/2008	-3.48	51.9	283	6	48.4	66	3940	0.4	8.12	3300	3340	183	2170	101	0.1	0.05	0.1	0.002	0.1	0.3
	3/9/2009	-5.65	55.7	432	1	49.7	92	4330	0.7	8.34	3450	4110	68	2210	20.5	0.05	0.05	0.1	0.004	0.1	0.1
	Average	-0.63	40.20	358.20	7.80	37.86	58.80	3144.00	0.50	8.30	2516.00	2612.00	71.60	1556.60	40.10	0.09	0.05	0.10	0.006	0.10	0.26
Ludeman-SW-2	6/17/2008	31.8	2	35	1	1.03	1	73	0.1	7.35	122	383	64	68		0.47	0.05	3.5	0.007	0.1	0.1
	7/31/2008	1.16	2.2	79	1	2.15	1	143	0.2	7.74	151	548	400	43	761	0.05	0.05	0.4	0.003	0.1	0.1
	3/9/2009	1.11	1.35	43	1	1.38	4	146	0.1	7.41	272	215	628	21	254	0.23	1.17	0.1	0.003	0.1	0.1
	Average	11.36	1.85	52.33	1.00	1.52	2.00	120.67	0.13	7.47	181.67	382.00	364.00	44.00	507.50	0.25	0.42	1.33	0.004	0.10	0.10
Ludeman-SW-3	6/17/2008	22.1	1.19	36	1	0.76	1	66	0.1	6.59	74	125	62	29		0.05	0.05	1.3	0.003	0.1	0.1
	3/9/2009	6.76	0.846	47	1	0.969	1	84	0.1	7.4	71	153	90	4	36.9	0.05	0.05	0.1	0.001	0.1	0.1
	Average	14.43	1.02	41.50	1.00	0.86	1.00	75.00	0.10	6.83	72.50	139.00	76.00	16.50	36.90	0.05	0.05	0.70	0.002	0.10	0.10
Ludeman-SW-4	6/17/2008	24.1	1.3	39	1	0.796	1	68	0.1	7.18	78	169	26	32		0.08	0.05	1.6	0.003	0.1	0.1
	7/23/2008	2.74	0.977	54	1	1.03	1	96	0.1	7.63	124	270	30	4	331	0.25	0.05	0.1	0.004	0.1	0.1
	Average	13.42	1.14	46.50	1.00	0.91	1.00	82.00	0.10	7.35	101.00	219.50	28.00	18.00	331.00	0.17	0.05	0.85	0.004	0.10	0.10
Ludeman-SW-6	4/21/2008	8.72	1.62	96	1	1.93	1	163	0.1	8.7	93	159	104	2	44.1	0.05	0.05	0.1	0.005	0.1	0.1
	4/28/2008	0.429	69.8	152	19	69.2	123	5620	0.4	8.9	4690	4730	29	3030	11.2	0.07	0.05	<0.2	0.010	0.1	0.3
	6/20/2008	0.418	0.971	54	1	0.979	1	88	0.1	9.18	57	159	36	4	90.2	0.1	0.05	0.6	0.004	0.1	0.1
	7/24/2008	0.754	1.22	46	12	1.2	1	117	0.1	9.4	67	90	13	3	17.3	0.05	0.05	0.1	0.006	0.1	0.1
	11/10/2008	-2.4	2.45	129	1	2.33	1	140	0.1	7.48	156	181	35	16	73.1	3.8	0.06	0.1	0.009	0.1	0.1
	3/17/2009	5.65	0.845	50	1	0.947	1	82	0.1	9.23	53	74	30	1	34.5	0.05	0.05	0.1	0.006	0.1	0.1
	Average	2.26	12.82	87.83	5.83	12.76	21.33	1035.00	0.15	8.20	852.67	898.83	41.17	509.33	45.07	0.69	0.05	0.20	0.007	0.10	0.13
Ludeman-SW-7	4/24/2008	1.21	2.28	88	1	2.33	7	184	0.1	7.48	137	243	690	30	606	0.08	0.05	1	0.008	0.1	0.1
	6/30/2008	14.3	1.63	62	1	1.23	1	106	0.1	7.12	94	208	102	30	156	0.11	0.05	0.7	0.008	0.1	0.1
	7/29/2008	26.1	3.12	55	1	5.33	1	95	0.1	7.76	247	272	653	106	504	0.05	0.05	0.2	0.010	0.1	0.1
	Average	13.87	2.34	68.33	1.00	2.96	3.00	128.33	0.10	7.38	159.33	241.00	481.67	55.33	422.00	0.08	0.05	0.63	0.009	0.10	0.10
Ludeman-SW-8	4/21/2008	1.66	0.906	17	1	0.936	1	34	0.1	6.76	64	241	690	30	724	0.13	0.05	1.8	0.013	0.1	0.1
	6/30/2008	23.7	0.721	19	1	0.445	1	38	0.1	6.84	46	153	49	19	95.2	0.06	0.05	0.9	0.005	0.1	0.1
	7/23/2008	35.5	0.133	5	1	0.28	1	24	0.1	5.59	94	298	305	2	531	0.13	0.05	1.7	0.007	0.1	0.1
	3/5/2009	2.13	0.394	15	1	0.411	1	42	0.1	7.68	47	26	37	3	25.7	0.39	1.13	0.5	0.001	0.1	0.1
	Average	15.75	0.54	14.00	1.00	0.52	1.00	34.50	0.10	6.14	62.75	179.50	270.25	13.50	343.98	0.18	0.32	1.23	0.007	0.10	0.10
Ludeman-SW-9	4/4/2008	6.73	1.15	30	1	1.01	1	60	0.1	6.5	83	109	315	31	358	0.11	0.1	0.9	0.007	0.1	0.1
	6/30/2008	11.9	1.77	75	1	1.39	1	118	0.1	7.23	109	1300	630	26	2440	0.1	0.05	0.6	0.011	0.1	0.1
	8/21/2008	5.06	0.822	49	1	0.91	1	68	0.1	7.68	55	132	232	1	254	0.1	0.05	0.2	0.005	0.1	0.1
	11/10/2008	-8.63	0.918	37	1	0.772	1	38	0.1	6.88	191	334	346	15	478	0.1	0.05	0.3	0.005	0.1	0.1
	3/5/2009	5.55	0.868	46	1	0.97	1	86	0.1	7.92	145	96	657	5	192	1.09	0.14	0.3	0.011	0.1	0.1
	Average	4.12	1.11	47.40	1.00	1.01	1.00	74.00	0.10	6.97	116.60	394.20	436.00	15.60	744.40	0.30	0.08	0.46	0.008	0.10	0.10
Ludeman-SW-10	4/4/2008	4.89	2.84	154	1	3.13	1	249	0.2	7.41	156	180	222	14	193	0.12	0.1	0.2	0.004	0.1	0.1
	6/30/2008	6.56	2.42	114	1	2.12	1	180	0.2	7.81	127	179	56	26	130	0.05	0.05	0.1	0.003	0.1	0.1
	7/23/2008	2.28	3.61	184	1	3.78	1	319	0.3	7.64	206	191	252	28	284	1.96	0.05	0.1	0.005	0.1	0.1
	11/10/2008	5.56	3.52	174	1	3.94	1	298	0.3	7.51	286	330	592	31	337	0.4	0.06	0.1	0.005	0.1	0.1
	3/2/2009	1.92	2.78	117	1	2.89	2	279	0.2	7.36	160	147	92	25	38.9	1.31	3.93	0.1	0.003	0.1	0.1
	Average	4.24	3.03	148.60	1.00	3.17	1.20	265.00	0.24	7.52	187.00	205.40	242.80	24.80	196.58	0.77	0.84	0.12	0.004	0.10	0.10
Ludeman-SW-11	6/17/2008	35.3	1.47	29	1	0.704	1	57	0.1	6.85	85	197	55	47		0.17	0.05	2.2	0.004	0.1	0.1
	7/24/2008	2.14	1.95	109	1	2.03	1	232	0.2	6.73	105	290	1850	7	1310	1.12	0.05	0.1	0.016	0.1	0.1
	Average	18.72	1.71	69.00	1.00	1.37	1.00	144.50	0.15	6.79	95.00	243.50	952.50	27.00	1310.00	0.65	0.05	1.15	0.010	0.10	0.10
Ludeman-SW-12	4/4/2008	2.73	20.7	445	1	21.8	31	1730	0.8	8.16	1280	1360	6	598	2.4	0.05	0.1	0.1	0.002	0.1	0.1
	7/24/2008	1.72	12	317	1	11.6	12	1080	0.9	7.18	711	717	58	310	5.8	0.05	0.05	0.1	0.001	0.1	0.1
	11/5/2008	-0.444	11.7	357	1	11.6	13	1030	0.9	8.28	693	718	171	259	28.4	0.1	0.05	0.1	0.002	0.1	0.1
	3/16/2009	-2.18	10.8	320	1	10.4	16	982	1	8.03	634	600	22	244	3.5	0.05	0.05	0.1	0.001	0.1	0.1
	Average	0.46	13.80	359.75	1.00	13.85	18.00	1205.50	0.90	7.66	829.50	848.75	64.25	352.75	10.03	0.06	0.06	0.10	0.002	0.10	0.10
Ludeman-SW-13	6/17/2008	40	2.99	37	1	1.28	1	79	0.1	6.75	178	504	26	114		0.28	0.05	5.4	0.005	0.1	0.1
	7/24/2008	11.6	1.5	63	1	1.19	1	122	0.2	6.69	82	157	271	22	272	0.12	0.05	0.1	0.011	0.1	0.1
	3/16/2009	24.9	0.295	12	1	0.492	1	35	0.1	7.59		249	1850	4	1260	0.59	0.07	0.7	0.007	0.1	0.1
	Average	25.50	1.60	37.33	1.00	0.99	1.00	78.67	0.13	6.87	130.00	303.33	715.67	46.67	766.00	0.33	0.06	2.07	0.01	0.10	0.10
Ludeman-SW-15	6/18/2008	15.1	2.31	116	1	3.14	1	253	0.2	7.2	167	693	250	19	1360	2.52	0.05	8	0.011	0.2	0.1
Ludeman-SW-16	4/28/2008	0.429	69.8	152	19	69.2	123	5620	0.4	8.9	4690	4730	29	3030	11.2	0.07	0.05	0.2	0.010	0.1	0.3
	6/30/2008	1.33	47.4	210	1	48.6	66	3830	0.5	7.82	3190	3330	593	2020	257	0.06	0.05	0.1	0.012	0.2	0.3
	7/23/2008	4.33	73.5	666	1	80.2	113	5850	0.6	8.19	5020	4740	73	2850	149	1.65	0.05	0.1	0.035	0.2	0.4
	11/13/2008	2.15	127	216	28	132	226	9980	0.4	8.86	8650	8740	34	5570	23.5	0.1	0.05	0.1	0.008	0.1	0.3
	3/19/2009	4.1	44.9	262	39	48.7	81	4090	0.5	8.83	3040	3100	10	1780	2.8	0.05	0.05	0.1	0.007	0.1	0.1
	Average	2.47	72.52	301.20	17.60	75.74	121.80	5874.00	0.48	8.29	4918.00	4928.00	147.80	3050	88.70	0.39	0.05	0.12	0.014	0.14	0.28
Ludeman-SW-17	4/25/2008	3	19.7	310	1	21	54	1810	0.2	8.2	1250	1370	635	630	456	0.08	0.05	0.1	0.006	0.1	0.1
	6/30/2008	1.22	6.38	14	30	6.54	10	627	0.2	9.55	411	421	43	233	15.5	0.05	0.05	0.1	0.004	0.1	0.1
	8/4/2008	1.69	10.5	31	19	10.9	23	1030	0.3	9.78	704	696	19	419	11.8	0.1	0.05	0.1	0.005	0.1	0.1

1. A "0" value represents below minimum detectable concentration

ClientSampID	Collection Date	Cadmium (DIS)	Calcium (DIS)	Chromium (DIS)	Copper (DIS)	Iron (DIS)	Lead (DIS)	Magnesium (DIS)	Manganese (DIS)	Mercury (DIS)	Molybdenum (DIS)	Nickel (DIS)	Potassium (DIS)	Selenium (DIS)	Silica (DIS)	Sodium (DIS)	Uranium (DIS)	Vanadium (DIS)	Zinc (DIS)	Iron (TOT)	Manganese (TOT)	Gross Alpha (DIS)	Gross Alpha MDC (DIS)
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	pCi/L
Ludeman-SW-1	4/24/2008	0.005	256	0.05	0.01	0.03	0.001	145	0.02	0.001	0.1	0.05	17	0.003	5.6	308	0.1060	0.2	0.01	1.95	0.48	153	9.3
	6/19/2008	0.005	200	0.05	0.01	0.16	0.001	109	0.21	0.001	0.1	0.05	15	0.002	1	209	0.1140	0.1	0.01	0.76	0.21	178	8.3
	7/18/2008	0.005	140	0.05	0.01	0.03	0.001	91	0.08	0.001	0.1	0.05	21	0.002	<0.2	208	0.1230	0.1	0.01	0.77	0.18	248	6.2
	7/22/2008																						
	11/3/2008	0.005	319	0.05	0.01	0.03	0.001	203	0.87	0.001	0.1	0.05	24	0.001	0.9	348	0.0714	0.1	0.1	2.23	0.89	114	11.9
	3/9/2009	0.005	332	0.05	0.02	0.03	0.009	200	0.1	0.001	0.1	0.05	15	0.005	10.6	375	0.6490	0.1	0.04	0.9	0.2	1390	18
	Average	0.005	249.40	0.05	0.01	0.06	0.003	149.60	0.26	0.001	0.10	0.05	18.40	0.003	4.53	289.60	0.2127	0.12	0.03	1.32	0.39	416.60	10.74
Ludeman-SW-2	6/17/2008	0.005	11	0.05	0.01	2.67	0.013	3	0.02	0.001	0.1	0.05	8	0.001	11.5	1	0.0027	0.1	0.03	17.4	0.06	17.8	1.1
	7/31/2008	0.005	26	0.05	0.01	14.1	0.001	6	0.01	0.001	0.1	0.05	13	0.001	39.9	1	0.0087	0.1	0.01	14.5	0.22	15.7	2.1
	3/9/2009	0.005	12	0.05	0.01	0.1	0.001	3	0.02	0.001	0.1	0.05	15	0.001	7.3	3	0.0005	0.1	0.01	20.2	0.26	3.5	1.4
	Average	0.005	16.33	0.05	0.01	5.62	0.005	4.00	0.02	0.001	0.10	0.05	12.00	0.001	19.57	1.67	0.0040	0.10	0.02	17.37	0.18	12.33	1.53
Ludeman-SW-3	6/17/2008	0.005	9	0.05	0.01	1.37	0.002	2	0.02	0.001	0.1	0.05	6	0.001	8.2	1	0.0003	0.1	0.01	7.15	0.04	6.5	1.1
	3/9/2009	0.005	8	0.05	0.01	0.11	0.001	2	0.01	0.001	0.1	0.05	14	0.001	8.6	1	0.0003	0.1	0.04	0.81	0.01	-0.01	1.2
	Average	0.005	8.50	0.05	0.01	0.74	0.002	2.00	0.02	0.001	0.10	0.05	10.00	0.001	8.40	1.00	0.0003	0.10	0.03	3.98	0.03	3.25	1.15
Ludeman-SW-4	6/17/2008	0.005	9	0.05	0.01	1.36	0.004	2	0.01	0.001	0.1	0.05	7	0.001	7.1	1	0.0008	0.1	0.01	7.24	0.03	6.2	1.1
	7/23/2008	0.005	12	0.05	0.01	0.35	0.001	2	0.03	0.001	0.1	0.05	8	0.001	13.1	1	0.0003	0.1	0.01	15.7	0.15	9	1.3
	Average	0.005	10.50	0.05	0.01	0.86	0.003	2.00	0.02	0.001	0.10	0.05	7.50	0.001	10.10	1.00	0.0006	0.10	0.01	11.47	0.09	7.60	1.20
Ludeman-SW-6	4/21/2008	0.005	24	0.05	0.01	0.14	0.001	5	0.02	0.001	0.1	0.05	11	0.001	3	1	0.0010	0.1	0.01	4.5	0.38	1.9	1.2
	4/28/2008	0.005	226	0.05	0.01	0.06	0.001	173	0.02	0.001	0.1	0.05	87	0.001	0.4	953	0.0145	0.1	0.01	0.11	0.08	3	16
	6/20/2008	0.005	12	0.05	0.01	1.42	0.002	2	0.04	0.001	0.1	0.05	6	0.001	4.1	1	0.0003	0.1	0.01	5.05	0.09	1.3	1.2
	7/24/2008	0.005	16	0.05	0.01	0.46	0.001	3	0.02	0.001	0.1	0.05	7	0.001	5.2	1	0.0004	0.1	0.01	2.5	0.09	3.3	1.1
	11/10/2008	0.005	25	0.05	0.01	0.08	0.001	6	0.3	0.001	0.1	0.05	14	0.001	9.8	1	0.0015	0.1	0.01	4.5	0.38	2.9	1.5
	3/17/2009	0.005	10	0.05	0.01	0.47	0.001	2	0.02	0.001	0.1	0.05	9	0.001	4	1	0.0004	0.1	0.01	2.28	0.11	-0.06	1.4
	Average	0.005	52.17	0.05	0.01	0.44	0.001	31.83	0.07	0.001	0.10	0.05	22.33	0.001	4.42	159.67	0.0030	0.10	0.01	3.16	0.19	2.06	3.73
Ludeman-SW-7	4/24/2008	0.005	20	0.05	0.06	2.47	0.063	8	0.3	0.001	0.1	0.05	14	0.001	7.9	2	0.0005	0.1	0.66	22.7	0.62	3.3	1.1
	6/30/2008	0.005	11	0.05	0.01	0.73	0.001	4	0.02	0.001	0.1	0.05	10	0.001	5.7	1	0.0003	0.1	0.01	12.5	0.25	1.5	1.2
	7/29/2008	0.005	43	0.05	0.01	0.25	0.001	14	0.01	0.001	0.1	0.05	8	0.001	10.7	41	0.0003	0.1	0.01	4.92	0.47	16.2	1.8
	Average	0.005	24.67	0.05	0.03	1.15	0.022	8.67	0.11	0.001	0.10	0.05	10.67	0.001	8.10	14.67	0.0004	0.10	0.23	13.37	0.45	7.00	1.37
Ludeman-SW-8	4/21/2008	0.005	6	0.05	0.01	4.29	0.017	1	0.19	0.001	0.1	0.05	6	0.001	6.2	1	0.0003	0.1	0.03	8.6	0.29	3	1.1
	6/30/2008	0.005	4	0.05	0.01	1.63	0.002	1	0.04	0.001	0.1	0.05	5	0.001	5.3	1	0.0003	0.1	0.01	8.65	0.17	3.2	1.1
	7/23/2008	0.005	1	0.05	0.01	1.94	0.003	1	0.02	0.001	0.1	0.05	5	0.001	25.9	1	0.0003	0.1	0.01	34.1	0.39	3.1	1
	3/5/2009	0.005	3	0.05	0.01	0.25	0.001	1	0.01	0.001	0.1	0.05	5	0.001	5.6	1	0.0003	0.1	0.01	1.83	0.04	0.5	1
	Average	0.005	3.50	0.05	0.01	2.03	0.006	1.00	0.07	0.001	0.10	0.05	5.25	0.001	10.75	1.00	0.0003	0.10	0.02	13.30	0.22	2.45	1.05
Ludeman-SW-9	4/4/2008	0.005	7	0.05	0.01	2.89	0.006	2	0.12	0.001	0.1	0.05	9	0.001	14	1	0.0003	0.1	0.01	3.98	0.17	1.8	1
	6/30/2008	0.005	14	0.05	0.01	0.43	0.001	5	0.02	0.001	0.1	0.05	7	0.001	14.8	1	0.0003	0.1	0.01	53.8	0.35	6.8	1.5
	8/21/2008	0.005	9	0.05	0.01	0.17	0.001	2	0.01	0.001	0.1	0.05	10	0.001	13.8	1	0.0003	0.1	0.02	12.8	0.35	2.6	1.4
	11/10/2008	0.005	7	0.05	0.01	0.69	0.001	2	0.01	0.001	0.1	0.05	8	0.002	23.4	1	0.0003	0.1	0.01	20.6	0.45	16.7	1.9
	3/5/2009	0.005	7	0.05	0.01	0.59	0.001	2	0.04	0.001	0.1	0.05	10	0.001	10	3	0.0003	0.1	0.02	15.3	0.28	1.7	1.1
	Average	0.005	8.80	0.05	0.01	0.95	0.002	2.60	0.04	0.001	0.10	0.05	8.80	0.001	15.20	1.40	0.0003	0.10	0.01	21.30	0.32	5.92	1.38
Ludeman-SW-10	4/4/2008	0.005	41	0.05	0.01	0.18	0.001	9	0.27	0.001	0.1	0.05	8	0.001	4.4	1	0.0031	0.1	0.01	1.64	0.37	2.6	1.2
	6/30/2008	0.005	30	0.05	0.01	0.11	0.001	6	0.01	0.001	0.1	0.05	3	0.001	3.1	2	0.0038	0.1	0.01	5.32	0.15	4.8	1.4
	7/23/2008	0.005	49	0.05	0.01	0.03	0.001	9	0.23	0.001	0.1	0.05	11	0.001	11.6	3	0.0052	0.1	0.01	11.9	0.58	7.2	1.6
	11/10/2008	0.005	45	0.05	0.01	0.03	0.001	14	0.02	0.001	0.1	0.05	8	0.001	2	7	0.0042	0.1	0.01	12.9	0.28	14.3	1.8
	3/2/2009	0.005	35	0.05	0.01	0.05	0.001	9	0.2	0.001	0.1	0.05	7	0.002	3.5	3	0.0055	0.1	0.03	3.21	0.3	5.7	1.6
	Average	0.005	40.00	0.05	0.01	0.08	0.001	9.40	0.15	0.001	0.10	0.05	7.40	0.001	4.92	3.20	0.0044	0.10	0.01	6.99	0.34	6.92	1.52
Ludeman-SW-11	6/17/2008	0.005	8	0.05	0.01	2.58	0.004	2	0.04	0.001	0.1	0.05	5	0.001	6.8	1	0.0005	0.1	0.02	8.53	0.08	6.7	1.1
	7/24/2008	0.005	22	0.05	0.01	0.1	0.001	5	0.19	0.001	0.1	0.05	12	0.001	3.7	2	0.0006	0.1	0.01	45.9	0.67	11.5	1.4
	Average	0.005	15.00	0.05	0.01	1.34	0.003	3.50	0.12	0.001	0.10	0.05	8.50	0.001	5.25	1.50	0.0006	0.10	0.02	27.22	0.38	9.10	1.25
Ludeman-SW-12	4/4/2008	0.005	170	0.05	0.01	0.15	0.001	73	0.07	0.001	0.1	0.05	11	0.002	11.7	162	0.0242	0.1	0.01	0.25	0.12	39.5	4.9
	7/24/2008	0.005	110	0.05	0.01	0.03	0.001	37	0.13	0.001	0.1	0.05	5	0.002	21.1	67	0.0267	0.1	0.01	0.32	0.22	55.9	3.7
	11/5/2008	0.005	103	0.05	0.01	0.03	0.001	37	0.03	0.001	0.1	0.05	8	0.003	18.2	73	0.0330	0.1	0.01	2.58	0.08	44.7	3
	3/16/2009	0.005	90	0.05	0.01	<0.03	0.001	31	0.01	0.001	0.1	0.05	5	0.006	13.3	73	0.0238	0.1	0.01	0.44	0.14	50.2	4.2
	Average	0.005	118.25	0.05	0.01	0.07	0.001	44.50	0.06	0.001	0.10	0.05	7.25	0.003	16.08	93.75	0.0269	0.10	0.01	0.90	0.14	47.58	3.95
Ludeman-SW-13	6/17/2008	0.005	14	0.05	0.01	4.09	0.012	4	0.07	0.001	0.1	0.05	6	0.001	15.6	1	0.0011	0.1	0.04	18.4	0.1	12	1.2
	7/24/2008	0.005	14	0.05	0.01	0.07	0.001	3	0.05	0.001	0.1	0.05	7	0.001	6.2	1	0.0004	0.1	0.01	4.13	0.22	8.2	1.2
	3/16/2009	0.005	3	0.05	0.01	0.36	0.001	<1	0.01	0.001	0.1	0.05	5	0.001	7.8	3	0.0003	0.1	0.01	35.8	0.23	10.5	2.1
	Average	0.01	10.33	0.05	0.01	1.51	0.00	3.50	0.04	0.00	0.10	0.05	6.00	0.00	9.87	1.67	0.00	0.10	0.02	19.44	0.18	10.23	1.50
Ludeman-SW-15	6/18/2008	0.005	28	0.05	0.01	12.1	0.014	11	0.27	0.001	0.1	0.05	19	0.001	22.3	4	0.0014	0.1	0.05	41	0.58	5.1	1.6
Ludeman-SW-16	4/28/2008	0.005	226	0.05	0.01	0.06	0.001	173	0.02	0.001	0.1	0.05	87	0.001	0.4	953	0.0145	0.1	0.01	0.11	0.08	3	16
	6/30/2008	0.005	216	0.05	0.01	0.48	0.001	127	0.93	0.001	0.1	1.06	65	0.002	3.5	592	0.0187	0.1	0.01	11.9	1.07	38.2	13.1
	7/23/2008	0.005	319	0.05	0.01	0.1	0.001	197	0.49	0.001	0.1	0.05	105	<0.002	48.2	1040	0.0155	0.1	0.03	4.98	0.64	16	20.2
	11/13/2008	0.005	302	0.05	0.01	0.14	0.002	360	0.14	0.001	0.1	0.05	105	<0.006	<0.4	1960	0.0350	0.1	0.05	0.68	0.15	41	38.8
	3/19/2009	0.005	152	0.05	0.11	0.07	0.011	120	0.14	0.001	0.1	0.05	49	0.004	3.3	690	0.0180	0.1	0.1	0.17	0.18	15.1	17.3
	Average	0.005	243.00	0.05	0.03	0.17	0.003	195.40	0.34	0.001	0.10	0.25	82.20	0.002	13.85	1047.00	0.0203	0.10	0.04	3.57	0.42	22.66	21.08
Ludeman-SW-17	4/25/2008	0.005	133	0.05	0.02	0.15	0.050	60	0.22	0.001	0.1	0.05	18	0.001	1	205	0.0288	0.1	0.22	23	0.97	30.1	4.8
	6/30/2008	0.005	35	0.05	0.01	0.03	0.001	24	0.01	0.001	0.1	0.05	12	0.001	1	59	0.0067	0.1	0.01	0.94	0.03	7	1.9
	8/4/2008	0.006	64	0.05	0.01	0.03	0.001	26	0.01	0.001	0.1	0.05	16	0.001	19.9	118	0.0138	0.1	0.01	0.18	0.01	20.4	2.3

1. A "0" value represents below minimum detectable concentration

ClientSampID	Collection Date	Gross Alpha precision (±)	Gross Beta (DIS)	Gross Beta MDC (DIS)	Gross Beta precision (±)	Lead 210 (DIS)	Lead 210 MDC (DIS)	Lead 210 precision (±)	Polonium 210 (DIS)	Polonium 210 precision (±)	Radium 226 (DIS)	Radium 226 MDC (DIS)	Radium 226 precision (±)	Radium 228 (DIS)	Radium 228 MDC (DIS)	Radium 228 precision (±)	Thorium 230 (DIS)	Thorium 230 precision (±)	Lead 210 (SUS)
		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
Ludeman-SW-1	4/24/2008		54	12.7		0			0.1		0.5	0.2		0.6	1		0.1		0
	6/19/2008	13.1	33	10.9	7.1	1.1	12	7.2	0.5	1	0.9	0.1	0.2	0.6	1.2	0.7	0	0.5	0.4
	7/18/2008	14.2	64.6	7.6	5.6	0	9.1	5.4	0	0.4	0.55	0.25	0.22	2.4	1.5	1	0.2	0.5	1.3
	7/22/2008																		
	11/3/2008	14.3	23	20	12.3	0	5.1	3	0.1	0.2	-0.02	0.25	0.14	0.7	1.1	0.7	0.2	0.4	2.4
	3/9/2009	54.5	289	28.2	21.4	1.1	3.2	1.9	0	0.2	0.19	0.19	0.14	0.5	1.1	0.7	0	0.1	3.6
	Average	**24.03**	**92.72**	**15.88**	**11.60**	**0.44**	**7.35**	**4.38**	**0.14**	**0.45**	**0.42**	**0.20**	**0.18**	**0.96**	**1.18**	**0.78**	**0.10**	**0.38**	**1.54**
Ludeman-SW-2	6/17/2008		15.3	2.5		0.1	5.9		0.1		1.9	0.2		0.7	1.2		0.1		0.8
	7/31/2008	2.2	18.4	2.8	1.9	2.1	15.1	9	0.4	0.7	0.34	0.42	0.29	0	1.5	0.9	1	0.3	1
	3/9/2009	1.1	14.5	2.7	1.9	2.8	3.2	1.9	0.3	0.4	-0.1	0.23	0.11	0.3	1.3	0.8	0.07	0.1	6.1
	Average	**1.65**	**16.07**	**2.67**	**1.90**	**1.67**	**8.07**	**5.45**	**0.27**	**0.55**	**0.71**	**0.28**	**0.20**	**0.33**	**1.33**	**0.85**	**0.39**	**0.20**	**2.63**
Ludeman-SW-3	6/17/2008		7.1	2.5		2.2	5.9		0		0.4	0.2		0.4	1.2		0		3.2
	3/9/2009	0.7	9.2	2.7	1.8	2.2	3.2	1.9	2.6	1.1	-0.09	0.21	0.1	0.6	1.2	0.7	0	0.1	0.6
	Average	**0.70**	**8.15**	**2.60**	**1.80**	**2.20**	**4.55**	**1.90**	**1.30**	**1.10**	**0.16**	**0.21**	**0.10**	**0.50**	**1.20**	**0.70**	**0.00**	**0.10**	**1.90**
Ludeman-SW-4	6/17/2008		8.6	2.5		0	5.9		0		0.3	0.2		0.7	1.2		0.2		5.3
	7/23/2008	1.3	12.5	2.6	1.8	3.6	13	7.8	0.3	1	5	0.4	0.6	0.8	1.2	0.7	0.3	0.3	0.1
	Average	**1.30**	**10.55**	**2.55**	**1.80**	**1.80**	**9.45**	**7.80**	**0.15**	**1.00**	**2.65**	**0.30**	**0.60**	**0.75**	**1.20**	**0.70**	**0.25**	**0.30**	**2.70**
Ludeman-SW-6	4/21/2008		10.2	2.6		0			0.8		-0.12	0.42		0.5	1.9		0		0
	4/28/2008		60	25.1		0			1.2		-0.21	0.29		0.2	1.1		0		0
	6/20/2008	0.8	5.4	2.8	1.7	0	12	7.1	0	0.6	1.3	0.3	0.3	0.4	1.1	0.7	0.3	0.3	0
	7/24/2008	0.9	9.7	3.1	2	0	15.1	8.9	0.1	0.5	0.06	0.2	0.12	0	1	0.6	0.1	0.3	0
	11/10/2008	1.1	11.7	2.8	1.9	1.1	4.7	2.8	0.5	0.5	-0.3	0.38	0.17	0	1.1	0.7	0.4	0.4	0
	3/17/2009	0.8	4.6	2.6	1.6	6	8.6	5.2	0.3	0.5	-0.2	0.28	0.12	0.3	2.1	1.3	0.1	0.2	0
	Average	**0.90**	**16.93**	**6.50**	**1.80**	**1.18**	**10.10**	**6.00**	**0.48**	**0.53**	**0.09**	**0.31**	**0.18**	**0.23**	**1.38**	**0.83**	**0.15**	**0.30**	**0.00**
Ludeman-SW-7	4/24/2008		16.2	2.3		0			0.4		0	0.2		2.3	1		0		0
	6/30/2008	0.8	8.7	3.2	2.1	0	8.4	5	0.2	0.5	0.2	0.3	0.2	0.8	1.3	0.8	0.2	0.2	3.4
	7/29/2008	2.1	25.8	3.2	2.3	0	15.1	8.9	0.7	1	0.32	0.23	0.18	0.4	0.9	0.6	0.2	0.2	1.8
	Average	**1.45**	**16.90**	**2.90**	**2.20**	**0.00**	**11.75**	**6.95**	**0.43**	**0.75**	**0.17**	**0.24**	**0.19**	**1.17**	**1.07**	**0.70**	**0.13**	**0.20**	**1.73**
Ludeman-SW-8	4/21/2008		4.9	2.6		0			2.9		0.04	0.41		0	1.9		0.4		0
	6/30/2008	0.9	8.6	3.2	2.1	0	8.4	5	0.1	0.3	0.3	0.3	0.2	0	1.3	0.8	0	0.2	4.6
	7/23/2008	0.8	6.8	2.6	1.7	1	13	7.8	0.7	1	1.1	0.3	0.3	0.5	1.2	0.7	0.1	0.1	7.6
	3/5/2009	0.7	3.7	2.6	1.6	5.5	3.2	2	0.2	0.4	0.25	0.08	0.08	0.6	0.9	0.6	0.1	0.1	4.5
	Average	**0.80**	**6.00**	**2.75**	**1.80**	**1.63**	**8.20**	**4.93**	**0.98**	**0.57**	**0.42**	**0.27**	**0.19**	**0.28**	**1.33**	**0.70**	**0.15**	**0.13**	**4.18**
Ludeman-SW-9	4/4/2008		8	2.3		0			0.5		0.38	0.22		0	0.9		0.1		0
	6/30/2008	1.4	20.8	3.3	2.3	2.6	8.4	5	0.3	0.6	1	0.3	0.3	0.7	1.3	0.8	0.3	0.2	6.9
	8/21/2008	1.1	10.7	2.6	1.7	0	10.7	6.4	0.1	0.5	0.43	0.25	0.21	1.3	1.1	0.7	0.2	0.3	0
	11/10/2008	2.2	19.7	2.9	2	0	7.4	4.4	0.2	0.4	-0.02	0.23	0.13	0.3	1.1	0.7	0.5	1	3.3
	3/5/2009	0.8	9	2.6	1.7	4.7	3.2	2	0.1	0.3	0.37	0.09	0.11	0.4	1.1	0.7	0.02	0.1	6.6
	Average	**1.38**	**13.64**	**2.74**	**1.93**	**1.46**	**7.43**	**4.45**	**0.24**	**0.45**	**0.43**	**0.22**	**0.19**	**0.54**	**1.10**	**0.73**	**0.22**	**0.40**	**3.36**
Ludeman-SW-10	4/4/2008		3.1	2.3		0			0.5		0.17	0.25		0.4	0.9		0		0
	6/30/2008	1.2	5.8	3.3	2.1	0	8.4	5	0.1	0.5	0.06	0.3	0.2	0.3	1.3	0.8	0	0.1	5.3
	7/23/2008	1.4	9.9	2.7	1.8	4.6	13	7.8	0	0.8	0.3	0.4	0.3	0.4	1.2	0.7	0.1	0.1	1.7
	11/10/2008	2	16.1	2.8	2	0	4.7	2.8	1.2	0.8	-0.1	0.38	0.2	0	1.1	0.7	0	1.6	0.5
	3/2/2009	1.3	7.1	2.7	1.8	0	3.8	2.3	0.3	0.4	0.17	0.18	0.13	0.7	1.3	0.8	0.07	0.1	0
	Average	**1.48**	**8.40**	**2.76**	**1.93**	**0.92**	**7.48**	**4.48**	**0.42**	**0.63**	**0.12**	**0.30**	**0.21**	**0.36**	**1.16**	**0.75**	**0.03**	**0.48**	**1.50**
Ludeman-SW-11	6/17/2008		8.5	2.5		1.1	5.9		0		0.7	0.7		0.3	1.2		0		0
	7/24/2008	1.6	19.5	3.1	2.2	3.1	15.1	9	0.6	0.7	0.62	0.2	0.2	0.01	1	0.6	0.1	0.2	1.5
	Average	**1.60**	**14.00**	**2.80**	**2.20**	**2.10**	**10.50**	**9.00**	**0.30**	**0.70**	**0.66**	**0.45**	**0.20**	**0.16**	**1.10**	**0.60**	**0.05**	**0.20**	**0.75**
Ludeman-SW-12	4/4/2008		11.6	5		0			0.7		0.33	0.27		0.4	0.9		0		0
	7/24/2008	5.4	16.9	5	3.3	0	15.1	8.9	0	0.4	0.52	0.24	0.21	0	1	0.6	0.1	0.2	0
	11/5/2008	4.3	12.6	5	3.2	0	5.1	3	0.1	0.2	0.29	0.23	0.17	0.4	1.1	0.7	0.3	0.4	0
	3/16/2009	5.4	9.7	3.9	2.5	0.5	8.6	5.1	0.2	0.4	-0.2	0.28	0.12	0.6	2.1	1.3	0.09	0.1	0
	Average	**5.03**	**12.70**	**4.73**	**3.00**	**0.13**	**9.60**	**5.67**	**0.25**	**0.33**	**0.24**	**0.26**	**0.17**	**0.35**	**1.28**	**0.87**	**0.12**	**0.23**	**0.00**
Ludeman-SW-13	6/17/2008		11	2.5		1.4	5.9		0		1.5	0.6		0.2	1.2		0.1		5.4
	7/24/2008	1.2	11.6	3.1	2.1	0	13	7.7	0.4	0.6	0.69	0.21	0.21	0	1	0.6	0.1	0.2	3.8
	3/16/2009	2	12.4	2.6	1.8	0	13.8	8.2	0.5	0.5	0.09	0.18	0.12	0	1.3	0.8	0	0.05	4
	Average	**1.60**	**11.67**	**2.73**	**1.95**	**0.47**	**10.90**	**7.95**	**0.30**	**0.55**	**0.76**	**0.33**	**0.17**	**0.07**	**1.17**	**0.70**	**0.07**	**0.13**	**4.40**
Ludeman-SW-15	6/18/2008	**1.3**	**21.3**	**2.7**	**1.9**	**7.9**	**12**	**7.3**	**0**	**0.6**	**2.8**	**0.1**	**0.3**	**1**	**1.2**	**0.7**	**0.2**	**0.2**	**0**
Ludeman-SW-16	4/28/2008		60	25.1		0			1.2		-0.21	0.29		0.2	1.1		0		0
	6/30/2008	10.7	65.4	22.4	14.5	1	8.4	5	0.2	0.4	0.8	0.3	0.3	0.4	1.3	0.8	0	0.2	5.7
	7/23/2008	13.3	91.2	18.8	12.8	1.3	13	7.8	0.7	0.8	1.3	0.3	0.3	2.8	1.2	0.8	0.1	0.2	3.1
	11/13/2008	26.5	112	50.3	31.9	0.3	4	2.4	0.2	0.5	0.63	0.56	0.43	0.3	3.4	2	0.5	0.9	1.8
	3/19/2009	11.5	19.7	17.8	11	0	4.1	2.4	0.08	0.4	0.09	0.2	0.13	0.008	1.4	0.8	0	0.3	0
	Average	**15.50**	**69.66**	**26.88**	**17.55**	**0.52**	**7.38**	**4.40**	**0.48**	**0.53**	**0.52**	**0.33**	**0.29**	**0.74**	**1.68**	**1.10**	**0.12**	**0.40**	**2.12**
Ludeman-SW-17	4/25/2008		25.8	6.4		0			1.2		-0.1	0.2		1	1		0		0
	6/30/2008	1.6	16.4	3.4	2.3	0	8.4	4.9	0.5	0.6	-0.05	0.3	0.1	0	1.3	0.8	0.1	0.2	3.1
	8/4/2008	2.7	3.8	3.6	2.2	0	10.7	6.3	0.3	0.8	0.01	0.35	0.2	0.6	1	0.6	0	0.3	2.4

1. A "0" value represents below minimum detectable concentration

ClientSampID	Collection Date	Lead 210 MDC (SUS)	Lead 210 precision (±)	Polonium 210 (SUS)	Polonium 210 precision (±)	Radium 226 (SUS)	Radium 226 MDC (SUS)	Radium 226 precision (±)	Radium 228 (SUS)	Radium 228 MDC (SUS)	Radium 228 precision (±)	Thorium 230 (SUS)	Thorium 230 precision (±)	Uranium (SUS)	TDS Balance (0.80 - 1.20)
		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	mg/L	dec. %
Ludeman-SW-1	4/24/2008			0.9		0.2	0.4		NOT ANALYZED			0.1		0.0011	0.97
	6/19/2008	20.1	12	0.2	0.3	0	0.6	0.2				0	0.2	0.0003	
	7/18/2008	12.4	7.4	0.4	0.5	0.1	0.6	0.3				0.2	0.2	0.0007	
	7/22/2008														
	11/3/2008	8.2	4.9	0.7	0.7	0.2	0.4	0.3				0	0.3	0.0018	
	3/9/2009	4.7	2.8	0.3	0.4	0	0.4	0.2				0.1	0.2	0.0009	
	Average	11.35	6.78	0.50	0.48	0.10	0.48	0.25				0.08	0.23	0.0010	0.97
Ludeman-SW-2	6/17/2008	11.5		0.8		0.3	0.4		NOT ANALYZED			0.5		0.0003	
	7/31/2008	12.8	7.6	0.8	0.8	0	0.6	0.3				0.2	0.2	0.0032	
	3/9/2009	4.7	2.8	4.2	1.3	1.2	0.4	0.4				1	0.4	0.0030	
	Average	9.67	5.20	1.93	1.05	0.50	0.47	0.35				0.57	0.30	0.0022	
Ludeman-SW-3	6/17/2008	11.4		0.2		0	0.4		NOT ANALYZED			0.2		0.0003	
	3/9/2009	4.7	2.8	0.6	0.4	0	0.4	0.2				0.2	0.2	0.0004	
	Average	8.05	2.80	0.40	0.40	0.00	0.40	0.20				0.20	0.20	0.0004	
Ludeman-SW-4	6/17/2008	11.4		0		0	0.4		NOT ANALYZED			0.2		0.0003	
	7/23/2008	12.5	7.5	1.2	0.8	0.9	0.7	0.5				0.3	1.4	0.0003	
	Average	11.95	7.50	0.60	0.80	0.45	0.55	0.50				0.25	1.40	0.0003	
Ludeman-SW-6	4/21/2008			0.8		1.3	0.4		NOT ANALYZED			0.1		0.0003	1.71
	4/28/2008			0		0.7	0.3					0.9		0.0003	1.01
	6/20/2008	15.1	9	0.4	0.5	0	0.6	0.2	0.5	2.5	1.5	0.1	0.1	0.0003	
	7/24/2008	24.1	14.4	0.3	0.4	0	0.6	0.2	NOT ANALYZED			0.1	0.2	0.0003	
	11/10/2008	8.2	4.9	0.3	0.5	0.5	0.3	0.3				0	0.05	0.0003	
	3/17/2009	3.1	1.9	0.4	0.3	0.004	0.1	0.07				0	0.1	0.0003	
	Average	12.63	7.55	0.37	0.43	0.42	0.38	0.19	0.50	2.50	1.50	0.20	0.11	0.0003	1.36
Ludeman-SW-7	4/24/2008			3.5		0.7	0.4		NOT ANALYZED			0.9		0.0010	1.77
	6/30/2008	7.3	4.4	0.9	0.6	0	0.5	0.2				0.2	0.2	0.0003	2.21
	7/29/2008	12.7	7.6	2.6	1.4	1.2	0.7	0.6				0.2	0.2	0.0007	
	Average	10.00	6.00	2.33	1.00	0.63	0.53	0.40				0.43	0.20	0.0007	1.99
Ludeman-SW-8	4/21/2008			4.4		1.8	0.4		NOT ANALYZED			0.3		0.0008	3.77
	6/30/2008	7.1	4.3	1.6	0.8	0	0.5	0.2				0.1	0.2	0.0003	3.33
	7/23/2008	13.2	8	6.6	2.4	0.2	0.7	0.4				0.3	0.3	0.0005	
	3/5/2009	5	3	1.1	0.6	0	0.4	0.2				0.0002	0.1	0.0003	
	Average	8.43	5.10	3.43	1.27	0.50	0.50	0.27				0.18	0.20	0.0005	3.55
Ludeman-SW-9	4/4/2008			3.3		0.4	0.5		NOT ANALYZED			0.3		0.0006	1.31
	6/30/2008	7.8	4.7	2.3	1.2	0.9	0.5	0.4				0.9	0.3	0.0013	11.9
	8/21/2008	20.8	12.3	2.8	1.1	0.1	0.7	0.4				0.7	0.5	0.0009	
	11/10/2008	8.5	5.1	2.6	1.2	0.8	0.3	0.3				0.4	0.7	0.0010	
	3/5/2009	4.8	2.9	2.7	0.9	0.1	0.4	0.2				0.4	0.3	0.0009	
	Average	10.48	6.25	2.74	1.10	0.46	0.48	0.33				0.54	0.45	0.0009	6.61
Ludeman-SW-10	4/4/2008			1.8		0.2	0.5		NOT ANALYZED			0.7		0.0003	1.15
	6/30/2008	7.2	4.4	0.2	0.3	0	0.5	0.2				0.1	0.3	0.0003	1.41
	7/23/2008	12.5	7.5	1	0.7	0	0.6	0.3				0.5	0.3	0.0003	
	11/10/2008	8.4	5	1.5	0.8	1.2	0.3	0.4				0.4	0.4	0.0012	
	3/2/2009	4.1	2.4	0.5	0.4	0.02	0.2	0.1				0.4	0.2	0.0004	
	Average	8.05	4.83	1.00	0.55	0.28	0.42	0.25				0.42	0.30	0.0005	1.28
Ludeman-SW-11	6/17/2008	11.3		0.3		0	0.4		NOT ANALYZED			0.3		0.0003	
	7/24/2008	24.9	14.9	7.1	2.4	0.4	0.6	0.4				1.2	0.4	0.0017	
	Average	18.10	14.90	3.70	2.40	0.20	0.50	0.40				0.75	0.40	0.0010	
Ludeman-SW-12	4/4/2008			1.3		0	0.5		NOT ANALYZED			0.1		0.0003	1.06
	7/24/2008	24.4	14.3	0.6	0.7	0	0.6	0.3				0.1	0.1	0.0016	
	11/5/2008	16.1	9.5	1.5	1.4	1.3	0.7	0.6				0	0.1	0.0005	
	3/16/2009	3.1	1.8	0.1	0.2	0.05	0.1	0.08				0.09	0.3	0.0003	
	Average	14.53	8.53	0.88	0.77	0.34	0.48	0.33				0.07	0.17	0.0007	1.06
Ludeman-SW-13	6/17/2008	11.4		0.2		0	0.4		NOT ANALYZED			0.1		0.0003	
	7/24/2008	23.1	13.8	1.2	0.8	0	0.7	0.3				0.4	0.2	0.0003	
	3/16/2009	3.2	1.9	4.5	1.4	0.6	0.05	0.08				1	0.4	0.0030	
	Average	12.57	7.85	1.97	1.10	0.20	0.38	0.19				0.50	0.30	0.00	
Ludeman-SW-15	6/18/2008	20.4	12.1	1.5	1	0.2	0.6	0.4	NOT ANALYZED			0.6	0.3	0.0003	
Ludeman-SW-16	4/28/2008			0		0.7	0.3		NOT ANALYZED			0.9		0.0003	1.01
	6/30/2008	7.4	4.5	1.4	0.8	0	0.5	0.3				0.1	0.2	0.0079	
	7/23/2008	12.7	7.6	0.1	0.4	0	0.7	0.3				0.1	0.3	0.0005	
	11/13/2008	9.9	5.9	0.6	0.5	0.2	0.4	0.2				0	0.3	0.0010	
	3/19/2009	4.1	2.4	0.2	0.3	0.5	0.2	0.2				0.1	0.2	0.0003	
	Average	8.53	5.10	0.46	0.50	0.28	0.42	0.25				0.24	0.25	0.0010	1.01
Ludeman-SW-17	4/25/2008			2.8		0.9	0.4		NOT ANALYZED			0.7		0.0007	1.1
	6/30/2008	7.2	4.3	0.1	0.3	0	0.5	0.2				0.1	0.2	0.0003	
	8/4/2008	15	8.9	0.2	0.4	0.1	0.4	0.2				0.1	0.2	0.0003	

1. A "0" value represents below minimum detectable concentration

ClientSampID	Collection Date	A/C Balance (± 5) (DIS)	Anions (DIS)	Bicarbonate as HCO3 (DIS)	Carbonate as CO3 (DIS)	Cations (DIS)	Chloride (DIS)	Conductivity (DIS)	Fluoride (DIS)	pH (DIS)	Solids, Total Dissolved Calculated (DIS)	Solids, Total Dissolved TDS @ 180 C (DIS)	Solids, Total Suspended TSS @ 105 C	Sulfate (DIS)	Turbidity	Nitrogen, Ammonia as N (DIS)	Nitrogen, Nitrate+Nitrite as N (DIS)	Aluminum (DIS)	Arsenic (DIS)	Barium (DIS)	Boron (DIS)
		%	meq/L	mg/L	mg/L	meq/L	mg/L	umhos/cm	mg/L	s.u.	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	2/25/2009	-0.0645	16.1	296	1	16.1	34	1590	0.2	7.91	1000	1030	84	493	45.4	1.08	0.05	0.1	0.015	0.1	0.1
	Average	1.46	13.17	162.75	12.75	13.64	30.25	1264.25	0.23	8.32	841.25	879.25	195.25	443.75	132.18	0.33	0.05	0.10	0.008	0.10	0.10
Ludeman-SW-18	6/18/2008	14.5	2.1	81	1	1.57	1	152	0.2	6.99	118	254	128	37	321	1.42	0.05	1.9	0.008	0.1	0.1
Ludeman-SW-19	4/29/2008	3.63	3.3	175	1	3.55	2	309	0.4	7.69	179	212	291	17	193	0.06	0.05	0.1	0.006	0.1	0.1
	6/20/2008	1.42	0.993	46	3	1.02	1	79	0.1	7.35	61	437	97	6	615	0.4	0.05	2.5	0.006	0.1	0.1
	7/21/2008	38.3	2.83	71	1	1.26	1	122	0.1	7.54	145	423	190	80	563	1.17	0.08	0.2	0.003	0.1	0.1
	11/13/2008	5.73	1.78	106	1	.2	1	166	0.2	7.81	102	289	110	1	350	0.05	0.44	0.1	0.002	0.1	0.1
	3/27/2009	-4.12	1.74	76	4	1.6	1	221	0.2	8.9	93	125	14	18	51.9	0.05	0.05	0.1	0.001	0.1	0.1
	Average	8.99	2.13	94.80	2.00	1.89	1.20	179.40	0.20	7.65	116.00	297.20	140.40	24.40	354.58	0.35	0.13	0.60	0.004	0.10	0.10
Ludeman-SW-20	6/18/2008	10	1.26	50	1	1.54	1	124	0.1	7.87	90	414	56	21	515	0.2	0.05	3.9	0.003	0.1	0.1
	7/21/2008	2.05	1.05	54	1	1.09	1	101	0.1	7.77	64	686	146	6	1150	0.14	0.46	0.4	0.003	0.1	0.1
	11/20/2008	1.92	2.31	104	1	2.4	1	158	0.1	8.83	130	133	54	29	34.8	0.05	0.05	0.1	0.002	0.1	0.1
	3/27/2009	-3.81	2.53	87	5	2.34	1	124	0.2	8.83	145	154	13	45	25.9	0.05	0.05	0.1	0.001	0.1	0.1
	Average	2.54	1.79	73.75	2.00	1.84	1.00	126.75	0.13	8.08	107.25	346.75	67.25	25.25	431.43	0.11	0.15	1.13	0.002	0.10	0.10
Ludeman-SW-21	6/18/2008	11.6	1.07	43	1	1.35	1	83	0.1	7.14	84	589	103	17	1140	0.72	0.05	6.1	0.004	0.1	0.1
	7/21/2008	18.8	2.45	59	6	1.68	1	153	0.1	9.1	134	273	130	61	368	0.05	0.12	0.2	0.003	0.1	0.1
	11/20/2008	-16.3	2.49	88	1	1.79	1	112	0.2	8.32	135	389	84	48	419	0.05	0.26	0.2	0.002	0.1	0.1
	3/27/2009	-23.1	1.12	44	1	0.699	1	64	0.1	7.76	100	118	52	19	105	0.08	0.05	0.2	0.001	0.1	0.1
	Average	-2.25	1.78	58.50	2.25	1.38	1.00	103.00	0.13	7.62	113.25	342.25	92.25	36.25	508.00	0.23	0.12	1.68	0.00	0.10	0.10
Ludeman-SW-22	4/4/2008	3.79	2.78	116	1	3	1	246	0.2	7.25	176	211	172	42	182	0.23	0.1	0.2	0.005	0.1	0.1
	6/30/2008	14.6	2.93	121	1	2.18	1	204	0.2	7.65	156	312	26	45	187	1.69	0.05	0.3	0.004	0.1	0.1
	7/21/2008	5.33	2.5	141	1	2.79	1	230	0.2	8.4	144	208	70	9	74.3	0.3	0.05	0.1	0.006	0.1	0.1
	11/13/2008	4.73	4.13	211	4	4.54	11	406	0.3	8.06	237	304	58	9	137	1.29	0.61	0.1	0.003	0.1	0.1
	3/19/2009	6.25	2.78	136	5	3.15	6	258	0.2	8.83	166	217	136	10	141	0.06	0.05	0.1	0.002	0.1	0.1
	Average	6.94	3.02	145.00	2.40	3.13	4.00	268.80	0.22	7.73	175.80	250.40	92.40	23.00	144.26	0.71	0.17	0.16	0.004	0.10	0.10
Ludeman-SW-24	4/21/2008	21.8	1.66	87	1	2.58	1	154	0.1	7.63	114	868	880	11	2740	0.56	0.1	1.3	0.006	0.1	0.1
	6/18/2008	12.2	1.34	54	1	1.71	1	105	0.1	7.35	110	809	70	22	1140	0.81	0.05	7.7	0.007	0.1	0.1
	7/18/2008	2.9	2.26	112	1	2.14	1	192	0.2	7.93	126	868	146	20		2.3	0.06	0.5	0.005	0.1	0.1
	7/22/2008														948						
	11/3/2008	2.84	4.76	160	7	5.04	4	401	0.3	8.55	300	290	170	85	75.8	0.1	0.15	0.1	0.002	0.1	0.1
	3/9/2009	2.81	1.28	59	1	1.35	1	112	0.1	7.73	125	212	64	14	150	0.05	0.05	0.9	0.003	0.1	0.1
	Average	8.51	2.26	94.40	2.20	2.56	1.60	192.80	0.16	7.69	155.00	609.40	266.00	30.40	1010.76	0.76	0.08	2.10	0.005	0.10	0.10
Ludeman-SW-25	4/29/2008	4.66	39.5	238	3	36	35	2840	0.4	8.44	2480	2480	20	1650	6.1	0.05	0.05	0.1	0.004	0.1	0.2
	6/19/2008	8.14	0.713	28	1	0.839	1	53	0.1	6.58	62	466	55	12	701	0.32	0.05	4.1	0.004	0.1	0.1
	7/18/2008	12.2	1.41	58	1	1.1	1	106	0.1	7.21	77	884	92	22		2.88	0.05	0.4	0.003	0.1	0.1
	7/22/2008														1300						
	11/3/2008	-0.627	1.21	47	1	1.2	1	79	0.1	7.51	94	1650	508	11	1860	0.1	2.69	0.3	0.001	0.1	0.1
	3/9/2009	41.1	1.5	44	1	3.61	1	88	0.1	7.79	210	265	78	37	214	0.05	0.19	1	0.001	0.1	0.1
	Average	13.09	8.87	83.00	1.40	8.55	7.80	633.20	0.16	7.12	584.60	1149.00	150.60	346.40	816.22	0.68	0.61	1.18	0.003	0.10	0.12
Ludeman-SW-26	6/18/2008	9.4	0.807	26	1	0.974	1	59	0.1	7.07	68	651	71	18	1030	0.2	0.05	4.7	0.005	0.1	0.1
	7/22/2008	5.79	0.966	41	1	0.861	1	82	0.1	7.4	127	1020	126	14	1410	0.5	0.11	0.2	0.006	0.2	0.1
	11/10/2008	-9.61	1.35	45	1	1.12	1	61	0.1	7.33	98	1690	122	25	2010	0.1	0.72	0.5	0.004	0.1	0.1
	2/24/2009	-21.3	1.43	34	1	0.93	1	87	0.1	8	148	165	50	38	126	0.05	0.74	0.1	0.001	0.1	0.1
	Average	-3.93	1.14	36.50	1.00	0.97	1.00	72.25	0.10	7.34	110.25	881.50	92.25	23.75	1144.00	0.21	0.41	1.38	0.004	0.13	0.10

1. A "0" value represents below minimum detectable concentration

ClientSampID	Collection Date	Cadmium (DIS)	Calcium (DIS)	Chromium (DIS)	Copper (DIS)	Iron (DIS)	Lead (DIS)	Magnesium (DIS)	Manganese (DIS)	Mercury (DIS)	Molybdenum (DIS)	Nickel (DIS)	Potassium (DIS)	Selenium (DIS)	Silica (DIS)	Sodium (DIS)	Uranium (DIS)	Vanadium (DIS)	Zinc (DIS)	Iron (TOT)	Manganese (TOT)	Gross Alpha (DIS)	Gross Alpha MDC (DIS)
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	pCi/L
	2/25/2009	0.005	96	0.05	0.01	<0.03	0.001	50	0.57	0.001	0.1	0.05	18	0.001	9.7	153	0.0214	0.1	0.01	2.4	1	24.3	4.6
	Average	0.005	82.00	0.05	0.01	0.07	0.013	40.00	0.20	0.001	0.10	0.05	16.00	0.001	7.90	133.75	0.0177	0.10	0.06	6.63	0.50	20.45	3.40
Ludeman-SW-18	6/18/2008	0.005	14	0.05	0.01	5.54	0.005	5	0.06	0.001	0.1	0.05	13	0.001	6.6	1	0.0025	0.1	0.02	13.5	0.24	14.7	1.3
Ludeman-SW-19	4/29/2008	0.005	42	0.05	0.01	0.16	0.001	11	0.01	0.001	0.1	0.05	16	0.001	0.6	3	0.0036	0.1	0.01	4.1	0.32	3.1	1.4
	6/20/2008	0.005	12	0.05	0.01	2.42	0.015	3	0.03	0.001	0.1	0.05	5	0.004	6.6	1	0.0044	0.1	0.02	13.9	0.07	3.3	1.1
	7/21/2008	0.005	15	0.05	0.01	0.26	0.001	3	0.01	0.001	0.1	0.05	6	0.001	9.7	1	0.0003	0.1	0.01	23	0.22	5.7	1.1
	11/13/2008	0.005	25	0.05	0.01	0.08	0.001	6	0.01	0.001	0.1	0.05	8	0.001	5.6	2	0.0003	0.1	0.01	15.2	0.08	6.8	2.1
	3/27/2009	0.005	19	0.05	0.01	0.04	0.001	5	0.01	0.001	0.1	0.05	8	0.002	0.7	2	0.0006	0.1	0.01	2.12	0.02	3.6	1.3
	Average	0.005	22.60	0.05	0.01	0.59	0.004	5.60	0.01	0.001	0.10	0.05	8.60	0.002	4.64	1.80	0.0018	0.10	0.01	11.66	0.14	4.50	1.40
Ludeman-SW-20	6/18/2008	0.005	18	0.05	0.01	3.1	0.005	4	0.04	0.001	0.1	0.05	5	0.001	10.6	3	0.0011	0.1	0.02	14.4	0.09	4	1.3
	7/21/2008	0.020	12	0.05	0.03	0.2	0.003	3	0.02	0.001	0.1	0.05	7	0.001	9.7	1	0.0003	0.1	0.03	35.2	0.23	5.9	1.1
	11/20/2008	0.005	29	0.05	0.01	0.03	0.001	7	0.01	0.001	0.1	0.05	6	0.001	2	6	0.0008	0.1	0.02	0.64	0.01	1.4	1.1
	3/27/2009	0.005	24	0.05	0.01	<0.03	0.001	8	0.01	0.001	0.1	0.05	6	0.001	0.2	8	0.0011	0.1	0.03	0.83	0.02	1.7	1.4
	Average	0.009	20.75	0.05	0.02	1.11	0.003	5.50	0.02	0.001	0.10	0.05	6.00	0.001	5.63	4.50	0.0008	0.10	0.03	12.77	0.09	3.25	1.23
Ludeman-SW-21	6/18/2008	0.005	14	0.05	0.01	6.05	0.009	5	0.1	0.001	0.1	0.05	7	0.001	15.2	1	0.0009	0.1	0.04	21.7	0.19	4.4	1.3
	7/21/2008	0.005	21	0.05	0.02	0.07	0.001	4	0.01	0.001	0.1	0.05	5	0.001	5.3	4	0.0004	0.1	0.01	11.2	0.11	3.6	1.1
	11/20/2008	0.005	21	0.05	0.01	0.07	0.001	5	0.01	0.001	0.1	0.05	9	0.001	3.9	2	0.0006	0.1	0.01	16.5	0.08	21.3	2.4
	3/27/2009	0.005	7	0.05	0.01	0.17	0.001	2	0.01	0.001	0.1	0.05	6	0.001	3.2	<1	0.0003	0.1	0.02	4.8	0.02	3.5	1.2
	Average	0.01	15.75	0.05	0.01	1.59	0.00	4.00	0.03	0.00	0.10	0.05	6.75	0.00	6.90	2.33	0.00	0.10	0.02	13.55	0.10	8.20	1.50
Ludeman-SW-22	4/4/2008	0.005	21	0.05	0.01	1.21	0.001	5	0.47	0.001	0.1	0.05	16	0.001	10.4	23	0.0003	0.1	0.01	5.2	0.58	0.7	1.2
	6/30/2008	0.005	23	0.05	0.01	0.42	0.001	5	0.03	0.001	0.1	0.05	12	0.001	5.3	5	0.0004	0.1	0.01	13.8	0.39	1.3	1.4
	7/21/2008	0.020	32	0.05	0.04	0.13	0.003	6	0.07	0.001	0.1	0.05	14	0.001	10.7	6	0.0005	0.1	0.01	3.79	0.26	3	1.2
	11/13/2008	0.005	40	0.05	0.01	0.04	0.001	11	0.01	0.001	0.1	0.05	33	0.001	5.8	15	0.0019	0.1	0.08	4.27	0.1	7.5	2
	3/19/2009	0.005	25	0.05	0.01	0.08	0.002	8	0.01	0.001	0.1	0.05	22	0.001	5.8	15	0.0015	0.1	0.01	4	0.43	1.5	1.9
	Average	0.008	28.20	0.05	0.02	0.38	0.002	7.00	0.12	0.001	0.10	0.05	19.40	0.001	7.60	12.80	0.0009	0.10	0.02	6.21	0.35	2.80	1.54
Ludeman-SW-24	4/21/2008	0.005	22	0.05	0.01	2.37	0.004	6	0.23	0.001	0.1	0.05	11	0.001	8.5	9	0.0033	0.1	0.03	10.6	0.98	2.3	1.3
	6/18/2008	0.005	18	0.05	0.02	5.87	0.012	6	0.08	0.001	0.1	0.05	9	<0.002	19.8	1	0.0035	0.1	0.06	23.2	0.17	7.6	1.4
	7/18/2008	0.005	21	0.05	0.01	0.32	0.001	6	0.01	0.001	0.1	0.05	12	0.001	15.5	2	0.0039	0.1	0.01	32.1	0.36	13.7	1.4
	7/22/2008																						
	11/3/2008	0.005	48	0.05	0.01	0.03	0.001	19	0.02	0.001	0.1	0.05	17	0.001	0.9	16	0.0153	0.1	0.01	2.4	0.11	13.6	1.5
	3/9/2009	0.005	12	0.05	0.01	0.37	0.001	4	0.01	0.001	0.1	0.05	8	0.001	6	5	0.0028	0.1	0.03	4.65	0.03	5.4	1.4
	Average	0.005	24.20	0.05	0.01	1.79	0.004	8.20	0.07	0.001	0.10	0.05	11.40	0.001	10.14	6.60	0.0058	0.10	0.03	14.59	0.33	8.52	1.40
Ludeman-SW-25	4/29/2008	0.005	284	0.05	0.01	0.06	0.001	140	0.24	0.001	0.1	0.05	16	0.001	6.8	226	0.0430	0.1	0.01	0.15	0.24	73.1	8
	6/19/2008	0.005	9	0.05	0.01	3.29	0.007	3	0.02	0.001	0.1	0.05	6	<0.002	9.3	1	0.0011	0.1	0.04	11.8	0.06	7.7	1.3
	7/18/2008	0.005	9	0.05	0.01	0.31	0.001	2	0.04	0.001	0.1	0.05	8	0.001	10.8	1	0.0003	0.1	0.01	33.3	0.31	10.2	1.3
	7/22/2008																						
	11/3/2008	0.005	11	0.05	0.01	0.67	0.002	3	0.03	0.001	0.1	0.05	11	0.001	15.9	2	0.0004	0.1	0.06	61	0.18	9.2	1.4
	3/9/2009	0.005	12	0.05	0.04	0.44	0.017	4	0.01	0.001	0.1	0.05	11	0.006	4.4	55	0.0091	0.1	0.07	7.6	0.03	6.1	1.5
	Average	0.005	65.00	0.05	0.02	0.95	0.006	30.40	0.07	0.001	0.10	0.05	10.40	0.002	9.44	57.00	0.0108	0.10	0.04	22.77	0.16	21.26	2.70
Ludeman-SW-26	6/18/2008	0.005	12	0.05	0.01	3.22	0.009	3	0.02	0.001	0.1	0.05	5	<0.002	13.6	1	0.0010	0.1	0.04	16.6	0.04	3.8	1.3
	7/22/2008	0.005	9	0.05	0.01	0.3	0.001	2	0.03	0.001	0.1	0.05	5	0.001	13.8	1	0.0003	0.1	0.01	29.7	0.09	14.9	1.3
	11/10/2008	0.005	13	0.05	0.01	0.58	0.001	3	0.01	0.001	0.1	0.05	7	0.004	17.4	1	0.0003	0.1	0.01	32.8	0.08	82.4	7.9
	2/24/2009	0.005	10	0.05	0.01	0.23	0.001	2	0.01	0.001	0.1	0.05	5	0.001	8.2	1	0.0003	0.1	0.01	5.52	0.04	2.1	1.2
	Average	0.005	11.00	0.05	0.01	1.08	0.003	2.50	0.02	0.001	0.10	0.05	5.50	0.002	13.25	1.00	0.0005	0.10	0.02	21.16	0.06	25.80	2.93

1. A "0" value represents below minimum detectable concentration

ClientSampID	Collection Date	Gross Alpha precision (±)	Gross Beta (DIS)	Gross Beta MDC (DIS)	Gross Beta precision (±)	Lead 210 (DIS)	Lead 210 MDC (DIS)	Lead 210 precision (±)	Polonium 210 (DIS)	Polonium 210 precision (±)	Radium 226 (DIS)	Radium 226 MDC (DIS)	Radium 226 precision (±)	Radium 228 (DIS)	Radium 228 MDC (DIS)	Radium 228 precision (±)	Thorium 230 (DIS)	Thorium 230 precision (±)	Lead 210 (SUS)
		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
	2/25/2009	4.6	27.9	7.3	4.8	0	2.8	1.6	0.2	0.3	1.2	0.24	0.28	0.7	1.7	1	0	0.1	1.1
	Average	2.97	18.48	5.18	3.10	0.00	7.30	4.27	0.55	0.57	0.27	0.27	0.19	0.58	1.25	0.80	0.03	0.20	1.65
Ludeman-SW-18	6/18/2008	1.6	12.6	2.6	1.8	0.9	12	7.2	0.2	0.7	3.6	0.2	0.4	0.7	1.2	0.7	0.2	0.2	1.4
Ludeman-SW-19	4/29/2008		5.3	2.7		0			0.2		0	0.22		0	1.1		0		0
	6/20/2008	0.9	5.9	2.8	1.8	3.4	12	7.2	0	0.6	0.3	0.3	0.2	0	1.1	0.6	0	0.2	2.1
	7/21/2008	1.1	10.2	2.7	1.8	0	13.2	7.8	0.4	0.7	1.5	0.24	0.37	0	1.3	0.7	0.1	0.2	0
	11/13/2008	1.8	15.8	2.6	1.8	0	4	2.4	0.6	0.9	0.58	0.51	0.4	2	3.5	2.2	0.1	0.2	3.7
	3/27/2009	1.1	5.8	2.8	1.8	0.8	2.7	1.6	0.1	0.3	0.05	0.21	0.13	0	1	0.6	0	0.1	2.4
	Average	1.23	8.60	2.72	1.80	0.84	7.98	4.75	0.26	0.63	0.49	0.30	0.28	0.40	1.60	1.03	0.04	0.18	1.64
Ludeman-SW-20	6/18/2008	1.1	4.3	2.6	1.6	10.1	12	7.3	0	0.4	1.2	0.2	0.2	0.7	1.2	0.7	0	0.08	5.9
	7/21/2008	1.2	11.6	2.7	1.8	7.7	15.6	9.5	0.9	1.2	1.3	0.22	0.34	0.5	1.3	0.8	0.2	0.2	0
	11/20/2008	0.8	2.7	2.7	1.7	0	9.4	5.6	0.1	0.3	-0.2	0.26	0.12	2.9	1	0.7	0	0.09	0
	3/27/2009	1	3.7	2.8	1.7	2	2.7	1.6	0.3	0.5	0.38	0.24	0.19	1.1	1.1	0.7	0.04	0.1	2.5
	Average	1.03	5.58	2.70	1.70	4.95	9.93	6.00	0.33	0.60	0.67	0.23	0.21	1.30	1.15	0.73	0.06	0.12	2.10
Ludeman-SW-21	6/18/2008	1.1	6.5	2.6	1.7	10.8	12	7.3	0.5	1.7	0.9	0.1	0.2	0.7	1.2	0.7	0	0.07	0
	7/21/2008	1	0.8	2.7	1.6	0.9	13	7.8	1.1	1.2	1.1	0.26	0.33	0.4	1.3	0.8	0.1	0.07	0
	11/20/2008	2.9	25.8	3.2	2.3	2.4	4.7	2.8	0.5	0.5	0.3	0.34	0.24	1	1	0.6	0.1	0.2	0
	3/27/2009	1	6.3	2.8	1.8	2.7	2.7	1.6	0.02	0.4	0.48	0.19	0.18	0.6	0.9	0.5	0.06	0.1	1.5
	Average	1.50	9.85	2.83	1.85	4.20	8.10	4.88	0.53	0.95	0.70	0.22	0.24	0.68	1.10	0.65	0.07	0.11	0.38
Ludeman-SW-22	4/4/2008		10.9	2.4		0			0.4		0.24	0.24		0.6	0.9		0		0
	6/30/2008	0.9	13.5	3.3	2.2	1.6	8.4	5	0.3	0.9	0.2	0.3	0.2	0.7	1.3	0.8	0.1	0.1	2.2
	7/21/2008	1	13.1	2.7	1.9	1.9	13	7.8	0.4	1.2	0.84	0.22	0.27	0.007	1.3	0.8	0	0.07	42.1
	11/13/2008	1.8	36.1	2.6	2.1	1.3	4	2.4	0.4	0.7	0.37	0.45	0.32	0	3.5	2	0.1	0.2	1.9
	3/19/2009	1.2	20.6	2.6	1.9	0	4.1	2.4	0.3	0.4	0.05	0.18	0.11	0	1.2	0.7	0	0.2	0.2
	Average	1.23	18.84	2.72	2.03	0.96	7.38	4.40	0.36	0.80	0.34	0.28	0.23	0.26	1.64	1.08	0.04	0.14	9.28
Ludeman-SW-24	4/21/2008		9.5	2.7		0			0.6		1.9	0.52		0.1	1.9		0.1		0
	6/18/2008	1.3	9.6	2.6	1.7	9.2	12	7.3	0.1	0.7	1.3	0.2	0.3	0.6	1.2	0.7	0.1	0.1	13.7
	7/18/2008	1.8	19.6	2.9	2.1	3.3	9.1	5.5	0.6	0.7	1	0.23	0.25	1.4	1.5	0.9	0	0.07	0
	7/22/2008																		
	11/3/2008	1.8	21.8	3	2.1	0	5.1	3	0.2	0.3	-0.03	0.21	0.11	0.5	1.1	0.7	0.1	0.2	0
	3/9/2009	1.2	8.9	2.7	1.8	4.2	6.4	3.9	0.8	0.7	0.1	0.19	0.12	0.2	1.1	0.6	0.2	0.2	1.1
	Average	1.53	13.88	2.78	1.93	3.34	8.15	4.93	0.46	0.60	0.85	0.27	0.20	0.56	1.36	0.73	0.10	0.14	2.96
Ludeman-SW-25	4/29/2008		16.1	13.5		0			0		-0.06	0.15		0	1.1		0		0
	6/19/2008	1.3	10.1	2.6	1.7	2.8	12	7.2	0	0.7	1.8	0.2	0.3	0.8	1.2	0.7	0	0.1	0
	7/18/2008	1.5	17.8	2.9	2	4.3	9.1	5.5	0.3	0.6	1.5	0.2	0.26	1.6	1.5	0.9	0.1	0.1	0
	7/22/2008																		
	11/3/2008	1.4	23.9	2.9	2.1	4.9	5.3	3.2	0.3	0.4	2.5	0.19	0.32	1.3	1.1	0.7	0.3	0.4	6.3
	3/9/2009	1.3	15.5	2.7	1.9	2.8	3.2	1.9	0.6	0.6	0.14	0.17	0.12	0	1	0.6	0.1	0.1	1.1
	Average	1.38	16.68	4.92	1.93	2.96	7.40	4.45	0.24	0.58	1.18	0.18	0.25	0.74	1.18	0.73	0.10	0.18	1.48
Ludeman-SW-26	6/18/2008	1	5.1	2.6	1.6	6.2	12	7.3	0	0.5	1	0.2	0.2	0.7	1.2	0.7	0	0.1	10.4
	7/22/2008	1.8	16.5	2.7	1.9	6	13	7.8	0.5	0.8	1.9	0.22	0.39	0	1.3	0.7	0.1	0.07	11.6
	11/10/2008	9.8	76.6	16.2	11	4	6.6	4	0.4	0.4	1.7	0.21	0.28	1.4	1.1	0.7	0.1	0.2	0
	2/24/2009	0.9	5.6	2.5	1.6	0.9	2.8	1.7	0.1	0.3	0.17	0.2	0.14	0.2	1.4	0.8	0.06	0.3	0.9
	Average	3.38	25.95	6.00	4.03	4.28	8.60	5.20	0.25	0.50	1.19	0.21	0.25	0.58	1.25	0.73	0.07	0.17	5.73

1. A "0" value represents below minimum detectable concentration

ClientSampID	Collection Date	Lead 210 MDC (SUS)	Lead 210 precision (±)	Polonium 210 (SUS)	Polonium 210 precision (±)	Radium 226 (SUS)	Radium 226 MDC (SUS)	Radium 226 precision (±)	Radium 228 (SUS)	Radium 228 MDC (SUS)	Radium 228 precision (±)	Thorium 230 (SUS)	Thorium 230 precision (±)	Uranium (SUS)	TDS Balance (0.80 - 1.20)
		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	mg/L	dec. %
	2/25/2009	6.7	4	0.4	0.4	0.07	0.2	0.1				0.1	0.2	0.0004	
	Average	9.63	5.73	0.88	0.37	0.27	0.38	0.17				0.25	0.20	0.0004	1.10
Ludeman-SW-18	6/18/2008	20.1	12	0.9	0.7	0	0.6	0.2		NOT ANALYZED		0	0.1	0.0003	
Ludeman-SW-19	4/29/2008			1.9		1.4	0.3			NOT ANALYZED		0.1		0.0003	1.18
	6/20/2008	15.9	9.5	0.5	0.5	0	0.6	0.3	0.07	2.7	1.6	0.2	0.2	0.0003	
	7/21/2008	11.8	7	0.4	0.4	0	0.6	0.3		NOT ANALYZED		0.1	0.2	0.0003	
	11/13/2008	9.8	5.9	1.2	0.7	0.3	0.4	0.3				0	0.7	0.0005	
	3/27/2009	4.1	2.5	0.1	0.3	0	0.09	0.04				0.1	0.1	0.0003	
	Average	10.40	6.23	0.82	0.48	0.34	0.40	0.24	0.07	2.70	1.60	0.10	0.30	0.0003	1.18
Ludeman-SW-20	6/18/2008	20.7	12.5	0.3	0.5	0	0.5	0.2		NOT ANALYZED		0	0.1	0.0003	
	7/21/2008	11.8	6.9	0.5	0.4	0	0.6	0.3				0.3	0.2	0.0003	
	11/20/2008	8.7	5.1	0	0.7	0	0.5	0.3				0.1	0.2	0.0003	
	3/27/2009	4.1	2.4	0.3	0.3	0.08	0.08	0.06				0.09	0.2	0.0003	
	Average	11.33	6.73	0.28	0.48	0.02	0.42	0.22				0.12	0.18	0.0003	
Ludeman-SW-21	6/18/2008	19.6	11.6	0.9	0.8	0	0.6	0.3		NOT ANALYZED		0.5	0.3	0.0003	
	7/21/2008	11.8	7	0.3	0.4	0	0.6	0.3				0.3	0.2	0.0003	
	11/20/2008	8.4	5	2.9	2.3	0	0.4	0.2				0.1	0.2	0.0003	
	3/27/2009	4.2	2.5	0.2	0.3	0.6	0.08	0.09				0.05	0.2	0.0003	
	Average	11.00	6.53	1.08	0.95	0.15	0.42	0.22				0.24	0.23	0.00	
Ludeman-SW-22	4/4/2008			1.5		0.3	0.5			NOT ANALYZED		0.4		0.0003	1.2
	6/30/2008	7.4	4.5	0.2	0.4	0	0.5	0.2				0	0.02	0.0003	2
	7/21/2008	11.8	7.6	0.1	0.3	0	0.7	0.3				0	0.1	0.0003	
	11/13/2008	10.6	6.4	1.8	0.9	0	0.4	0.2				0.4	0.08	0.0011	
	3/19/2009	4.2	2.5	0.9	0.6	0.6	0.2	0.2				0.1	0.9	0.0003	
	Average	8.50	5.25	0.90	0.55	0.18	0.46	0.23				0.18	0.28	0.0005	1.60
Ludeman-SW-24	4/21/2008			3.4		5.2	0.4			NOT ANALYZED		1.6		0.0070	7.61
	6/18/2008	20.8	12.7	0.7	0.6	0	0.6	0.3				0.2	0.1	0.0003	
	7/18/2008	12.4	7.3	0.3	0.4	0.2	0.6	0.4				0.2	0.3	0.0005	
	7/22/2008														
	11/3/2008	8.1	4.8	1	0.6	0.2	0.4	0.3				0.1	0.3	0.0011	
	3/9/2009	4.7	2.8	0.3	0.3	0.4	0.4	0.3				0.2	0.2	0.0007	
	Average	11.50	6.90	1.14	0.48	1.20	0.48	0.33				0.46	0.23	0.0019	7.61
Ludeman-SW-25	4/29/2008			0.6		0.5	0.3			NOT ANALYZED		0.4		0.0003	1
	6/19/2008	22.1	13	0.6	0.5	0	0.6	0.3				0	0.2	0.0003	
	7/18/2008	12.4	7.4	0.4	0.4	0	0.7	0.3				0.1	0.2	0.0003	
	7/22/2008														
	11/3/2008	8	4.9	3.3	1.4	1.4	0.4	0.4				0.6	0.4	0.0017	
	3/9/2009	4.7	2.8	0.7	0.5	0	0.3	0.1				0.3	0.2	0.0005	
	Average	11.80	7.03	1.12	0.70	0.38	0.46	0.28				0.28	0.25	0.0006	1.00
Ludeman-SW-26	6/18/2008	19.6	11.9	0.5	0.5	0	0.5	0.2		NOT ANALYZED		0.1	0.2	0.0003	
	7/22/2008	25.3	15.2	1.6	1.1	0	0.6	0.3				0.4	0.3	0.0004	
	11/10/2008	9.7	5.8	1.2	0.9	0	0.4	0.2				0.4	0.3	0.0007	
	2/24/2009	6.8	4	0.04	0.2	0	0.2	0.08				0.08	0.2	0.0005	
	Average	15.35	9.23	0.84	0.68	0.00	0.43	0.20				0.25	0.25	0.0005	

1. A "0" value represents below minimum detectable concentration

Addendum 2.7-E

Ground Water Quality Sample Data

Uranium One - Wyoming
Sampling Schedule

Ludeman 2008 & 2009

	2008												2009											
Location I.D.	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Stock. Well - 1																		NR			9/22			NR
Stock. Well - 2																		NR			9/22			NR
Stock. Well - 3																		6/30			9/24			NR
Stock. Well - 4																		NR			9/24			NR
Stock. Well - 5																		NR			9/24			NR
Stock. Well - 6																		NR			9/24			NR
Stock. Well - 7																		6/30			9/24			NR
Stock. Well - 8																		6/29			9/22			NR
Stock. Well - 9																								
Stock. Well - 10																		6/30			NR			NR
Stock. Well - 11																		6/29			NR			NR
Stock. Well - 12																		6/29			9/22			NR
Stock. Well - 13																		6/29			9/24			NR
Stock. Well - 14																		"NR			NR			NR
Stock. Well - 15																		6/30			9/22			NR
Stock. Well - 16																		6/30			9/24			NR

Well	Collection Date	Analyte	A/C Balance (± 5) (%)	Anions (meq/L)	Bicarbonate as HCO3 (mq/L)	Carbonate as CO3 (mg/L)	Cations (meq/L)	Chloride (mg/L)	Conductivity (umhos/cm)	Fluoride (mg/L)	pH (s.u.)	Solids, Total Dissolved Calculated (mg/L)	Solids, Total Dissolved TDS @ 180 C (mg/L)	Sulfate (mg/L)	Nitrogen, Ammonia as N (mg/L)	Nitrogen, Nitrate+Nitrite as N (mg/L)	Aluminum (mg/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
Stock Well #1	11/6/2008		2.51	6.13	215	1	6.44	4	529	0.6	7.79	381	356	116	0.1	0.94	0.1
	Average		**2.51**	**6.13**	**215**	**1.00**	**6.44**	**4.00**	**529**	**0.60**	**7.79**	**381.00**	**356.00**	**116.00**	**0.10**	**0.94**	**0.10**
Stock Well #2	11/6/2008		2.72	7.09	200	1	7.49	5	630	0.5	8	441	416	175	0.1	0.05	0.1
	Average		**2.72**	**7.09**	**200**	**1.00**	**7.49**	**5.00**	**630.00**	**0.50**	**8.00**	**441.00**	**416.00**	**175.00**	**0.10**	**0.05**	**0.10**
Stock Well #3	11/10/2008		2.83	5.45	184	1	5.78	4	469	0.2	7.83	343	316	112	0.1	0.05	0.1
	6/30/2009		-0.934	5.28	187	1	5.18	3	519	0.2	8.07	319	357	102	0.05	0.01	0.1
	Average		**0.95**	**5.37**	**185.5**	**1.00**	**5.48**	**3.50**	**494.00**	**0.20**	**7.93**	**331.00**	**336.50**	**107.00**	**0.08**	**0.03**	**0.10**
Stock Well #7	6/30/2009		0.34	20.7	362	1	20.9	23	1790	0.4	7.66	1310	1390	680	0.05	0.04	0.1
	Average		**0.34**	**20.70**	**362**	**1.00**	**20.90**	**23.00**	**1790.00**	**0.40**	**7.66**	**1310.00**	**1390.00**	**680.00**	**0.05**	**0.04**	**0.10**
Stock Well #8	6/29/2009		-4.79	5.8	262	1	5.27	4	520	0.2	7.6	326	326	60	0.1	1.78	0.1
	Average		**-4.79**	**5.80**	**262**	**1.00**	**5.27**	**4.00**	**520.00**	**0.20**	**7.60**	**326.00**	**326.00**	**60.00**	**0.10**	**1.78**	**0.10**
Stock Well #9	11/20/2008		2.27	7.65	273	1	8.01	5	679	0.6	8.15	456	435	142	0.05	0.72	0.1
	Average		**2.27**	**7.65**	**273**	**1.00**	**8.01**	**5.00**	**679.00**	**0.60**	**8.15**	**456.00**	**435.00**	**142.00**	**0.05**	**0.72**	**0.10**
Stock Well #10	6/30/2009		0.865	5.42	200	3	5.51	5	535	0.7	8.2	326	359	90	0.05	0.09	0.1
	Average		**0.87**	**5.42**	**200**	**3.00**	**5.51**	**5.00**	**535.00**	**0.70**	**8.20**	**326.00**	**359.00**	**90.00**	**0.05**	**0.09**	**0.10**
Stock Well #11	6/29/2009		-4.09	4.96	221	1	4.57	3	470	0.5	7.9	274	276	59	0.07	0.05	0.1
	Average		**-4.09**	**4.96**	**221**	**1.00**	**4.57**	**3.00**	**470.00**	**0.50**	**7.90**	**274.00**	**276.00**	**59.00**	**0.07**	**0.05**	**0.10**
Stock Well #12	6/29/2009		-4.22	20.3	404	1	18.7	29	1700	0.5	7.3	1230	1300	616	0.05	0.56	0.1
	Average		**-4.22**	**20.30**	**404**	**1.00**	**18.70**	**29.00**	**1700.00**	**0.50**	**7.30**	**1230.00**	**1300.00**	**616.00**	**0.05**	**0.56**	**0.10**
Stock Well #13	6/29/2009		-1.8	5.79	214	1	5.59	2	550	0.4	7.9	337	335	106	0.05	0.05	0.1
	Average		**-1.80**	**5.79**	**214**	**1.00**	**5.59**	**2.00**	**550.00**	**0.40**	**7.90**	**337.00**	**335.00**	**106.00**	**0.05**	**0.05**	**0.10**
Stock Well #15	6/30/2009		-1.88	6.33	209	1	6.09	5	600	0.2	8.03	385	421	129	0.05	1.23	0.1
	Average		**-1.88**	**6.33**	**209**	**1.00**	**6.09**	**5.00**	**600.00**	**0.20**	**8.03**	**385.00**	**421.00**	**129.00**	**0.05**	**1.23**	**0.10**
Stock Well #16	6/30/2009		-4.74	14.1	327	1	12.8	9	1170	0.2	7.51	840	866	404	0.05	0.55	0.1
	Average		**-4.74**	**14.10**	**327**	**1.00**	**12.80**	**9.00**	**1170.00**	**0.20**	**7.51**	**840.00**	**866.00**	**404.00**	**0.05**	**0.55**	**0.10**

1. A "0" value represents below minimum detectable limits.

Well	Collection Date	Analyte	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
Stock Well #1	11/6/2008		0.002	0.1	0.1	0.005	80	0.05	0.01	0.03	0.001	14	0.02	0.001	0.1	0.05	8	0.013
	Average		**0.002**	**0.10**	**0.10**	**0.005**	**80.00**	**0.05**	**0.01**	**0.03**	**0.001**	**14.00**	**0.02**	**0.001**	**0.10**	**0.05**	**8.00**	**0.013**
Stock Well #2	11/6/2008		0.001	0.1	0.1	0.005	69	0.05	0.01	0.03	0.001	17	0.03	0.001	0.1	0.05	7	0.001
	Average		**0.001**	**0.10**	**0.10**	**0.005**	**69.00**	**0.05**	**0.01**	**0.03**	**0.001**	**17.00**	**0.03**	**0.001**	**0.10**	**0.05**	**7.00**	**0.001**
Stock Well #3	11/10/2008		0.001	0.1	0.1	0.005	45	0.05	0.01	0.03	0.001	12	0.02	0.001	0.1	0.05	6	0.001
	6/30/2009		0.001	0.1	0.1	0.005	38	0.05	0.01	0.03	0.001	10	0.02	0.001	0.1	0.05	6	0.001
	Average		**0.001**	**0.10**	**0.10**	**0.005**	**41.50**	**0.05**	**0.01**	**0.03**	**0.001**	**11.00**	**0.02**	**0.001**	**0.10**	**0.05**	**6.00**	**0.001**
Stock Well #7	6/30/2009		0.001	0.1	0.1	0.005	126	0.05	0.01	0.03	0.001	61	0.01	0.001	0.1	0.05	5	0.001
	Average		**0.001**	**0.10**	**0.10**	**0.005**	**126.00**	**0.05**	**0.01**	**0.03**	**0.001**	**61.00**	**0.01**	**0.001**	**0.10**	**0.05**	**5.00**	**0.001**
Stock Well #8	6/29/2009		0.001	0.1	0.1	0.005	69	0.05	0.01	0.03	0.001	9	0.01	0.001	0.1	0.05	7	0.015
	Average		**0.001**	**0.10**	**0.10**	**0.005**	**69.00**	**0.05**	**0.01**	**0.03**	**0.001**	**9.00**	**0.01**	**0.001**	**0.10**	**0.05**	**7.00**	**0.015**
Stock Well #9	11/20/2008		0.002	0.1	0.1	0.005	73	0.05	0.01	0.03	0.001	20	0.01	0.001	0.1	0.05	7	0.010
	Average		**0.002**	**0.10**	**0.10**	**0.005**	**73.00**	**0.05**	**0.01**	**0.03**	**0.001**	**20.00**	**0.01**	**0.001**	**0.10**	**0.05**	**7.00**	**0.010**
Stock Well #10	6/30/2009		0.001	0.1	0.1	0.005	20	0.05	0.01	0.03	0.001	8	0.13	0.001	0.1	0.05	5	0.002
	Average		**0.001**	**0.10**	**0.10**	**0.005**	**20.00**	**0.05**	**0.01**	**0.03**	**0.001**	**8.00**	**0.13**	**0.001**	**0.10**	**0.05**	**5.00**	**0.002**
Stock Well #11	6/29/2009		0.001	0.1	0.1	0.005	40	0.05	0.01	0.03	0.001	12	0.05	0.001	0.1	0.05	6	0.001
	Average		**0.001**	**0.10**	**0.10**	**0.005**	**40.00**	**0.05**	**0.01**	**0.03**	**0.001**	**12.00**	**0.05**	**0.001**	**0.10**	**0.05**	**6.00**	**0.001**
Stock Well #12	6/29/2009		0.001	0.1	0.2	0.005	199	0.05	0.01	0.03	0.001	48	0.54	0.001	0.1	0.05	10	0.004
	Average		**0.001**	**0.10**	**0.20**	**0.005**	**199.00**	**0.05**	**0.01**	**0.03**	**0.001**	**48.00**	**0.54**	**0.001**	**0.10**	**0.05**	**10.00**	**0.004**
Stock Well #13	6/29/2009		0.004	0.1	0.1	0.005	43	0.05	0.01	0.03	0.001	14	0.02	0.001	0.1	0.05	7	0.001
	Average		**0.004**	**0.10**	**0.10**	**0.005**	**43.00**	**0.05**	**0.01**	**0.03**	**0.001**	**14.00**	**0.02**	**0.001**	**0.10**	**0.05**	**7.00**	**0.001**
Stock Well #15	6/30/2009		0.001	0.1	0.1	0.005	71	0.05	0.01	0.03	0.001	12	0.03	0.001	0.1	0.05	8	0.034
	Average		**0.001**	**0.10**	**0.10**	**0.005**	**71.00**	**0.05**	**0.01**	**0.03**	**0.001**	**12.00**	**0.03**	**0.001**	**0.10**	**0.05**	**8.00**	**0.034**
Stock Well #16	6/30/2009		0.001	0.1	0.1	0.005	94	0.05	0.01	0.03	0.001	40	0.01	0.001	0.1	0.05	5	0.001
	Average		**0.001**	**0.10**	**0.10**	**0.005**	**94.00**	**0.05**	**0.01**	**0.03**	**0.001**	**40.00**	**0.01**	**0.001**	**0.10**	**0.05**	**5.00**	**0.001**

1. A "0" value represents below minimum detectable limits.

Well	Collection Date	Analyte	Silica (mg/L)	Sodium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Iron (mg/L)	Manganese (mg/L)	Gross Alpha (pCi/L)	Gross Alpha MDC (pCi/L)	Gross Alpha precision (±) (pCi/L)	Gross Beta (pCi/L)	Gross Beta MDC (pCi/L)	Gross Beta precision (±) (pCi/L)	Lead 210 (pCi/L)	Lead 210 MDC (pCi/L)
			DIS	DIS	DIS	DIS	DIS	TOT	TOT	DIS	DIS		DIS	DIS		DIS	
Stock Well #1	11/6/2008		18.7	25	0.0054	0.1	0.02	0.89	0.02	25.4	1.7	2.3	10.3	2.8	1.8	0	5.1
	Average		**18.70**	**25.00**	**0.0054**	**0.10**	**0.02**	**0.89**	**0.02**	**25.40**	**1.70**	**2.30**	**10.30**	**2.80**	**1.80**	**0.00**	**5.10**
Stock Well #2	11/6/2008		9.6	57	0.0013	0.1	0.58	0.26	0.03	6.5	1.8	1.5	3.3	2.8	1.7	0	10.2
	Average		**9.60**	**57.00**	**0.0013**	**0.10**	**0.58**	**0.26**	**0.03**	**0.69**	**0.33**	**0.00**	**3.30**	**2.80**	**1.70**	**0.00**	**10.20**
Stock Well #3	11/10/2008		15.3	55	0.0064	0.1	0.01	0.12	0.03	25.3	1.8	2.5	12.6	2.9	1.9	0	4.7
	6/30/2009		13.4	53	0.0063	0.1	0.01	0.12	0.02	27.3	2	2.6	7.2	2.6	1.7	0	2.1
	Average		**14.35**	**54.00**	**0.0064**	**0.10**	**0.01**	**0.12**	**0.03**	**26.30**	**1.90**	**2.55**	**9.90**	**2.75**	**1.80**	**0.00**	**3.40**
												0					
Stock Well #7	6/30/2009		14	218	0.0129	0.1	0.16	0.03	0.01	8.2	7.1	4.8	-20	8.8	5	0	2.1
	Average		**14.00**	**218.00**	**0.0129**	**0.10**	**0.16**	**0.03**	**0.01**	**8.20**	**7.10**	**4.80**	**-20.00**	**8.80**	**5.00**	**0.00**	**2.10**
Stock Well #8	6/29/2009		15.1	19	0.0183	0.1	0.01	0.03	0.01	52.9	2.4	3.9	13.4	2.7	1.8	0	2.1
	Average		**15.10**	**19.00**	**0.0183**	**0.10**	**0.01**	**0.03**	**0.01**	**52.90**	**2.40**	**3.90**	**13.40**	**2.70**	**1.80**	**0.00**	**2.10**
Stock Well #9	11/20/2008		10.6	58	0.0365	0.1	0.01	0.03	0.01	49.5	2	3.8	13.3	3.1	2.1	1.8	4.7
	Average		**10.60**	**58.00**	**0.0365**	**0.10**	**0.01**	**0.03**	**0.01**	**49.50**	**2.00**	**3.80**	**13.30**	**3.10**	**2.10**	**1.80**	**4.70**
Stock Well #10	6/30/2009		8.9	86	0.0144	0.1	0.01	0.15	0.14	27.2	2.1	2.7	6.9	2.6	1.7	0	2.1
	Average		**8.90**	**86.00**	**0.0144**	**0.10**	**0.01**	**0.15**	**0.14**	**27.20**	**2.10**	**2.70**	**6.90**	**2.60**	**1.70**	**0.00**	**2.10**
Stock Well #11	6/29/2009		9.3	34	0.0003	0.1	0.02	0.15	0.05	2.2	2.1	1.4	5.3	2.6	1.7	0	2.1
	Average		**9.30**	**34.00**	**0.0003**	**0.10**	**0.02**	**0.15**	**0.05**	**2.20**	**2.10**	**1.40**	**5.30**	**2.60**	**1.70**	**0.00**	**2.10**
Stock Well #12	6/29/2009		16.1	103	0.2030	0.1	0.01	0.03	0.55	315	6.7	15.1	58.1	7.6	5.5	0	2.1
	Average		**16.10**	**103.00**	**0.2030**	**0.10**	**0.01**	**0.03**	**0.55**	**315.00**	**6.70**	**15.10**	**58.10**	**7.60**	**5.50**	**0.00**	**2.10**
Stock Well #13	6/29/2009		8.1	49	0.0104	0.1	0.01	0.4	0.02	21.4	2.1	2.5	10.6	2.7	1.8	0	2.1
	Average		**8.10**	**49.00**	**0.0104**	**0.10**	**0.01**	**0.40**	**0.02**	**21.40**	**2.10**	**2.50**	**10.60**	**2.70**	**1.80**	**0.00**	**2.10**
Stock Well #15	6/30/2009		16.4	32	0.0133	0.1	0.09	0.22	0.03	41.6	2.4	3.5	11.7	2.7	1.8	0	2.1
	Average		**16.40**	**32.00**	**0.0133**	**0.10**	**0.09**	**0.22**	**0.03**	**41.60**	**2.40**	**3.50**	**11.70**	**2.70**	**1.80**	**0.00**	**2.10**
Stock Well #16	6/30/2009		14.3	108	0.0118	0.1	0.01	0.03	0.01	11	4.2	3.3	3.4	4.2	2.5	0	2.1
	Average		**14.30**	**108.00**	**0.0118**	**0.10**	**0.01**	**0.03**	**0.01**	**11.00**	**4.20**	**3.30**	**3.40**	**4.20**	**2.50**	**0.00**	**2.10**

1. A "0" value represents below minimum detectable limits.

Well	Collection Date	Analyte	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L)	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L)	Radium 226 MDC (pCi/L)	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Lead 210 (pCi/L)	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L)
				DIS		DIS	DIS		DIS	DIS		DIS		SUS			SUS
Stock Well #1	11/6/2008		3	0	0.3	0.56	0.33	0.29	2	2.5	1.6	0	0.3	0	8.5	5	0
	Average		**3.00**	**0.00**	**0.30**	**0.56**	**0.33**	**0.29**	**2.00**	**2.50**	**1.60**	**0.00**	**0.30**	**0.00**	**8.50**	**5.00**	**0.00**
Stock Well #2	11/6/2008		6.1	0.2	0.5	0.69	0.33	0.32	0	2.5	1.5	0.2	0.4	0	8.3	4.9	0.2
	Average		**6.10**	**0.20**	**0.50**	**0.69**	**0.33**	**0.32**	**0.00**	**2.50**	**1.50**	**0.20**	**0.40**	**0.00**	**8.30**	**4.90**	**0.20**
Stock Well #3	11/10/2008		2.8	0	0.2	3.6	0.2	0.37	0	1.1	0.7	0	0.05	0	8.2	4.9	0
	6/30/2009		1.2	0	0.2	3.3	0.18	0.36	1	1.2	0.8	0.01	0.06	0.2	2.8	1.7	0.1
	Average		**2.00**	**0.00**	**0.20**	**3.45**	**0.19**	**0.37**	**0.50**	**1.15**	**0.75**	**0.01**	**0.06**	**0.10**	**5.50**	**3.30**	**0.05**
Stock Well #7	6/30/2009		1.2	0.08	0.3	0.35	0.17	0.15	0.8	1.2	0.7	0.1	0.1	0	2.9	1.7	0
	Average		**1.20**	**0.08**	**0.30**	**0.35**	**0.17**	**0.15**	**0.80**	**1.20**	**0.70**	**0.10**	**0.10**	**0.00**	**2.90**	**1.70**	**0.00**
Stock Well #8	6/29/2009		1.2	0.03	0.3	0.33	0.2	0.16	2.3	1	0.7	0	0.07	0	2.8	1.7	0.2
	Average		**1.20**	**0.03**	**0.30**	**0.33**	**0.20**	**0.16**	**2.30**	**1.00**	**0.70**	**0.00**	**0.07**	**0.00**	**2.80**	**1.70**	**0.20**
Stock Well #9	11/20/2008		2.8	0.1	0.2	0.06	0.31	0.19	0.8	1	0.6	0.1	0.1	0	8.2	4.9	0.1
	Average		**2.80**	**0.10**	**0.20**	**0.06**	**0.31**	**0.19**	**0.80**	**1.00**	**0.60**	**0.10**	**0.10**	**0.00**	**8.20**	**4.90**	**0.10**
Stock Well #10	6/30/2009		1.2	0.07	0.2	0.19	0.18	0.13	0.6	1.2	0.7	0	0.1	0	2.8	1.7	0.1
	Average		**1.20**	**0.07**	**0.20**	**0.19**	**0.18**	**0.13**	**0.60**	**1.20**	**0.70**	**0.00**	**0.10**	**0.00**	**2.80**	**1.70**	**0.10**
Stock Well #11	6/29/2009		1.2	0	0.2	0.94	0.17	0.21	1.1	1.2	0.8	0.04	0.1	0	2.8	1.7	0
	Average		**1.20**	**0.00**	**0.20**	**0.94**	**0.17**	**0.21**	**1.10**	**1.20**	**0.80**	**0.04**	**0.10**	**0.00**	**2.80**	**1.70**	**0.00**
Stock Well #12	6/29/2009		1.2	0	0.2	0.13	0.19	0.13	1.1	1	0.6	0	0.09	0	2.8	1.7	0.03
	Average		**1.20**	**0.00**	**0.20**	**0.13**	**0.19**	**0.13**	**1.10**	**1.00**	**0.60**	**0.00**	**0.09**	**0.00**	**2.80**	**1.70**	**0.03**
Stock Well #13	6/29/2009		1.2	0.2	0.3	2	0.2	0.3	0.1	1	0.6	0.003		0.08	0	1.7	0
	Average		**1.20**	**0.20**	**0.30**	**2.00**	**0.20**	**0.30**	**0.10**	**1.00**	**0.60**	**0.00**	**#DIV/0!**	**0.08**	**0.00**	**1.70**	**0.00**
Stock Well #15	6/30/2009		1.2	0.04	0.2	0.28	0.17	0.14	0.9	1.2	0.7	0.01	0.06	0	5.9	3.5	0.2
	Average		**1.20**	**0.04**	**0.20**	**0.28**	**0.17**	**0.14**	**0.90**	**1.20**	**0.70**	**0.01**	**0.06**	**0.00**	**5.90**	**3.50**	**0.20**
Stock Well #16	6/30/2009		1.2	0.3	0.5	0.13	0.18	0.12	0.6	1.2	0.7	0.002	0.1	0	2.8	1.7	0
	Average		**1.20**	**0.30**	**0.50**	**0.13**	**0.18**	**0.12**	**0.60**	**1.20**	**0.70**	**0.00**	**0.10**	**0.00**	**2.80**	**1.70**	**0.00**

1. A "0" value represents below minimum detectable limits.

Well	Collection Date	Analyte	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L)	Radium 226 MDC (pCi/L)	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Uranium (mg/L)
				SUS	SUS					SUS		SUS
Stock Well #1	11/6/2008		0.3	0.1	0.3	0.2	NOT ANALYZED			0	0.03	0.0003
	Average		**0.30**	**0.10**	**0.30**	**0.20**				**0.00**	**0.03**	**0.0003**
Stock Well #2	11/6/2008		0.4	0.3	0.3	0.2	NOT ANALYZED			0	0.05	0.0003
	Average		**0.40**	**0.30**	**0.30**	**0.20**				**0.00**	**0.05**	**0.0003**
Stock Well #3	11/10/2008		0.3	0.2	0.3	0.2	NOT ANALYZED			0	0.05	0.0003
	6/30/2009		0.2	0	0.04	0.02				0.06	0.04	0.0003
	Average		**0.25**	**0.10**	**0.17**	**0.11**				**0.03**	**0.05**	**0.0003**
Stock Well #7	6/30/2009		0.1	0	0.04	0.02	NOT ANALYZED			0.5	0.2	0.0003
	Average		**0.10**	**0.00**	**0.04**	**0.02**				**0.50**	**0.20**	**0.0003**
Stock Well #8	6/29/2009		0.2	0	0.04	0.02	NOT ANALYZED			0	0.2	0.0003
	Average		**0.20**	**0.00**	**0.04**	**0.02**				**0.00**	**0.20**	**0.0003**
Stock Well #9	11/20/2008		1	0	0.4	0.2	NOT ANALYZED			0.1	0.2	0.0003
	Average		**1.00**	**0.00**	**0.40**	**0.20**				**0.10**	**0.20**	**0.0003**
Stock Well #10	6/30/2009		0.2	0.03	0.04	0.02	NOT ANALYZED			0.01	0.06	0.0003
	Average		**0.20**	**0.03**	**0.04**	**0.02**				**0.01**	**0.06**	**0.0003**
Stock Well #11	6/29/2009		0.4	0	0.04	0.2	NOT ANALYZED			0	0.05	0.0003
	Average		**0.40**	**0.00**	**0.04**	**0.20**				**0.00**	**0.05**	**0.0003**
Stock Well #12	6/29/2009		0.2	0	0.04	0.02	NOT ANALYZED			0	0.03	0.0003
	Average		**0.20**	**0.00**	**0.04**	**0.02**				**0.00**	**0.03**	**0.0003**
Stock Well #13	6/29/2009		0.1	0.03	0.04	0.03	NOT ANALYZED			0	0.05	0.0003
	Average		**0.10**	**0.03**	**0.00**	**0.03**				**0.00**	**0.05**	**0.0003**
Stock Well #15	6/30/2009		0.4	0	0.08	0.04	NOT ANALYZED			0	0.08	0.0003
	Average		**0.40**	**0.00**	**0.08**	**0.04**				**0.00**	**0.08**	**0.0003**
Stock Well #16	6/30/2009		0.1	0.008	0.04	0.02	NOT ANALYZED			0	0.04	0.0003
	Average		**0.10**	**0.01**	**0.04**	**0.02**				**0.00**	**0.04**	**0.0003**

1. A "0" value represents below minimum detectable limits.

Uranium One - Wyoming
Sampling Schedule

Ludeman 2008 & 2009

	2008												2009											
Location I.D.	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
M-2				4/24			7/29				11/6				3/17									
M-3				4/28			7/30				11/6				3/17									
M-4				4/29			7/30				11/6				3/17									
M-5				4/30			7/14				11/7				3/5									
M-6					5/7			8/6				12/2			3/25									
M-7				4/25				8/13			11/5				3/12									
M-8					5/5			8/12			11/18			2/12										
M-9						6/19		8/12			11/3				3/12									
M-10			3/28				7/17				11/11				3/5									
M-11				4/16			7/15				11/7				3/4									
M-12				4/18			7/18				11/17				3/30									
M-13						6/20		8/14			11/18				3/30									
M-14				4/17			7/24				11/5				3/16									
M-15			3/28			6/30	7/17				11/12				3/19									
M-16				4/16			7/16				11/12				3/19									
M-17				4/18			7/15				11/11				3/30									
M-18						6/17	7/23				11/5			2/24										
M-19						6/20	7/22				11/13				3/20									
M-20			3/29			6/30	7/22				11/12				3/20									
M-21			3/27				7/18				11/13				3/20									
M-23								8/15			11/17			2/24				6/22						
M-24			3/30				7/23				11/19				3/20									
M-26				4/21			7/28				11/10				3/16									

Uranium One - Wyoming
Sampling Schedule

Ludeman 2008 & 2009

	2008												2009											
Location I.D.	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
OW-1								8/18			11/14				3/18			6/24						
OW-9			3/27					8/5			11/14				3/18									
LPW-1												12/4		2/10				6/17		8/24				
LMU-1												12/4		2/10				6/17		8/24				
LMO-1												12/5		2/12				6/17		8/24				
LPW-2												12/5		2/11				6/17		8/24				
LPW-3A												12/18			3/2			6/22		8/26				
LMU-2A												12/12			3/4			6/24		8/27				
LMO-2A												12/10			3/2			6/22		8/26				
LPW-4												12/22			3/18			6/18		8/31				
LMU-3												12/22			3/18			6/18		8/31				

Well		Collection Date	A/C Balance (± 5) (%)	Anions (meq/L)	Bicarbonate as HCO3 (mg/L)	Carbonate as CO3 (mg/L)	Cations (meq/L)	Chloride (mg/L)	Conductivity (umhos/cm)	Fluoride (mg/L)	pH (s.u.)	Solids, Total Dissolved Calculated (mg/L)	Solids, Total Dissolved TDS @ 180 C (mg/L)	TDS Balance (0.80 - 1.20) (dec. %)	Sulfate (mg/L)	Nitrogen, Ammonia as N (mg/L)	Nitrogen, Nitrate+Nitrite as N (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
OW-9	60	3/26/2008	0.911	5.44	219	2	5.54	2	511	0.6	8.28	324	261	0.81	82	0.11	0.1	0.1	0.006	0.1	0.1	0.005	13	0.05	0.01	0.04	0.001
		8/5/2008	4.31	5.39	220	1	5.88	5	504	0.6	7.76	327	302		77	0.1	0.05	0.1	0.006	0.1	0.1	0.005	15	0.05	0.01	0.03	0.004
		11/14/2008	2.75	5.19	215		5.48	5	505	0.6	7.99	316	284	0.9	72	0.09	0.1	0.1	0.006	0.1	0.1	0.005	14	0.05	0.01	0.03	0.001
		3/18/2009	-1.72	5.3	217	1	5.12	4	511	0.6	7.96	311	327	1.05	76	0.12	0.05	0.1	0.005	0.1	0.1	0.005	11	0.05	0.01	0.03	0.001
		Average	**1.56**	**5.33**	**217.75**	**1.33**	**5.51**	**4.00**	**507.75**	**0.60**	**7.96**	**319.50**	**293.50**	**0.92**	**76.75**	**0.11**	**0.08**	**0.10**	**0.006**	**0.10**	**0.10**	**0.005**	**13.25**	**0.05**	**0.01**	**0.03**	**0.002**
LMU-2A	60	12/12/2008	-2.98	5.96	205	1	5.61	5	468	0.7	8.74	360	315	0.88	115	0.35	0.05	0.1	0.001	0.1	0.1	0.005	17	0.05	0.01	0.03	0.001
		3/4/2009	-0.527	6.43	230	1	6.37	6	564	0.6	8.66	411	336	0.82	119	0.35	0.05	0.1	0.001	0.1	0.1	0.005	18	0.05	0.01	0.03	0.001
		6/24/2009	-2.87	6.13	215	6	5.79	5	604	0.6	8.49	362	385	1.06	109	0.53	0.1	0.1	0.001	0.1	0.1	0.005	18	0.05	0.01	0.03	0.001
		Average	**-2.13**	**6.17**	**216.67**	**2.67**	**5.92**	**5.33**	**545.33**	**0.63**	**8.62**	**377.67**	**345.33**	**0.92**	**114.33**	**0.41**	**0.07**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**17.67**	**0.05**	**0.01**	**0.03**	**0.001**
AVERAGE	**60 SAND**		**-0.28**	**5.75**	**217.21**	**2.00**	**5.71**	**4.67**	**526.54**	**0.62**	**8.17**	**348.58**	**319.42**	**0.92**	**95.54**	**0.26**	**0.07**	**0.10**	**0.003**	**0.10**	**0.10**	**0.01**	**15.46**	**0.05**	**0.01**	**0.03**	**0.001**

*Sand OW-9 sand location is an estimated on surrounding logs and drill depths.

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silica (mg/L)	Sodium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Iron (mg/L)	Manganese (mg/L)	Gross Alpha (pCi/L)	Gross Alpha MDC (pCi/L)	Gross Alpha precision (±) (pCi/L)	Gross Beta (pCi/L)	Gross Beta MDC (pCi/L)	Gross Beta precision (±) (pCi/L)	Lead 210 (pCi/L)	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS.	TOT	TOT	DIS	DIS		DIS	DIS		DIS			DIS
		3/26/2008	5	0.06	0.001	0.1	0.05	3	0.001	8	100	0.0070	0.1	0.01	0.07	0.06	14.7	1.5		1.5	2.5		0			2.5
		8/5/2008	5	0.06	0.001	0.1	0.05	4	0.001	64	106	0.0141	0.1	0.01	0.1	0.06	26.5	1.9	2.6	7	2.4	1.5	89.1	10.7	7.6	0
OW-9	60	11/14/2008	5	0.06	0.001	0.1	0.05	3	0.001	9.8	98	0.0073	0.1	0.01	0.08	0.06	21.1	1.4	2.2	5.2	2.6	1.7	2.8	4	2.4	0.2
		3/18/2009	4	0.05	0.001	0.1	0.05	3	0.001	7.8	95	0.0076	0.1	0.01	0.08	0.06	19.9	2.2	2.5	3.5	2.6	1.6	0.5	4.1	2.4	0
		Average	**4.75**	**0.06**	**0.001**	**0.10**	**0.05**	**3.25**	**0.001**	**22.40**	**99.75**	**0.0090**	**0.10**	**0.01**	**0.08**	**0.06**	**20.55**	**1.75**	**2.43**	**4.30**	**2.53**	**1.60**	**23.10**	**6.27**	**4.13**	**0.68**
		12/12/2008	6	0.02	0.001	0.1	0.05	6	0.001	11.8	93	0.0003	0.1	0.02	1.17	0.04	5.7	1.7	1.5	3.2	2.8	1.7	0	4.6	2.7	0.2
		3/4/2009	7	0.03	0.001	0.1	0.05	6	0.001	7.6	109	0.0007	0.1	0.01	3.64	0.07	7.5	1.9	1.7	4.2	2.7	1.7	4.1	3.2	2	0.3
LMU-2A	60	6/24/2009	7	0.03	0.001	0.1	0.05	5	0.001	8.4	96	0.0011	0.1	0.01	2.14	0.06	9.9	2.1	1.9	5.5	2.7	1.7	0	2.6	1.5	0.2
		Average	**6.67**	**0.03**	**0.001**	**0.10**	**0.05**	**5.67**	**0.001**	**9.27**	**99.33**	**0.0007**	**0.10**	**0.01**	**2.32**	**0.06**	**7.70**	**1.90**	**1.70**	**4.30**	**2.73**	**1.70**	**1.37**	**3.47**	**2.07**	**0.23**
AVERAGE	**60 SAND**		**5.71**	**0.04**	**0.001**	**0.10**	**0.05**	**4.46**	**0.001**	**15.83**	**99.54**	**0.0049**	**0.10**	**0.01**	**1.20**	**0.06**	**14.13**	**1.83**	**2.07**	**4.30**	**2.63**	**1.65**	**12.23**	**4.87**	**3.10**	**0.45**

*Sand OW-9 sand location is an estimated on surrounding logs and drill depths.

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L)	Radium 226 MDC (pCi/L)	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Lead 210 (pCi/L)	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L)	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L)	Radium 226 MDC (pCi/L)	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Uranium (mg/L)
				DIS	DIS		DIS	DIS		DIS		SUS			SUS		SUS	SUS							SUS		SUS
OW-9	60	3/26/2008		0.34	0.09		0.4	0.8		0.6		7.2			0.6		0.3	0.3							0.1		0.0003
		8/5/2008	0.6	0.56	0.28	0.24	1.2	1	0.7	0.1	0.1	0	15	8.9	0	0.2	0	0.4	0.2					0.1	0.2	0.0003
		11/14/2008	0.3	0.34	0.18	0.15	0.2	1.2	0.7	0.1	0.2	5.9	8.3	5.1	2.1	1.8	1.4	0.4	0.4					0.1	0.2	0.0003
		3/18/2009	0.2	0.33	0.18	0.15	0	1.2	0.7	0.1	0.1	0	3.1	1.8	0.09	0.2	0.09	0.1	0.09					0	0.1	0.0003
		Average	**0.37**	**0.39**	**0.18**	**0.18**	**0.45**	**1.05**	**0.70**	**0.23**	**0.13**	**3.28**	**8.80**	**5.27**	**0.70**	**0.73**	**0.45**	**0.30**	**0.23**					**0.08**	**0.17**	**0.0003**
LMU-2A	60	12/12/2008	0.4	0.73	0.21	0.21	1.1	1.7	1.1	0.2	0.2	0	14.5	8.5	0.3	0.4	0.9	0.5	0.4					0.7	0.4	0.0019
		3/4/2009	0.4	0.8	0.09	0.14	1.1	1.3	0.8	0.1	0.1	5.9	4.7	2.9	1	0.6	0.1	0.4	0.2					1.2	0.4	0.0015
		6/24/2009	0.4	1.1	0.19	0.24	1.5	1.1	0.7	0.1	0.1	0	3.6	2.2	0.4	0.3	0.4	0.05	0.07					0.8	0.2	0.0013
		Average	**0.40**	**0.88**	**0.16**	**0.20**	**1.23**	**1.37**	**0.87**	**0.13**	**0.13**	**1.97**	**7.60**	**4.53**	**0.57**	**0.43**	**0.47**	**0.32**	**0.22**					**0.90**	**0.33**	**0.0016**
AVERAGE	**60 SAND**		**0.38**	**0.63**	**0.17**	**0.19**	**0.84**	**1.21**	**0.78**	**0.18**	**0.13**	**2.62**	**8.20**	**4.90**	**0.63**	**0.58**	**0.46**	**0.31**	**0.23**					**0.49**	**0.25**	**0.0009**

*Sand OW-9 sand location is an estimated on surrounding logs and drill depths.

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	A/C Balance (± 5) (%)	Anions (meq/L)	Bicarbonate as HCO3 (mg/L)	Carbonate as CO3 (mg/L)	Cations (meq/L)	Chloride (mg/L)	Conductivity (umhos/cm)	Fluoride (mg/L)	pH (s.u.)	Solids, Total Dissolved Calculated (mg/L)	Solids, Total Dissolved TDS @ 180 C (mg/L)	TDS Balance (0.80 - 1.20) (dec. %)	Sulfate (mg/L)	Nitrogen, Ammonia as N (mg/L)	Nitrogen, Nitrate+Nitrite as N (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
M-9	70	6/19/2008	4	5.2	175	9	5.64	2	502	0.6	8.49	317	338	1.07	93	0.25	0.05	0.1	0.002	0.1	0.1	0.005	48	0.05	0.01	0.03	0.001	11	0.01	0.001
		8/12/2008	1.11	5.24	199	1	5.36	2	501	0.6	8.17	309	319		91	0.2	0.05	0.1	0.002	0.1	0.1	0.005	48	0.05	0.01	0.03	0.001	10	0.01	0.001
		11/3/2008	3.18	5.32	194	6	5.67	2	464	0.6	8.08	324	300		89	0.2	0.05	0.1	0.001	0.1	0.1	0.005	49	0.05	0.01	0.03	0.001	13	0.02	0.001
		3/12/2009	2.06	5.26	203	1	5.48	4	499	0.5	8.19	312	305	0.98	86	0.11	0.05	0.1	0.001	0.1	0.1	0.005	45	0.05	0.01	0.03	0.001	13	0.02	0.001
		Average	**2.59**	**5.26**	**192.75**	**4.25**	**5.54**	**2.50**	**491.50**	**0.58**	**8.21**	**315.50**	**315.50**	**1.03**	**89.75**	**0.19**	**0.05**	**0.10**	**0.002**	**0.10**	**0.10**	**0.005**	**47.50**	**0.05**	**0.01**	**0.03**	**0.001**	**11.75**	**0.02**	**0.001**
M-10	70	3/28/2008	1.54	6.06	161	11	5.88	6	566	0.6	8.94	370	326	0.88	138	0.17	0.1	0.1	0.009	0.1	0.1	0.005	22	0.05	0.01	0.03	0.003	7	0.01	0.001
		7/17/2008	0.075	6.05	177	2	6.06	3	576	0.6	8.28	373	330		143	0.06	0.05	0.1	0.004	0.1	0.1	0.005	24	0.05	0.01	0.03	0.001	7	0.01	0.001
		11/11/2008	4.02	5.58	171	1	6.05	5	547	0.6	8.25	362	343		125	0.08	0.05	0.1	0.006	0.1	0.1	0.005	24	0.05	0.01	0.03	0.001	6	0.01	0.001
		3/5/2009	-4.35	5.68	172	1	5.21	4.2	550	0.6	8.39	343	312	0.91	130	0.07	0.05	0.1	0.005	0.1	0.1	0.005	18	0.05	0.01	0.03	0.001	6	0.01	0.001
		Average	**0.32**	**5.84**	**170.25**	**3.75**	**5.80**	**4.55**	**559.75**	**0.60**	**8.40**	**362.00**	**327.75**	**0.90**	**134.00**	**0.10**	**0.06**	**0.10**	**0.006**	**0.10**	**0.10**	**0.005**	**22.00**	**0.05**	**0.01**	**0.03**	**0.002**	**6.50**	**0.01**	**0.001**
M-11	70	4/16/2008	4.13	5.62	166	1	6.1	5	561	0.6	8.4	354	333	0.94	129	0.15	0.05	0.1	0.002	0.1	0.1	0.005	23	0.05	0.01	0.03	0.001	7	0.01	0.001
		7/15/2008	0.9	5.57	172	1	5.67	5	563	0.6	8.02	339	366	1.08	123	0.16	0.05	0.1	0.001	0.1	0.1	0.005	19	0.05	0.01	0.03	0.001	7	0.01	0.001
		11/7/2008	-1.63	6.16	193	1	5.96	5	524	0.6	8.37	379	349		136	0.1	0.05	0.1	0.001	0.1	0.1	0.005	19	0.05	0.01	0.03	0.001	8	0.01	0.001
		3/4/2009	-1.77	5.62	168	1	5.43	4.2	530	0.6	8.45	348	292	0.84	131	0.14	0.05	0.1	0.001	0.1	0.1	0.005	15	0.05	0.01	0.03	0.001	6	0.01	0.001
		Average	**0.41**	**5.74**	**174.75**	**1.00**	**5.79**	**4.80**	**544.50**	**0.60**	**8.27**	**355.00**	**335.00**	**0.95**	**129.75**	**0.14**	**0.05**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**19.00**	**0.05**	**0.01**	**0.03**	**0.001**	**7.00**	**0.01**	**0.001**
M-14	70	4/17/2008	1.2	6.18	240	3	6.04	5	597	0.6	7.86	357	285	0.8	96	0.21	0.05	0.1	0.001	0.1	0.1	0.005	23	0.05	0.01	0.03	0.001	8	0.02	0.001
		7/24/2008	2.33	6.17	247	2	5.89	5	602	0.7	7.99	352	370	1.05	91	0.24	0.05	0.1	0.001	0.1	0.1	0.005	23	0.05	0.01	0.03	0.001	9	0.03	0.001
		11/5/2008	5.54	6.01	242	1	6.72	1	542	0.6	8.06	374	400		95	0.2	0.05	0.1	0.001	0.1	0.1	0.005	26	0.05	0.01	0.03	0.001	10	0.03	0.001
		3/16/2009	0.27	6.07	240	1	6.1	5	572	0.6	8.19	360	316	0.88	94	0.17	0.05	0.1	0.001	0.1	0.1	0.005	22	0.05	0.01	0.03	0.001	9	0.03	0.001
		Average	**2.34**	**6.11**	**242.25**	**1.75**	**6.19**	**4.00**	**578.25**	**0.63**	**8.01**	**360.75**	**342.75**	**0.91**	**94.00**	**0.21**	**0.05**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**23.50**	**0.05**	**0.01**	**0.03**	**0.001**	**9.00**	**0.03**	**0.001**
M-15	70	3/28/2008	0.362	4.93	192	9	4.97	3	459	0.7	8.83	290	252	0.87	66	0.08	0.1	0.1	0.001	0.1	0.1	0.005	20	0.05	0.01	0.03	0.001	5	0.01	0.001
		6/30/2008	1.73	4.8	198	4	4.97	4	450	0.7	8.28	282	271	0.96	60	0.13	0.05	0.1	0.001	0.1	0.1	0.005	19	0.05	0.01	0.03	0.001	6	0.02	0.001
		7/17/2008	3.1	4.93	199	3	5.24	3	466	0.7	8.27	294	274		71	0.09	0.05	0.1	0.001	0.1	0.1	0.005	21	0.05	0.01	0.03	0.001	7	0.01	0.001
		11/13/2008	1.11	4.74	189	6	4.85	2	441	0.7	8.35	282	274		64	0.08	0.05	0.1	0.001	0.1	0.1	0.005	17	0.05	0.01	0.03	0.001	6	0.01	0.001
		3/18/2009	1.89	4.6	190	4	4.78	3	443	0.7	8.25	276	281	1.02	60	0.1	0.05	0.1	0.001	0.1	0.1	0.005	15	0.05	0.01	0.03	0.001	6	0.02	0.001
		Average	**1.64**	**4.80**	**193.6**	**5.20**	**4.96**	**3.00**	**451.80**	**0.70**	**8.29**	**284.80**	**270.40**	**0.95**	**64.20**	**0.10**	**0.06**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**18.40**	**0.05**	**0.01**	**0.03**	**0.001**	**6.00**	**0.01**	**0.001**
M-16	70	4/16/2008	7.93	5.98	189	1	7.02	5	524	0.6	8.31	384	322	0.84	130	0.19	0.05	0.1	0.002	0.1	0.1	0.005	30	0.05	0.01	0.03	0.001	11	0.03	0.001
		7/16/2008	0.742	5.48	185	1	5.56	3	532	0.6	8.19	331	331		110	0.17	0.05	0.1	0.001	0.1	0.1	0.005	21	0.05	0.01	0.03	0.001	8	0.01	0.001
		11/13/2008	-1.55	5.39	177	3	5.23	4	506	0.7	8.08	325	317		108	0.17	0.05	0.1	0.001	0.1	0.1	0.005	18	0.05	0.01	0.03	0.001	7	0.01	0.001
		3/19/2009	-0.473	5.24	177	2	5.19	4	508	0.7	8.13	319	327	1.03	103	0.16	0.05	0.1	0.001	0.1	0.1	0.005	17	0.05	0.01	0.03	0.001	7	0.02	0.001
		Average	**1.66**	**5.52**	**182**	**1.75**	**5.75**	**4.00**	**517.50**	**0.65**	**8.17**	**339.75**	**324.25**	**0.94**	**112.75**	**0.17**	**0.05**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**21.50**	**0.05**	**0.01**	**0.03**	**0.001**	**8.25**	**0.02**	**0.001**
M-18	70	6/18/2008	2.78	5.12	192	6	5.41	2	482	0.6	8.26	305	314	1.03	81	0.11	0.05	0.1	0.008	0.1	0.1	0.005	34	0.05	0.01	0.03	0.001	9	0.01	0.001
		7/23/2008	1.69	5.15	212	2	5.33	2	484	0.6	8.17	308	250		72	0.12	0.05	0.1	0.007	0.1	0.1	0.005	34	0.05	0.01	0.03	0.001	10	0.01	0.001
		11/5/2008	3.24	4.51	179	2	4.82	2	383	0.6	8.38	277	299		69	0.1	0.05	0.1	0.006	0.1	0.1	0.005	25	0.05	0.01	0.03	0.001	8	0.01	0.001
		2/24/2009			196	1	4.59	4	447	0.6	8.23	279	240	0.86	70	0.05	0.05	0.1	0.007	0.1	0.1	0.005	25	0.05	0.01	0.03	0.001	9	0.01	0.001
		Average	**2.57**	**4.93**	**194.75**	**2.75**	**5.04**	**2.50**	**449.00**	**0.60**	**8.25**	**292.25**	**275.75**	**0.95**	**73.00**	**0.10**	**0.05**	**0.10**	**0.007**	**0.10**	**0.10**	**0.005**	**29.50**	**0.05**	**0.01**	**0.03**	**0.001**	**9.00**	**0.01**	**0.001**
M-20	70	3/29/2008	0.99	6.62	222	10.00	6.49	4.00	601.00	0.60	8.76	394.00	362.00	0.92	120.00	0.19	0.10	0.10	0.012	0.10	0.10	0.005	28.00	0.05	0.01	0.03	0.001	7.00	0.03	0.001
		6/30/2008	3.14	5.59	203	1	5.95	5	544	0.7	8.22	342	335	0.98	98	0.17	0.05	0.1	0.006	0.1	0.1	0.005	21	0.05	0.01	0.03	0.001	6	0.03	0.001
		7/22/2008	3.71	5.89	210	3	5.47	3	577	0.7	8.57	342	338		106	0.14	0.05	0.1	0.006	0.1	0.1	0.005	20	0.05	0.01	0.03	0.001	6	0.02	0.001
		11/12/2008	-0.0887	6.16	219	6	6.15	3	576	0.7	8.16	371	353		109	0.11	0.05	0.1	0.005	0.1	0.1	0.005	23	0.05	0.01	0.03	0.001	8	0.03	0.001
		3/20/2009	-4.03	6.17	229	3	5.69	6	581	0.7	8.02	357	331	0.93	102	0.11	0.05	0.1	0.004	0.1	0.1	0.005	25	0.05	0.01	0.03	0.001	6	0.04	0.001
		Average	**0.74**	**6.09**	**216.6**	**4.60**	**5.95**	**4.20**	**575.80**	**0.68**	**8.20**	**361.20**	**343.80**	**0.94**	**107.00**	**0.14**	**0.06**	**0.10**	**0.007**	**0.10**	**0.10**	**0.005**	**23.40**	**0.05**	**0.01**	**0.03**	**0.001**	**6.60**	**0.03**	**0.001**
M-21	70	3/27/2008	2.22	5.16	205	9	4.93	3	459	0.7	9.01	298	270	0.91	66	0.25	0.1	0.1	0.006	0.1	0.1	0.005	12	0.05	0.01	0.03	0.001	3	0.01	0.001
		7/18/2008	0.902	4.86	199	3	4.77	3	456	0.7	8	282	250		66	0.21	0.05	0.1	0.002	0.1	0.1	0.005	10	0.05	0.01	0.03	0.001	4	0.01	0.001
		11/13/2008	1.42	4.59	199	1	4.72	2	436	0.7	8.17	274	272		59	0.18	0.05	0.1	0.003	0.1	0.1	0.005	9	0.05	0.01	0.03	0.001	4	0.01	0.001
		3/20/2009	-3.12	4.69	199	3	4.4	4	433	0.7	8.09	269	255	0.95	57	0.21	0.05	0.1	0.002	0.1	0.1	0.005	9	0.05	0.01	0.03	0.001	3	0.01	0.001
		Average	**0.36**	**4.83**	**200.5**	**4.00**	**4.71**	**3.00**	**446.00**	**0.70**	**8.19**	**280.75**	**261.75**	**0.93**	**62.00**	**0.21**	**0.06**	**0.10**	**0.003**	**0.10**	**0.10**	**0.005**	**10.00**	**0.05**	**0.01**	**0.03**	**0.001**	**3.50**	**0.01**	**0.001**
M-23	70	8/15/2008	0.607	4.76	160	9	4.82	1	456	0.6	8.88	289	282		86	0.3	0.05	0.1	0.001	0.1	0.1	0.005	12	0.05	0.01	0.03	0.001	3	0.01	0.001
		11/17/2008	-0.22	4.49	170	2	4.47	1	446	0.6	8.63	276	254	0.92	76	0.28	0.1	0.1	0.001	0.1	0.1	0.005	8	0.05	0.01	0.03	0.001	3	0.01	0.001
		2/24/2009	-2.43	4.6	172	1	4.38	1	444	0.6	8.46	277	250	0.9	84	0.17	0.05	0.1	0.001	0.1	0.1	0.005	7	0.05	0.01	0.03	0.001	4	0.01	0.001
		6/22/2009	-2.18	4.58	168	5	4.38	1	455	0.6	8.46	274	287	1.05	78	0.44	0.1	0.1	0.001	0.1	0.1	0.005	8	0.05	0.01	0.03	0.001	3	0.01	0.001
		Average	**-1.06**	**4.61**	**167.5**	**4.25**	**4.51**	**1.00**	**450.25**	**0.60**	**8.62**	**279.00**	**268.25**	**0.96**	**81.00**	**0.30**	**0.08**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**8.75**	**0.05**	**0.01**	**0.03**	**0.001**	**3.25**	**0.01**	**0.001**
LMU-1	70	12/4/2008	1.87	4.74	219	1	4.92	3	382	0.5	8.1	275	257	0.93	50	0.12	0.05	0.1	0.001	0.1	0.1	0.005	40	0.05	0.01	0.03	0.001	12	0.03	0.001
		2/10/2009	-4.72	4.81	216	1	4.38	4	325	0.5	7.92	267	274	1.03	55	0.05	0.05	0.1	0.001	0.1	0.1	0.005	34	0.05	0.01	0.03	0.001	11	0.04	0.001
		6/17/2009	-2.95	4.7	220	1	4.43	4	448	0.5	8.05	261	272	1.04	47	0.09	0.05	0.1	0.001	0.1	0.1	0.005	35	0.05	0.01	0.03	0.001	11	0.04	0.001
		8/24/2009	-2.21	4.91	222	4	4.7	4	432	0.5	8.07	273	277	1.01	48	0.1	0.1	0.1	0.001	0.1	0.1	0.005	37	0.05	0.01	0.03	0.001	12	0.05	0.001
		Average	**-2.00**	**4.79**	**219.25**	**1.75**	**4.61**	**3.75**	**396.75**	**0.50**	**8.02**	**269.00**	**270.00**	**1.00**	**50.00**	**0.09**	**0.06**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**36.50**	**0.05**	**0.01**	**0.03**	**0.001**	**11.50**	**0.04**	**0.001**
LPW-3A	70	12/18/2008	2.55	5.3	165	1	5.58	5	435	0.6	8.33	338	343	1.01	117	0.08	0.05	0.1	0.001	0.1	0.1	0.005	17	0.05	0.01	0.03	0.001	6	0.01	0.001
		3/2/2009	-0.881	5.48	170	1	5.39	4	545	0.6	8.18	339	302	0.89	123	0.13	0.05	0.1	0.001	0.1	0.1	0.005	18	0.05	0.01	0.03	0.001	7	0.01	0.001
		6/22/2009	-3.55	5.46	166	6	5.09	5	548	0.6	8.44	328	351	1.07	116	0.31	0.1	0.1	0.001	0.1	0.1	0.005	16	0.05	0.01	0.03	0.001	6	0.01	0.001

1. A "0" value represents below the minimum detectable concentration.

Well	Collection Date	A/C Balance (± 5) (%)	Anions (meq/L)	Bicarbonate as HCO3 (mg/L)	Carbonate as CO3 (mg/L)	Cations (meq/L)	Chloride (mg/L)	Conductivity (umhos/cm)	Fluoride (mg/L)	pH (s.u.)	Solids, Total Dissolved Calculated (mg/L)	Solids, Total Dissolved TDS @ 180 C (mg/L)	TDS Balance (0.80 - 1.20) (dec. %)	Sulfate (mg/L)	Nitrogen, Ammonia as N (mg/L)	Nitrogen, Nitrate+Nitrite as N (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
		DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
	Average	-0.63	5.41	167	2.67	5.35	4.67	509.33	0.60	8.30	335.00	332.00	0.99	118.67	0.17	0.07	0.10	0.001	0.10	0.10	0.005	17.00	0.05	0.01	0.03	0.001	6.33	0.01	0.001
AVERAGE	70 SAND	0.74	5.33	193.43	3.14	5.35	3.50	497.54	0.62	8.22	319.58	305.60	0.95	93.01	0.16	0.06	0.10	0.003	0.10	0.10	0.01	23.09	0.05	0.01	0.03	0.001	7.39	0.02	0.001

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silica (mg/L)	Sodium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Iron (mg/L)	Manganese (mg/L)	Gross Alpha (pCi/L)	Gross Alpha MDC (pCi/L)	Gross Alpha precision (±) (pCi/L)	Gross Beta (pCi/L)	Gross Beta MDC (pCi/L)	Gross Beta precision (±) (pCi/L)	Lead 210 (pCi/L)	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L)	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L)	Radium 226 MDC (pCi/L)	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	TOT	TOT	DIS	DIS		DIS	DIS		DIS			DIS		DIS	DIS		DIS
M-9	70	6/19/2008	0.1	0.05	12	0.001	5.6	47	0.0302	0.1	0.01	0.05	0.01	277	1.9	7.4	76.6	2.7	2.7	14.2	12	7.4	1.2	1.1	124	0.1	1.8	1
		8/12/2008	0.1	0.05	10	0.001	12	43	0.0258	0.1	0.01	0.03	0.01	284	2.1	7.8	77.2	2.6	2.6	12.2	9.9	6.1	0.5	0.9	141	0.24	2.6	1.6
		11/3/2008	0.1	0.05	8	0.001	12	46	0.0249	0.1	0.01	0.04	0.02	355	1.6	8.1	148	3	3.6	5.2	5.1	3.1	0.4	0.4	134	0.21	2.4	1.1
		3/12/2009	0.1	0.05	7	0.001	11.6	45	0.0146	0.1	0.01	0.04	0.02	220	1.8	6.9	84.8	2.7	2.8	12.2	5.6	3.4	0.4	0.6	71	0.2	1.7	1.1
		Average	**0.10**	**0.05**	**9.25**	**0.001**	**10.30**	**45.25**	**0.0239**	**0.10**	**0.01**	**0.04**	**0.02**	**284.00**	**1.85**	**7.55**	**96.65**	**2.75**	**2.93**	**10.95**	**8.15**	**5.00**	**0.63**	**0.75**	**117.50**	**0.19**	**2.13**	**1.20**
M-10	70	3/28/2008	0.1	0.05	6	0.001	8.3	93	0.0076	0.1	0.01	0.15	0.01	30.4	1.8	2.7	12.2	2.7	1.8	0.2		0.3	0.9	1	2.3	0.1	0.2	1.8
		7/17/2008	0.1	0.05	5	0.001	11.9	95	0.0062	0.1	0.01	0.03	0.01	34.6	1.7	2.9	11.3	3	2	2.1	9.1	5.4	0.4	0.6	5.2	0.3	0.6	1
		11/11/2008	0.1	0.05	5	0.001	12.1	96	0.0050	0.1	0.01	0.03	0.01	18.3	1.4	2	6.6	2.6	1.7	0	4.7	2.8	0	0.3	3.3	0.22	0.37	2.2
		3/5/2009	0.1	0.05	5	0.001	7.8	86	0.0055	0.1	0.01	0.03	0.01	28.6	1.7	2.6	11.6	2.7	1.8	4.3	3.2	2	0	0.2	3.1	0.18	0.33	0.6
		Average	**0.10**	**0.05**	**5.25**	**0.001**	**10.03**	**92.50**	**0.0061**	**0.10**	**0.01**	**0.06**	**0.01**	**27.98**	**1.65**	**2.55**	**10.43**	**2.75**	**1.83**	**1.65**	**5.67**	**2.63**	**0.33**	**0.53**	**3.48**	**0.20**	**0.38**	**1.40**
M-11	70	4/16/2008	0.1	0.05	5	0.001	5	97	0.0123	0.1	0.01	0.03	0.01	356	1.7		147	3.8		20.6			3.2		144	0.2		0.8
		7/15/2008	0.1	0.05	5	0.001	4.4	93	0.0075	0.1	0.01	0.03	0.01	457	1.7	9.8	133	2.7	3.3	24	9.1	5.8	3	1.9	145	0.2	2.3	0.2
		11/7/2008	0.1	0.05	5	0.001	10.9	98	0.0093	0.1	0.01	0.03	0.01	465	1.9	10	168	2.9	3.7	76.7	5	4.1	3	1.3	152	0.21	2.5	2.1
		3/4/2009	0.1	0.05	5	0.001	7.5	93	0.0074	0.1	0.01	0.04	0.01	643	1.7	11.4	218	2.7	4	40.2	3.2	2.3	1.8	0.9	148	0.08	1.7	1.3
		Average	**0.10**	**0.05**	**5.00**	**0.001**	**6.95**	**95.25**	**0.0091**	**0.10**	**0.01**	**0.03**	**0.01**	**480.25**	**1.75**	**10.40**	**166.50**	**3.03**	**3.67**	**40.38**	**5.77**	**4.07**	**2.75**	**1.37**	**147.25**	**0.17**	**2.17**	**1.10**
M-14	70	4/17/2008	0.1	0.05	5	0.001	4.7	94	0.0010	0.1	0.01	0.03	0.03	180	1.7		71.2	3.1		20.7			2.9		61.6	0.22		0.05
		7/24/2008	0.1	0.05	5	0.001	9.6	89	0.0177	0.1	0.01	0.03	0.03	182	1.8	6.2	44.6	3.2	2.6	2.3	15.1	9	1.1	1	60	0.2	1.6	0.8
		11/5/2008	0.1	0.05	6	0.001	10.8	103	0.0178	0.1	0.01	0.03	0.03	301	1.6	7.6	128	3	3.4	10.4	5.9	3.7	0.4	0.4	65	0.22	1.7	0.5
		3/16/2009	0.1	0.05	5	0.001	8.8	95	0.0168	0.1	0.01	0.03	0.03	392	2.4	10	109	2.7	3	23.2	8.6	5.4	0.3	0.4	63	0.19	1.6	0
		Average	**0.10**	**0.05**	**5.25**	**0.001**	**8.48**	**95.25**	**0.0133**	**0.10**	**0.01**	**0.03**	**0.03**	**263.75**	**1.88**	**7.93**	**88.20**	**3.00**	**3.00**	**14.15**	**9.87**	**6.03**	**1.18**	**0.60**	**62.40**	**0.21**	**1.63**	**0.34**
M-15	70	3/28/2008	0.1	0.05	6	0.001	7.6	78	0.0003	0.1	0.01	0.1	0.01	44	2.1	3.2	18.7	2.6	1.9	0		0.8	0	0.7	11	0.1	0.5	1
		6/30/2008	0.1	0.05	6	0.001	4.7	78	0.0048	0.1	0.01	0.03	0.02	34	1.7	2.6	12.7	3.3	2.2	1.4	8.4	5	0	0.5	14.3	0.3	1	0.5
		7/17/2008	0.1	0.05	5	0.001	11	81	0.0047	0.1	0.01	0.04	0.02	41.3	1.5	2.9	11.9	2.9	2	3	9.1	5.5	0.8	0.9	14.5	0.3	0.9	0.3
		11/13/2008	0.1	0.05	5	0.001	8.3	77	0.0041	0.1	0.01	0.03	0.01	47.2	1.7	3.2	16.7	2.5	1.8	2.8	4	2.4	0.3	0.4	9.3	0.48	1.1	0
		3/18/2009	0.1	0.05	5	0.001	8.5	78	0.0039	0.1	0.01	0.03	0.02	62.2	2	3.9	16.9	2.6	1.9	1.6	4.1	2.4	0.2	0.3	12	0.18	0.73	0.7
		Average	**0.10**	**0.05**	**5.40**	**0.001**	**8.02**	**78.40**	**0.0036**	**0.10**	**0.01**	**0.05**	**0.02**	**45.74**	**1.80**	**3.16**	**15.38**	**2.78**	**1.96**	**1.76**	**6.40**	**3.22**	**0.26**	**0.56**	**12.22**	**0.27**	**0.85**	**0.50**
M-16	70	4/16/2008	0.1	0.05	6	0.001	4.9	103	0.0217	0.1	0.01	0.12	0.02	13	1.5		6.9	3.1		0			0.5		3.9	0.22		0.7
		7/16/2008	0.1	0.05	5	0.001	10.3	86	0.0008	0.1	0.01	0.03	0.02	18.9	1.6	2.1	2	2.9	1.8	2.1	9.1	5.4	0.4	0.8	4.6	0.3	0.5	0.3
		11/13/2008	0.1	0.05	5	0.001	8	83	0.0006	0.1	0.02	0.03	0.02	4.3	1.8	1.4	4.1	2.5	1.6	0.6	4	2.4	0	0.3	0.57	0.48	0.38	0
		3/19/2009	0.1	0.05	4	0.001	8	84	0.0007	0.1	0.01	0.03	0.02	3.7	2.1	1.6	3.4	2.6	1.6	0.4	4.1	2.4	0	0.2	0.8	0.2	0.22	0.8
		Average	**0.10**	**0.05**	**5.00**	**0.001**	**7.80**	**89.00**	**0.0060**	**0.10**	**0.01**	**0.05**	**0.02**	**9.98**	**1.75**	**1.70**	**4.10**	**2.78**	**1.67**	**0.78**	**5.73**	**3.40**	**0.23**	**0.43**	**2.47**	**0.30**	**0.37**	**0.45**
M-18	70	6/18/2008	0.1	0.05	7	0.001	5.2	64	0.0605	0.1	0.01	0.03	0.01	448	1.8	9.2	145	2.7	3.4	44.2	12	7.9	2.3	1.4	263	0.1	2.9	2.6
		7/23/2008	0.1	0.05	6	0.001	11.7	62	0.0448	0.1	0.01	0.03	0.01	405	1.7	8.5	108	2.7	3	12.4	13	7.9	2.7	1.4	210	0.8	7.5	1.5
		11/5/2008	0.1	0.05	7	0.001	10.8	63	0.1210	0.1	0.02	0.03	0.01	819	1.4	11.6	385	2.9	5.3	26.3	5.4	3.6	0.8	0.4	278	0.21	3.4	1.7
		2/24/2009	0.1	0.05	6	0.001	9.1	57	0.0594	0.1	0.03	0.03	0.02	735	1.5	11.7	212	2.5	3.8	20.5	2.8	1.9	1.9	0.9	262	0.17	3.1	1.7
		Average	**0.10**	**0.05**	**6.50**	**0.001**	**9.20**	**61.50**	**0.0714**	**0.10**	**0.02**	**0.03**	**0.01**	**601.75**	**1.60**	**10.25**	**212.50**	**2.70**	**3.88**	**25.85**	**8.30**	**5.33**	**1.93**	**1.03**	**253.25**	**0.32**	**4.23**	**1.88**
M-20	70	3/29/2008	0.10	0.05	8.00	0.001	8.60	98.00	0.0393	0.10	0.01	0.23	0.03	415.00	2.40	10.00	121.00	2.60	3.10	0.00		1.60	1.80	1.20	76.20	0.10	1.30	1.40
		6/30/2008	0.1	0.05	8	0.001	4.8	96	0.0247	0.1	0.01	0.03	0.03	199	1.8	6.3	62.7	3.4	2.9	6.9	8.4	5.1	0	1.2	64.5	0.3	2.3	0.2
		7/22/2008	0.1	0.05	7	0.001	8.9	87	0.0258	0.1	0.01	0.03	0.03	331	1.6	8.4	93	2.8	2.9	5.8	13	7.8	0.5	0.8	71	0.25	2.5	0
		11/12/2008	0.1	0.05	8	0.001	8.2	96	0.0301	0.1	0.01	0.03	0.04	409	1.9	9.5	99.9	2.5	2.8	6.8	4	2.5	0.5	0.4	70	0.46	3	1.3
		3/20/2009	0.1	0.05	6	0.001	7.4	87	0.0242	0.1	0.01	0.05	0.04	514	2.3	11.4	144	2.7	3.4	6.4	2.7	1.7	0.07	0.3	75	0.19	1.7	1.5
		Average	**0.10**	**0.05**	**7.40**	**0.001**	**7.58**	**92.80**	**0.0288**	**0.10**	**0.01**	**0.07**	**0.03**	**373.60**	**2.00**	**9.12**	**104.12**	**2.80**	**3.02**	**5.18**	**7.03**	**3.74**	**0.57**	**0.78**	**71.34**	**0.26**	**2.16**	**0.88**
M-21	70	3/27/2008	0.1	0.05	4	0.001	8	91	0.0109	0.1	0.01	0.03	0.01	43.3	2.1	3.2	12.5	2.6	1.8	0		1.3	2	1.2	3.6	0.1	0.3	0.08
		7/18/2008	0.1	0.05	4	0.001	10.1	88	0.0076	0.1	0.01	0.1	0.01	30.9	1.5	2.6	8.4	2.9	1.9	1.5	9.1	5.4	0.2	0.7	3.7	0.2	0.4	1.6
		11/13/2008	0.1	0.05	4	0.001	7.6	88	0.0069	0.1	0.01	0.03	0.01	36.7	1.7	2.8	8.9	2.5	1.7	3	4	2.4	0.2	0.4	3.4	0.68	0.88	0
		3/20/2009	0.1	0.05	3	0.001	7.1	83	0.0069	0.1	0.01	0.13	0.01	43.9	2	3.3	12.8	2.6	1.8	3.1	2.7	1.6	0.8	0.6	3.3	0.18	0.36	0.03
		Average	**0.10**	**0.05**	**3.75**	**0.001**	**8.20**	**87.50**	**0.0081**	**0.10**	**0.01**	**0.07**	**0.01**	**38.70**	**1.83**	**2.98**	**10.65**	**2.65**	**1.80**	**1.90**	**5.27**	**2.68**	**0.80**	**0.73**	**3.50**	**0.29**	**0.49**	**0.43**
M-23	70	8/15/2008	0.1	0.05	5	0.001	9.5	89	0.0014	0.1	0.01	0.03	0.01	12.1	1.9	1.9	7.5	2.5	1.7	3.4	9.9	5.9	0	0.4	2.3	0.26	0.37	0.9
		11/17/2008	0.1	0.05	4	0.001	10.3	85	0.0008	0.1	0.01	0.03	0.01	10.1	1.3	1.5	4.5	2.6	1.6	0	4.4	2.6	0	0.3	0.99	0.41	0.36	0
		2/24/2009	0.1	0.05	3	0.001	7.8	83	0.0005	0.1	0.01	0.03	0.01	5.4	1.5	1.3	4.7	2.5	1.6	0	2.8	1.6	0.1	0.3	0.9	0.17	0.21	1
		6/22/2009	0.1	0.05	3	0.001	7.7	83	0.0005	0.1	0.01	0.03	0.01	4.8	1.8	1.4	3.7	2.7	1.7	1.4	2.6	1.6	0.3	0.4	1.1	0.19	0.23	1.7
		Average	**0.10**	**0.05**	**3.75**	**0.001**	**8.83**	**85.00**	**0.0008**	**0.10**	**0.01**	**0.03**	**0.01**	**8.10**	**1.63**	**1.53**	**5.10**	**2.58**	**1.65**	**1.20**	**4.93**	**2.93**	**0.10**	**0.35**	**1.32**	**0.26**	**0.29**	**0.90**
LMU-1	70	12/4/2008	0.1	0.05	7	0.001	11.2	41	0.0009	0.1	0.01	0.15	0.04	1.8	1.6	1.1	6.2	2.7	1.7	0	4.1	2.4	0.1	0.3	1.1	0.08	0.17	0.7
		2/10/2009	0.1	0.05	7	0.001	9.3	36	0.0003	0.1	0.01	0.13	0.05	0.8	1.6	1	7.3	2.7	1.7	2.2	7.9	4.8	0.05	0.2	0.88	0.19	0.22	0.2
		6/17/2009	0.1	0.05	7	0.001	9.9	37	0.0003	0.1	0.01	0.12	0.04	0.2	2.6	1.6	5.3	2.7	1.7	0.1	2.8	1.7	0	0.2	0.8	0.27	0.26	0.4
		8/24/2009	0.1	0.05	7	0.001	9.8	39	0.0003	0.1	0.01	0.16	0.05	1.2	2	1.3	3.4	2.9	1.8	0	2.6	1.5	0	0.3	0.8	0.17	0.19	0.7
		Average	**0.10**	**0.05**	**7.00**	**0.001**	**10.05**	**38.25**	**0.0005**	**0.10**	**0.01**	**0.14**	**0.05**	**1.00**	**1.95**	**1.25**	**5.55**	**2.75**	**1.73**	**0.58**	**4.35**	**2.60**	**0.04**	**0.25**	**0.90**	**0.18**	**0.21**	**0.50**
LPW-3A	70	12/18/2008	0.1	0.05	4	0.001	9.9	94	0.0082	0.1	0.01	0.03	0.01	196	1.7	6.5	73.8	2.7	2.6	17	4	2.6	2.1	1.8	32	0.17	1.1	0.4
		3/2/2009	0.1	0.05	4	0.001	9	87	0.0058	0.1	0.02	0.03	0.01	175	2	6.1	57.9	2.8	2.5	41	3.8	2.7	0.6	0.4	34	0.14	1	0.1
		6/22/2009	0.1	0.05	4	0.001	7.8	84	0.0067	0.1	0.01	0.03	0.01	194	1.9	6.3	76.6	2.7	2.7	25.8	2.6	1.8	1.7	0.8	44	0.18	1.3	1.2

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silica (mg/L)	Sodium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Iron (mg/L)	Manganese (mg/L)	Gross Alpha (pCi/L)	Gross Alpha MDC (pCi/L)	Gross Alpha precision (±) (pCi/L)	Gross Beta (pCi/L)	Gross Beta MDC (pCi/L)	Gross Beta precision (±) (pCi/L)	Lead 210 (pCi/L)	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L)	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L)	Radium 226 MDC (pCi/L)	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	TOT	TOT	DIS	DIS		DIS	DIS		DIS			DIS		DIS			DIS
		Average	**0.10**	**0.05**	**4.00**	**0.001**	**8.90**	**88.33**	**0.0069**	**0.10**	**0.01**	**0.03**	**0.01**	**188.33**	**1.87**	**6.30**	**69.43**	**2.73**	**2.60**	**27.93**	**3.47**	**2.37**	**1.47**	**1.00**	**36.67**	**0.16**	**1.13**	**0.57**
AVERAGE	**70 SAND**		**0.10**	**0.05**	**5.63**	**0.001**	**8.69**	**79.09**	**0.01**	**0.10**	**0.01**	**0.05**	**0.02**	**193.60**	**1.80**	**5.39**	**65.72**	**2.77**	**2.48**	**11.02**	**6.24**	**3.66**	**0.86**	**0.70**	**59.36**	**0.23**	**1.33**	**0.84**

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Lead 210 (pCi/L)	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L)	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L)	Radium 226 MDC (pCi/L)	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Uranium (mg/L)
			DIS		DIS		SUS			SUS		SUS	SUS					SUS		SUS
M-9	70	6/19/2008	1.2	0.7	0	0.08	14.2	20.6	12.6	1.3	0.8	0.8	0.5	0.4	NOT ANALYZED			0.4	0.3	0.0003
		8/12/2008	1.2	0.8	0	0.09	0.2	9.9	5.9	0.6	0.6	2.9	0.5	0.7				0	0.9	0.0003
		11/3/2008	1.1	0.7	0	0.07	3.5	8	4.8	0.3	0.5	0.7	0.4	0.3				0.2	0.3	0.0003
		3/12/2009	1.2	0.8	0.03	0.08	6.1	4.1	2.5	0.5	0.4	1.4	0.3	0.4				0.07	0.2	0.0003
		Average	**1.18**	**0.75**	**0.01**	**0.08**	**6.00**	**10.65**	**6.45**	**0.68**	**0.58**	**1.45**	**0.43**	**0.45**				**0.17**	**0.43**	**0.0003**
M-10	70	3/28/2008	1.1	0.8	0	0.1	0		19.7	6.4	6.4	1	3	1.9	NOT ANALYZED			0.3	1.2	0.0011
		7/17/2008	1.1	0.7	0	0.09	0	11.8	7	0	0.2	0	0.6	0.2				0	0.2	0.0003
		11/11/2008	1.3	0.9	0	0.06	0.1	9.8	5.9	0.1	0.4	0	0.4	0.2				0	0.3	0.0003
		3/5/2009	0.9	0.6	0.03	0.1	5	4.7	2.8	0.02	0.2	0	0.4	0.2				0.3	0.2	0.0003
		Average	**1.10**	**0.75**	**0.01**	**0.09**	**1.28**	**8.77**	**8.85**	**1.63**	**1.80**	**0.25**	**1.10**	**0.63**				**0.15**	**0.48**	**0.0005**
M-11	70	4/16/2008	1		0		0			0.6		1	0.4		NOT ANALYZED			0.1		0.0003
		7/15/2008	1.1	0.7	0.1	0.1	0	23.3	13.8	0.1	0.3	0	0.7	0.4				0	0.2	0.0003
		11/7/2008	1.2	0.8	0.1	0.1	0.5	8.2	4.9	0.2	0.4	0.6	0.3	0.3				0	0.05	0.0003
		3/4/2009	1	0.6	0.01	0.2	8.2	4.7	2.9	0.5	0.5	0.07	0.4	0.2				0	0.2	0.0003
		Average	**1.08**	**0.70**	**0.05**	**0.13**	**2.18**	**12.07**	**7.20**	**0.35**	**0.40**	**0.42**	**0.45**	**0.30**				**0.03**	**0.15**	**0.0003**
M-14	70	4/17/2008	1		0		0			0.1		0.3	0.4		NOT ANALYZED			0.1		0.0003
		7/24/2008	1	0.7	0	0.1	4.8	25	14.9	0.1	0.3	0.007	0.6	0.3				0.4	0.2	0.0003
		11/5/2008	1.1	0.7	0.1	0.2	0	8.4	5	0.1	0.3	0.4	0.3	0.3				0.2	0.05	0.0003
		3/16/2009	1.4	0.8	0.04	0.1	4.3	3.1	1.9	0.3	0.3	0.2	0.1	0.1				0	0.1	0.0003
		Average	**1.13**	**0.73**	**0.04**	**0.13**	**2.28**	**12.17**	**7.27**	**0.15**	**0.30**	**0.23**	**0.35**	**0.23**				**0.18**	**0.12**	**0.0003**
M-15	70	3/28/2008	1.1	0.7	0.1	0.1	0		18.5	13.8	8.5	3.4	3	2.3	NOT ANALYZED			4.7	2.9	0.0105
		6/30/2008	1.3	0.8	0	0.04	2.4	7.6	4.5	0.2	0.3	0	0.5	0.2				0.1	0.1	0.0003
		7/17/2008	1.1	0.7	0.1	0.1	0	11.8	6.9	0.2	0.4	0	0.5	0.2				0	0.2	0.0003
		11/13/2008	3.5	2.1	0	0.07	3.2	9.9	5.9	0.2	0.3	0.09	0.5	0.3				0	0.2	0.0003
		3/18/2009	1.2	0.7	0.05	0.08	0	3.1	1.9	0	0.1	0	0.1	0.07				0.07	0.1	0.0003
		Average	**1.64**	**1.00**	**0.05**	**0.08**	**1.12**	**8.10**	**7.54**	**2.88**	**1.92**	**0.70**	**0.92**	**0.61**				**0.97**	**0.70**	**0.0023**
M-16	70	4/16/2008	1		0		0			0.6		0.1	0.4		NOT ANALYZED			0		0.0004
		7/16/2008	1.1	0.6	0	0.07	0	11.8	7	0	0.4	0	0.5	0.2				0	0.07	0.0003
		11/13/2008	3.5	2.1	0.1	0.08	0.3	9.7	5.8	0	0.2	0.07	0.4	0.2				0.1	0.2	0.0003
		3/19/2009	1.3	0.8	0.05	0.08	0	3.2	1.9	0.05	0.2	0	0.1	0.05				0	0.1	0.0003
		Average	**1.73**	**1.17**	**0.04**	**0.08**	**0.08**	**8.23**	**4.90**	**0.16**	**0.27**	**0.04**	**0.35**	**0.15**				**0.03**	**0.12**	**0.0003**
M-18	70	6/18/2008	1.2	0.8	0.1	0.1	0.5	21.5	12.8	0.5	0.5	0.5	0.5	0.4	NOT ANALYZED			0	0.2	0.0003
		7/23/2008	1.2	0.8	0.1	0.1	0	12.6	7.5	0.9	0.6	0.5	0.6	0.5				0.2	0.2	0.0003
		11/5/2008	1.1	0.7	0.3	0.1	0	8.5	5	0.5	0.5	0.7	0.4	0.3				0	0.05	0.0003
		2/24/2009	1.2	0.8	0.09	0.1	12.6	6.4	3.9	0.4	0.3	1.3	0.2	0.2				0.009	0.1	0.0003
		Average	**1.18**	**0.78**	**0.15**	**0.10**	**3.28**	**12.25**	**7.30**	**0.58**	**0.48**	**0.75**	**0.43**	**0.35**				**0.05**	**0.14**	**0.0003**
M-20	70	3/29/2008	1.10	0.70	0.00	0.10	0.00		16.50	10.50	6.60	3.10	3.00	2.30	NOT ANALYZED			3.90	2.70	0.0107
		6/30/2008	1.3	0.8	0	0.05	4	7.5	4.5	0.9	0.6	0	0.5	0.2				0.1	0.1	0.0004
		7/22/2008	1.3	0.8	0.1	0.1	0	25.8	15.2	0	0.3	0	0.6	0.3				0.2	0.2	0.0003
		11/12/2008	3.5	2.1	0.1	0.09	1.5	9.8	5.8	0.4	0.5	0	0.4	0.2				0	0.3	0.0003
		3/20/2009	1.5	0.9	0	0.05	2.2	5	3	0.1	0.3	1.2	0.2	0.3				0.2	0.2	0.0003
		Average	**1.74**	**1.06**	**0.04**	**0.08**	**1.54**	**12.03**	**9.00**	**2.38**	**1.66**	**0.86**	**0.94**	**0.66**				**0.88**	**0.70**	**0.0024**
M-21	70	3/27/2008	1.1	0.7	0.7	0.3	0		4.8	9.6	4.2	2.2	1	0.9	NOT ANALYZED			1	1	0.0029
		7/18/2008	1.5	0.9	0	0.09	0	12.4	7.4	0.5	0.5	0	0.6	0.2				0	0.2	0.0003
		11/13/2008	5.2	3	0	0.09	2.8	8.1	4.9	1	1.6	0	0.5	0.2				0.2	0.2	0.0003
		3/20/2009	1.3	0.8	0.08	0.1	4.5	5	3.1	0.3	0.3	0.3	0.2	0.1				0	0.2	0.0003
		Average	**2.28**	**1.35**	**0.20**	**0.15**	**1.83**	**8.50**	**5.05**	**2.85**	**1.65**	**0.63**	**0.58**	**0.35**				**0.30**	**0.40**	**0.0010**
M-23	70	8/15/2008	1.2	0.7	0	0.1	4.5	9.8	6	0.1	0.3	0.9	0.5	0.4	NOT ANALYZED			0	0.1	0.0003
		11/17/2008	2.3	1.3	0	0.1	0	8.2	4.7	2.6	2.3	0	0.5	0.2				0	0.2	0.0003
		2/24/2009	1.2	0.8	0.006	0.08	3.4	6.7	4.1	0.1	0.3	0	0.2	0.1				0.2	0.2	0.0003
		6/22/2009	1.1	0.7	0.07	0.1	1.6	3.6	2.2	0.04	0.1	0.002	0.05	0.03						
		Average	**1.45**	**0.88**	**0.02**	**0.10**	**2.38**	**7.08**	**4.25**	**0.71**	**0.75**	**0.23**	**0.31**	**0.18**				**0.07**	**0.17**	**0.0003**
LMU-1	70	12/4/2008	1.1	0.7	0.2	0.3	0	9.9	5.9	0	0.3	0	0.5	0.2	NOT ANALYZED			0	0.05	0.0003
		2/10/2009	1.2	0.7	0.006	0.1	0	6.2	3.7	0	0.1	0	0.4	0.2				0	0.2	0.0003
		6/17/2009	1.4	0.9	0	0.06	0	3.4	2	0	0.1	0.05	0.2	0.1				0	0.2	0.0003
		8/24/2009	1.1	0.7	0	0.1	0.8	3.4	2	0.04	0.1	0.03	0.2	0.1				0	0.09	0.0003
		Average	**1.20**	**0.75**	**0.05**	**0.14**	**0.20**	**5.73**	**3.40**	**0.01**	**0.15**	**0.02**	**0.33**	**0.15**				**0.00**	**0.14**	**0.0003**
LPW-3A	70	12/18/2008	1.3	0.8	0	0.1	17.8	8.9	5.6	1.6	0.7	0	0.4	0.2	NOT ANALYZED			0	0.1	0.0003
		3/2/2009	1.1	0.6	0.001	0.07	2.7	4.1	2.5	0.7	0.5	0.2	0.2	0.2				0.04	0.2	0.0003
		6/22/2009	1	0.7	0	0.05	2.1	3.6	2.2	0.3	0.3	0	0.05	0.03				0	0.04	0.0003

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Lead 210 (pCi/L)	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L)	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L)	Radium 226 MDC (pCi/L)	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Uranium (mg/L)
			DIS		DIS		SUS			SUS		SUS	SUS					SUS		SUS
		Average	1.13	0.70	0.00	0.07	7.53	5.53	3.43	0.87	0.50	0.07	0.22	0.14				0.01	0.11	0.0003
AVERAGE	70 SAND		1.40	0.88	0.05	0.10	2.47	9.26	6.22	1.10	0.87	0.47	0.53	0.35				0.24	0.30	0.0007

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	A/C Balance (± 5) (%)	Anions (meq/L)	Bicarbonate as HCO3 (mq/L)	Carbonate as CO3 (mg/L)	Cations (meq/L)	Chloride (mg/L)	Conductivity (umhos/cm)	Fluoride (mg/L)	pH (s.u.)	Solids, Total Dissolved Calculated (mg/L)	Solids, Total Dissolved TDS @ 180 C (mg/L)	TDS Balance (0.80 - 1.20) (dec. %)	Sulfate (mg/L)	Nitrogen, Ammonia as N (mg/L)	Nitrogen, Nitrate+Nitrite as N (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
M-5	80	4/30/2008	0.306	4.84	187	9	4.87	2	473	0.5	8.71	283	300	1.06	67	0.28	0.05	0.1	0.001	0.1	0.1	0.005	21	0.05	0.01	0.03	0.001
		7/14/2008	2.58	4.8	209	1	5.05	1	468	0.5	7.95	280	303	1.08	64	0.27	0.05	0.1	0.001	0.1	0.1	0.005	20	0.05	0.01	0.03	0.001
		11/7/2008	2.77	4.71	197	1	4.97	1	404	0.5	8.35	292	286		69	0.3	0.05	0.1	0.001	0.1	0.1	0.005	19	0.05	0.01	0.03	0.001
		3/5/2009	-3.95	4.75	202	1	4.39	1.4	424	0.5	8.44	274	230	0.84	66	0.25	0.05	0.1	0.001	0.1	0.1	0.005	15	0.05	0.01	0.03	0.001
		Average	**0.43**	**4.78**	**198.75**	**3.00**	**4.82**	**1.35**	**442.25**	**0.50**	**8.27**	**282.25**	**279.75**	**0.99**	**66.50**	**0.28**	**0.05**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**18.75**	**0.05**	**0.01**	**0.03**	**0.001**
M-8	80	5/5/2008	0.692	4.97	161	3	5.04	2	476	0.6	8.6	296	316	1.07	105	0.05	0.05	0.1	0.001	0.1	0.1	0.005	50	0.05	0.01	0.03	0.001
		8/12/2008	4.59	5.15	184	1	5.65	1	506	0.4	7.98	313	323		101	0.1	0.05	0.1	0.007	0.1	0.1	0.005	62	0.05	0.01	0.03	0.001
		11/18/2008	1.33	5.37	192	1	5.51	2	467	0.4	8.1	325	322	0.99	103	0.05	0.05	0.1	0.004	0.1	0.1	0.005	58	0.05	0.01	0.03	0.001
		2/12/2009	-4.93	5.33	193	1	4.83	2	399	0.4	7.93	306	320	1.05	101	0.05	0.05	0.1	0.004	0.1	0.1	0.005	48	0.05	0.01	0.03	0.001
		Average	**0.42**	**5.21**	**182.5**	**1.50**	**5.26**	**1.75**	**462.00**	**0.45**	**8.09**	**310.00**	**320.25**	**1.04**	**102.50**	**0.06**	**0.05**	**0.10**	**0.004**	**0.10**	**0.10**	**0.005**	**54.50**	**0.05**	**0.01**	**0.03**	**0.001**
M-12	80	4/18/2008	1.2	5.02	158	12	4.9	3	490	0.6	8.92	302	316	1.05	91	0.22	0.05	0.1	0.001	0.1	0.1	0.005	15	0.05	0.01	0.03	0.001
		7/18/2008	0.128	5.28	172	5	5.26	1	498	0.6	8.44	321	279		108	0.16	0.05	0.1	0.001	0.1	0.1	0.005	16	0.05	0.01	0.03	0.001
		11/17/2008	5	4.78	174	1	5.28	3	473	0.7	8.54	304	274		85	0.15	0.1	0.1	0.001	0.1	0.1	0.005	14	0.05	0.01	0.03	0.001
		3/30/2009	0.457	4.5	150	8	4.54	1	437	0.7	8.75	277	265	0.96	82	0.16	0.05	0.1	0.002	0.1	0.1	0.005	10	0.05	0.01	0.03	0.001
		Average	**1.70**	**4.90**	**163.5**	**6.50**	**5.00**	**2.00**	**474.50**	**0.65**	**8.62**	**301.00**	**283.50**	**1.01**	**91.50**	**0.17**	**0.06**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**13.75**	**0.05**	**0.01**	**0.03**	**0.001**
M-17	80	4/18/2008	3.14	4.97	184	1	5.29	3	478	0.7	8.14	305	283	0.93	88	0.07	0.05	0.1	0.004	0.1	0.1	0.005	16	0.05	0.01	0.05	0.001
		7/15/2008	1.23	4.9	188	1	5.02	2	486	0.7	7.74	290	308	1.06	84	0.06	0.05	0.1	0.005	0.1	0.1	0.005	15	0.05	0.01	0.03	0.001
		11/11/2008	6.23	4.85	183	1	5.5	3	469	0.7	7.91	311	287		84	0.06	0.05	0.1	0.005	0.1	0.1	0.005	18	0.05	0.01	0.03	0.001
		3/30/2009	-1.93	4.96	185	4	4.78	2	529	0.7	7.96	294	303	1.03	82	0.11	0.05	0.1	0.005	0.1	0.1	0.005	14	0.05	0.01	0.03	0.001
		Average	**2.17**	**4.92**	**185**	**1.75**	**5.15**	**2.50**	**490.50**	**0.70**	**7.91**	**300.00**	**295.25**	**1.01**	**84.50**	**0.08**	**0.05**	**0.10**	**0.005**	**0.10**	**0.10**	**0.005**	**15.75**	**0.05**	**0.01**	**0.04**	**0.001**
M-19	80	6/20/2008	1.15	6.72	230	7	6.88	5	632	0.5	8.6	406	404	1	124	0.2	0.05	0.1	0.008	0.1	0.1	0.005	32	0.05	0.01	0.03	0.001
		7/22/2008	0.761	6.6	228	6	6.5	4	630	0.5	8.6	390	378		121	0.61	0.05	0.1	0.006	0.1	0.1	0.005	32	0.05	0.01	0.03	0.001
		11/13/2008	-7.9	6.25	215	1	5.34	4	594	0.6	8.39	363	367		125	0.18	0.05	0.1	0.006	0.1	0.1	0.005	27	0.05	0.01	0.03	0.001
		3/20/2009	-1.23	6.24	212	6	6.09	4	592	0.6	8.37	375	348	0.93	115	0.2	0.05	0.1	0.007	0.1	0.1	0.005	28	0.05	0.01	0.03	0.001
		Average	**-1.80**	**6.45**	**221.25**	**5.00**	**6.20**	**4.25**	**612.00**	**0.55**	**8.48**	**383.50**	**374.25**	**0.97**	**121.25**	**0.30**	**0.05**	**0.10**	**0.007**	**0.10**	**0.10**	**0.005**	**29.75**	**0.05**	**0.01**	**0.03**	**0.001**
M-26	80	4/21/2008	2.23	5.99	201	1	6.26	2	531	0.4	8.4	358	335	0.94	125	0.09	0.05	0.1	0.006	0.1	0.1	0.005	52	0.05	0.01	0.03	0.001
		7/28/2008	2.9	5.74	209	1	6.08	2	547	0.4	7.93	340	318		106	0.08	0.05	0.1	0.005	0.1	0.1	0.005	49	0.05	0.01	0.03	0.001
		11/10/2008	2.2	5.62	196	2	5.87	1	479	0.4	7.82	340	326		109	0.1	0.05	0.1	0.004	0.1	0.1	0.005	47	0.05	0.01	0.03	0.001
		3/16/2009	-1.62	5.66	206	1	5.48	2	529	0.4	7.98	331	308	0.93	106	0.06	0.05	0.1	0.003	0.1	0.1	0.005	42	0.05	0.01	0.03	0.001
		Average	**1.43**	**5.75**	**203**	**1.25**	**5.92**	**1.75**	**521.50**	**0.40**	**7.99**	**342.25**	**321.75**	**0.94**	**111.50**	**0.08**	**0.05**	**0.10**	**0.005**	**0.10**	**0.10**	**0.005**	**47.50**	**0.05**	**0.01**	**0.03**	**0.001**
OW-1	80	8/18/2008	2.34	7.18	234	1	7.53	9	677	0.3	7.67	432	405		148	0.5	0.05	0.1	0.002	0.1	0.1	0.005	40	0.05	0.01	0.03	0.001
		11/14/2008	5.83	7.03	235	1	7.9	9	681	0.3	7.85	438	396	0.9	140	0.59	0.1	0.1	0.002	0.1	0.1	0.005	43	0.05	0.01	0.03	0.001
		3/18/2009	6.29	7.24	236	1	8.21	9	685	0.3	7.74	451	425	0.94	150	0.5	0.05	0.1	0.001	0.1	0.1	0.005	46	0.05	0.01	0.03	0.006
		6/24/2009	-2.64	7.09	242	1	6.73	8	672	0.3	7.7	413	433	1.05	138	0.8	0.1	0.1	0.001	0.1	0.1	0.005	35	0.05	0.01	0.03	0.001
		Average	**2.96**	**7.14**	**236.75**	**1.00**	**7.59**	**8.75**	**678.75**	**0.30**	**7.73**	**433.50**	**414.75**	**0.96**	**144.00**	**0.60**	**0.08**	**0.10**	**0.002**	**0.10**	**0.10**	**0.005**	**41.00**	**0.05**	**0.01**	**0.03**	**0.002**
LMU-3	80	12/22/2008	4.84	5.08	170	13	5.6	4	401	0.6	9.17	329	334	1.02	82	0.13	0.05	0.1	0.025	0.1	0.1	0.005	16	0.05	0.01	0.03	0.001
		3/18/2009	1.08	5.15	187	7	5.26	4	509	0.6	8.51	317	319	1.01	84	0.15	0.05	0.1	0.011	0.1	0.1	0.005	14	0.05	0.01	0.03	0.001
		6/18/2009	-2.19	5.26	203	5	5.04	4	508	0.5	8.32	313	321	1.03	78	0.11	0.05	0.1	0.009	0.1	0.1	0.005	13	0.05	0.01	0.03	0.001
		Average	**1.24**	**5.16**	**186.67**	**8.33**	**5.30**	**4.00**	**472.67**	**0.57**	**8.55**	**319.67**	**324.67**	**1.02**	**81.33**	**0.13**	**0.05**	**0.10**	**0.015**	**0.10**	**0.10**	**0.005**	**14.33**	**0.05**	**0.01**	**0.03**	**0.001**
LPW-1	80	12/4/2008	1.3	5.91	212	1	6.07	4	481	0.5	7.89	352	333	0.95	110	0.05	0.05	0.1	0.001	0.1	0.1	0.005	68	0.05	0.01	0.03	0.001
		2/10/2009	-3.48	5.8	208	1	5.41	4	435	0.5	7.72	334	349	1.04	108	0.05	0.05	0.1	0.001	0.1	0.1	0.005	58	0.05	0.01	0.03	0.001
		6/17/2009	-2.82	5.75	213	1	5.44	4	541	0.5	7.76	331	357	1.08	103	0.05	0.05	0.1	0.001	0.1	0.1	0.005	61	0.05	0.01	0.03	0.001
		8/24/2009	-2.68	5.89	225	1	5.58	4	522	0.5	7.85	336	358	1.07	100	0.05	0.1	0.1	0.001	0.1	0.1	0.005	62	0.05	0.01	0.03	0.001
		Average	**-1.92**	**5.84**	**214.5**	**1.00**	**5.63**	**4.00**	**494.75**	**0.50**	**7.78**	**338.25**	**349.25**	**1.04**	**105.25**	**0.05**	**0.06**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**62.25**	**0.05**	**0.01**	**0.03**	**0.001**
AVERAGE	**80 SAND**		**0.73**	**5.57**	**199.10**	**3.26**	**5.65**	**3.37**	**516.55**	**0.51**	**8.05**	**334.49**	**329.27**	**1.00**	**100.93**	**0.19**	**0.06**	**0.10**	**0.00**	**0.10**	**0.10**	**0.01**	**33.06**	**0.05**	**0.01**	**0.03**	**0.00**

*Sand OW-1 sand location is an estimated on surrounding logs and drill depths.

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silica (mg/L)	Sodium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Iron (mg/L)	Manganese (mg/L)	Gross Alpha (pCi/L)	Gross Alpha MDC (pCi/L)	Gross Alpha precision (±) (pCi/L)	Gross Beta (pCi/L)	Gross Beta MDC (pCi/L)	Gross Beta precision (±) (pCi/L)	Lead 210 (pCi/L)	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	TOT	TOT	DIS	DIS		DIS	DIS		DIS			DIS
M-5	80	4/30/2008	5	0.01	0.001	0.1	0.05	5	0.001	6.1	76	0.0003	0.1	0.01	0.03	0.01	1.5	1.4		2.7	2.7		0			0
		7/14/2008	7	0.01	0.001	0.1	0.05	5	0.001	6.2	77	0.0003	0.1	0.01	0.03	0.01	3.2	1.6	1.2	3.8	2.7	1.7	1.2	9.1	5.4	0.7
		11/7/2008	7	0.01	0.001	0.1	0.05	5	0.001	14.6	77	0.0003	0.1	0.01	0.03	0.01	2	1.7	1.2	1.7	2.8	1.7	0	5.9	3.5	0
		3/5/2009	6	0.02	0.001	0.1	0.05	4	0.001	9.3	70	0.0003	0.1	0.01	0.03	0.02	2.2	1.6	1.1	3.1	2.7	1.7	3.8	3.2	2	0.06
		Average	**6.25**	**0.01**	**0.001**	**0.10**	**0.05**	**4.75**	**0.001**	**9.05**	**75.00**	**0.0003**	**0.10**	**0.01**	**0.03**	**0.01**	**2.23**	**1.58**	**1.17**	**2.83**	**2.73**	**1.70**	**1.25**	**6.07**	**3.63**	**0.19**
M-8	80	5/5/2008	13	0.01	0.001	0.1	0.05	11	0.003	6.4	28	0.0623	0.1	0.01	0.03	0.01	121	1.8		45.3	2.7		0			0.5
		8/12/2008	13	0.01	0.001	0.1	0.05	9	0.001	12.8	27	0.0406	0.1	0.01	0.03	0.01	113	2.1	5	33.8	2.6	2.1	15.3	9.9	6.1	0.9
		11/18/2008	15	0.01	0.001	0.1	0.05	9	0.001	13	27	0.0401	0.1	0.01	0.03	0.01	109	1.6	4.9	50.2	2.8	2.4	8.2	4.7	2.9	0.7
		2/12/2009	14	0.01	0.001	0.1	0.05	7	0.001	9.3	25	0.0359	0.1	0.02	0.03	0.02	118	1.7	4.9	45.5	2.7	2.3	22	7.9	5	0.3
		Average	**13.75**	**0.01**	**0.001**	**0.10**	**0.05**	**9.00**	**0.002**	**10.38**	**26.75**	**0.0447**	**0.10**	**0.01**	**0.03**	**0.01**	**115.25**	**1.80**	**4.93**	**43.70**	**2.70**	**2.27**	**11.38**	**7.50**	**4.67**	**0.60**
M-12	80	4/18/2008	5	0.02	0.001	0.1	0.05	6	0.001	8.4	82	0.0062	0.1	0.01	0.03	0.02	425	1.4		138	2.4		58.1			1.1
		7/18/2008	6	0.02	0.001	0.1	0.05	5	0.001	10.9	89	0.0047	0.1	0.01	0.03	0.02	593	1.6	10.8	284	2.9	4.6	42.6	9.1	6	2.4
		11/17/2008	5	0.02	0.001	0.1	0.05	5	0.001	10	92	0.0049	0.1	0.01	0.04	0.02	838	1.3	12.3	337	2.6	4.7	76.1	4.4	3.6	2.2
		3/30/2009	4	0.01	0.001	0.1	0.05	5	0.001	8	83	0.0058	0.1	0.01	0.03	0.01	436	1.7	8.7	182	2.7	3.7	70.8	2.8	2.4	2.1
		Average	**5.00**	**0.02**	**0.001**	**0.10**	**0.05**	**5.25**	**0.001**	**9.33**	**86.50**	**0.0054**	**0.10**	**0.01**	**0.03**	**0.02**	**573.00**	**1.50**	**10.60**	**235.25**	**2.65**	**4.33**	**61.90**	**5.43**	**4.00**	**1.95**
M-17	80	4/18/2008	7	0.03	0.001	0.1	0.05	4	0.001	8.1	87	0.0046	0.1	0.01	0.11	0.02	52.3	1.4		18.6	2.4		0.7			0.6
		7/15/2008	6	0.02	0.001	0.1	0.05	4	0.001	4.4	84	0.0053	0.1	0.01	0.05	0.02	52.9	1.6	3.3	16.9	2.7	1.9	8.3	9.1	5.5	0.9
		11/11/2008	7	0.02	0.001	0.1	0.05	4	0.001	11.6	90	0.0069	0.1	0.01	0.06	0.02	49.5	1.5	3.2	16.7	2.6	1.9	0	9.4	5.6	0.1
		3/30/2009	6	0.02	0.001	0.1	0.05	4	0.001	8.3	81	0.0072	0.1	0.01	0.07	0.02	40.6	2	3.1	14.1	3.4	2.2	4.1	2.7	1.7	0.1
		Average	**6.50**	**0.02**	**0.001**	**0.10**	**0.05**	**4.00**	**0.001**	**8.10**	**85.50**	**0.0060**	**0.10**	**0.01**	**0.07**	**0.02**	**48.83**	**1.63**	**3.20**	**16.58**	**2.78**	**2.00**	**3.28**	**7.07**	**4.27**	**0.43**
M-19	80	6/20/2008	7	0.02	0.001	0.1	0.05	11	0.001	5.2	101	0.0230	0.1	0.01	0.05	0.02	381	1.8	9.3	99.3	2.7	2.9	7.7	12	7.3	7.8
		7/22/2008	8	0.02	0.001	0.1	0.05	9	0.001	11.1	92	0.0204	0.1	0.01	0.03	0.02	378	1.7	9.3	125	2.8	3.3	13.7	13	8	3.1
		11/13/2008	7	0.01	0.001	0.1	0.05	10	0.001	8.8	73	0.0205	0.1	0.01	0.03	0.02	463	2	10.2	131	2.5	3.1	13.7	4	2.6	0.6
		3/20/2009	6	0.02	0.001	0.1	0.05	9	0.001	8.1	91	0.0200	0.1	0.01	0.03	0.02	666	2.4	13.1	195	2.7	3.8	7.4	2.7	1.7	0.7
		Average	**7.00**	**0.02**	**0.001**	**0.10**	**0.05**	**9.75**	**0.001**	**8.30**	**89.25**	**0.0210**	**0.10**	**0.01**	**0.04**	**0.02**	**472.00**	**1.98**	**10.48**	**137.58**	**2.68**	**3.28**	**10.63**	**7.93**	**4.90**	**3.05**
M-26	80	4/21/2008	15	0.03	0.001	0.1	0.05	9	0.003	5	50	0.0137	0.1	0.01	0.1	0.03	38.8	1.8		10.6	2.7		0			0.2
		7/28/2008	16	0.03	0.001	0.1	0.05	8	0.001	10.4	49	0.0121	0.1	0.01	0.21	0.02	39.8	1.8	3	13.7	3.2	2.1	0	15.1	8.9	0
		11/10/2008	16	0.02	0.001	0.1	0.05	7	0.001	10.7	46	0.0102	0.1	0.01	0.07	0.03	37.9	1.9	3.1	17.1	2.9	2	1.2	10.7	6.4	0.1
		3/16/2009	14	0.03	0.001	0.1	0.05	7	0.001	8.3	48	0.0099	0.1	0.01	0.08	0.03	32.2	2.3	3.2	11.4	2.7	1.8	8.6	13.8	8.3	0.03
		Average	**15.25**	**0.03**	**0.001**	**0.10**	**0.05**	**7.75**	**0.002**	**8.60**	**48.25**	**0.0115**	**0.10**	**0.01**	**0.12**	**0.03**	**37.18**	**1.95**	**3.10**	**13.20**	**2.88**	**1.97**	**2.45**	**13.20**	**7.87**	**0.08**
OW-1	80	8/18/2008	18	0.08	0.001	0.1	0.05	7	0.001	10.4	89	0.0103	0.1	0.01	0.26	0.09	176	2.5	6.8	64.3	2.9	2.7	4.1	9.9	6	0.1
		11/14/2008	19	0.08	0.001	0.1	0.05	7	0.001	10.9	90	0.0099	0.1	0.01	0.28	0.08	228	1.7	7.4	80.9	3	2.9	6	8	4.9	0.1
		3/18/2009	22	0.07	0.001	0.1	0.05	6	0.001	8.8	91	0.0096	0.1	0.07	0.27	0.07	258	2.7	8.8	81.9	3	3	8.3	4.1	2.5	0.1
		6/24/2009	15	0.08	0.001	0.1	0.05	6	0.001	8.3	80	0.0100	0.1	0.01	0.33	0.08	141	2.4	6	48.4	2.9	2.5	2.9	2.6	1.6	0.4
		Average	**18.50**	**0.08**	**0.001**	**0.10**	**0.05**	**6.50**	**0.001**	**9.60**	**87.50**	**0.0100**	**0.10**	**0.03**	**0.29**	**0.08**	**200.75**	**2.33**	**7.25**	**68.88**	**2.95**	**2.78**	**5.33**	**6.15**	**3.75**	**0.18**
LMU-3	80	12/22/2008	2	0.01	0.001	0.1	0.05	7	0.001	14.4	102	0.0111	0.1	0.01	0.03	0.01	18.6	1.6	2.1	8.2	2.7	1.7	2.7	4	2.4	0.1
		3/18/2009	2	0.01	0.001	0.1	0.05	6	0.001	9.1	98	0.0090	0.1	0.01	0.03	0.01	22.9	2.1	2.6	5.6	2.6	1.7	0	4.1	2.4	0
		6/18/2009	3	0.01	0.001	0.1	0.05	5	0.001	9.8	92	0.0095	0.1	0.01	0.03	0.01	27.6	1.6	2.4	9.9	2.6	1.8	1	2.8	1.7	0.3
		Average	**2.33**	**0.01**	**0.001**	**0.10**	**0.05**	**6.00**	**0.001**	**11.10**	**97.33**	**0.0099**	**0.10**	**0.01**	**0.03**	**0.01**	**23.03**	**1.77**	**2.37**	**7.90**	**2.63**	**1.73**	**1.23**	**3.63**	**2.17**	**0.13**
LPW-1	80	12/4/2008	17	0.03	0.001	0.1	0.05	7	0.001	12.4	25	0.0066	0.1	0.01	0.21	0.03	60.4	1.8	3.8	24.1	2.7	2	0	4.1	2.4	0
		2/10/2009	16	0.03	0.001	0.1	0.05	8	0.001	10.5	23	0.0065	0.1	0.01	0.22	0.04	28.9	1.8	2.6	12.9	2.7	1.8	0.7	7.9	4.7	0.5
		6/17/2009	15	0.03	0.001	0.1	0.05	7	0.001	10.8	23	0.0058	0.1	0.01	0.18	0.04	31.3	2.9	3.3	10.8	2.7	1.8	0	6.3	3.7	0.4
		8/24/2009	15	0.04	0.001	0.1	0.05	7	0.001	10.3	24	0.0058	0.1	0.01	0.2	0.04	22.5	2.2	2.6	18.2	2.9	2	0	2.6	1.6	0
		Average	**15.75**	**0.03**	**0.001**	**0.10**	**0.05**	**7.25**	**0.001**	**11.00**	**23.75**	**0.0062**	**0.10**	**0.01**	**0.20**	**0.04**	**35.78**	**2.18**	**3.08**	**16.50**	**2.75**	**1.90**	**0.18**	**5.23**	**3.10**	**0.23**
AVERAGE	**80 SAND**		**10.04**	**0.03**	**0.00**	**0.10**	**0.05**	**6.69**	**0.00**	**9.49**	**68.87**	**0.01**	**0.10**	**0.01**	**0.09**	**0.03**	**167.56**	**1.85**	**5.13**	**60.27**	**2.75**	**2.44**	**10.85**	**6.91**	**4.26**	**0.76**

*Sand OW-1 sand location is an estimated on surrounding logs and drill depths.

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L)	Radium 226 MDC (pCi/L)	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Lead 210 (pCi/L)	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L)	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L)	Radium 226 MDC (pCi/L)	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Uranium (mg/L)
				DIS	DIS		DIS	DIS		DIS		SUS			SUS		SUS	SUS					SUS		SUS
M-5	80	4/30/2008		0.28	0.19		0.3	0.8		0		0			0		0.7	0.3		NOT ANALYZED			0.9		0.0003
		7/14/2008	1.1	1.1	0.18	0.22	0.07	1.1	0.7	0	0.09	0	23.4	13.9	0.3	0.3	0	0.6	0.3				0.1	0.1	0.0003
		11/7/2008	0.2	0.33	0.22	0.17	2	1.2	0.8	0	0.06	0	8.6	5.1	0.2	0.4	0.2	0.3	0.2				0	0.03	0.0003
		3/5/2009	0.2	1.3	0.08	0.17	1	1	0.6	0.2	0.1	2.2	4.8	2.9	0	0.1	0	0.4	0.2				0.04	0.2	0.0003
		Average	**0.50**	**0.75**	**0.17**	**0.19**	**0.84**	**1.03**	**0.70**	**0.05**	**0.08**	**0.55**	**12.27**	**7.30**	**0.13**	**0.27**	**0.23**	**0.40**	**0.23**				**0.26**	**0.11**	**0.0003**
		5/5/2008		25.3	0.2		1.3	1		0		0			0.5		0.4	0.3		NOT ANALYZED			0.1		0.0003
		8/12/2008	1	33	0.27	1.3	0.2	1.2	0.7	0.1	0.1	1	9.8	5.9	0	0.3	0.9	0.5	0.4				0.2	0.2	0.0003
M-8	80	11/18/2008	0.8	37	0.29	1.4	1.8	1	0.7	0	0.08	0	8.4	5	1.9	1.9	0	0.4	0.2				0.1	0.2	0.0003
		2/12/2009	0.4	29	0.18	1.1	1.2	1.1	0.7	0.06	0.1	0.2	6.1	3.6	0.1	0.3	0	0.4	0.2				0.02	0.2	0.0003
		Average	**0.73**	**31.08**	**0.24**	**1.27**	**1.13**	**1.08**	**0.70**	**0.04**	**0.09**	**0.30**	**8.10**	**4.83**	**0.63**	**0.83**	**0.33**	**0.40**	**0.27**				**0.11**	**0.20**	**0.0003**
		4/18/2008		167	0.22		0.5	1		0.2		41.5			1.5		2	0.3					0.2		0.0003
		7/18/2008	1.6	138	0.19	2.3	1.3	1.5	0.9	0.1	0.1	17	12.4	7.7	2.4	1.1	0.6	0.6	0.4				0.1	0.2	0.0003
M-12	80	11/17/2008	0.9	157	0.46	3.7	0	2.3	1.3	0	0.1	1.2	8.3	4.9	1.1	1.6	0.3	0.4	0.3				0.1	0.2	0.0003
		3/30/2009	0.9	175	0.2	2.8	1	1	0.6	0.01	0.06	6.9	5.6	3.4	0.9	0.5	8.9	0.3	0.8				0	0.1	0.0003
		Average	**1.13**	**159.25**	**0.27**	**2.93**	**0.70**	**1.45**	**0.93**	**0.08**	**0.09**	**16.65**	**8.77**	**5.33**	**1.48**	**1.07**	**2.95**	**0.40**	**0.50**				**0.10**	**0.17**	**0.0003**
		4/18/2008		12.4	0.21		0.04	1		0		0			1		0.6	0.3					0.1		0.0003
		7/15/2008	1.3	12	0.2	0.66	0.3	1.1	0.7	0	0.1	0	23.5	13.8	0	0.2	0	0.7	0.3				0	0.1	0.0003
M-17	80	11/11/2008	0.3	12	0.21	0.68	0.6	1.2	0.8	0	0.09	0	9.8	5.8	0	0.3	0	0.3	0.1				0	0.4	0.0003
		3/30/2009	0.3	14	0.2	0.8	0.7	1	0.6	0	0.05	0	5.6	3.3	0.1	0.3	0	0.3	0.2				0	0.1	0.0003
		Average	**0.63**	**12.60**	**0.21**	**0.71**	**0.41**	**1.08**	**0.70**	**0.00**	**0.08**	**0.00**	**12.97**	**7.63**	**0.28**	**0.27**	**0.15**	**0.40**	**0.20**				**0.03**	**0.20**	**0.0003**
		6/20/2008	3.1	125	0.2	2.3	1	1.1	0.7	0	0.2	5.3	15.4	9.3	0.9	0.6	1	0.6	0.5	0	2.6	1.5	0.2	0.2	0.0003
		7/22/2008	1.8	106	0.34	3.8	0.04	1.3	0.8	0	0.09	9.3	24.2	14.6	0.6	0.7	0	0.6	0.2				0	0.2	0.0003
M-19	80	11/13/2008	0.5	95	0.45	3.4	1.7	3.5	2.1	0.2	0.2	5.5	8.2	5	1.4	1.6	0.02	0.4	0.3		NOT ANALYZED		0	0.2	0.0003
		3/20/2009	0.6	104	0.18	1.9	1	1.3	0.8	0	0.09	2.2	5	3	0.1	0.3	0.7	0.2	0.2				0.06	0.2	0.0003
		Average	**1.50**	**107.50**	**0.29**	**2.85**	**0.94**	**1.80**	**1.10**	**0.05**	**0.15**	**5.58**	**13.20**	**7.98**	**0.75**	**0.80**	**0.43**	**0.45**	**0.30**	**0.00**	**2.60**	**1.50**	**0.07**	**0.20**	**0.0003**
		4/21/2008		4.8	0.37		0.4	1.9		0		0			0.5		0.6	0.4					0.2		0.0003
		7/28/2008	0.6	3.7	0.26	0.46	1.3	0.9	0.6	0	0.1	0	12.6	7.4	0.1	0.3	0	0.7	0.3				0	0.2	0.0003
M-26	80	11/10/2008	0.3	3.5	0.2	0.37	0.4	1.1	0.7	0.1	0.08	0	8.2	4.8	0.2	0.6	0.3	0.3	0.2		NOT ANALYZED		0.2	0.05	0.0003
		3/16/2009	0.3	2.5	0.2	0.34	0.4	1.5	0.9	0.02	0.1	0	3.1	1.8	0.05	0.2	0	0.1	0.06				0	0.08	0.0003
		Average	**0.40**	**3.63**	**0.26**	**0.39**	**0.63**	**1.35**	**0.73**	**0.03**	**0.09**	**0.00**	**7.97**	**4.67**	**0.21**	**0.37**	**0.23**	**0.38**	**0.19**				**0.10**	**0.11**	**0.0003**
		8/18/2008	0.4	51	0.34	1.8	0.9	1.2	0.7	0	0.1	5.6	10	6.1	0.2	0.3	1.6	0.5	0.6				0.1	0.2	0.0003
		11/14/2008	0.3	41	0.18	1.2	0.7	1.2	0.8	0	0.1	0	8.3	4.9	0.3	1.3	0	0.4	0.2				0.1	0.2	0.0003
OW-1	80	3/18/2009	0.3	49	0.22	1.8	1.2	1.2	0.8	0.07	0.1	2.9	4.1	2.5	0.1	0.3	1	0.2	0.2		NOT ANALYZED		0	0.1	0.0003
		6/24/2009	0.4	46	0.19	1.4	1.8	1.1	0.7	0.09	0.1	2.3	3.6	2.1	1.2	0.5	1.6	0.05	0.1				0	0.06	0.0003
		Average	**0.35**	**46.75**	**0.23**	**1.55**	**1.15**	**1.18**	**0.75**	**0.04**	**0.10**	**2.70**	**6.50**	**3.90**	**0.45**	**0.60**	**1.05**	**0.29**	**0.28**				**0.05**	**0.14**	**0.0003**
		12/22/2008	0.3	0.43	0.17	0.16	0.2	1.3	0.8	0	0.1	0	8.9	5.3	0	0.2	1.5	0.4	0.4				0	0.2	0.0003
		3/18/2009	0.2	0.49	0.2	0.19	0	1.3	0.8	0.02	0.09	0.4	3.2	1.9	0.02	0.1	0.2	0.1	0.1				0	0.1	0.0003
LMU-3	80	6/18/2009	0.4	0.29	0.18	0.15	0.7	1.1	0.7	0.07	0.09	0	3.4	2	0	0.1	0	0.2	0.1		NOT ANALYZED		0.1	0.2	0.0003
		Average	**0.30**	**0.40**	**0.18**	**0.17**	**0.30**	**1.23**	**0.77**	**0.03**	**0.09**	**0.13**	**5.17**	**3.07**	**0.01**	**0.13**	**0.57**	**0.23**	**0.20**				**0.03**	**0.17**	**0.0003**
		12/4/2008	0.2	11	0.08	0.53	1.2	1.2	0.7	0.1	0.1	1.2	9.9	5.9	0	0.2	1	0.5	0.4				0	0.05	0.0003
		2/10/2009	0.5	12	0.19	0.74	0.9	1.2	0.7	0.05	0.1	3	6.2	3.8	0.08	0.2	0	0.4	0.2				0.05	0.4	0.0003
LPW-1	80	6/17/2009	0.5	14	0.26	0.85	1	1.4	0.8	0.05	0.09	0	3.4	2	0	0.1	0.007	0.2	0.1		NOT ANALYZED		0.1	0.2	0.0003
		8/24/2009	0.2	12	0.18	0.67	1	1.1	0.7	0.04	0.08	0	3.4	2	0.06	0.2	0	0.2	0.09				0.04	0.1	0.0003
		Average	**0.35**	**12.25**	**0.18**	**0.70**	**1.03**	**1.23**	**0.73**	**0.06**	**0.09**	**1.05**	**5.73**	**3.43**	**0.04**	**0.18**	**0.25**	**0.33**	**0.20**				**0.05**	**0.19**	**0.0003**
AVERAGE	**80 SAND**		**0.66**	**41.58**	**0.22**	**1.19**	**0.79**	**1.27**	**0.79**	**0.04**	**0.10**	**3.00**	**8.96**	**5.35**	**0.44**	**0.50**	**0.69**	**0.36**	**0.26**	**0.00**	**2.60**	**1.50**	**0.09**	**0.16**	**0.00**

*Sand OW-1 sand location is an estimated on surrounding logs and drill depths.

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	A/C Balance (± 5) (%)	Anions (meq/L)	Bicarbonate as HCO3 (mg/L)	Carbonate as CO3 (mg/L)	Cations (meq/L)	Chloride (mg/L)	Conductivity (umhos/cm)	Fluoride (mg/L)	pH (s.u.)	Solids, Total Dissolved Calculated (mg/L)	Solids, Total Dissolved TDS @ 180 C (mg/L)	TDS Balance (0.80 - 1.20) (dec. %)	Sulfate (mg/L)	Nitrogen, Ammonia as N (mg/L)	Nitrogen, Nitrate+Nitrite as N (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
M-2	90	4/24/2008	3.86	5.53	205	1	5.98	3	525	0.2	8.32	333	329	0.99	100	0.05	0.05	0.1	0.001	0.1	0.1	0.005	62
		7/29/2008	2.99	5.08	169	1	5.39	2	503	0.3	8.16	314	303		108	0.05	0.05	0.1	0.003	0.1	0.1	0.005	46
		11/6/2008	-2.1	5.47	176	6	5.24	1	469	0.3	8.17	334	316		112	0.1	0.05	0.1	0.002	0.1	0.1	0.005	43
		3/17/2009	-2.05	5.44	187	1	5.22	3	512	0.3	8.14	326	287	0.88	109	0.05	0.05	0.1	0.002	0.1	0.1	0.005	47
		Average	**0.68**	**5.38**	**184.25**	**2.25**	**5.46**	**2.25**	**502.25**	**0.28**	**8.19**	**326.75**	**308.75**	**0.94**	**107.25**	**0.06**	**0.05**	**0.10**	**0.002**	**0.10**	**0.10**	**0.005**	**49.50**
M-3	90	4/28/2008	4.12	7.05	158	14	6.49	1	595	0.2	8.83	422	410	0.97	190	0.05	0.05	0.2	0.001	0.1	0.1	0.005	71
		7/30/2008	2.45	7.38	170	1	7.75	1	691	0.3	7.65	467	452		220	0.05	0.05	0.1	0.001	0.1	0.1	0.005	93
		11/6/2008	2.96	7.47	171	1	7.93	1	671	0.3	7.55	488	476		223	0.1	0.05	0.1	0.001	0.1	0.1	0.005	96
		3/17/2009	-3.11	7.44	168	1	6.99	1	690	0.3	7.85	465	430	0.92	223	0.05	0.05	0.1	0.001	0.1	0.1	0.005	81
		Average	**1.61**	**7.34**	**166.75**	**4.25**	**7.29**	**1.00**	**661.75**	**0.28**	**7.78**	**460.50**	**442.00**	**0.95**	**214.00**	**0.06**	**0.05**	**0.13**	**0.001**	**0.10**	**0.10**	**0.005**	**85.25**
M-4	90	4/29/2008	1.03	5.34	145	9	5.45	3	497	0.2	8.75	327	321	0.98	124	0.05	0.05	0.1	0.001	0.1	0.1	0.005	40
		7/30/2008	2.73	5.36	180	1	5.66	2	522	0.2	8.35	328	306		112	0.05	0.05	0.1	0.001	0.1	0.1	0.005	46
		11/6/2008	4.09	5.36	171	6	5.82	1	473	0.2	8.23	339	316		110	0.1	0.05	0.1	0.001	0.1	0.1	0.005	47
		3/17/2009	-0.571	5.33	179	1	5.27	3	508	0.2	8.17	325	272	0.84	111	0.05	0.05	0.1	0.001	0.1	0.1	0.005	37
		Average	**1.82**	**5.35**	**168.75**	**4.25**	**5.55**	**2.25**	**500.00**	**0.20**	**8.33**	**329.75**	**303.75**	**0.91**	**114.25**	**0.06**	**0.05**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**42.50**
M-24	90	3/30/2008	0.105	7.7	191	11	7.72	6	731	0.5	8.82	481	462	0.96	192	0.32	0.1	0.1	0.002	0.1	0.1	0.005	25
		7/23/2008	-5.76	9.02	200	4	8.03	5	742	0.5	8.18	556	297		261	0.42	0.05	0.1	0.001	0.1	0.1	0.005	23
		11/18/2008	2.68	7.41	200	1	7.81	5	704	0.5	8.26	476	446	0.94	190	0.41	0.05	0.1	0.001	0.1	0.1	0.005	20
		3/20/2009	-3.17	7.46	205	1	7	6	733	0.5	8.07	456	428	0.94	187	0.4	0.05	0.1	0.001	0.1	0.1	0.005	20
		Average	**-1.54**	**7.90**	**199**	**4.25**	**7.64**	**5.50**	**727.50**	**0.50**	**8.16**	**492.25**	**408.25**	**0.95**	**207.50**	**0.39**	**0.06**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**22.00**
LPW-2	90	12/5/2008	0.0389	8.69	182	1	8.7	1	723	0.4	7.89	544	525		274	0.05	0.05	0.1	0.001	0.1	0.1	0.005	100
		2/11/2009	-4.39	8.28	184	1	7.58	1	709	0.4	7.72	501	532	1.06	251	0.05	0.05	0.1	0.001	0.1	0.1	0.005	83
		6/17/2009	-2	8.29	183	1	7.97	2	758	0.5	7.67	508	515	1.01	251	0.05	0.05	0.1	0.001	0.1	0.1	0.005	92
		8/24/2009	-1.88	8.1	190	1	7.8	1	747	0.4	7.84	492	548	1.08	237	0.1	0.1	0.1	0.001	0.1	0.1	0.005	88
		Average	**-2.06**	**8.34**	**184.75**	**1.00**	**8.01**	**1.25**	**734.25**	**0.43**	**7.75**	**511.25**	**530.00**	**1.05**	**253.25**	**0.06**	**0.06**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**90.75**
LPW-4	90	12/22/2008	1.78	16.5	351	1	17.1	14	1550	0.3	8.05	1050	1040	0.99	496	0.16	0.05	0.1	0.001	0.1	0.1	0.005	95
		3/18/2009	1.65	16.5	357	1	17.1	15	1510	0.3	7.83	1030	1030	1.00	494	0.15	0.05	0.1	0.001	0.1	0.1	0.005	90
		6/18/2009	-1.21	16.4	359	1	16	14	1470	0.3	7.85	1010	1000	0.99	484	0.12	0.05	0.1	0.001	0.1	0.1	0.005	90
		Average	**0.74**	**16.47**	**355.7**	**1.00**	**16.73**	**14.33**	**1510.00**	**0.30**	**7.90**	**1030.00**	**1023.33**	**0.99**	**491.33**	**0.14**	**0.05**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**91.67**
AVERAGE	**90 SAND**		**0.21**	**8.46**	**209.86**	**2.83**	**8.45**	**4.43**	**772.63**	**0.33**	**7.97**	**525.08**	**502.68**	**0.96**	**231.26**	**0.13**	**0.05**	**0.10**	**0.001**	**0.10**	**0.10**	**0.01**	**63.61**

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silica (mg/L)	Sodium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Iron (mg/L)	Manganese (mg/L)	Gross Alpha (pCi/L)	Gross Alpha MDC (pCi/L)	Gross Alpha precision (±) (pCi/L)	Gross Beta (pCi/L)	Gross Beta MDC (pCi/L)	Gross Beta precision (±) (pCi/L)	Lead 210 (pCi/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	TOT	TOT	DIS	DIS		DIS	DIS		DIS
		4/24/2008	0.05	0.32	0.04	1.070	12	0.02	0.001	0.1	0.06	9	0.001	7.7	38	0.0131	0.1	7.87	0.06	0.01	26.1	1.6		11.2	2.5		0
		7/29/2008	0.05	0.01	0.03	0.001	12	0.01	0.001	0.1	0.05	13	0.001	15.8	42	0.0020	0.1	0.01	0.05	0.01	10.9	1.6	1.7	14.8	3.2	2.2	0
M-2	90	11/6/2008	0.05	0.01	0.03	0.001	12	0.02	0.001	0.1	0.05	10	0.001	16.5	42	0.0008	0.1	0.01	0.06	0.02	10.2	1.7	1.7	11	2.9	1.9	0
		3/17/2009	0.05	0.01	0.03	0.001	12	0.02	0.001	0.1	0.05	8	0.001	12.5	39	0.0008	0.1	0.01	0.06	0.02	2.9	2.3	1.6	8.1	2.7	1.7	0
		Average	**0.05**	**0.09**	**0.03**	**0.268**	**12.00**	**0.02**	**0.001**	**0.10**	**0.05**	**10.00**	**0.001**	**13.13**	**40.25**	**0.0042**	**0.10**	**1.98**	**0.06**	**0.02**	**12.53**	**1.80**	**1.67**	**11.28**	**2.83**	**1.93**	**0.00**
		4/28/2008	0.05	0.01	0.13	0.001	13	0.01	0.001	0.1	0.05	10	0.001	8	36	0.0123	0.1	0.01	0.24	0.04	20.4	1.7		10.8	2.5		0
		7/30/2008	0.05	0.01	0.03	0.001	17	0.08	0.001	0.1	0.05	9	0.001	18.7	33	0.0049	0.1	0.01	0.03	0.1	28.5	2.6	3.1	34	3.1	2.4	0
M-3	90	11/6/2008	0.05	0.01	0.03	0.001	18	0.1	0.001	0.1	0.05	8	0.001	19.8	33	0.0048	0.1	0.01	0.03	0.11	27.4	1.8	2.6	10.8	2.8	1.9	0
		3/17/2009	0.05	0.01	0.03	0.001	16	0.1	0.001	0.1	0.05	8	0.001	15.7	34	0.0047	0.1	0.01	0.03	0.1	22.9	2.8	3.1	11.1	3	2	1
		Average	**0.05**	**0.01**	**0.06**	**0.001**	**16.00**	**0.07**	**0.001**	**0.10**	**0.05**	**8.75**	**0.001**	**15.55**	**34.00**	**0.0067**	**0.10**	**0.01**	**0.08**	**0.09**	**24.80**	**2.23**	**2.93**	**16.68**	**2.85**	**2.10**	**0.25**
		4/29/2008	0.05	0.01	0.03	0.001	11	0.01	0.001	0.1	0.05	7	0.001	6.6	55	0.0335	0.1	0.01	0.03	0.01	63.7	1.5		22.8	2.5		0
		7/30/2008	0.05	0.01	0.03	0.001	10	0.01	0.001	0.1	0.05	7	0.001	13.9	54	0.0266	0.1	0.01	0.03	0.01	76.1	2.2	4.3	15.3	2.8	1.9	0
M-4	90	11/6/2008	0.05	0.01	0.03	0.001	12	0.01	0.001	0.1	0.05	7	0.001	14.5	52	0.0242	0.1	0.01	0.03	0.01	75.6	1.5	3.6	23.8	2.8	2.1	0.6
		3/17/2009	0.05	0.01	0.03	0.001	11	0.01	0.001	0.1	0.05	7	0.001	11.5	54	0.0228	0.1	0.01	0.03	0.01	99	2.2	5	28.7	2.7	2.1	5.3
		Average	**0.05**	**0.01**	**0.03**	**0.001**	**11.00**	**0.01**	**0.001**	**0.10**	**0.05**	**7.00**	**0.001**	**11.63**	**53.75**	**0.0268**	**0.10**	**0.01**	**0.03**	**0.01**	**78.60**	**1.85**	**4.30**	**22.65**	**2.70**	**2.03**	**1.48**
		3/30/2008	0.05	0.01	0.03	0.001	7	0.01	0.001	0.1	0.05	6	0.001	7.7	130	0.0574	0.1	0.01	0.03	0.01	435	2.7	10.8	126	2.7	3.2	0
		7/23/2008	0.05	0.01	0.03	0.001	10	0.01	0.001	0.1	0.05	5	0.001	10.6	136	0.0190	0.1	0.01	0.03	0.01	296	2.1	8.4	88.5	3	3	10.2
M-24	90	11/18/2008	0.05	0.01	0.03	0.001	10	0.02	0.001	0.1	0.05	5	0.001	9.9	135	0.0177	0.1	0.01	0.03	0.02	387	2	10.2	110	3.2	3.3	18.4
		3/20/2009	0.05	0.01	0.03	0.001	8	0.02	0.001	0.1	0.05	4	0.001	7.1	119	0.0136	0.1	0.01	0.03	0.02	658	2.7	14	171	2.7	3.6	17.5
		Average	**0.05**	**0.01**	**0.03**	**0.001**	**8.75**	**0.02**	**0.001**	**0.10**	**0.05**	**5.00**	**0.001**	**8.83**	**130.00**	**0.0269**	**0.10**	**0.01**	**0.03**	**0.02**	**444.00**	**2.38**	**10.85**	**123.88**	**2.90**	**3.28**	**11.53**
		12/5/2008	0.05	0.01	0.03	0.001	24	0.04	0.001	0.1	0.05	10	0.001	9.3	35	0.0099	0.1	0.01	0.27	0.04	46.7	2.3	3.9	18.9	3.1	2.1	0
		2/11/2009	0.05	0.01	0.03	0.001	21	0.04	0.001	0.1	0.05	10	0.001	7.8	32	0.0111	0.1	0.01	0.4	0.05	29.7	2.2	3	13	3	2	0.4
LPW-2	90	6/17/2009	0.05	0.01	0.03	0.001	22	0.04	0.001	0.1	0.05	9	0.001	9.2	30	0.0103	0.1	0.01	0.33	0.05	42.6	3.5	4.3	12.5	3.2	2.1	0.4
		8/24/2009	0.05	0.01	0.04	0.001	22	0.05	0.001	0.1	0.05	8	0.001	8	32	0.0104	0.1	0.01	0.38	0.05	33.4	2.6	3.3	12.9	3.4	2.3	0.1
		Average	**0.05**	**0.01**	**0.03**	**0.001**	**22.25**	**0.04**	**0.001**	**0.10**	**0.05**	**9.25**	**0.001**	**8.58**	**32.25**	**0.0104**	**0.10**	**0.01**	**0.35**	**0.05**	**38.10**	**2.65**	**3.63**	**14.33**	**3.18**	**2.13**	**0.23**
		12/22/2008	0.05	0.01	0.03	0.001	37	0.09	0.001	0.1	0.05	10	0.001	9.5	208	0.1000	0.1	0.01	0.25	0.1	679	4.4	19.4	188	5.5	5.8	19.5
		3/18/2009	0.05	0.01	0.03	0.001	37	0.09	0.001	0.1	0.05	10	0.001	8.8	213	0.1020	0.1	0.01	0.24	0.09	796	5.7	22.2	182	5.4	5.7	30.2
LPW-4	90	6/18/2009	0.05	0.01	0.03	0.001	34	0.08	0.001	0.1	0.05	10	0.001	9.1	195	0.1050	0.1	0.01	0.25	0.09	695	4.5	18.5	204	6.6	6.9	29.2
		Average	**0.05**	**0.01**	**0.03**	**0.001**	**36.00**	**0.09**	**0.001**	**0.10**	**0.05**	**10.00**	**0.001**	**9.13**	**205.33**	**0.1023**	**0.10**	**0.01**	**0.25**	**0.09**	**723.33**	**4.87**	**20.03**	**191.33**	**5.83**	**6.13**	**26.30**
AVERAGE	**90 SAND**		**0.05**	**0.02**	**0.04**	**0.05**	**17.67**	**0.04**	**0.001**	**0.10**	**0.05**	**8.33**	**0.001**	**11.14**	**82.60**	**0.030**	**0.10**	**0.34**	**0.13**	**0.045**	**220.23**	**2.63**	**7.23**	**63.36**	**3.38**	**2.93**	**6.63**

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L) DIS	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L) DIS	Radium 226 MDC (pCi/L) DIS	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L) DIS	Radium 228 MDC (pCi/L) DIS	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L) DIS	Thorium 230 precision (±) (pCi/L)	Lead 210 (pCi/L) SUS	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L) SUS	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L) SUS	Radium 226 MDC (pCi/L) SUS	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)
M-2	90	4/24/2008			0.9		0.6	0.2		0.8	1		0		0			0.5		0	0.4				
		7/29/2008	15.1	8.9	0.1	0.6	0.86	0.25	0.25	1.4	0.9	0.6	0	0.1	0	12.8	7.5	0	0.4	0	0.8	0.3	NOT ANALZYED		
		11/6/2008	6.9	4	0.3	0.5	2.1	0.33	0.49	0.5	2.5	1.5	0	0.09	0	8.5	5	0	0.2	0.2	0.4	0.2			
		3/17/2009	8.6	5.1	0.1	0.3	0.25	0.17	0.13	0	1.1	0.7	0	0.08	0	3.1	1.8	0	0.1	0	0.1	0.07			
		Average	**10.20**	**6.00**	**0.35**	**0.47**	**0.95**	**0.24**	**0.29**	**0.68**	**1.38**	**0.93**	**0.00**	**0.09**	**0.00**	**8.13**	**4.77**	**0.13**	**0.23**	**0.05**	**0.43**	**0.19**			
M-3	90	4/28/2008			0.4		0.44	0.25		1.2	1.1		0.1		0			0.1		0.8	0.3				
		7/30/2008	15.1	8.9	0	0.5	0.77	0.27	0.26	0.9	1.5	0.9	0	0.09	5.2	12.5	7.6	0.4	0.4	0	0.7	0.3	NOT ANALYZED		
		11/6/2008	5.1	3	0.3	0.4	1.4	0.33	0.41	2	2.5	1.6	0	0.1	0	8.6	5.1	0	0.3	0.1	0.4	0.2			
		3/17/2009	8.6	5.1	0.07	0.3	0.67	0.23	0.22	2	1.5	1	0.1	0.1	0	3.1	1.9	0	0.1	0	0.1	0.07			
		Average	**9.60**	**5.67**	**0.19**	**0.40**	**0.82**	**0.27**	**0.30**	**1.53**	**1.65**	**1.17**	**0.05**	**0.10**	**1.30**	**8.07**	**4.87**	**0.13**	**0.27**	**0.23**	**0.38**	**0.19**			
M-4	90	4/29/2008			0.4		5	0.16		0.6	1.1		0		0			0		0.5	0.3				
		7/30/2008	15.1	8.9	0	0.6	6.5	0.31	0.66	0	1.5	0.9	0	0.06	0	12.9	7.7	0	0.4	1.1	0.6	0.5	NOT ANALYZED		
		11/6/2008	10.2	6.1	0.3	0.4	8	0.33	0.91	0.007	2.5	1.5	0.1	0.1	0	8.6	5.1	0.1	0.4	0.2	0.4	0.2			
		3/17/2009	8.6	5.2	0	0.2	8.9	0.2	0.62	0	1.5	0.9	0.02	0.08	0	3.1	1.9	0	0.1	0	0.1	0.07			
		Average	**11.30**	**6.73**	**0.18**	**0.40**	**7.10**	**0.25**	**0.73**	**0.15**	**1.65**	**1.10**	**0.03**	**0.08**	**0.00**	**8.20**	**4.90**	**0.03**	**0.30**	**0.45**	**0.35**	**0.26**			
M-24	90	3/30/2008		1.3	2.8	1.7	63.2	0.1	1.2	0.8	1.1	0.7	0.1	0.1	0		17	1.9	4	2.2	3.2	2.2	NOT ANALYZED		
		7/23/2008	13	7.9	1.2	1.1	82.4	0.4	3	1.4	1.2	0.8	0	0.1	2.9	12.7	7.6	0.3	0.5	0	0.7	0.3			
		11/18/2008	4.7	3.1	0.9	0.7	86	0.28	2.1	1.8	1	0.7	0	0.1	0	9.8	5.8	0.5	0.5	0	0.5	0.3			
		3/20/2009	2.7	1.8	0.8	0.5	93	0.18	1.9	0.8	1.4	0.9	0	0.04	0	4.9	2.9	0.2	0.3	0.3	0.2	0.2			
		Average	**6.80**	**3.53**	**1.43**	**1.00**	**81.15**	**0.24**	**2.05**	**1.20**	**1.18**	**0.78**	**0.03**	**0.09**	**0.73**	**9.13**	**8.33**	**0.73**	**1.33**	**0.63**	**1.15**	**0.75**			
LPW-2	90	12/5/2008	4.6	2.7	0.1	0.3	5.1	0.17	0.41	1.5	1.1	0.7	0.1	0.1	0.7	9.7	5.8	0.2	0.4	0	0.4	0.2	NOT ANALYZED		
		2/11/2009	7.9	4.7	0	0.3	4.1	0.18	0.43	0.6	1.1	0.7	0.03	0.09	2.2	6.3	3.8	0.06	0.2	0	0.5	0.2			
		6/17/2009	2.8	1.7	0.4	0.5	4.7	0.27	0.53	1.6	1.4	0.9	0.002	0.06	0	6.7	4	0	0.2	0	0.1	0.06			
		8/24/2009	2.6	1.6	0.2	0.3	3.7	0.17	0.37	1.3	1.1	0.7	0.06	0.1	0.5	3.5	2.1	0.02	0.2	0.03	0.2	0.1			
		Average	**4.48**	**2.68**	**0.18**	**0.35**	**4.40**	**0.20**	**0.44**	**1.25**	**1.18**	**0.75**	**0.05**	**0.09**	**0.85**	**6.55**	**3.93**	**0.07**	**0.25**	**0.01**	**0.30**	**0.14**			
LPW-4	90	12/22/2008	4	2.7	0.8	0.6	77	0.29	2.8	1.1	1.3	0.8	0	0.1	3.8	8.8	5.3	0.7	0.6	3.8	0.4	0.6	NOT ANALYZED		
		3/18/2009	4.1	2.7	0.6	0.6	79	0.3	2.8	1.1	1.2	0.8	0	0.06	14.6	3.1	2	0.4	0.3	0.2	0.1	0.1			
		6/18/2009	2.8	2	1.3	0.7	79	0.21	1.9	2.3	1.3	0.9	0.008	0.06	5.8	3.4	2.1	0.6	0.4	1.2	0.2	0.3			
		Average	**3.63**	**2.47**	**0.90**	**0.63**	**78.33**	**0.27**	**2.50**	**1.50**	**1.27**	**0.83**	**0.00**	**0.07**	**8.07**	**5.10**	**3.13**	**0.57**	**0.43**	**1.73**	**0.23**	**0.33**			
AVERAGE	**90 SAND**		**7.67**	**4.51**	**0.54**	**0.54**	**28.79**	**0.24**	**1.05**	**1.05**	**1.38**	**0.93**	**0.026**	**0.085**	**1.82**	**7.53**	**4.99**	**0.27**	**0.47**	**0.52**	**0.47**	**0.31**			

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Uranium (mg/L)
			SUS		SUS
M-2	90	4/24/2008	0.1		0.0003
		7/29/2008	0	0.1	0.0003
		11/6/2008	0.1	0.05	0.0003
		3/17/2009	0	0.09	0.0003
		Average	**0.05**	**0.08**	**0.0003**
M-3	90	4/28/2008	0.2		0.0003
		7/30/2008	0.1	0.2	0.0003
		11/6/2008	0.1	0.08	0.0003
		3/17/2009	0	0.1	0.0003
		Average	**0.10**	**0.13**	**0.0003**
M-4	90	4/29/2008	0		0.0003
		7/30/2008	0.1	0.3	0.0004
		11/6/2008	0.1	0.05	0.0003
		3/17/2009	0	0.08	0.0003
		Average	**0.05**	**0.14**	**0.0003**
M-24	90	3/30/2008	0.3	1.9	0.0005
		7/23/2008	0	0.2	0.0003
		11/18/2008	0.1	0.08	0.0003
		3/20/2009	0	0.1	0.0003
		Average	**0.10**	**0.57**	**0.0004**
LPW-2	90	12/5/2008	0	0.02	0.0003
		2/11/2009	0.1	0.2	0.0003
		6/17/2009	0	0.2	0.0003
		8/24/2009	0.02	0.1	0.0003
		Average	**0.03**	**0.13**	**0.0003**
LPW-4	90	12/22/2008	0	0.2	0.0003
		3/18/2009	0.005	0.1	0.0003
		6/18/2009	0	0.2	0.0003
		Average	**0.00**	**0.17**	**0.0003**
AVERAGE	**90 SAND**		**0.06**	**0.20**	**0.0003**

1. A "0" value represents below the minimum detectable concentration.

Well		Collection Date	A/C Balance (± 5) (%)	Anions (meq/L)	Bicarbonate as HCO3 (mg/L)	Carbonate as CO3 (mg/L)	Cations (meq/L)	Chloride (mg/L)	Conductivity (umhos/cm)	Fluoride (mg/L)	pH (s.u.)	Solids, Total Dissolved Calculated (mg/L)	Solids, Total Dissolved TDS @ 180 C (mg/L)	TDS Balance (0.80 - 1.20) (dec. %)	Sulfate (mg/L)	Nitrogen, Ammonia as N (mg/L)	Nitrogen, Nitrate+Nitrite as N (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
M-6	100	5/7/2008	2.65	7.45	171	3	7.06	1	672	0.7	8.42	453	434	0.96	215	0.28	0.05	0.1	0.005	0.1	0.1	0.005	79
		8/6/2008	3.32	7.45	180	1	7.96	1	673	0.4	7.74	471	455		210	0.2	0.05	0.1	0.003	0.1	0.1	0.005	92
		12/2/2008	1.84	7.38	190	1	7.66	1	642	0.4	7.81	472	482	1.02	204	0.07	0.05	0.1	0.001	0.1	0.1	0.005	88
		3/25/2009	-2.96	7.3	188	1	6.88	1	687	0.4	7.65	451	474	1.05	201	0.09	0.05	0.1	0.001	0.1	0.1	0.005	75
		Average	**1.21**	**7.40**	**182.25**	**1.50**	**7.39**	**1.00**	**668.50**	**0.48**	**7.82**	**461.75**	**461.25**	**1.01**	**207.50**	**0.16**	**0.05**	**0.10**	**0.003**	**0.10**	**0.10**	**0.005**	**83.50**
M-13	100	6/20/2008	0.526	9.93	345	1	10	8	888	0.3	7.75	577	589	1.02	194	0.2	0.05	0.1	0.013	0.1	0.1	0.005	114
		8/14/2008	0.841	10.2	370	1	10	7	898	0.3	7.47	576	589		188	0.1	0.05	0.1	0.004	0.1	0.1	0.005	120
		11/18/2008	4.1	10.2	376	1	11.1	7	891	0.3	7.64	602	580	0.96	183	0.1	0.05	0.1	0.002	0.1	0.1	0.005	132
		3/30/2009	-3.2	9.91	358	1	9.29	8	795	0.3	7.59	559	544	0.97	183	0.12	0.05	0.1	0.002	0.1	0.1	0.005	104
		Average	**0.57**	**10.06**	**362.25**	**1.00**	**10.10**	**7.50**	**868.00**	**0.30**	**7.60**	**578.50**	**575.50**	**0.98**	**187.00**	**0.13**	**0.05**	**0.10**	**0.005**	**0.10**	**0.10**	**0.005**	**117.50**
LMO-2A	100	12/10/2008	1.31	12.6	250	1	13	4	1090	0.3	8.11	807	752	0.93	404	0.21	0.05	0.1	0.002	0.1	0.1	0.005	132
		3/2/2009	-1.51	13.5	262	1	13.1	5	1180	0.2	7.81	846	820	0.97	435	0.16	0.05	0.1	0.001	0.1	0.1	0.005	128
		6/22/2009	-3	12.3	266	1	11.6	3	1090	0.3	7.88	755	780	1.03	378	0.29	0.1	0.1	0.001	0.1	0.1	0.005	113
		Average	**-1.07**	**12.80**	**259.33**	**1.00**	**12.57**	**4.00**	**1120.00**	**0.27**	**7.92**	**802.67**	**784.00**	**0.98**	**405.67**	**0.22**	**0.07**	**0.10**	**0.001**	**0.10**	**0.10**	**0.005**	**124.33**
AVERAGE	**100 SAND**		**0.24**	**10.09**	**267.94**	**1.17**	**10.02**	**4.17**	**885.50**	**0.35**	**7.76**	**614.31**	**606.92**	**0.99**	**266.72**	**0.17**	**0.06**	**0.10**	**0.00**	**0.10**	**0.10**	**0.01**	**108.44**

1. A "0" value represents below the miniumum detectable concentration.

Well		Collection Date	Chromium (mg/L) DIS	Copper (mg/L) DIS	Iron (mg/L) DIS	Lead (mg/L) DIS	Magnesium (mg/L) DIS	Manganese (mg/L) DIS	Mercury (mg/L) DIS	Molybdenum (mg/L) DIS	Nickel (mg/L) DIS	Potassium (mg/L) DIS	Selenium (mg/L) DIS	Silica (mg/L) DIS	Sodium (mg/L) DIS	Uranium (mg/L) DIS	Vanadium (mg/L) DIS	Zinc (mg/L) DIS	Iron (mg/L) TOT	Manganese (mg/L) TOT	Gross Alpha (pCi/L) DIS	Gross Alpha MDC (pCi/L) DIS	Gross Alpha precision (±) (pCi/L)	Gross Beta (pCi/L) DIS	Gross Beta MDC (pCi/L) DIS	Gross Beta precision (±) (pCi/L)	Lead 210 (pCi/L) DIS
M-6	100	5/7/2008	0.05	0.01	0.05	0.001	16	0.01	0.001	0.1	0.05	12	0.001	8.4	33	0.0997	0.1	0.01	0.09	0.01	1070	1.8		335	2.5		213
		8/6/2008	0.05	0.01	0.03	0.001	18	0.01	0.001	0.1	0.05	13	0.001	20.1	35	0.1320	0.1	0.01	0.12	0.01	1370	2.2	18.6	406	3.3	5.8	1.1
		12/2/2008	0.05	0.01	0.03	0.001	19	0.02	0.001	0.1	0.05	10	0.001	18.9	33	0.0500	0.1	0.02	0.18	0.02	3290	2.1	28.9	1380	2.8	9.3	53.3
		3/25/2009	0.05	0.01	0.03	0.001	18	0.01	0.001	0.1	0.05	10	0.001	16.4	33	0.0546	0.1	0.01	0.17	0.02	1490	2.3	19.6	457	3.2	5.9	85.4
		Average	**0.05**	**0.01**	**0.04**	**0.001**	**17.75**	**0.01**	**0.001**	**0.10**	**0.05**	**11.25**	**0.001**	**15.95**	**33.50**	**0.0841**	**0.10**	**0.01**	**0.14**	**0.02**	**1805.00**	**2.10**	**22.37**	**644.50**	**2.95**	**7.00**	**88.20**
M-13	100	6/20/2008	0.05	0.01	0.03	0.001	29	0.03	0.001	0.1	0.05	25	0.002	5.3	29	0.2670	0.1	0.01	0.23	0.02	3320	3.1	35.6	627	2.8	6.6	50.4
		8/14/2008	0.05	0.01	0.03	0.001	31	0.03	0.001	0.1	0.05	17	0.001	10.5	24	0.1420	0.1	0.01	0.54	0.04	2450	3.7	30.4	482	3.7	6.8	63.7
		11/18/2008	0.05	0.01	0.03	0.001	34	0.03	0.001	0.1	0.05	18	0.001	11.2	27	0.1270	0.1	0.01	0.49	0.04	3120	2.8	34.4	848	4.1	9	75.8
		3/30/2009	0.05	0.01	0.03	0.001	29	0.03	0.001	0.1	0.05	18	0.001	10.2	28	0.1390	0.1	0.01	0.37	0.03	2390	3.2	27.8	543	2.9	6.1	118
		Average	**0.05**	**0.01**	**0.03**	**0.001**	**30.75**	**0.03**	**0.001**	**0.10**	**0.05**	**19.50**	**0.001**	**9.30**	**27.00**	**0.1688**	**0.10**	**0.01**	**0.41**	**0.03**	**2820.00**	**3.20**	**32.05**	**625.00**	**3.38**	**7.13**	**76.98**
LMO-2A	100	12/10/2008	0.05	0.01	0.03	0.001	35	0.04	0.001	0.1	0.05	16	0.001	17.2	71	0.0006	0.1	0.01	0.23	0.04	4.7	3.1	2.3	8.2	4.7	3	0.2
		3/2/2009	0.05	0.01	0.04	0.001	37	0.06	0.001	0.1	0.05	15	0.001	16.9	72	0.0004	0.1	0.01	0.3	0.05	7.1	4.3	3.1	15.5	4.2	2.7	0
		6/22/2009	0.05	0.01	0.03	0.001	34	0.04	0.001	0.1	0.05	15	0.001	13.5	64	0.0004	0.1	0.01	0.2	0.04	4.6	3.9	2.6	16.1	4.3	2.8	0
		Average	**0.05**	**0.01**	**0.03**	**0.001**	**35.33**	**0.05**	**0.001**	**0.10**	**0.05**	**15.33**	**0.001**	**15.87**	**69.00**	**0.0005**	**0.10**	**0.01**	**0.24**	**0.04**	**5.47**	**3.77**	**2.67**	**13.27**	**4.40**	**2.83**	**0.07**
AVERAGE	**100 SAND**		**0.05**	**0.01**	**0.03**	**0.00**	**27.94**	**0.03**	**0.00**	**0.10**	**0.05**	**15.36**	**0.00**	**13.71**	**43.17**	**0.08**	**0.10**	**0.01**	**0.26**	**0.03**	**1543.49**	**3.02**	**19.03**	**427.59**	**3.58**	**5.65**	**55.08**

1. A "0" value represents below the miniumum detectable concentration.

Well		Collection Date	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L) DIS	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L) DIS	Radium 226 MDC (pCi/L) DIS	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L) DIS	Radium 228 MDC (pCi/L) DIS	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L) DIS	Thorium 230 precision (±) (pCi/L)	Lead 210 (pCi/L) SUS	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L) SUS	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L) SUS	Radium 226 MDC (pCi/L) SUS	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)
		5/7/2008			12.4		551	1.4		4	1.1		0		33.7			5		5.9	0.3				
M-6	100	8/6/2008	10.7	6.4	6	2.7	650	0.29	6.2	1.6	1	0.7	0.1	0.1	2	14.8	8.8	0.7	0.6	2	0.4	0.4	NOT ANALYZED		
		12/2/2008	4.1	3.2	5.1	1.7	866	0.08	4.6	5.8	1.2	0.9	0.1	0.2	56.9	10.3	6.9	9.1	2.9	8.7	0.5	1			
		3/25/2009	2.7	2.4	0.8	0.6	963	0.2	6.3	5.4	0.9	0.7	0	0.07	69.8	13.8	9	7.1	1.8	18.3	0.09	0.5			
		Average	**5.83**	**4.00**	**6.08**	**1.67**	**757.50**	**0.49**	**5.70**	**4.20**	**1.05**	**0.77**	**0.05**	**0.12**	**40.60**	**12.97**	**8.23**	**5.48**	**1.77**	**8.73**	**0.32**	**0.63**			
		6/20/2008	12	8	1.9	1.5	1490	0.3	8.8	7.2	1.1	0.9	0.1	0.2	52.7	15.4	10.4	15.1	3.6	12.3	0.5	1.2	0.4	2.5	1.5
		8/14/2008	9.9	6.8	1.2	1.1	1430	0.26	8.4	3.6	1.2	0.9	0	0.09	25	9.9	6.3	4.4	1.2	75.8	0.5	3.3			
M-13	100	11/18/2008	9.4	6.7	1.4	0.7	1330	0.3	8.5	9.7	1	0.9	0.1	0.1	59.8	8.1	5.7	38	10	44	0.5	2			
		3/30/2009	2.7	2.6	5	1.9	1510	0.19	7.9	3.9	0.9	0.7	0.03	0.07	19	5.6	3.5	1.5	0.7	17.8	0.3	1.2			
		Average	**8.50**	**6.03**	**2.38**	**1.30**	**1440.00**	**0.26**	**8.40**	**6.10**	**1.05**	**0.85**	**0.06**	**0.12**	**39.13**	**9.75**	**6.48**	**14.75**	**3.88**	**37.48**	**0.45**	**1.93**			
		12/10/2008	4.6	2.7	0	0.2	0.57	0.2	0.18	2.4	1.7	1.1	0	0.1	0	14.9	8.7	0.2	0.4	0	0.6	0.3			
LMO-2A	100	3/2/2009	3.8	2.3	0.2	0.3	1.3	0.16	0.23	2.5	1.2	0.8	0	0.05	0.2	4.2	2.5	0.1	0.3	0	0.2	0.1			
		6/22/2009	2.6	1.5	0.2	0.3	0.94	0.17	0.21	2.6	1	0.7	0.005	0.07	0.9	3.6	2.2	0.03	0.2	0	0.06	0.02			
		Average	**3.67**	**2.17**	**0.13**	**0.27**	**0.94**	**0.18**	**0.21**	**2.50**	**1.30**	**0.87**	**0.00**	**0.07**	**0.37**	**7.57**	**4.47**	**0.11**	**0.30**	**0.00**	**0.29**	**0.14**			
AVERAGE	**100 SAND**		**6.00**	**4.06**	**2.86**	**1.08**	**732.81**	**0.31**	**4.77**	**4.27**	**1.13**	**0.83**	**0.04**	**0.10**	**26.70**	**10.09**	**6.39**	**6.78**	**1.98**	**15.40**	**0.35**	**0.90**			

1. A "0" value represents below the miniumum detectable concentration.

Well		Collection Date	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Uranium (mg/L)
			SUS		SUS
M-6	100	5/7/2008	1.8		0.0003
		8/6/2008	0.1	0.3	0.0003
		12/2/2008	0	0.05	0.0003
		3/25/2009	0.1	0.2	0.0003
		Average	**0.50**	**0.18**	**0.0003**
M-13	100	6/20/2008	0.2	0.2	0.0003
		8/14/2008	0.2	0.2	0.0003
		11/18/2008	0.2	0.2	0.0003
		3/30/2009	0.04	0.2	0.0003
		Average	**0.16**	**0.20**	**0.0003**
LMO-2A	100	12/10/2008	0	0.3	0.0003
		3/2/2009	0.2	0.2	0.0003
		6/22/2009	0.006	0.06	0.0003
		Average	**0.07**	**0.19**	**0.0003**
AVERAGE	**100 SAND**		**0.24**	**0.19**	**0.00**

1. A "0" value represents below the miniumum detectable concentration.

Well		Collection Date	A/C Balance (± 5) (%)	Anions (meq/L)	Bicarbonate as HCO3 (mg/L)	Carbonate as CO3 (mg/L)	Cations (meq/L)	Chloride (mg/L)	Conductivity (umhos/cm)	Fluoride (mg/L)	pH (s.u.)	Solids, Total Dissolved Calculated (mg/L)	Solids, Total Dissolved TDS @ 180 C (mg/L)	TDS Balance (0.80 - 1.20) (dec. %)	Sulfate (mg/L)	Nitrogen, Ammonia as N (mg/L)	Nitrogen, Nitrate+Nitrite as N (mg/L)	Aluminum (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
M-7	110	4/25/2008	2.08	5.57	202	1	5.81	6	536	0.7	8.21	330	331	1	94	0.05	1.61	0.1	0.002	0.1	0.1	0.005	71
		8/13/2008	2.8	5.49	198	1	5.8	4	526	0.7	7.5	330	341		95	0.1	1.68	0.1	0.001	0.1	0.1	0.005	71
		11/5/2008	5.13	5.59	200	1	6.2	6	481	0.8	7.5	355	371		96	0.1	1.69	0.1	0.002	0.1	0.1	0.005	76
		3/12/2009	0.164	5.47	199	1	5.49	6	514	0.7	7.67	327	322	0.98	91	0.05	1.61	0.1	0.002	0.1	0.1	0.005	67
		Average	**2.54**	**5.53**	**199.75**	**1.00**	**5.83**	**5.50**	**514.25**	**0.73**	**7.64**	**335.50**	**341.25**	**0.99**	**94.00**	**0.08**	**1.65**	**0.10**	**0.002**	**0.10**	**0.10**	**0.005**	**71.25**
LMO-1	110	12/5/2008	1.7	10.8	216	1	11.2	1	918	0.6	7.77	693	679		348	0.05	0.05	0.1	0.003	0.1	0.1	0.005	144
		2/11/2009	-4.12	10.8	224	1	9.95	1	926	0.6	7.62	662	689	1.04	341	0.05	0.05	0.1	0.003	0.1	0.1	0.005	122
		6/17/2009	-0.585	10.5	222	1	10.4	2	937	0.6	7.54	658	699	1.06	328	0.05	0.05	0.1	0.003	0.1	0.1	0.005	131
		8/24/2009	-1.83	10.6	235	1	10.2	1	932	0.6	7.73	653	692	1.06	322	0.05	0.1	0.1	0.003	0.1	0.1	0.005	129
		Average	**-1.21**	**10.68**	**224.25**	**1.00**	**10.44**	**1.25**	**928.25**	**0.60**	**7.63**	**666.50**	**689.75**	**1.05**	**334.75**	**0.05**	**0.06**	**0.10**	**0.003**	**0.10**	**0.10**	**0.005**	**131.50**
AVERAGE	**110 SAND**		**0.67**	**8.10**	**212.00**	**1.00**	**8.13**	**3.38**	**721.25**	**0.66**	**7.64**	**501.00**	**515.50**	**1.02**	**214.38**	**0.06**	**0.86**	**0.10**	**0.002**	**0.10**	**0.10**	**0.005**	**101.38**

1. A "0" value represents below the miniumum detectable concentration.

Well		Collection Date	Chromium (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silica (mg/L)	Sodium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)	Iron (mg/L)	Manganese (mg/L)	Gross Alpha (pCi/L)	Gross Alpha MDC (pCi/L)	Gross Alpha precision (±) (pCi/L)	Gross Beta (pCi/L)	Gross Beta MDC (pCi/L)	Gross Beta precision (±) (pCi/L)	Lead 210 (pCi/L)
			DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	TOT	TOT	DIS	DIS		DIS	DIS		DIS
M-7	110	4/25/2008	0.05	0.02	0.03	0.003	14	0.01	0.001	0.1	0.05	8	0.015	9.4	20	0.0062	0.1	0.07	0.03	0.01		1.7		9.9	2.5		0
		8/13/2008	0.05	0.01	0.03	0.001	15	0.01	0.001	0.1	0.05	8	0.016	20.2	19	0.0058	0.1	0.01	0.03	0.01	27.9	2.2	2.8	12	2.6	1.7	8.2
		11/5/2008	0.05	0.01	0.03	0.001	16	0.01	0.001	0.1	0.05	8	0.018	20.8	21	0.0055	0.1	0.01	0.03	0.01	17.9	1.6	2	12.4	3	2	0
		3/12/2009	0.05	0.01	0.03	0.001	15	0.01	0.001	0.1	0.05	7	0.016	19.1	17	0.0052	0.1	0.01	0.03	0.02	22	2.1	2.5	9	2.8	1.8	0
		Average	**0.05**	**0.01**	**0.03**	**0.002**	**15.00**	**0.01**	**0.001**	**0.10**	**0.05**	**7.75**	**0.016**	**17.38**	**19.25**	**0.0057**	**0.10**	**0.03**	**0.03**	**0.01**	**22.60**	**1.90**	**2.43**	**10.83**	**2.73**	**1.83**	**2.05**
LMO-1	110	12/5/2008	0.05	0.01	0.03	0.001	28	0.06	0.001	0.1	0.05	11	0.001	14.8	32	0.0297	0.1	0.01	0.03	0.07	65.8	2.9	5.2	26.2	3.9	2.8	0.7
		2/11/2009	0.05	0.01	0.03	0.001	27	0.07	0.001	0.1	0.05	12	0.001	13.7	30	0.0360	0.1	0.04	0.05	0.08	72.3	2.9	5.2	17.6	3.4	2.3	2.8
		6/17/2009	0.05	0.01	0.03	0.001	27	0.07	0.001	0.1	0.05	10	0.001	15.6	31	0.0321	0.1	0.01	0.05	0.07	80.1	2.7	5.1	24.8	3.8	2.7	1.3
		8/24/2009	0.05	0.01	0.03	0.001	27	0.08	0.001	0.1	0.05	10	0.001	13.8	29	0.0338	0.1	0.01	0.05	0.08	66.1	3.4	5.2	19.9	4.2	2.8	0.8
		Average	**0.05**	**0.01**	**0.03**	**0.001**	**27.25**	**0.07**	**0.001**	**0.10**	**0.05**	**10.75**	**0.001**	**14.48**	**30.50**	**0.0329**	**0.10**	**0.02**	**0.05**	**0.08**	**71.08**	**2.98**	**5.18**	**22.13**	**3.83**	**2.65**	**1.40**
AVERAGE	**110 SAND**		**0.05**	**0.01**	**0.03**	**0.001**	**21.13**	**0.040**	**0.001**	**0.100**	**0.05**	**9.25**	**0.009**	**15.93**	**24.88**	**0.019**	**0.10**	**0.02**	**0.04**	**0.04**	**46.84**	**2.44**	**3.80**	**16.48**	**3.28**	**2.24**	**1.73**

1. A "0" value represents below the miniumum detectable concentration.

Well		Collection Date	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L) DIS	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L) DIS	Radium 226 MDC (pCi/L) DIS	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L) DIS	Radium 228 MDC (pCi/L) DIS	Radium 228 precision (±) (pCi/L)	Thorium 230 (pCi/L) DIS	Thorium 230 precision (±) (pCi/L)	Lead 210 (pCi/L) SUS	Lead 210 MDC (pCi/L)	Lead 210 precision (±) (pCi/L)	Polonium 210 (pCi/L) SUS	Polonium 210 precision (±) (pCi/L)	Radium 226 (pCi/L) SUS	Radium 226 MDC (pCi/L) SUS	Radium 226 precision (±) (pCi/L)	Radium 228 (pCi/L)	Radium 228 MDC (pCi/L)	Radium 228 precision (±) (pCi/L)
M-7	110	4/25/2008			1.3		0.8	0.2		1.4	1		0		0			0.6		0	0.4		NOT ANALYZED		
		8/13/2008	9.9	6	0.5	0.8	2	0.24	0.33	2.2	1.2	0.8	0	0.1	1.3	9.8	5.9	0	0.4	0.6	0.5	0.4			
		11/5/2008	5.8	3.4	0	0.2	0.87	0.21	0.22	1.5	1.1	0.7	0	0.3	0	8.2	4.8	0.2	0.4	0.3	0.3	0.2			
		3/12/2009	2.8	1.6	0.3	0.5	0.19	0.19	0.14	1.6	1.2	0.8	0.1	0.1	0.07	4.1	2.4	0.1	0.3	0	0.4	0.2			
		Average	**6.17**	**3.67**	**0.53**	**0.50**	**0.97**	**0.21**	**0.23**	**1.68**	**1.13**	**0.77**	**0.03**	**0.17**	**0.34**	**7.37**	**4.37**	**0.23**	**0.37**	**0.23**	**0.40**	**0.27**			
LMO-1	110	12/5/2008	9.2	5.5	0.1	0.3	2.8	0.16	0.31	0.7	1.1	0.7	0.1	0.2	0.08	9.9	5.9	0.1	0.3	0.08	0.4	0.2			
		2/11/2009	7.9	4.8	0	0.2	2.5	0.18	0.34	1.7	1.1	0.7	0.04	0.08	1.1	6.4	3.8	0.2	0.3	0	0.5	0.2			
		6/17/2009	2.8	1.7	0	0.2	1.7	0.23	0.32	2.4	1.4	1	0.008	0.1	0	3.4	2	0.2	0.2	0	0.2	0.1			
		8/24/2009	2.6	1.6	0	0.3	2.4	0.17	0.31	1.1	1.1	0.7	0.0005	0.08	0	3.4	2	0.09	0.2	0.04	0.2	0.1			
		Average	**5.63**	**3.40**	**0.03**	**0.25**	**2.35**	**0.19**	**0.32**	**1.48**	**1.18**	**0.78**	**0.04**	**0.12**	**0.30**	**5.78**	**3.43**	**0.15**	**0.25**	**0.03**	**0.33**	**0.15**			
AVERAGE	**110 SAND**		**5.90**	**3.53**	**0.28**	**0.38**	**1.66**	**0.20**	**0.28**	**1.58**	**1.15**	**0.77**	**0.03**	**0.14**	**0.32**	**6.57**	**3.90**	**0.19**	**0.31**	**0.13**	**0.36**	**0.21**			

1. A "0" value represents below the miniumum detectable concentration.

Well		Collection Date	Thorium 230 (pCi/L)	Thorium 230 precision (±) (pCi/L)	Uranium (mg/L)
			SUS		SUS
M-7	110	4/25/2008	0.3		0.0003
		8/13/2008	1.8	1.2	0.0003
		11/5/2008	0.6	0.05	0.0003
		3/12/2009	0	0.1	0.0003
		Average	**0.68**	**0.45**	**0.0003**
LMO-1	110	12/5/2008	0	0.03	0.0003
		2/11/2009	0.001	0.1	0.0003
		6/17/2009	0	0.2	0.0003
		8/24/2009	0.01	0.1	0.0003
		Average	**0.00**	**0.11**	**0.0003**
AVERAGE	**110 SAND**		**0.34**	**0.28**	**0.0003**

1. A "0" value represents below the miniumum detectable concentration.

Uranium One - Wyoming
Sampling Schedule

Ludeman 2008 & 2009

2008												
Location I.D.	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
N-1												
N-2												
N-3											11/15	
N-4											11/15	
N-5											11/15	
N-6											11/15	
N-7											11/15	
N-8												
N-9												
N-10												
N-11											11/10	
N-12											11/12	
N-13											11/21	
N-14												
N-15											11/7	
N-16											11/11	
N-17											11/10	
N-18												
N-19											11/13	
N-20												
N-21											11/10	
N-22											11/21	
N-23											11/7	

2009											
Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
		3/20			6/24			9/16			
		3/19			6/22			9/16			
		3/14			6/24			9/15			
		3/14			6/25			9/16			
		3/14			6/25			9/16			
		3/14			6/25			9/15			
		3/14			6/26			9/16			
		3/21			6/25			9/23			
		3/19			WD			9/22			
		3/19			WD			9/22			
		3/16			6/18			9/22			
		3/17			6/22			9/25			
		3/25			6/19			9/16			
								9/23			
		3/18			6/19			9/23			
		3/20			6/24			9/14			
		3/20			6/19			9/14			
		3/25			6/17			9/23			
		3/16			6/17			9/15			
		3/17			WD			WD			
		3/20			6/17			9/23			
		3/31					8/4	9/23			
		3/17			6/18			9/22			

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-1				
Parameters	**3/20/2009**	**6/24/2009**	**9/16/2009**		**Average**
Bicarbonate as HCO3, mg/L	247	241	248		245
Carbonate as CO3, mg/L	<1	<1	<5		<3
Chloride, mg/L	<1	1	2		1
Conductivity, umhos/cm	835	819	800		818
Fluoride, mg/L	0.9	0.9	0.9		0.9
pH, s.u.	7.59	7.65	7.60		7.61
Solids, Total Dissolved TDS @ 180 C, mg/L	595	567	561		574
Sulfate, mg/L	251	237	237		242
Gross Alpha, pci/L (dissolved)	29.9	33.9	29.3		31.0
Gross Beta, pci/L (dissolved)	13.8	15.3	12.9		14.0
Lead 210, pci/L (dissolved)	<6.9	<2.2	<0.8		<3.3
Polonium 210, pci/L (dissolved)	<0.4	<0.9	<0.6		<0.7
Radium 226, pci/L (dissolved)	0.36	0.37	0.83		0.52
Radium 228, pci/L (dissolved)	2.0	2.2	1.9		2.0
Thorium 230, pci/L (dissolved)	<0.2	<0.2	<0.09		<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05		<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	<0.05	<0.05	<0.05		<0.05
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Arsenic, mg/L (dissolved)	0.001	<0.001	<0.001		<0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Boron, mg/L (dissolved)	0.1	<0.1	<0.1		<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005		<0.005
Calcium, mg/L	123	102	108		111
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05		<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01		<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03		<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Magnesium, mg/L	21	22	23		22
Manganese, mg/L (dissolved)	0.09	<0.01	0.07		0.06
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05		<0.05
Potassium, mg/L	8	9	9		9
Selenium, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Silica, mg/L	16.2	15.8	18.8		16.9
Sodium, mg/L	28	24	24		25
Uranium, mg/L (dissolved)	0.0108	0.0114	0.0118		0.0113
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Zinc, mg/L (dissolved)	<0.01	0.01	<0.01		<0.01
Iron, TOTAL mg/L	0.16	0.12	0.18		0.15
Manganese, TOTAL mg/L	0.10	0.09	0.09		0.09
Lead 210, suspended pci/L	<7.4	<3.3	<4.3		<5.1
Polonium 210 suspended, pci/L	<0.6	<0.4	0.4		<0.5
Radium 226 suspended, pci/L	0.6	<0.05	<0.2		<0.3
Thorium 230 suspended, pci/L	<0.3	0.08	<0.1		<0.2
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003		<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-2				
Parameters	**3/19/2009**	**6/22/2009**	**9/16/2009**		**Average**
Bicarbonate as HCO3, mg/L	248	248	259		252
Carbonate as CO3, mg/L	<1	<1	<5		<3
Chloride, mg/L	1	2	2		2
Conductivity, umhos/cm	852	831	820		834
Fluoride, mg/L	0.7	0.7	0.7		0.7
pH, s.u.	7.81	7.77	7.70		7.76
Solids, Total Dissolved TDS @ 180 C, mg/L	609	563	590		587
Sulfate, mg/L	256	247	245		249
Gross Alpha, pci/L (dissolved)	52	51.7	54.8		52.8
Gross Beta, pci/L (dissolved)	17.9	19.3	14.3		17.2
Lead 210, pci/L (dissolved)	<9.9	<2.2	<0.8		<4.3
Polonium 210, pci/L (dissolved)	<0.9	<0.8	<0.8		<0.9
Radium 226, pci/L (dissolved)	0.35	0.36	<0.23		0.31
Radium 228, pci/L (dissolved)	1.8	1.3	2.5		1.9
Thorium 230, pci/L (dissolved)	<0.1	<0.1	<0.2		<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05		<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	0.10	0.09	0.1		0.10
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Arsenic, mg/L (dissolved)	0.001	0.001	0.001		0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005		<0.005
Calcium, mg/L	124	108	111		114
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05		<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01		<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03		<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Magnesium, mg/L	21	22	23		22
Manganese, mg/L (dissolved)	<0.01	<0.01	<0.01		<0.01
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05		<0.05
Potassium, mg/L	8	8	8		8
Selenium, mg/L (dissolved)	0.002	0.003	0.003		0.003
Silica, mg/L	16.8	17.1	20.0		18.0
Sodium, mg/L	30	30	29		30
Uranium, mg/L (dissolved)	0.0198	0.0200	0.0211		0.0203
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Zinc, mg/L (dissolved)	0.01	0.02	0.01		0.01
Iron, TOTAL mg/L	<0.03	<0.03	<0.03		<0.03
Manganese, TOTAL mg/L	<0.01	<0.01	<0.01		<0.01
Lead 210, suspended pci/L	<7.5	<3.3	<4.3		<5.1
Polonium 210 suspended, pci/L	<0.8	<0.6	<0.5		<0.7
Radium 226 suspended, pci/L	0.3	<0.05	<0.2		<0.2
Thorium 230 suspended, pci/L	<0.5	<0.1	<0.08		<0.3
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003		<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-3				
Parameters	**11/15/2008**	**3/14/2009**	**6/24/2009**	**9/15/2009**	**Average**
Bicarbonate as HCO3, mg/L	193	136	135	142	152
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	78	119	131	130	115
Conductivity, umhos/cm	1380	1650	1610	1600	1560
Fluoride, mg/L	0.3	0.2	0.2	0.3	0.3
pH, s.u.	7.72	7.52	7.68	7.80	7.68
Solids, Total Dissolved TDS @ 180 C, mg/L	980	1260	1400	1310	1238
Sulfate, mg/L	456	608	626	622	578
Gross Alpha, pci/L (dissolved)	87.6	78.6	224.0	109.0	124.8
Gross Beta, pci/L (dissolved)	25.9	19.9	64.2	25.7	33.9
Lead 210, pci/L (dissolved)	<4.0	8.3	<2.2	2.5	4.3
Polonium 210, pci/L (dissolved)	<1.0	<0.5	<0.5	<0.8	<0.7
Radium 226, pci/L (dissolved)	<0.4	0.47	0.49	0.86	0.56
Radium 228, pci/L (dissolved)	<2.3	2.4	1.4	4.2	2.6
Thorium 230, pci/L (dissolved)	<0.2	<0.2	<0.1	<0.2	<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	3.73	3.16	3.05	3.2	3.29
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.001	0.002	0.001	0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	221	264	252	257	249
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	33	40	37	38	37
Manganese, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	11	14	13	13	13
Selenium, mg/L (dissolved)	0.097	0.120	0.111	0.113	0.110
Silica, mg/L	16.3	12.9	13.6	14.2	14.3
Sodium, mg/L	34	42	35	37	37
Uranium, mg/L (dissolved)	0.0450	0.0389	0.0362	0.0377	0.0395
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	0.01	0.01	0.01	<0.01	0.01
Iron, TOTAL mg/L	0.73	0.39	<0.03	0.03	0.30
Manganese, TOTAL mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Lead 210, suspended pci/L	<8.4	<6.0	<4.8	<4.3	<5.9
Polonium 210 suspended, pci/L	<1.0	1.1	<0.7	<0.4	<0.8
Radium 226 suspended, pci/L	<0.4	<0.5	<0.1	<0.2	<0.3
Thorium 230 suspended, pci/L	<0.2	<0.4	<0.1	<0.06	<0.2
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-4				
Parameters	**11/15/2008**	**3/14/2009**	**6/25/2009**	**9/16/2009**	**Average**
Bicarbonate as HCO3, mg/L	315	318	321	335	322
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	8	7	7	8	8
Conductivity, umhos/cm	881	880	855	860	869
Fluoride, mg/L	0.2	0.1	0.1	0.2	0.2
pH, s.u.	7.41	7.27	7.50	7.70	7.47
Solids, Total Dissolved TDS @ 180 C, mg/L	582	574	593	601	588
Sulfate, mg/L	186	210	183	183	191
Gross Alpha, pci/L (dissolved)	91	133	38.7	130.0	98.3
Gross Beta, pci/L (dissolved)	43.2	29.6	19.3	35.8	32.0
Lead 210, pci/L (dissolved)	<4.0	4.8	<2.2	<0.8	<3.0
Polonium 210, pci/L (dissolved)	<1.0	<0.7	<0.5	<0.7	<0.8
Radium 226, pci/L (dissolved)	0.53	0.69	0.72	0.53	0.62
Radium 228, pci/L (dissolved)	3.0	2.9	2.0	4.4	3.1
Thorium 230, pci/L (dissolved)	<0.2	<0.2	<0.2	<0.1	<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	3.00	3.60	3.06	3.3	3.24
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	135	111	122	117	121
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	22	19	20	19	20
Manganese, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	10	10	10	10	10
Selenium, mg/L (dissolved)	0.031	0.028	0.024	0.027	0.028
Silica, mg/L	20.1	15.9	17.1	17.6	17.7
Sodium, mg/L	36	36	33	33	35
Uranium, mg/L (dissolved)	0.0725	0.0723	0.0741	0.0737	0.0732
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	0.01	<0.01	<0.01	<0.01	<0.01
Iron, TOTAL mg/L	1.3	3.85	0.48	0.07	1.43
Manganese, TOTAL mg/L	0.02	0.04	<0.01	<0.01	0.002
Lead 210, suspended pci/L	<8.5	<6.2	<3.3	<4.3	<5.6
Polonium 210 suspended, pci/L	1.2	1.0	<0.6	<0.5	0.9
Radium 226 suspended, pci/L	<0.5	<0.4	0.06	<0.2	<0.3
Thorium 230 suspended, pci/L	0.2	0.4	<0.9	<0.09	0.4
Uranium suspended, pci/L	0.0003	0.0011	<0.0003	<0.0003	0.0005

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-5				
Parameters	**11/15/2008**	**3/14/2009**	**6/25/2009**	**9/16/2009**	**Average**
Bicarbonate as HCO3, mg/L	337	344	345	355	345
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	5	6	5	5	5
Conductivity, umhos/cm	908	906	884	890	897
Fluoride, mg/L	0.2	0.1	0.1	0.2	0.2
pH, s.u.	7.55	7.36	7.52	7.70	7.53
Solids, Total Dissolved TDS @ 180 C, mg/L	593	583	609	612	599
Sulfate, mg/L	196	219	186	186	197
Gross Alpha, pci/L (dissolved)	106	136	37.5	105.0	96.1
Gross Beta, pci/L (dissolved)	36.6	25.8	8.9	40.8	28.0
Lead 210, pci/L (dissolved)	<4.0	4.2	<2.2	<0.8	<2.8
Polonium 210, pci/L (dissolved)	<1.0	<0.7	<0.7	<0.7	<0.8
Radium 226, pci/L (dissolved)	<0.38	0.85	1.0	0.76	0.75
Radium 228, pci/L (dissolved)	<2.3	1.9	2.2	3.7	2.5
Thorium 230, pci/L (dissolved)	<0.2	<0.2	<0.2	<0.1	<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	3.13	3.80	3.58	3.7	3.55
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.002	0.006	0.001	0.001	0.003
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	0.1	<0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	131	124	58	122	109
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	23	22	21	21	22
Manganese, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	10	10	10	10	10
Selenium, mg/L (dissolved)	0.026	0.027	0.029	0.024	0.027
Silica, mg/L	17.2	14.7	16.8	16.0	16.2
Sodium, mg/L	29	32	30	29	30
Uranium, mg/L (dissolved)	0.0771	0.0806	0.0797	0.0838	0.0803
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	0.02	0.07	<0.01	0.01	0.03
Iron, TOTAL mg/L	33.7	13.9	2.11	0.71	12.61
Manganese, TOTAL mg/L	0.17	0.07	0.01	<0.01	0.07
Lead 210, suspended pci/L	<8.3	<6.2	<3.4	<4.3	<5.6
Polonium 210 suspended, pci/L	17.3	1.6	<0.7	0.8	5.1
Radium 226 suspended, pci/L	4.5	1.6	0.4	0.6	1.8
Thorium 230 suspended, pci/L	2.5	0.9	0.3	1.2	1.2
Uranium suspended, pci/L	0.0073	0.0039	0.0008	0.0049	0.0042

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-6				
Parameters	**11/15/2008**	**3/14/2009**	**6/25/2009**	**9/15/2009**	**Average**
Bicarbonate as HCO3, mg/L	233	239	237	243	238
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	<1	<1	1	2	1
Conductivity, umhos/cm	817	814	799	800	808
Fluoride, mg/L	0.9	0.8	0.9	0.9	0.9
pH, s.u.	7.74	7.49	7.68	7.90	7.70
Solids, Total Dissolved TDS @ 180 C, mg/L	541	546	565	568	555
Sulfate, mg/L	240	259	238	242	245
Gross Alpha, pci/L (dissolved)	44.7	41.9	79.8	27.1	48.4
Gross Beta, pci/L (dissolved)	24.4	15.4	21.4	13.3	18.6
Lead 210, pci/L (dissolved)	<4.0	5.3	<2.2	<0.8	<3.1
Polonium 210, pci/L (dissolved)	<1.0	<0.6	<0.7	<0.5	<0.7
Radium 226, pci/L (dissolved)	0.54	0.63	0.51	1.0	0.67
Radium 228, pci/L (dissolved)	<2.3	3.0	3.3	5.4	3.5
Thorium 230, pci/L (dissolved)	<0.2	<0.3	<0.1	<0.2	<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.001	<0.001	<0.001	0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1	0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	124	107	104	108	111
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	25	22	21	22	23
Manganese, mg/L (dissolved)	0.15	0.15	0.16	0.15	0.15
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	8	8	8	8	8
Selenium, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Silica, mg/L	22.0	17.2	16.5	19.1	18.7
Sodium, mg/L	27	29	25	26	27
Uranium, mg/L (dissolved)	0.0090	0.0100	0.0094	0.0099	0.0096
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	0.01	0.08	<0.01	<0.01	0.03
Iron, TOTAL mg/L	0.03	0.09	<0.03	0.03	0.05
Manganese, TOTAL mg/L	0.17	0.16	0.15	0.16	0.16
Lead 210, suspended pci/L	<8.5	<6.1	<3.3	<4.3	<5.6
Polonium 210 suspended, pci/L	<1.0	<0.6	<0.4	<0.4	<0.6
Radium 226 suspended, pci/L	<0.4	<0.4	0.08	<0.2	<0.3
Thorium 230 suspended, pci/L	<0.2	<0.4	<0.09	<0.08	<0.2
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-7				
Parameters	**11/15/2008**	**3/14/2009**	**6/26/2009**	**9/16/2009**	**Average**
Bicarbonate as HCO3, mg/L	334	336	335	346	338
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	7	7	6	8	7
Conductivity, umhos/cm	1010	1000	978	980	992
Fluoride, mg/L	0.1	0.1	0.1	0.1	0.1
pH, s.u.	7.55	7.25	7.62	7.80	7.56
Solids, Total Dissolved TDS @ 180 C, mg/L	665	688	686	713	688
Sulfate, mg/L	257	261	249	246	253
Gross Alpha, pci/L (dissolved)	166.0	160	174.0	191.0	172.8
Gross Beta, pci/L (dissolved)	52	40.7	43.1	50.8	46.7
Lead 210, pci/L (dissolved)	<8.0	12	<2.2	<0.8	<5.8
Polonium 210, pci/L (dissolved)	<1.0	<0.7	<0.6	<0.8	<0.6
Radium 226, pci/L (dissolved)	0.56	0.73	1.10	1.1	0.87
Radium 228, pci/L (dissolved)	4.6	4.3	4.9	8.2	5.5
Thorium 230, pci/L (dissolved)	<0.2	<0.3	<0.1	<0.2	<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	3.71	3.92	3.8	3.9	3.83
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.001	<0.001	0.001	<0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1	0.01	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	155	147	140	139	145
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	26	24	23	23	24
Manganese, mg/L (dissolved)	<0.01	0.01	<0.01	<0.01	<0.01
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	10	10	11	10	10
Selenium, mg/L (dissolved)	0.038	0.037	0.034	0.035	0.036
Silica, mg/L	18.1	15.1	17.1	17.6	17.0
Sodium, mg/L	35	33	34	33	34
Uranium, mg/L (dissolved)	0.0970	0.1010	0.0986	0.1020	0.0997
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	0.02	0.08	0.02	0.01	0.03
Iron, TOTAL mg/L	0.17	<0.03	<0.03	<0.03	<0.07
Manganese, TOTAL mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Lead 210, suspended pci/L	<8.4	<6.3	<3.3	<4.4	<5.6
Polonium 210 suspended, pci/L	<1.0	<0.6	<0.6	<0.4	<0.7
Radium 226 suspended, pci/L	<0.5	<0.5	<0.05	<0.2	<0.4
Thorium 230 suspended, pci/L	<0.2	<0.3	<0.07	<0.1	<0.2
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-8				
Parameters	**3/21/2009**	**6/25/2009**	**9/23/2009**		**Average**
Bicarbonate as HCO3, mg/L	258	257	267		261
Carbonate as CO3, mg/L	<1	<1	<5		<3
Chloride, mg/L	2	3	3		3
Conductivity, umhos/cm	550	553	516		540
Fluoride, mg/L	0.6	0.5	0.5		0.5
pH, s.u.	7.62	7.80	7.84		7.75
Solids, Total Dissolved TDS @ 180 C, mg/L	353	330	310		331
Sulfate, mg/L	83	76	77		79
Gross Alpha, pci/L (dissolved)	<2.1	6.8	<3.0		<4.0
Gross Beta, pci/L (dissolved)	6.2	6.2	7.2		6.5
Lead 210, pci/L (dissolved)	<8.6	<2.2	<3.7		<4.9
Polonium 210, pci/L (dissolved)	<0.6	<0.5	<0.5		<0.6
Radium 226, pci/L (dissolved)	0.45	0.51	0.81		0.59
Radium 228, pci/L (dissolved)	<1.1	<1.1	1.5		<1.3
Thorium 230, pci/L (dissolved)	<0.2	<0.2	<0.4		<0.3
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05		<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	<0.05	<0.05	<0.05		<0.05
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Arsenic, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Boron, mg/L (dissolved)	0.1	<0.1	<0.1		<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005		<0.005
Calcium, mg/L	76	65	68		70
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05		<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01		<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03		<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Magnesium, mg/L	14	15	15		15
Manganese, mg/L (dissolved)	0.03	0.03	0.03		0.03
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05		<0.05
Potassium, mg/L	7	7	7		7
Selenium, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Silica, mg/L	7.3	8.5	6.7		7.5
Sodium, mg/L	22	20	21		21
Uranium, mg/L (dissolved)	0.0006	0.0005	0.0004		0.0005
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Zinc, mg/L (dissolved)	<0.01	<0.01	<0.01		<0.01
Iron, TOTAL mg/L	0.20	0.23	0.31		0.25
Manganese, TOTAL mg/L	0.03	0.03	0.03		0.03
Lead 210, suspended pci/L	<8.6	<3.3	<1.7		<4.6
Polonium 210 suspended, pci/L	<0.6	<0.5	<0.5		<0.6
Radium 226 suspended, pci/L	0.45	0.09	<0.2		0.25
Thorium 230 suspended, pci/L	<0.2	<0.5	<0.06		<0.26
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003		<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-9				
Parameters	**3/19/2009**	**6/18/2009**	**9/22/2009**		**Average**
Bicarbonate as HCO3, mg/L	307	Well not working	316		312
Carbonate as CO3, mg/L	<1		<5		<3
Chloride, mg/L	13		12		13
Conductivity, umhos/cm	1170		1150		1160
Fluoride, mg/L	0.1		0.1		0.1
pH, s.u.	7.73		7.70		7.72
Solids, Total Dissolved TDS @ 180 C, mg/L	862		845		854
Sulfate, mg/L	346		350		348
Gross Alpha, pci/L (dissolved)	145		218		182
Gross Beta, pci/L (dissolved)	34.9		41.0		38.0
Lead 210, pci/L (dissolved)	<9.9		<3.7		<6.8
Polonium 210, pci/L (dissolved)	<0.5		<0.5		<0.5
Radium 226, pci/L (dissolved)	0.23		0.31		0.27
Radium 228, pci/L (dissolved)	1.1		2.1		1.6
Thorium 230, pci/L (dissolved)	<0.2		<0.6		<0.4
Nitrogen, Ammonia as N, mg/L	<0.05		<0.05		<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	7.09		6.3		6.7
Aluminum, mg/L (dissolved)	<0.1		<0.1		<0.1
Arsenic, mg/L (dissolved)	<0.001		<0.001		<0.001
Barium, mg/L (dissolved)	<0.1		<0.1		<0.1
Boron, mg/L (dissolved)	0.1		<0.1		0.1
Cadmium, mg/L (dissolved)	<0.005		<0.005		<0.005
Calcium, mg/L	199		183		191
Chromium, mg/L (dissolved)	<0.05		<0.05		<0.05
Copper, mg/L (dissolved)	<0.01		<0.01		<0.01
Iron, mg/L (dissolved)	<0.03		<0.03		<0.03
Lead, mg/L (dissolved)	<0.001		<0.001		<0.001
Magnesium, mg/L	24		26		25
Manganese, mg/L (dissolved)	<0.01		0.01		0.01
Mercury, mg/L (dissolved)	<0.001		<0.001		<0.001
Molybdenum, mg/L (dissolved)	<0.1		<0.1		<0.1
Nickel, mg/L (dissolved)	<0.05		<0.05		<0.05
Potassium, mg/L	12		12		12
Selenium, mg/L (dissolved)	0.048		0.048		0.048
Silica, mg/L	16.0		14.3		15.2
Sodium, mg/L	41		37		39
Uranium, mg/L (dissolved)	0.0750		0.0880		0.0815
Vanadium, mg/L (dissolved)	<0.1		<0.1		<0.1
Zinc, mg/L (dissolved)	0.14		0.07		0.11
Iron, TOTAL mg/L	0.90		0.87		0.89
Manganese, TOTAL mg/L	<0.01		0.01		0.01
Lead 210, suspended pci/L	<7.4		<1.7		<4.6
Polonium 210 suspended, pci/L	<0.9		<0.4		<0.7
Radium 226 suspended, pci/L	0.5		<0.2		0.4
Thorium 230 suspended, pci/L	<0.4		<0.1		<0.3
Uranium suspended, pci/L	<0.0003		0.0004		0.0004

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-10				
Parameters	**3/19/2009**	**6/18/2009**	**9/22/2009**		**Average**
Bicarbonate as HCO3, mg/L	366	Well not working	374		370
Carbonate as CO3, mg/L	<1		<5		<3
Chloride, mg/L	6		6		6
Conductivity, umhos/cm	961		908		935
Fluoride, mg/L	0.5		0.5		0.5
pH, s.u.	7.77		7.78		7.78
Solids, Total Dissolved TDS @ 180 C, mg/L	670		648		659
Sulfate, mg/L	218		193		206
Gross Alpha, pci/L (dissolved)	175		161		168
Gross Beta, pci/L (dissolved)	40.9		37.5		39.2
Lead 210, pci/L (dissolved)	<8.6		<3.7		<6.2
Polonium 210, pci/L (dissolved)	<0.4		<0.6		<0.5
Radium 226, pci/L (dissolved)	0.36		0.27		0.32
Radium 228, pci/L (dissolved)	1.4		1.8		1.6
Thorium 230, pci/L (dissolved)	<0.2		<0.3		<0.3
Nitrogen, Ammonia as N, mg/L	<0.05		<0.05		<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	3.04		2.9		3.0
Aluminum, mg/L (dissolved)	<0.1		<0.1		<0.1
Arsenic, mg/L (dissolved)	<0.001		<0.001		<0.001
Barium, mg/L (dissolved)	<0.1		<0.1		<0.1
Boron, mg/L (dissolved)	0.1		<0.1		0.1
Cadmium, mg/L (dissolved)	<0.005		<0.005		<0.005
Calcium, mg/L	148		126		137
Chromium, mg/L (dissolved)	<0.05		<0.05		<0.05
Copper, mg/L (dissolved)	0.02		<0.01		0.02
Iron, mg/L (dissolved)	<0.03		<0.03		<0.03
Lead, mg/L (dissolved)	<0.001		<0.001		<0.001
Magnesium, mg/L	25		26		26
Manganese, mg/L (dissolved)	<0.01		0.01		0.01
Mercury, mg/L (dissolved)	<0.001		<0.001		<0.001
Molybdenum, mg/L (dissolved)	<0.1		<0.1		<0.1
Nickel, mg/L (dissolved)	<0.05		<0.05		<0.05
Potassium, mg/L	8		9		9
Selenium, mg/L (dissolved)	0.014		0.014		0.014
Silica, mg/L	15.1		13.0		14.1
Sodium, mg/L	31		29		30
Uranium, mg/L (dissolved)	0.0913		0.1030		0.0972
Vanadium, mg/L (dissolved)	<0.1		<0.1		<0.1
Zinc, mg/L (dissolved)	0.1		0.16		0.14
Iron, TOTAL mg/L	0.37		0.41		0.39
Manganese, TOTAL mg/L	<0.01		0.01		0.01
Lead 210, suspended pci/L	<7.5		<1.7		<4.6
Polonium 210 suspended, pci/L	<0.7		<0.3		<.05
Radium 226 suspended, pci/L	0.3		<0.2		0.3
Thorium 230 suspended, pci/L	<0.4		<0.08		<0.3
Uranium suspended, pci/L	<0.0003		<0.0003		<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-11				
Parameters	**11/10/2008**	**3/16/2009**	**6/18/2009**	**9/22/2009**	**Average**
Bicarbonate as HCO3, mg/L	279	280	306	293	290
Carbonate as CO3, mg/L	<1	<1	<1	<1	<1
Chloride, mg/L	41	35	20	43	35
Conductivity, umhos/cm	1060	1070	1030	1050	1053
Fluoride, mg/L	0.2	0.2	0.2	0.2	0.2
pH, s.u.	7.96	7.54	7.56	7.66	7.68
Solids, Total Dissolved TDS @ 180 C, mg/L	709	717	725	698	712
Sulfate, mg/L	207	208	238	186	210
Gross Alpha, pci/L (dissolved)	113	118	156	99.1	122
Gross Beta, pci/L (dissolved)	36.9	22.8	29.0	35.3	31.0
Lead 210, pci/L (dissolved)	<4.7	<3.2	<2.8	<3.8	<3.7
Polonium 210, pci/L (dissolved)	<1.0	<0.7	<0.9	<0.6	<0.8
Radium 226, pci/L (dissolved)	0.73	0.27	1.60	0.88	0.87
Radium 228, pci/L (dissolved)	4.4	<1.6	5.8	5.6	4.4
Thorium 230, pci/L (dissolved)	<0.2	<0.2	0.1	<0.2	<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	22	24.2	9.5	19.2	18.7
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.001	<0.001	0.001	<0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	0.1	<0.1	<0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	166	153	135	158	153
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	0.02	<0.01	<0.01	<0.02
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	26	24	23	24	24
Manganese, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	11	10	10	11	11
Selenium, mg/L (dissolved)	0.043	0.042	0.043	0.038	0.042
Silica, mg/L	19.0	17.2	17.9	13.4	16.9
Sodium, mg/L	26	25	28	25	26
Uranium, mg/L (dissolved)	0.0598	0.0547	0.0826	0.0605	0.0644
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	0.02	0.02	0.02	0.02	0.02
Iron, TOTAL mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Manganese, TOTAL mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Lead 210, suspended pci/L	<9.9	<6.3	<4.8	<1.8	<5.7
Polonium 210 suspended, pci/L	<1.0	<0.5	<0.5	<0.5	<0.7
Radium 226 suspended, pci/L	<0.4	<0.5	<0.07	<0.2	<0.3
Thorium 230 suspended, pci/L	0.3	<0.8	<0.1	<0.1	<0.4
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-12				
Parameters	**11/12/2008**	**3/17/2009**	**6/22/2009**	**9/25/2009**	**Average**
Bicarbonate as HCO3, mg/L	244	244	244	254	247
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	<1	<1	1	1	1
Conductivity, umhos/cm	860	857	845	841	851
Fluoride, mg/L	0.8	0.8	0.8	0.8	0.8
pH, s.u.	7.95	7.37	7.80	7.59	7.68
Solids, Total Dissolved TDS @ 180 C, mg/L	592	610	610	589	600
Sulfate, mg/L	276	261	254	254	261
Gross Alpha, pci/L (dissolved)	35.6	46.1	37.4	39.6	39.7
Gross Beta, pci/L (dissolved)	15.1	12.7	12.3	15.8	14.0
Lead 210, pci/L (dissolved)	<9.4	<2.7	<2.2	<2.0	<4.1
Polonium 210, pci/L (dissolved)	<1.0	<0.6	<0.5	<0.6	<0.7
Radium 226, pci/L (dissolved)	<0.46	0.28	0.21	0.35	0.32
Radium 228, pci/L (dissolved)	<1.9	1.6	<1.1	1.7	1.6
Thorium 230, pci/L (dissolved)	<0.2	<0.4	<0.1	<0.6	<0.4
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	0.28	0.39	0.27	0.2	0.29
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.001	0.001	0.001	0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	132	111	109	116	117
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	28	25	23	24	25
Manganese, mg/L (dissolved)	0.02	0.02	0.02	0.02	0.02
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	9	9	9	8	9
Selenium, mg/L (dissolved)	<0.001	0.001	<0.001	<0.001	<0.001
Silica, mg/L	22.3	18.6	16.9	15.3	18.3
Sodium, mg/L	30	33	27	26	29
Uranium, mg/L (dissolved)	0.0128	0.0136	0.0129	0.0127	0.0130
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	<0.01	<0.01	0.01	<0.01	<0.01
Iron, TOTAL mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Manganese, TOTAL mg/L	0.04	0.04	0.03	0.03	0.04
Lead 210, suspended pci/L	<10	<6.2	<3.3	<1.8	<5.4
Polonium 210 suspended, pci/L	<1.0	<0.7	<0.6	<0.4	<0.7
Radium 226 suspended, pci/L	<0.4	<0.5	0.2	<0.2	<0.4
Thorium 230 suspended, pci/L	<0.2	<0.4	<0.09	<0.07	<0.2
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-13				
Parameters	**11/21/2008**	**3/25/2009**	**6/19/2009**	**9/16/2009**	**Average**
Bicarbonate as HCO3, mg/L	229	241	234	240	236
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	13	8	8	7	9
Conductivity, umhos/cm	824	842	821	810	824
Fluoride, mg/L	0.8	0.8	0.8	0.9	0.8
pH, s.u.	7.61	7.66	7.64	7.80	7.68
Solids, Total Dissolved TDS @ 180 C, mg/L	592	568	563	581	576
Sulfate, mg/L	243	234	229	233	235
Gross Alpha, pci/L (dissolved)	44.0	39.6	58.8	44.1	46.6
Gross Beta, pci/L (dissolved)	29.3	16.1	15.8	17.0	19.6
Lead 210, pci/L (dissolved)	<4.4	<2.7	<2.8	<0.8	<2.7
Polonium 210, pci/L (dissolved)	<1.0	<0.7	<0.8	<0.8	<0.9
Radium 226, pci/L (dissolved)	0.7	1.4	1.3	0.67	1.0
Radium 228, pci/L (dissolved)	4.1	4.2	3.8	4.7	4.2
Thorium 230, pci/L (dissolved)	<0.2	<0.2	<0.1	<0.1	<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	0.7	0.4	0.4	0.4	0.5
Aluminum, mg/L (dissolved)	<0.1	3.4	<0.1	<0.1	<1.0
Arsenic, mg/L (dissolved)	0.003	0.001	0.001	0.001	0.002
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	0.1	<0.1	0.1	<0.1	0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	114	106	110	105	109
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	0.08	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	0.36	<0.03	<0.03	<0.12
Lead, mg/L (dissolved)	<0.001	0.005	<0.001	<0.001	<0.002
Magnesium, mg/L	23	22	23	22	23
Manganese, mg/L (dissolved)	<0.01	0.01	<0.01	<0.01	<0.01
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	8	8	9	8	8
Selenium, mg/L (dissolved)	0.009	0.006	0.005	0.004	0.006
Silica, mg/L	19.3	18.4	19.4	19.0	19.0
Sodium, mg/L	28	29	28	26	28
Uranium, mg/L (dissolved)	0.0179	0.0149	0.0141	0.0133	0.0151
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	<0.01	0.26	<0.01	<0.01	<0.008
Iron, TOTAL mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Manganese, TOTAL mg/L	<0.01	<0.01	<0.01	0.01	<0.01
Lead 210, suspended pci/L	<9.6	4.1	<4.8	<4.4	<5.8
Polonium 210 suspended, pci/L	<0.3	<0.3	<0.5	<0.5	<0.4
Radium 226 suspended, pci/L	<0.5	<0.08	<0.07	<0.2	<0.22
Thorium 230 suspended, pci/L	<0.2	<0.3	<0.1	<0.06	<0.17
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-14				
Parameters	**9/23/2009**				**Average**
Bicarbonate as HCO3, mg/L	250				250
Carbonate as CO3, mg/L	<5				<5
Chloride, mg/L	71				71
Conductivity, umhos/cm	722				722
Fluoride, mg/L	0.3				0.3
pH, s.u.	7.74				7.74
Solids, Total Dissolved TDS @ 180 C, mg/L	455				455
Sulfate, mg/L	59				59
Gross Alpha, pci/L (dissolved)	66.5				66.5
Gross Beta, pci/L (dissolved)	17.4				17.4
Lead 210, pci/L (dissolved)	<3.7				<3.7
Polonium 210, pci/L (dissolved)	<0.6				<0.6
Radium 226, pci/L (dissolved)	0.90				0.90
Radium 228, pci/L (dissolved)	2.1				2.1
Thorium 230, pci/L (dissolved)	<0.4				<0.4
Nitrogen, Ammonia as N, mg/L	<0.05				<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	4.2				4.2
Aluminum, mg/L (dissolved)	<0.1				<0.1
Arsenic, mg/L (dissolved)	<0.001				<0.001
Barium, mg/L (dissolved)	<0.1				<0.1
Boron, mg/L (dissolved)	<0.1				<0.1
Cadmium, mg/L (dissolved)	<0.005				<0.005
Calcium, mg/L	98				98
Chromium, mg/L (dissolved)	<0.05				<0.05
Copper, mg/L (dissolved)	<0.01				<0.01
Iron, mg/L (dissolved)	<0.03				<0.03
Lead, mg/L (dissolved)	<0.001				<0.001
Magnesium, mg/L	16				16
Manganese, mg/L (dissolved)	<0.01				<0.01
Mercury, mg/L (dissolved)	<0.001				<0.001
Molybdenum, mg/L (dissolved)	<0.1				<0.1
Nickel, mg/L (dissolved)	<0.05				<0.05
Potassium, mg/L	9				9
Selenium, mg/L (dissolved)	0.007				0.007
Silica, mg/L	12.2				12.2
Sodium, mg/L	26				26
Uranium, mg/L (dissolved)	0.0368				0.0368
Vanadium, mg/L (dissolved)	<0.1				<0.1
Zinc, mg/L (dissolved)	<0.01				<0.01
Iron, TOTAL mg/L	0.36				0.36
Manganese, TOTAL mg/L	<0.01				<0.01
Lead 210, suspended pci/L	<1.7				<1.7
Polonium 210 suspended, pci/L	<0.5				<0.5
Radium 226 suspended, pci/L	<0.2				<0.2
Thorium 230 suspended, pci/L	<0.1				<0.1
Uranium suspended, pci/L	<0.0003				<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-15				
Parameters	**11/7/2008**	**3/18/2009**	**6/19/2009**	**9/23/2009**	**Average**
Bicarbonate as HCO3, mg/L	240	240	244	259	246
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	<1	<1	2	2	2
Conductivity, umhos/cm	839	840	824	809	828
Fluoride, mg/L	0.9	0.8	0.8	0.8	0.8
pH, s.u.	8.07	7.46	7.62	7.82	7.74
Solids, Total Dissolved TDS @ 180 C, mg/L	583	584	602	601	593
Sulfate, mg/L	266	252	240	242	250
Gross Alpha, pci/L (dissolved)	51.5	33.9	43.2	38.0	41.7
Gross Beta, pci/L (dissolved)	24.7	14.5	6.0	12.4	14.4
Lead 210, pci/L (dissolved)	<4.7	<2.7	<2.8	<3.7	<3.5
Polonium 210, pci/L (dissolved)	<1.0	<0.7	<0.8	<0.7	<0.8
Radium 226, pci/L (dissolved)	<0.48	0.59	1.2	0.47	0.69
Radium 228, pci/L (dissolved)	3.4	2.2	2.3	2.9	2.7
Thorium 230, pci/L (dissolved)	<0.2	<0.3	<0.2	<0.3	<0.3
Nitrogen, Ammonia as N, mg/L	<0.1	<0.05	<0.05	<0.05	<0.07
Nitrogen, Nitrate+Nitrite as N, mg/L	0.16	0.15	<0.1	0.1	<0.13
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.001	0.001	0.001	<0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	134	104	115	114	117
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	28	23	25	23	25
Manganese, mg/L (dissolved)	0.13	0.12	0.13	0.13	0.13
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	9	8	9	9	9
Selenium, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Silica, mg/L	22.5	17.3	19.2	14.7	18.4
Sodium, mg/L	28	29	27	26	28
Uranium, mg/L (dissolved)	0.0146	0.0138	0.0154	0.0152	0.0148
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	<0.01	0.01	<0.01	<0.01	<0.01
Iron, TOTAL mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Manganese, TOTAL mg/L	0.15	0.13	0.13	0.13	0.14
Lead 210, suspended pci/L	<9.9	<6.2	<4.8	<1.7	<5.7
Polonium 210 suspended, pci/L	<1.0	<0.8	<0.6	<0.5	<0.8
Radium 226 suspended, pci/L	<0.4	<0.4	<0.09	<0.2	<0.3
Thorium 230 suspended, pci/L	<0.2	<0.4	<0.1	<0.1	<0.2
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-16				
Parameters	**11/11/2008**	**3/20/2009**	**6/24/2009**	**9/14/2009**	**Average**
Bicarbonate as HCO3, mg/L	250	247	242	250	247
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	11	8	6	6	8
Conductivity, umhos/cm	962	916	893	870	910
Fluoride, mg/L	0.6	0.7	0.7	0.7	0.7
pH, s.u.	7.73	7.40	7.62	7.70	7.61
Solids, Total Dissolved TDS @ 180 C, mg/L	660	670	616	626	643
Sulfate, mg/L	317	289	269	269	286
Gross Alpha, pci/L (dissolved)	55.4	44.7	34.0	43.2	44.3
Gross Beta, pci/L (dissolved)	25.2	16.3	16.6	21.5	19.9
Lead 210, pci/L (dissolved)	<4.7	<7.7	<2.2	<0.8	<3.9
Polonium 210, pci/L (dissolved)	<1.0	<0.7	<0.4	<0.5	<0.7
Radium 226, pci/L (dissolved)	0.93	0.95	0.8	1.4	1.0
Radium 228, pci/L (dissolved)	<1.9	1.6	3.1	2.8	2.4
Thorium 230, pci/L (dissolved)	<0.2	<0.2	<0.2	<0.1	<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	0.06	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	<0.05	0.05	<0.05	<0.1	<0.07
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.001	0.001	<0.001	<0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	143	140	116	120	130
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	28	22	22	23	24
Manganese, mg/L (dissolved)	0.08	0.08	0.07	0.05	0.07
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	10	9	10	9	10
Selenium, mg/L (dissolved)	0.003	0.004	0.003	0.003	0.003
Silica, mg/L	18.4	14.7	14.4	17.1	16.2
Sodium, mg/L	36	33	30	29	32
Uranium, mg/L (dissolved)	0.0331	0.0279	0.0272	0.0266	0.0287
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	0.01	0.02	0.04	0.02	0.02
Iron, TOTAL mg/L	0.15	0.21	0.09	0.08	0.13
Manganese, TOTAL mg/L	0.08	0.08	0.07	0.07	0.08
Lead 210, suspended pci/L	<9.8	<7.5	<3.3	<4.3	<6.3
Polonium 210 suspended, pci/L	<1.0	<0.8	<0.5	<0.7	<0.8
Radium 226 suspended, pci/L	<0.4	0.7	<0.6	<0.2	<0.5
Thorium 230 suspended, pci/L	<0.2	<0.4	<0.07	<0.07	<0.2
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-17				
Parameters	**11/10/2008**	**3/20/2009**	**6/19/2009**	**9/14/2009**	**Average**
Bicarbonate as HCO3, mg/L	240	246	239	247	243
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	1	1	4	3	2
Conductivity, umhos/cm	876	879	854	850	865
Fluoride, mg/L	0.9	0.8	0.8	0.9	0.9
pH, s.u.	8.03	7.58	7.54	8.00	7.79
Solids, Total Dissolved TDS @ 180 C, mg/L	600	639	595	612	612
Sulfate, mg/L	293	285	260	267	276
Gross Alpha, pci/L (dissolved)	50.1	36.8	47.2	36.0	42.5
Gross Beta, pci/L (dissolved)	16.4	12.6	14.3	13.9	14.3
Lead 210, pci/L (dissolved)	<5.4	<8.6	<2.8	<0.8	<4.4
Polonium 210, pci/L (dissolved)	<1.0	<0.7	<0.4	<0.6	<0.7
Radium 226, pci/L (dissolved)	<0.48	0.49	1.0	0.65	0.66
Radium 228, pci/L (dissolved)	<1.9	1.1	2.7	2.7	2.1
Thorium 230, pci/L (dissolved)	<0.2	<0.2	<0.1	<0.1	<0.2
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	0.08	0.08	<0.1	<0.1	0.09
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.001	0.001	0.001	0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	129	135	118	117	125
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	26	22	24	23	24
Manganese, mg/L (dissolved)	0.12	0.12	0.12	0.12	0.12
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	9	8	9	9	9
Selenium, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Silica, mg/L	20.0	16.2	18.5	18.8	18.4
Sodium, mg/L	29	29	28	26	28
Uranium, mg/L (dissolved)	0.0123	0.0121	0.0129	0.0129	0.0126
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	0.01	<0.01	<0.01	<0.01	<0.01
Iron, TOTAL mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Manganese, TOTAL mg/L	0.15	0.13	0.13	0.13	0.14
Lead 210, suspended pci/L	<9.9	<7.5	<4.9	<4.3	<6.7
Polonium 210 suspended, pci/L	<1.0	<0.5	<0.5	<0.7	<0.7
Radium 226 suspended, pci/L	<0.4	0.3	<0.09	<0.2	<0.3
Thorium 230 suspended, pci/L	<0.2	<0.5	<0.09	<0.08	<0.3
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-18				
Parameters	**3/25/2009**	**6/17/2009**	**9/23/2009**		**Average**
Bicarbonate as HCO3, mg/L	317	318	339		325
Carbonate as CO3, mg/L	<1	<1	<5		<3
Chloride, mg/L	117	126	123		122
Conductivity, umhos/cm	1960	1860	1860		1893
Fluoride, mg/L	0.4	0.3	0.3		0.3
pH, s.u.	7.48	7.32	7.59		7.46
Solids, Total Dissolved TDS @ 180 C, mg/L	1460	1410	1380		1417
Sulfate, mg/L	609	589	560		586
Gross Alpha, pci/L (dissolved)	244	317	292		284
Gross Beta, pci/L (dissolved)	39.5	56.8	57.3		51.2
Lead 210, pci/L (dissolved)	<2.7	<2.8	<3.7		<3.1
Polonium 210, pci/L (dissolved)	<0.9	<0.7	<0.5		<0.7
Radium 226, pci/L (dissolved)	0.73	0.44	0.20		0.46
Radium 228, pci/L (dissolved)	1.4	<1.3	<1.2		<1.3
Thorium 230, pci/L (dissolved)	<0.3	<0.2	<0.4		<0.3
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05		<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	12	16	14.4		14
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Arsenic, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005		<0.005
Calcium, mg/L	287	272	270		276
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05		<0.05
Copper, mg/L (dissolved)	0.03	0.03	0.03		0.03
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03		<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Magnesium, mg/L	52	47	46		48
Manganese, mg/L (dissolved)	<0.01	<0.01	<0.01		<0.01
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001		<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05		<0.05
Potassium, mg/L	8	8	7		8
Selenium, mg/L (dissolved)	0.125	0.125	0.112		0.121
Silica, mg/L	17.9	17.6	13.7		16.4
Sodium, mg/L	83	73	66		74
Uranium, mg/L (dissolved)	0.1700	0.1680	0.1960		0.1780
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1		<0.1
Zinc, mg/L (dissolved)	0.02	0.02	0.02		0.02
Iron, TOTAL mg/L	0.46	0.53	0.10		0.36
Manganese, TOTAL mg/L	0.01	0.03	<0.01		0.02
Lead 210, suspended pci/L	<4.2	<4.5	<1.7		<3.5
Polonium 210 suspended, pci/L	<0.5	<0.6	<0.5		<0.6
Radium 226 suspended, pci/L	<0.09	0.1	<0.2		<0.2
Thorium 230 suspended, pci/L	<0.2	<0.3	<0.05		<0.2
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003		<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-19				
Parameters	**11/13/2008**	**3/16/2009**	**6/17/2009**	**9/15/2009**	**Average**
Bicarbonate as HCO3, mg/L	248	250	251	257	252
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	5	4	5	4	5
Conductivity, umhos/cm	737	739	736	720	733
Fluoride, mg/L	0.7	0.7	0.7	0.8	0.7
pH, s.u.	7.64	7.44	7.59	8.00	7.67
Solids, Total Dissolved TDS @ 180 C, mg/L	464	465	498	516	486
Sulfate, mg/L	181	187	186	184	185
Gross Alpha, pci/L (dissolved)	69.7	58.1	43.6	54.3	56.4
Gross Beta, pci/L (dissolved)	34.2	16.8	17.5	22.1	22.7
Lead 210, pci/L (dissolved)	<4.7	5.3	<2.8	<0.8	<3.4
Polonium 210, pci/L (dissolved)	<1.0	<0.5	0.7	<0.7	<0.8
Radium 226, pci/L (dissolved)	<0.39	0.79	1.3	0.46	0.74
Radium 228, pci/L (dissolved)	3.7	3.4	4.8	4.7	4.2
Thorium 230, pci/L (dissolved)	<0.2	<0.5	<0.2	<0.2	<0.4
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	0.25	0.28	0.26	0.2	0.25
Aluminum, mg/L (dissolved)	<0.1	0.2	<0.1	<0.1	<0.2
Arsenic, mg/L (dissolved)	0.001	0.002	0.001	0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1	0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	111	94	99	95	100
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	0.03	<0.01	<0.01	<0.02
Iron, mg/L (dissolved)	<0.03	0.04	<0.03	<0.03	<0.04
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	23	20	20	20	21
Manganese, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	8	8	8	8	8
Selenium, mg/L (dissolved)	0.007	0.007	0.007	0.008	0.007
Silica, mg/L	19.7	16.2	18.4	18.1	18.1
Sodium, mg/L	26	27	26	24	26
Uranium, mg/L (dissolved)	0.0330	0.0354	0.0337	0.0328	0.0337
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	<0.01	0.08	<0.01	<0.01	<0.03
Iron, TOTAL mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Manganese, TOTAL mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Lead 210, suspended pci/L	<8.6	<6.1	<4.5	<4.3	<5.9
Polonium 210 suspended, pci/L	1.2	<1	<0.6	<0.4	<0.8
Radium 226 suspended, pci/L	<0.4	<0.5	<0.1	<0.2	<0.3
Thorium 230 suspended, pci/L	<0.2	<0.3	<0.3	<0.1	<0.3
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-20				
Parameters	**3/17/2009**	**6/17/2009**	**9/17/2009**		**Average**
Bicarbonate as HCO3, mg/L	238	Well not working	Well not working		238
Carbonate as CO3, mg/L	<1				<1
Chloride, mg/L	<1				<1
Conductivity, umhos/cm	842				842
Fluoride, mg/L	0.9				0.9
pH, s.u.	7.45				7.45
Solids, Total Dissolved TDS @ 180 C, mg/L	582				582
Sulfate, mg/L	260				260
Gross Alpha, pci/L (dissolved)	27.8				27.8
Gross Beta, pci/L (dissolved)	14.4				14.4
Lead 210, pci/L (dissolved)	<2.7				<2.7
Polonium 210, pci/L (dissolved)	<0.6				<0.6
Radium 226, pci/L (dissolved)	0.52				0.52
Radium 228, pci/L (dissolved)	4.3				4.3
Thorium 230, pci/L (dissolved)	<0.4				<0.4
Nitrogen, Ammonia as N, mg/L	<0.05				<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	<0.05				<0.05
Aluminum, mg/L (dissolved)	<0.1				<0.1
Arsenic, mg/L (dissolved)	0.001				0.001
Barium, mg/L (dissolved)	<0.1				<0.1
Boron, mg/L (dissolved)	<0.1				<0.1
Cadmium, mg/L (dissolved)	<0.005				<0.005
Calcium, mg/L	104				104
Chromium, mg/L (dissolved)	<0.05				<0.05
Copper, mg/L (dissolved)	<0.01				<0.01
Iron, mg/L (dissolved)	<0.03				<0.03
Lead, mg/L (dissolved)	<0.001				<0.001
Magnesium, mg/L	23				23
Manganese, mg/L (dissolved)	0.11				0.11
Mercury, mg/L (dissolved)	<0.001				<0.001
Molybdenum, mg/L (dissolved)	<0.1				<0.1
Nickel, mg/L (dissolved)	<0.05				<0.05
Potassium, mg/L	8				8
Selenium, mg/L (dissolved)	<0.001				<0.001
Silica, mg/L	18.1				18.1
Sodium, mg/L	29				29
Uranium, mg/L (dissolved)	0.0102				0.0102
Vanadium, mg/L (dissolved)	<0.1				<0.1
Zinc, mg/L (dissolved)	<0.01				<0.01
Iron, TOTAL mg/L	<0.03				<0.03
Manganese, TOTAL mg/L	0.12				0.12
Lead 210, suspended pci/L	<6.3				<6.3
Polonium 210 suspended, pci/L	<0.7				<0.7
Radium 226 suspended, pci/L	<0.2				<0.2
Thorium 230 suspended, pci/L	<0.4				<0.4
Uranium suspended, pci/L	<0.0003				<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-21				
Parameters	**11/10/2008**	**3/20/2009**	**6/17/2009**	**9/23/2009**	**Average**
Bicarbonate as HCO3, mg/L	236	232	238	255	240
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	<1	<1	1	1	<1
Conductivity, umhos/cm	837	828	824	808	824
Fluoride, mg/L	0.9	0.9	0.9	0.8	0.9
pH, s.u.	7.83	7.48	7.62	7.76	7.67
Solids, Total Dissolved TDS @ 180 C, mg/L	576	612	601	609	600
Sulfate, mg/L	268	260	250	246	256
Gross Alpha, pci/L (dissolved)	26.1	30.1	77.4	32.0	41.4
Gross Beta, pci/L (dissolved)	15.3	14.1	24.0	15.8	17.3
Lead 210, pci/L (dissolved)	<4.7	<8.6	<2.8	<4.0	<5.1
Polonium 210, pci/L (dissolved)	<0.2	<0.6	<0.5	<0.6	<0.5
Radium 226, pci/L (dissolved)	<0.49	0.57	1.1	0.90	<0.77
Radium 228, pci/L (dissolved)	<1.9	1.9	3.9	3.9	2.9
Thorium 230, pci/L (dissolved)	<0.2	<0.2	<0.2	<0.3	<0.2
Nitrogen, Ammonia as N, mg/L	<0.1	<0.05	<0.05	<0.05	<0.07
Nitrogen, Nitrate+Nitrite as N, mg/L	<0.05	<0.05	<0.05	<0.1	<0.07
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	<0.001	<0.001	0.001	0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	0.1	0.1	<0.1	0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	129	123	112	114	120
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	26	21	23	23	23
Manganese, mg/L (dissolved)	0.20	0.24	0.13	0.12	0.17
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	9	8	9	8	9
Selenium, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Silica, mg/L	22.5	15.9	19.6	14.6	18.2
Sodium, mg/L	29	28	27	26	28
Uranium, mg/L (dissolved)	0.0097	0.0098	0.0104	0.0111	0.0103
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	0.01	<0.01	0.02	0.01	0.01
Iron, TOTAL mg/L	0.19	12.1	<0.03	<0.03	3.10
Manganese, TOTAL mg/L	0.23	0.30	0.12	0.12	0.19
Lead 210, suspended pci/L	<9.7	<7.4	<4.6	<1.7	<5.9
Polonium 210 suspended, pci/L	<1.0	<0.7	<0.6	<0.4	<0.5
Radium 226 suspended, pci/L	<0.4	<0.3	<0.1	<0.2	<0.3
Thorium 230 suspended, pci/L	<0.2	<0.4	<1.1	0.7	<0.6
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	0.0024	<0.0009

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-22				
Parameters	**11/21/2008**	**3/31/2009**	**8/4/2009**	**9/23/2009**	**Average**
Bicarbonate as HCO3, mg/L	239	249	242	249	245
Carbonate as CO3, mg/L	<1	<1	<1	<5	<2
Chloride, mg/L	1	1	2	2	2
Conductivity, umhos/cm	801	824	814	797	809
Fluoride, mg/L	0.9	0.9	0.9	0.9	0.9
pH, s.u.	7.76	7.70	7.59	7.75	7.70
Solids, Total Dissolved TDS @ 180 C, mg/L	580	569	561	556	567
Sulfate, mg/L	248	251	239	243	245
Gross Alpha, pci/L (dissolved)	39.8	40.7	30.8	37.8	37.3
Gross Beta, pci/L (dissolved)	23.1	16.8	36.9	19.4	24.1
Lead 210, pci/L (dissolved)	<4.4	<2.7	<2.2	<3.7	<3.3
Polonium 210, pci/L (dissolved)	<1.0	<0.6	<0.9	<0.4	<0.8
Radium 226, pci/L (dissolved)	<0.2	0.81	0.57	0.78	0.59
Radium 228, pci/L (dissolved)	3.5	4.7	5	5.6	4.7
Thorium 230, pci/L (dissolved)	0.02	<0.3	<0.1	<0.5	<0.3
Nitrogen, Ammonia as N, mg/L	<0.05	0.07	<0.05	<0.05	<0.06
Nitrogen, Nitrate+Nitrite as N, mg/L	0.1	0.1	0.08	<0.1	<0.1
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	<0.001	0.001	0.001	0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	0.1	<0.1	0.1	<0.1	0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	112	111	105	113	110
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	23	23	22	22	23
Manganese, mg/L (dissolved)	0.15	0.17	0.14	0.16	0.16
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	8	8	8	8	8
Selenium, mg/L (dissolved)	0.001	<0.001	<0.001	<0.001	<0.001
Silica, mg/L	19.8	17.5	16.2	14.8	17.1
Sodium, mg/L	28	28	26	26	27
Uranium, mg/L (dissolved)	0.0115	0.0110	0.0105	0.0114	0.0111
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, TOTAL mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Manganese, TOTAL mg/L	0.16	0.16	0.15	0.16	0.16
Lead 210, suspended pci/L	<9.6	<5.7	<3.2	<1.8	<5.1
Polonium 210 suspended, pci/L	<0.2	<0.4	<0.3	<0.4	<0.4
Radium 226 suspended, pci/L	<0.5	<0.4	<0.06	<0.2	<0.3
Thorium 230 suspended, pci/L	1.4	0.2	<0.1	<0.07	<0.5
Uranium suspended, pci/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Addendum 2.7-E Water Quality Data from Negley Subdivision

	N-23				
Parameters	**11/7/2008**	**3/17/2009**	**6/18/2009**	**9/22/2009**	**Average**
Bicarbonate as HCO3, mg/L	226	216	222	241	226
Carbonate as CO3, mg/L	<1.0	<1.0	<1.0	<5.0	<2.0
Chloride, mg/L	5	12	11	5	8
Conductivity, umhos/cm	932	1150	1130	925	1034
Fluoride, mg/L	0.9	0.8	0.8	0.8	0.8
pH, s.u.	8.00	7.06	7.28	7.63	7.49
Solids, Total Dissolved TDS @ 180 C, mg/L	675	1000	890	704	817
Sulfate, mg/L	325	398	370	289	346
Gross Alpha, pci/L (dissolved)	29.4	47.9	41.4	42.5	40.3
Gross Beta, pci/L (dissolved)	17.5	14.2	17	16.8	16.4
Lead 210, pci/L (dissolved)	<4.7	<2.7	<2.8	<3.7	<3.5
Polonium 210, pci/L (dissolved)	<1.0	<0.7	<0.8	<0.7	<0.6
Radium 226, pci/L (dissolved)	0.62	1.1	1.9	0.37	1.00
Radium 228, pci/L (dissolved)	1.9	2.3	2.3	3.3	2.5
Thorium 230, pci/L (dissolved)	<0.2	<0.4	<0.2	<0.3	<0.3
Nitrogen, Ammonia as N, mg/L	<0.1	<0.05	0.17	<0.05	<.009
Nitrogen, Nitrate+Nitrite as N, mg/L	5.39	14.3	12.1	4.6	9.10
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.002	0.002	0.002	0.002	0.002
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	0.1	0.1	0.2	<0.1	<0.2
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	140	155	163	131	147
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	0.06	0.05	<0.03	<0.05
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	30	31	34	26	30
Manganese, mg/L (dissolved)	0.014	0.15	0.18	0.15	0.12
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	9	10	11	9	10
Selenium, mg/L (dissolved)	0.014	0.032	0.039	0.012	0.024
Silica, mg/L	22.2	18.8	23.1	15.7	20.0
Sodium, mg/L	34	36	40	30	35
Uranium, mg/L (dissolved)	0.0110	0.0108	0.0116	0.0129	0.0116
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	<0.01	0.01	0.03	<0.01	<0.02
Iron, TOTAL mg/L	0.03	0.06	0.11	<0.03	<0.06
Manganese, TOTAL mg/L	0.15	0.16	0.17	0.15	0.16
Lead 210, suspended pci/L	<9.9	<6.1	<4.9	<1.9	<5.7
Polonium 210 suspended, pci/L	<1.0	<0.6	<0.5	<0.5	<0.7
Radium 226 suspended, pci/L	<0.4	<0.5	<0.07	<0.2	<0.29
Thorium 230 suspended, pci/L	<0.2	<0.4	0.2	<0.09	<0.23
Uranium suspended, pci/L	<0.0003	<0.0003	0.0007	<0.0003	<0.0004

Uranium One - Wyoming
Sampling Schedule

Ludeman 2008 & 2009

2008													2009											
Location I.D.	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
JS													1/16					6/29			9/22			12/21

Addendum 2.7-E Water Quality Data from only Domestic Well in Project Area

	JS Well			
Parameters	**1/16/2009**	**6/29/2009**	**9/22/2009**	**Average**
Bicarbonate as HCO3, mg/L	222	224	238	228
Carbonate as CO3, mg/L	<1	<1	<5	<2
Chloride, mg/L	2	2	2	2
Conductivity, umhos/cm	457	450	415	441
Fluoride, mg/L	0.6	0.6	0.6	0.6
pH, s.u.	7.87	7.80	7.88	7.85
Solids, Total Dissolved TDS @ 180 C, mg/L	252	274	255	260
Sulfate, mg/L	51	45	47	48
Gross Alpha, pci/L (dissolved)	22.8	14.9	13.9	17.2
Gross Beta, pci/L (dissolved)	11.7	6.7	11.4	9.9
Lead 210, pci/L (dissolved)	0	0	10.1	3.4
Polonium 210, pci/L (dissolved)	0	0.04	0	0.01
Radium 226, pci/L (dissolved)	0.67	0.6	0.84	0.70
Radium 228, pci/L (dissolved)	3.5	2.4	2.9	2.9
Thorium 230, pci/L (dissolved)	0.0	0.02	0.09	0.04
Nitrogen, Ammonia as N, mg/L	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrate+Nitrite as N, mg/L	1.0	1.08	1.15	1.08
Aluminum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1
Arsenic, mg/L (dissolved)	0.002	0.001	0.001	0.001
Barium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1
Boron, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1
Cadmium, mg/L (dissolved)	<0.005	<0.005	<0.005	<0.005
Calcium, mg/L	66	62	63	64
Chromium, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05
Copper, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01
Iron, mg/L (dissolved)	<0.03	<0.03	<0.03	<0.03
Lead, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001
Magnesium, mg/L	13	12	12	12.3
Manganese, mg/L (dissolved)	<0.01	<0.01	<0.01	<0.01
Mercury, mg/L (dissolved)	<0.001	<0.001	<0.001	<0.001
Molybdenum, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1
Nickel, mg/L (dissolved)	<0.05	<0.05	<0.05	<0.05
Potassium, mg/L	5	7	6	6
Selenium, mg/L (dissolved)	0.007	0.006	0.005	0.006
Silica, mg/L	14.5	14.1	12.4	13.7
Sodium, mg/L	12	11	9	10.7
Uranium, mg/L (dissolved)	0.0087	0.0079	0.0081	0.0082
Vanadium, mg/L (dissolved)	<0.1	<0.1	<0.1	<0.1
Zinc, mg/L (dissolved)	0.03	0.02	0.02	0.023
Iron, TOTAL mg/L	<0.03	<0.03	<0.03	<0.03
Manganese, TOTAL mg/L	<0.01	<0.01	<0.01	<0.01
Lead 210, TOTAL pci/L	1.8	0	0	0.6
Polonium 210 TOTAL, pci/L	0.1	0	0.03	0.04
Radium 226 suspended, pci/L	0.2	0	0	0.07
Thorium 230 suspended, pci/L	0	0	0	0
Uranium suspended, pci/L	<0.0003	<0.003	<0.003	<0.003

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2.8 ECOLOGICAL RESOURCES

2.8.1 Introduction

This section describes the existing ecological resources within the Ludeman Project area. The analysis consisted of a review of documents, databases, and reports in conjunction with field surveys.

All vegetation sampling procedures were designed according to the Wyoming Department of Environmental Quality – Land Quality Division (WDEQ-LQD) Rules and Regulations for Non-Coal Permitting, Guideline 2 (November 1997).

The wetland survey was conducted within the entire Ludeman Project area in accordance with the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE 2008). Identification of potential wetlands was based on visual assessment of vegetation and hydrology indicators, as well as intrusive soil sampling to determine the presence of wetland criteria indicators. Hydrology and soils were evaluated whenever a plant community type met hydrophytic vegetation parameters based on the Dominance Test and Prevalence Index (as defined by the USACE Great Plains Regional Supplement), or whenever indicators suggested the potential presence of a seasonal wetland area under normal circumstances. Per the Great Plains Interim Regional Supplement, for wetland delineation purposes, an area is considered to be vegetated if it has five percent or more total plant cover at the peak of the growing season.

The wildlife study was to collect both quantitative and qualitative data on vertebrate occurrence, abundance, diversity, and general habitat affinity in the project area. This included identification of habitats that could support Threatened and Endangered (T&E) species and other high value or unusual wildlife habitats.

The baseline wildlife surveys followed standard survey requirements and protocols used by the WGFD, USFWS, and BLM, as well as the non-coal permitting guidelines issued by the WDEQ-LQD. Procedures and schedules recommended in the Handbook of Biological Techniques (WGFD 1982) were reviewed, and those in keeping with project-specific guidance from the WGFD were followed.

2.8.2 Regional Setting

The Ludeman Project area is located in east-central Wyoming in Converse County. The license area is located approximately 40 miles northeast of Casper, Wyoming. State Highway 95 provides access to the Ludeman Project area from the Towns of Glenrock

and Rolling Hills to the west and State Highway 93 provides access from Douglas to the southeast. Interstate 25 provides access to both of these state highways from the south of the Ludeman Project area.

The Ludeman Project area is located within the Pathfinder to Guernsey subbasin of the greater Platte River Basin. The greater Platte River Basin is located within the Rocky Mountain, Wyoming Basin, and Great Plains Physiographic Provinces. The topography of the basin includes valleys, high plains, hills, and mountains. Elevations in the basin range from 12,013 to 4,025 feet above mean sea level. Average annual precipitation for the basin ranges from 8 to 12 inches per year (Trihydro 2006).

The majority of the project area is privately owned and the predominate land use is rangeland as discussed in Section 2.2.

2.8.3 Climate

Meteorological data have been compiled for ten sites surrounding the Ludeman Project.

The Ludeman Project area lies in a semi-arid climate in the upper Northern High Plains. The landscape is composed of a river valley and rolling hills covered with native grasses, sparse sage brush, and some woody areas in the low lying valley. A detailed description of and presentation of climatologic data is presented in Section 2.5.

The region experiences average maximum temperatures near 90° and average minimum temperatures around 10° F. The site average temperature is expected to be 47° F with extremes of -30° to +100° F. The region generally receives little precipitation with annual averages between 10 and 13 inches. Spring and early summer precipitation events are responsible for the majority of the yearly average.

The region is characteristically windy with annual averages of 10 to 15 mph. Winds at the project site are expected to average 13 mph annually, with summer averages dipping to 11 mph and winter averages reaching 15 mph. The predominant wind directions are from the west and the west/southwest.

2.8.4 Baseline Data

Ecological studies including baseline flora and fauna data were collected to fulfill the objectives specified in USNRC NUREG-1569, *Standard Review Plan for In situ Leach Uranium Extraction License Applications.* Ecological surveys were also conducted in accordance with applicable WDEQ-LQD, WGFD, and USFWS established guidelines. These agencies were consulted accordingly during development of survey plans to ensure adequate objectives, methodologies, and survey techniques were utilized.

The wetland survey was conducted by TREC, Inc. (TREC) of Casper, Wyoming during the spring/summer of 2008. The vegetation survey was conducted by BKS Environmental Associates (BKS) of Gillette, Wyoming during the spring/summer of 2008. Wildlife surveys were conducted by Jones and Stokes of Gillette during the summer and fall of 2008.

The following sections were developed from the final survey reports completed by TREC, BKS and Jones and Stokes.

2.8.5 Terrestrial Ecology

2.8.5.1 Vegetation

2.8.5.1.1 Survey Methodology

General

All sampling procedures were designed according to the Wyoming Department of Environmental Quality – Land Quality Division (WDEQ-LQD) Rules and Regulations for Non-Coal Permitting, Guideline 2 (November 1997). Due to the size of the license area, transects were not sampled in consecutive order. If the transects had been strictly sampled in consecutive order, adequate representation for each vegetation community would not have been achieved.

Mapping

Six different plant communities were identified for this area using 2006 National Agricultural Image Program (NAIP) true color orthophotos, which were verified through field survey. These communities include Big Sagebrush Shrubland, Lowland Grassland, Silver Sagebrush Shrubland, Upland Grassland, Upland Grassland Rough Breaks Complex and Crested Wheatgrass Field. Disturbed communities were mapped but excluded from all vegetation parameter sampling.

Transect Origin Selection

A computerized systematic grid (through ArcGIS) was used to randomly locate sample points within each vegetation community. These computer generated random numbers were then uploaded to a hand-held Garmin Global Positioning System (GPS) unit for actual location in the field.

Cover

A sample size of 25, 50-meter point-intercept cover transects were sampled within each of the Upland Grassland, Lowland Grassland, Upland Grassland Rough Breaks Complex, Silver Sagebrush Shrubland, and Crested Wheatgrass Field communities. The Big Sagebrush Shrubland community had a sample size of 26 transects. A total of 151 cover points were sampled in the project area.

In the vegetation communities, each 50-meter transect represented a single sample point. Percent cover measurements were taken from point-intercepts at one-meter intervals along a 50-meter transect. Transects that exceeded the boundaries of the vegetation community being sampled were redirected back into its vegetation community at a 90 degree angle from the original transect direction at the point of intercept. In instances where a 90 degree angle of reflection did not place the transect within the sampled community, a 45 degree angle of reflection was used. Each point-intercept represents two percent of a total cover measurement.

Percent cover measurements record "first-hit" point-intercepts by live foliar vegetation species, litter, rock, or bare ground. Multiple hits on vegetation were recorded, but used only for the purpose of constructing plant species lists for each plant community.

Species Composition

A list of plant species encountered during 2008 quantitative sampling is presented in Addendum 2.8-A by vegetation community type. The species list includes plant species sampled in cover transects as well as plant species observed along the belt transect. Plant names in the Rocky Mountain Vascular Plants of Wyoming (Dorn, 3rd Edition) were utilized.

Total Vegetation Cover

Percent vegetation cover is the vertical projection of the general outline of plants to the ground surface. Vegetation data cover was recorded by species, using first hit data. All point-intercepts of living vegetation and growth produced during the current growing season were counted toward total vegetation cover. Lichens and moss are excluded from total vegetation cover, but are included within total cover. Total vegetation cover measurements were expressed in absolute percentages for each sample point. Cover summaries for each vegetation community within the project area are presented in Addendum 2.8-B.

Total Ground Cover

Total ground cover equals the sum of cover values for percent vegetation, percent lichens and moss, percent litter, and percent rock. Litter includes all organic material that is older than the current year's growth. According to a WDEQ-LQD rule change, manure is now considered bare ground. Rock fragments were recorded when equal to or greater than two centimeters in size (i.e., sheet flow, minimum non-erodible particle size). Total ground cover measurements were expressed in absolute percentages for each sample point.

Shrub Density

Shrub density data was collected in conjunction with randomly selected cover transects, wherever possible. All shrubs, full, half or sub, were counted within 50 centimeters on either side of the 50-meter cover transect (1-meter x 50-meter belt transect), yielding a 100 square meter (m^2) belt transect. Sample adequacy was not calculated for shrub density. The number of belt transects equaled the number of cover transects for a given vegetation type. Summarization of this data can be found in Addendum 2.8-C.

Extended Reference Area

The Extended Reference Area (EXREFA) is a native land unit used to evaluate revegetation success on portions of the same native plant community that was affected by the mining operation. For this study area, the mining operation will affect the four plant communities: Big Sagebrush Shrubland, Lowland Grassland, Upland Grassland, and Upland Grassland Rough Breaks Complex. All areas of these communities not affected by mining activities will serve as the EXREFA. The EXREFA will be as large as practical, considering land ownership patterns and land management history. The EXREFA that remains unaffected over the course of the mining operation will be used to evaluate revegetation success. The EXREFA will consist of all mapped areas outside those disturbed by mining, but within the license boundary. The EXREFA will be defined when reclamation occurs.

2.8.5.1.2 Vegetation Survey Results

Mapping

The proposed license area is 19,888.10 acres. Of these acres, the Upland Grassland community was 7,908.00 acres (39.76 percent), the Big Sagebrush Shrubland was 5,674.70 acres (28.53 percent), the Upland Grassland Rough Breaks Complex community was 4,045.70 acres (20.34 percent), the Lowland Grassland community was 1,265.30 acres (6.36 percent), the Silver Sagebrush Shrubland was 309.90 acres (1.56 percent) and the Crested Wheatgrass Field was 307.40 acres (1.55 percent). Disturbed areas were

377.10 acres (1.90 percent). Refer to Table 2.8-1 below for acreage of each vegetation community both within the project area and within the one-half mile buffer of the project area. Refer to Addendum 2.8-D for vegetation community mapping units of the Ludeman Project area.

Table 2.8-1 Acreage and Percent of Total Area for Each Map Unit

Mapping Units	Project Area	Percent of Area	1/2 Mile Buffer Area	Percent of Area
Upland Grassland	7,908.00	39.76	2,819.72	27.12
Big Sagebrush Shrubland	5,674.70	28.53	2,983.48	28.69
Upland Grassland Rough Breaks Complex	4,045.70	20.34	2,379.34	22.88
Lowland Grassland	1,265.30	6.36	442.80	4.26
Silver Sagebrush Shrubland	309.90	1.56	1,026.16	9.87
Crested Wheatgrass Field	307.40	1.55	439.03	4.22
Disturbed	377.10	1.90	307.54	2.96
TOTAL	**19,888.10**	**100.00**	**10,398.07**	**100.00**

General

Cool season perennial grasses and introduced perennial grasses (also cool season) were combined when determining species dominance in vegetation cover. They are, however, reported separately in the individual summaries and tables. BKS uses an in-house program to generate the communities' summaries; rounding differences between this program and the raw data can range from 0.01 to 0.32.

2.8.5.1.3 Upland Grassland

Cover

The Upland Grassland plant community comprised 7,908.00 of the 19,888.10 acres of the license area (39.76 percent). Twenty-five cover transects were sampled for this community. Absolute total vegetation cover was 64.16 percent. Absolute bare soil and litter/rock percentages were 18.56 percent and 14.40 percent, respectively. Absolute total ground cover was 82.24 percent. *Elymus smithii* (western wheatgrass), provided the highest relative vegetation cover at 18.51 percent, while *Alyssum desertorum* (desert alyssum) provided the next highest relative vegetation cover at 15.45 percent. Refer to Table 2.8-2 below for the absolute cover values.

Table 2.8-2 2008 Absolute Cover for the Upland Grassland Vegetation Community

Vegetation Parameter	Mean
Absolute Total Vegetation Cover (percent)	64.16
Absolute Total Cover (percent)	82.24

Sample Adequacy

There were 25 samples taken in the Upland Grassland plant community. The sample adequacy formula outlined in WDEQ-LQD Guideline 2 was utilized to determine the minimum required size of the sample population. The Upland Grassland met sample adequacy guidelines. Refer to Table 2.8-3 below for sample adequacy values.

Table 2.8-3 Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Upland Grassland.

	Mean	Standard Deviation	Calculated Sample Adequacy Number*	Actual Sample Number	Z-Value	Confidence Level Achieved
Mapping Unit						
Upland Grassland						
Total Vegetation Cover	64.16	11.09	9.79	25.00	2.05	97.98
Total Ground Cover	82.24	6.67	2.16	25.00	4.36	100.00

*Based on WDEQ Sample Adequacy Formula Guideline 2.

Species Composition and Diversity

Species composition for the Upland Grassland plant community was dominated by native and introduced cool season perennial grasses with 43.39 percent relative cover, followed by annual forbs with 21.59 percent relative cover. Warm season perennial grasses had 9.55 percent relative cover. Annual grasses had 7.66 percent relative cover. Perennial forbs had 7.90 percent relative cover. Succulents had 3.18 percent relative cover. Full and sub-shrubs had a total 1.30 percent relative cover. A total of 41 different species were found within the Upland Grassland plant community. Eight of these species were cool season perennial grass and grasslike plants. Warm season perennial grasses and annual grasses had three species each. A total of five annual forbs were present. Perennial forbs had a total of 14 species. Full shrubs and lichens had one specie each, while sub/half shrubs had four species. Two succulents were present. The annual grasses

for this area were dominated by *Bromus tectorum* (cheatgrass), *Bromus japonicus* (Japanese brome) and *Vulpia octoflora* (sixweeks fescue). The cool season perennial grasses were dominated by *Elymus smithii* (western wheatgrass), *Hesperostipa comata* (needleandthread), *Carex filfolia* (threadleaf sedge) and *Poa secunda* (Sandberg bluegrass). Warm season perennial grass consisted of *Bouteloua gracilis* (blue grama) and *Calamovilfa longifolia* (Prairie sandreed). Perennial forbs were dominated by *Phlox hoodii* (Hood's phlox) and *Sphaeralcea coccinea* (scarlet globemallow). Annual and biennial forbs included desert alyssum, and *Plantago patagonica* (Pursh's plantain). Present shrubs/subshrubs were *Artemisia tridentata* (Big Sagebrush), and *Artemisa frigida* (fringed sagewort). Also present were lichen species and *Opuntia polyacantha* (plains prickly pear). For a complete list of species within the Upland Grassland community refer to Addendum 2.8-A. Also refer to Table 2.8-4 for relative Upland Grassland cover summary and to Addendum 2.8-B for a complete Upland Grassland cover summary.

Table 2.8-4 Vegetation Cover Sampling Data Summary of Species by Lifeform for the Upland Grassland Community.

	Vegetation Cover	
	Absolute (percent)	**Relative (percent)**
Annual Grasses	5.20	7.66
Native Cool Season Grasses	28.96	42.68
Introduced Cool Season Grasses	0.48	0.71
Warm Season Grasses	6.48	9.55
Annual Forbs	14.64	21.59
Perennial Forbs	5.36	7.90
Perennial Shrubs	0.56	0.83
Perennial Sub-Shrubs	0.32	0.47
Succulents	2.16	3.18

Shrub Density

The Upland Grassland community supported an average of 1,344.13 shrubs per acre or 0.33 shrubs/m^2. The following full and half/sub-shrub species were found: big sagebrush, fringed sagewort, *Artemisia ludoviciana* (Louisiana sagewort) and *Gutierrezia sarothrae* (broom snakeweed). Refer to Addendum 2.8-C for a complete Upland Grassland density summary.

Other Data

There were no federally listed threatened or endangered species found during sampling. The Converse County designated noxious weed cheatgrass was encountered in the area during sampling.

2.8.5.1.4 Big Sagebrush Shrubland

Cover

The Big Sagebrush Shrubland plant community comprised 5,674.70 of the 19,888.10 acres of the project area (28.53 percent). Twenty-six cover transects were sampled for this community. Absolute total vegetation cover was 59.70 percent. Absolute bare soil and litter/rock percentages were 23.38 percent and 15.62 percent, respectively. Absolute total ground cover was 76.73 percent. Big sagebrush provided the highest relative vegetation cover at 15.64 percent while cheatgrass, provided the next highest cover at 14.00 percent. Refer to Table 2.8-5 below, for the absolute cover values

Table 2.8-5 2008 Absolute Cover for the Big Sagebrush Shrubland Vegetation Community

Vegetation Parameter	Mean
Absolute Vegetation Cover (percent)	59.70
Absolute Total Cover (percent)	76.73

Sample Adequacy

There were 26 samples taken in the Big Sagebrush Shrubland plant community. The sample adequacy formula outlined in WDEQ-LQD Guideline 2 was utilized to determine the minimum required size of the sample population. The Big Sagebrush Shrubland met sample adequacy guidelines. Refer to Table 2.8-6 below for sample adequacy values.

Table 2.8-6 Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Big Sagebrush Shrubland

	Mean	Standard Deviation	Calculated Sample Adequacy Number*	Actual Sample Number	Z-Value	Confidence Level Achieved
Mapping Unit						
Big Sagebrush Shrubland						
Total Vegetation Cover	59.70	13.90	17.76	26.00	1.55	93.94
Total Ground Cover	76.63	10.13	5.73	26.00	2.73	99.68

*Based on WDEQ Sample Adequacy Formula Guideline 2.

Species Composition and Diversity

Species composition for the Big Sagebrush Shrubland plant community was dominated by native and introduced cool season perennial grasses with 37.46 percent relative cover, followed by annual grasses at 17.15 percent relative cover. Warm season perennial grasses had 11.60 percent relative cover. Annual forbs had 6.94 percent relative cover. Perennial forbs had 2.15 percent relative cover. Shrubs and subshrubs had a total 15.77 percent relative cover. Succulents had 6.81 percent relative cover. A total of 43 different species were found within the Big Sagebrush Shrubland plant community. Cool season perennial grasses and grasslike plants had nine species. Warm season perennial grasses, biennial forbs, succulents, and lichens had one specie each. A total of three annual grass species were present. Annual forbs and sub/half shrubs had four species each. There were 17 perennial forbs present. Two full shrub species were present. The annual grasses for this area were cheatgrass, Japanese brome, and sixweeks fescue. The cool season perennial grasses were dominated by threadleaf sedge, western wheatgrass, needleandthread, and Sandberg bluegrass. Blue grama was the dominant warm season perennial grass. Perennial forbs were dominated by Scarlet globemallow, *Vicia americana* (American vetch) and *Allium textile* (textile onion). Annual forbs included desert alyssum, Pursh's plantain and *Lappula redowskii* (bluebur stickseed). Shrubs and subshrubs included big sagebrush, and *Artemisia pedatifida*, birdsfoot sagewort. Also present were lichen species and plains prickly pear. For a complete list of species within the Big Sagebrush Shrubland community refer to Addendum 2.8-A. Also refer Table 2.8-7 for relative Big Sagebrush Shrubland cover summary and to Addendum 2.8-B for a complete Big Sagebrush Shrubland cover summary.

Table 2.8-7 Vegetation Cover Sampling Data Summary of Species by Lifeform for the Big Sagebrush Shrubland Community

	Vegetation Cover	
	Absolute (percent)	Relative (percent)
Annual Grasses	10.46	17.15
Native Cool Season Grasses	18.92	31.03
Introduced Cool Season Grasses	3.92	6.43
Warm Season Grasses	7.08	11.60
Annual Forbs	4.23	6.94
Perennial Forbs	1.32	2.15
Perennial Shrubs	9.54	15.64
Perennial Sub-Shrubs	0.08	0.13
Succulents	4.15	6.81

Shrub Density

The Big Sagebrush Shrubland community supported an average of 4,051.70 shrubs per acre or 1.00shrubs/m^2. The following full and half/sub-shrub species were found: big sagebrush, *Artemisia cana* (silver sagebrush), fringed sagewort, birdsfoot sagewort, and *Krascheninnikovia lanata* (winterfat). Refer to Addendum 2.8-C for a complete Big Sagebrush Shrubland density summary.

Other Data

There were no federally listed threatened or endangered species found during sampling. The Converse County designated noxious weed cheatgrass was encountered in the area during sampling.

2.8.5.1.5 Upland Grassland Rough Breaks Complex

Cover

The Upland Grassland Rough Breaks Complex plant community comprised approximately 4,045.70 of the 19,888.10 acres of the project area (20.34 percent). Twenty-five cover transects were sampled for this community. Absolute total vegetation cover was 44.96 percent. Absolute bare soil and litter/rock percentages were 36.64 percent and 17.92 percent, respectively. Absolute total ground cover was 63.36 percent. Blue grama provided the highest absolute vegetation cover at 14.44 percent, while cheatgrass provided the next highest relative vegetation cover at 12.68 percent. Refer to Table 2.8-8 below for the absolute cover values.

Table 2.8-8 2008 Absolute Cover for the Upland Grassland Rough Breaks Complex Vegetation Community

Vegetation Parameter	Mean
Absolute Total Vegetation Cover (percent)	44.96
Absolute Total Cover (percent)	63.36

Sample Adequacy

There were 25 samples taken in the Upland Grassland Rough Breaks Complex plant community. The sample adequacy formula outlined in WDEQ-LQD Guideline 2 was utilized to determine the minimum required size of the sample population. The Upland Grassland Rough Breaks Complex met sample adequacy guidelines. Refer to Table 2.8-9 below for sample adequacy values.

Table 2.8-9 Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Upland Grassland Rough Breaks Complex

	Mean	Standard Deviation	Calculated Sample Adequacy Number*	Actual Sample Number	Z-Value	Confidence Level Achieved
Mapping Unit						
Upland Grassland Rough Breaks Complex						
Total Vegetation Cover	44.96	10.17	16.77	25.00	1.56	94.06
Total Ground Cover	63.36	14.09	16.20	25.00	1.59	94.41

*Based on WDEQ Sample Adequacy Formula Guideline 2.

Species Composition and Diversity

Species composition for the Upland Grassland Rough Breaks Complex plant community was dominated by native and introduced cool season perennial grasses with 37.38 percent relative cover, followed by annual grasses at 15.15 percent relative cover. Warm season perennial grasses had 14.44 percent relative cover. Perennial forbs had 11.11 percent relative cover and annual forbs had 10.21 percent relative cover. Subshrubs had a total 1.06 percent relative cover, while full shrubs had 5.81 percent relative cover. Succulents had 3.52 percent relative cover. A total of 69 different species were found in the Upland Grassland Rough Breaks plant community. Twelve of these species were cool season

perennial grasses and grasslike plants. Warm season perennial grasses, biennial forbs, succulents, and lichens had one specie each. Eleven annual forb and 28 perennial forb species were present. Full shrubs had a total of five species while sub/half shrubs had six species. The annual grasses for this area were dominated by cheatgrass, sixweeks fescue, and Japanese brome. The cool season perennial grasses were dominated by western wheatgrass, needleandthread, threadleaf sedge, and Sandberg bluegrass. Blue grama was the dominant warm season perennial grass. Perennial forbs were dominated by Hood's phlox, scarlet globemallow and *Thermopsis rhombifolia* (golden banner). Annual forbs included desert alyssum, bluebur stickseed, and Pursh's plantain. Present shrubs and subshrubs were big sagebrush, *Rosa woodsii* (Wood's rose), fringed sagewort, Louisiana sagewort, *Atriplex gardneri* (Gardner saltbush), and *Yucca glauca* (small soapweed). Also present were lichen species and plains prickly pear. For a complete list of species within the Upland Grassland Rough Breaks community refer to Addendum 2.8-A. Also refer to Table 2.8-10 below for relative Upland Grassland Rough Breaks Complex cover summary and to Addendum 2.8-B for a complete Upland Grassland Rough Breaks Complex cover summary.

Table 2.8-10 Vegetation Cover Sampling Data Summary of Species by Lifeform for the Upland Grassland Rough Breaks Complex Community

	Vegetation Cover	
	Absolute (percent)	**Relative (percent)**
Annual Grasses	6.88	15.15
Native Cool Season Grasses	16.56	36.45
Introduced Cool Season Grasses	0.56	1.23
Warm Season Grasses	6.56	14.44
Annual Forbs	4.64	10.21
Perennial Forbs	5.04	11.11
Perennial Shrubs	2.64	5.81
Perennial Sub-Shrubs	0.48	1.06
Succulents	1.60	3.52

Shrub Density

The Upland Grassland Rough Breaks Complex community supported an average of 1,240.49 shrubs per acre or 0.31 shrubs/m^2. The following full and half/sub-shrub species were found: big sagebrush, *Atriplex canescens* (fourwing saltbush), *Chrysothamnus* species (rabbitbrush), fringed sagewort, birdsfoot sagewort and small soapweed. Refer to Addendum 2.8-C for a complete Upland Grassland Rough Breaks density summary.

Other Data

There were no federally listed threatened or endangered species found during sampling. The Converse County designated noxious weeds *Cirsium undulatum* (wavyleaf thistle) and cheatgrass were encountered in the area during sampling.

2.8.5.1.6 Lowland Grassland

Cover

The Lowland Grassland plant community comprised 1,265.30 of the 19,888.10 acres of the project area (6.36 percent). Twenty-five cover transects were sampled for this community. Absolute total vegetation cover was 70.16 percent. Absolute bare soil and litter/rock percentages were 16.72 percent and 13.04 percent, respectively. Absolute total ground cover was 83.28 percent. Western wheatgrass provided the highest relative vegetation cover at 24.37 percent, while cheatgrass provided the next highest relative vegetation cover at 10.14 percent. Refer to Table 2.8-11 below for the absolute cover values.

Table 2.8-11. 2008 Absolute Cover for the Lowland Grassland Vegetation Community

Vegetation Parameter	Mean
Absolute Total Vegetation Cover (percent)	70.16
Absolute Total Cover (percent)	83.28

Sample Adequacy

There were 25 samples taken in the Lowland Grassland plant community. The sample adequacy formula outlined in WDEQ-LQD Guideline 2 was utilized to determine the minimum required size of the sample population. The Lowland Grassland met sample adequacy guidelines. Refer to Table 2.8-12 below for sample adequacy values.

Table 2.8-12 Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Lowland Grassland

	Mean	Standard Deviation	Calculated Sample Adequacy Number*	Actual Sample Number	Z-Value	Confidence Level Achieved
Mapping Unit						
Lowland Grassland						
Total Vegetation Cover	70.16	14.59	14.17	25.00	1.70	95.54
Total Ground Cover	83.28	8.75	3.62	25.00	3.37	99.96

*Based on WDEQ Sample Adequacy Formula Guideline 2.

Species Composition and Diversity

Species composition for the Lowland Grassland plant community was dominated by native and introduced cool season perennial grasses with 50.81 percent relative cover, followed by annual grasses with 18.00 percent relative cover. Warm season perennial grasses had 7.62 percent relative cover. Annual forbs had 9.01 percent relative cover, while perennial forbs had 6.94 percent relative cover. Full and sub-shrubs had a total 7.18 percent relative cover. Succulents had 0.34 percent relative cover. A total of 89 different species were found within the Lowland Grassland plant community. Twenty-three species were cool season perennial grass and grasslike plants. There were seven warm season perennial grasses and four annual grass species. There were thirteen annual forbs, two biennial forbs, and 29 perennial forb species. There were four full shrubs and five sub/half shrub species. Lichens and succulents had one species each. The annual grasses for this area were dominated by cheatgrass and, Japanese brome. The cool season perennial grasses were dominated by western wheatgrass, Sandberg bluegrass, *Juncus balticus* (Baltic rush), *Nassella viridula* (green needlegrass), *Agropyron cristatum* (crested wheatgrass) and threadleaf sedge. The warm season perennial grasses were dominated by blue grama and *Sporobolus airoides* (alkali sacaton). Perennial forbs were dominated by American vetch. Annual and biennial forbs included desert alyssum, and Pursh's plantain. Present shrubs/subshrubs were big sagebrush, Woods rose, *Symphoricarpos occidentalis* (western snowberry), fringed sagewort and Louisiana sagewort. Also present were lichen species and plains prickly pear. For a complete list of species within the Lowland Grassland community refer to Addendum 2.8-A. Also refer to Table 2.8-13 below for relative Lowland Grassland cover summary and to Addendum 2.8-B for a Lowland Grassland complete cover summary.

Table 2.8-13 Vegetation Cover Sampling Data Summary of Species by Lifeform for the Lowland Grassland Community

	Vegetation Cover	
	Absolute (percent)	Relative (percent)
Annual Grasses	12.64	18.00
Native Cool Season Grasses	32.64	46.48
Introduced Cool Season Grasses	3.04	4.33
Warm Season Grasses	5.36	7.62
Annual Forbs	6.32	9.01
Perennial Forbs	4.88	6.94
Perennial Shrubs	4.24	6.04
Perennial Sub-Shrubs	0.80	1.14
Succulents	0.24	0.34

Shrub Density

The Lowland Grassland community supported an average of 4,816.19 shrubs per acre or 1.19 shrubs/m^2. The following full and half/sub-shrub species were found: silver sagebrush, big sagebrush, Woods rose, western snowberry, fringed sagewort, Louisiana sagewort, broom snakeweed, and winterfat. Refer to Addendum 2.8-C for a complete Lowland Grassland density summary.

Other Data

There were no federally listed threatened or endangered species found during sampling. The Converse County designated noxious weed cheatgrass was encountered in the area during sampling.

2.8.5.1.7 Silver Sagebrush Shrubland

Cover

The Silver Sagebrush Shrubland plant community comprised 309.90 of the 19,888.10 acres of the project area (1.56 percent). Twenty-five cover transects were sampled for this community. Absolute total vegetation cover was 64.80 percent. Absolute bare soil and litter/rock percentages were 13.36 percent and 20.88 percent, respectively. Absolute total ground cover was 86.64 percent. Cheatgrass provided the highest relative vegetation cover at 28.83 percent, while silver sagebrush provided the next highest

relative vegetation cover at 19.34 percent. Refer to Table 2.8-14 below for the absolute cover values.

Table 2.8-14 2008 Absolute Cover for the Silver Sagebrush Shrubland Vegetation Community

Vegetation Parameter	Mean
Absolute Total Vegetation Cover (percent)	64.80
Absolute Total Cover (percent)	86.64

Sample Adequacy

There were 25 samples taken in the Silver Sagebrush Shrubland plant community. The sample adequacy formula outlined in WDEQ-LQD Guideline 2 was utilized to determine the minimum required size of the sample population. The Silver Sagebrush Shrubland met sample adequacy guidelines. Refer to Table 2.8-15 below for sample adequacy values.

Table 2.8-15 Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Silver Sagebrush Shrubland

	Mean	Standard Deviation	Calculated Sample Adequacy Number*	Actual Sample Number	Z-Value	Confidence Level Achieved
Mapping Unit						
Silver Sagebrush Shrubland						
Total Vegetation Cover	64.80	6.83	3.64	25.00	3.35	99.96
Total Ground Cover	86.64	5.65	1.39	25.00	5.42	100.00

*Based on WDEQ Sample Adequacy Formula Guideline 2.

Species Composition

Species composition for the Silver Sagebrush Shrubland plant community was dominated by annual grasses with 36.98 percent relative cover, followed by full shrubs with 22.38 percent relative cover. Native and introduced cool season perennial grasses had 17.27 percent relative cover. Annual and perennial forbs had 8.50 percent, and 0.96 percent relative cover, respectively. Sub-shrubs had a total 0.12 percent relative cover. Warm

season perennial grasses had 4.37 percent relative cover. Succulents had 7.91 percent relative cover. A total of 67 different species were found within the Silver Sagebrush Shrubland plant community. Twelve cool season perennial grass and grasslike species were present. Warm season perennial grasses, annual grasses, and sub/half shrubs had four species each. There was a total of 16 annual forb and 22 perennial forb species present. Three full shrub species were present. Biennial forbs, succulents, and lichens had one species each. The annual grasses for this area were dominated by cheatgrass and sixweeks fescue. The cool season perennial grasses were dominated by western wheatgrass, needle and thread, and *Bromus inermis* (smooth brome). Blue grama was the dominant warm season perennial grass. Perennial forbs were dominated by American vetch and scarlet globemallow. Annual and biennial forbs included desert alyssum, and *Descurania sophia* (flixweed). Present shrubs/subshrubs were silver sagebrush, *Chrysothamnus viscidflorus* (sticky-leaved rabbitbrush), and winterfat. Also present were lichen species and plains prickly pear. For a complete list of species within the Silver Sagebrush Shrubland community refer to Addendum 2.8-A. Also refer to Table 2.8-16 below for relative Silver Sagebrush Shrubland cover summary and to Addendum 2.8-B for a Silver Sagebrush Shrubland complete cover summary.

Table 2.8-16. Vegetation Cover Sampling Data Summary of Species by Lifeform for the Silver Sagebrush Shrubland Community

	Vegetation Cover	
	Absolute (percent)	**Relative (percent)**
Annual Grasses	24.32	36.98
Native Cool Season Grasses	9.60	14.60
Introduced Perennial Grasses	1.76	2.67
Warm Season Grasses	2.88	4.37
Annual Forbs	5.60	8.50
Perennial Forbs	0.64	0.96
Perennial Shrubs	14.72	22.38
Perennial Sub-Shrubs	0.08	0.12
Succulents	5.20	7.91

Shrub Density

The Silver Sagebrush Shrubland community supported an average of 6,150.61 shrubs per acre or 1.52 shrubs/m^2. The following full and half/sub-shrub species were found: silver sagebrush, big sagebrush, sticky-leaved rabbitbrush, fringed sagewort, Gardner saltbush, winterfat and *Linanthus pungens* (granite prickly gilia). Refer to Addendum 2.8-C for a complete Silver Sagebrush Shrubland density summary.

Other Data

There were no federally listed threatened or endangered species found during sampling. The Converse County designated noxious weed cheatgrass was encountered in the area during sampling.

2.8.5.1.8 Crested Wheatgrass

Cover

The Crested Wheatgrass plant community comprised 307.40 of the 19,888.10 acres of the project area (1.55 percent). Twenty-five cover transects were sampled for this community. Absolute total vegetation cover was 51.84 percent. Absolute bare soil and litter/rock percentages were 23.92 percent and 23.68 percent, respectively. Absolute total ground cover was 76.08 percent. Crested wheatgrass provided the highest relative vegetation cover at 64.12 percent, while desert alyssum provided the next highest relative vegetation cover at 9.31 percent. Refer to Table 2.8-17 below for the absolute cover values.

Table 2.8-17 2008 Absolute Cover for the Crested Wheatgrass Vegetation Community

Vegetation Parameter	Mean
Absolute Total Vegetation Cover (percent)	51.84
Absolute Total Cover (percent)	76.08

Sample Adequacy

There were 25 samples taken in the Crested Wheatgrass plant community. The sample adequacy formula outlined in WDEQ-LQD Guideline 2 was utilized to determine the minimum required size of the sample population. The Crested Wheatgrass met sample adequacy guidelines. Refer to Table 2.8-18 below for sample adequacy values.

Table 2.8-18 Summary of Sample Adequacy Calculations for Percent Vegetation Cover in the Crested Wheatgrass Community

	Mean	Standard Deviation	Calculated Sample Adequacy Number*	Actual Sample Number	Z-Value	Confidence Level Achieved
Mapping Unit						
Crested Wheatgrass						
Total Vegetation Cover	51.84	7.14	6.22	25.00	2.57	99.49
Total Ground Cover	76.08	5.87	1.95	25.00	4.58	100.00

*Based on WDEQ Sample Adequacy Formula Guideline 2.

Species Composition and Diversity

Species composition for the Crested Wheatgrass plant community was dominated by native and introduced cool season perennial grasses with 68.25 percent relative cover, followed by annual forbs with 11.60 percent relative cover. Annual grasses had 4.74 percent relative cover. Perennial forbs had 8.10 percent relative cover. Full and sub-shrubs had a total 1.68 percent relative cover. Succulents had 0.46 percent relative cover. Warm season perennial grasses (blue grama) had 4.13 percent relative cover. A total of 59 different species were found within the Crested Wheatgrass plant community. Cool season perennial grasses and grasslikes as well as half/sub shrubs had six species each. Warm season perennial grasses, annual grasses, biennial forbs, and succulents had two species each. Annual forbs had eight species while perennial forbs had 27 species. Full shrubs had three species and one lichen specie was present. The annual grasses for this area were dominated by cheatgrass and sixweeks fescue. The cool season perennial grasses were dominated by crested wheatgrass and needle and thread. Perennial forbs were dominated by *Medicago sativa* (alfalfa medic), and *Psoralea tenuiflora* (slimflower scurfpea). Annual and biennial forbs included desert alyssum, and Pursh's plantain. Present shrubs/subshrubs were big sagebrush, and fringed sagewort. Also present were lichen species and plains prickly pear. For a complete list of species within the Crested Wheatgrass community refer to Addendum 2.8-A. Also refer to Table 2.8-19 for relative Crested Wheatgrass cover summary and to Addendum 2.8-B for a complete Crested Wheatgrass cover summary.

Table 2.8-19 Vegetation Cover Sampling Data Summary of Species by Lifeform for the Crested Wheatgrass Community

	Vegetation Cover	
	Absolute (percent)	Relative (percent)
Annual Grasses	2.48	4.74
Native Cool Season Grasses	2.16	4.13
Introduced Cool Season Grasses	33.60	64.12
Warm Season Grasses	2.16	4.13
Annual Forbs	6.08	11.60
Perennial Forbs	4.24	8.10
Perennial Shrubs	0.80	1.53
Perennial Sub-Shrubs	0.08	0.15
Succulents	0.24	0.46

Shrub Density

The Crested Wheatgrass community supported an average of 806.48 shrubs per acre or 0.20 shrubs/m^2. The following full and half/sub-shrub species were found: big sagebrush, sticky-leaved rabbitbrush, *Ericameria nauseosa* (rubber rabbitbrush), fringed sagewort, birdsfoot sagewort, winterfat, and granite prickly gilia. Refer to Addendum 2.8-C for a complete Crested Wheatgrass density summary.

Other Data

There were no federally listed threatened or endangered species found during sampling. The Converse County designated noxious weeds *Grindelia squarrosa* (curlycup gumweed) and cheatgrass were encountered in the area during sampling.

2.8.5.1.9 Vegetation Survey Discussion

The proposed 19,888.10 acre project area consists of six vegetation communities: Upland Grassland, Big Sagebrush Shrubland, Upland Grassland Rough Breaks Complex, Lowland Grassland, Silver Sagebrush Shrubland and Crested Wheatgrass. Each community was investigated for baseline vegetation information in support of an NRC License Amendment Application and a Wyoming Non-Coal Mine Permit Application.

No threatened or endangered species were encountered within the project area. Refer to Addendum 2.8-E for a complete report on the Ute Ladies' Tresses' orchid (*Spiranthes diluvialis*) reconnaissance survey. There was the presence of three Converse County

designated weeds, cheatgrass, curlycup gumweed, and wavyleaf thistle in the project area.

2.8.5.2 Wetlands

All figures and tables for this section can be found in Addendum 2.8-F through J.

2.8.5.2.1 Introduction

The following section discusses wetland delineations for the Ludeman Project area. The Ludeman Project area is located northeast of Glenrock, Wyoming within Converse County as shown on Figure 2.8-1, Addendum 2.8-F. The site covers approximately 31 sections (19,888 acres) which are described as follows:

- T34N, R74W – All of Sections 12, 13, 14, 23, 24 and the east half of Section 22.
- T34N, R73W – All of sections 3, 4, 5, 7, 8, 9, 10, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 34, 35, the west half of the west half of Section 2, the south half of Section 6, the west half of the west half of Section 11, the south half of Section 24, the west half of Section 25, the west half of the east half of Section 25, the northeast quarter of the northeast quarter of Section 25, the east half of Section 28, the west half of Section 36, and the west half of the east half of Section 36.
- T34N, R72W – The southwest quarter of Section 19 and the north half of the northwest quarter of Section 30.
- T33N, R73W – The northwest quarter of the northeast quarter of Section 1, the north half of the northwest quarter of Section 1, the north half of the north half of Section 2, and the north half of the north half of Section 3.

Figure 2.8-2 identifies the general wetland/waterbody location on a color infrared (CIR) map with soil types and Figures 2.8-3 through Figure 2.8-33 identify areas of wetland concentrations. All wetlands maps referenced in this section are presented in Addendum 2.8-F.

Construction, operation, or reclamation activities, which cause disturbance or impacts to jurisdictional wetlands on the Ludeman Project, will be performed in accordance with appropriate Nationwide Permits (NWP), if applicable:

- NWP 44 non-coal mining activities, which requires Pre-construction Notification (PCN) for all activities.

- NWP 12 utility line activities, which requires a PCN for an area where a section 10 permit is required (utility installation in navigable waters), when a utility line in waters of the U.S. exceeds 500 feet, when a utility line is placed within a jurisdictional area and it runs parallel to a stream bed that is within that jurisdictional area, when more than 0.1 acre will be impacted, or when permanent access roads are constructed in waters of the U.S. with impervious materials.

- NWP 14 linear transportation projects, which requires a PCN when more than 0.1 acre will be impacted or if there is a discharge in a special aquatic site, including wetlands.

NWP 44, NWP 12, and NWP 14 have an acreage impact limit of one half acre for waters of the United States (e.g. jurisdictional). Impacts to Other Waters of the United States (OWUS) are not considered under the acreage limit.

2.8.5.2.2 Methodology

The wetland survey was conducted within the entire Ludeman Project area in accordance with the Interim Regional Supplement to the U.S. Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE, 2008). Identification of potential wetlands was based on visual assessment of vegetation and hydrology indicators, as well as intrusive soil sampling to determine the presence of wetland criteria indicators. Hydrology and soils were evaluated whenever a plant community type met hydrophytic vegetation parameters based on the Dominance Test and Prevalence Index (as defined by the USACE Great Plains Regional Supplement), or whenever indicators suggested the potential presence of a seasonal wetland area under normal circumstances. Per the Great Plains Interim Regional Supplement, for wetland delineation purposes, an area is considered to be vegetated if it has 5 percent or more total plant cover at the peak of the growing season.

Prior to the field investigation, potential wetland areas were identified via review of National Wetlands Inventory (NWI) mapping, computerized infrared remote (CIR) imagery, and U.S. Geological Survey (USGS) digital raster graphic (DRG) images as detailed below:

- 1981 United States Fish and Wildlife Service Digital NWI mapping

- 2001/2002 CIR imagery for the Careyhurst Quadrangle

- 2001/2002 CIR imagery for the Gilbert Lake Quadrangle

- 2001/2002 CIR imagery for the Leuenberger Ranch Quadrangle

- 2001/2002 CIR imagery for the Orpha Quadrangle
- 1977 Careyhurst, Wyoming, DRG-Enhanced Quadrangle Map
- 1960 Gilbert Lake, Wyoming, DRG-Enhanced Quadrangle Map
- 1960 Leuenberger Ranch, Wyoming, DRG-Enhanced Quadrangle Map
- 1978 Orpha, Wyoming, DRG-Enhanced Quadrangle Map

Each drainage on the site was investigated either on foot or by all-terrain-vehicle. Particular attention was given to drainages, creeks, engineered areas (e.g. windmills), areas of closed topography, and wetter areas identified by CIR imagery, NWI mapping, and USGS topographical maps. Wetland boundaries were determined based on the presence of hydrophytic vegetation, hydric soils, and primary and/or secondary hydrologic indicators. Vegetation, soil, and hydrology were examined at wetland sampling points using United States Army Corps of Engineers (USACE) protocol. Water bodies were delineated by the presence of an ordinary high water mark or by the lack of vegetation. Data points and wetland and waterbody boundaries were delineated and surveyed by TREC, Inc. using a resource grade Global Position System (GPS) unit in NAD 1983 UTM Zone 13. The site-specific parameters recorded at each wetland data collection point were described on the Great Plains Region Wetland Determination Data Forms and are provided in Addendum 2.8-J.

Natural Resources Conservation Service (NRCS) soils mapping for Converse County, Wyoming was reviewed for general soils information. Vegetation indicator status was derived from the National List of Plant Species that Occur in Wetlands Region 4 (USDI, 1988 and updated supplement 1993).

2.8.5.2.3 Results

Wetlands and water bodies within the 19,888 acre site were delineated June 2 through the 12 and August 5 through 10, 2008. The majority of the wetlands and water bodies identified were small, disconnected depressions within ephemeral drainages.

Wetlands identified included groundwater slope wetlands, depressions within ephemeral and intermittent drainages, diked ephemeral drainages, or isolated depressions. All of the wetlands within the site are classified as Palustrine Emergent according to the Cowardin classification system (Cowardin, et al, 1979). Many of the wetlands also have an open water component and are therefore also classified as Palustrine Unconsolidated Bottom. As a general rule, one data collection point was used for a series of small disconnected wetlands within the same drainage. Approximately 59.6 acres of wetland were identified (233 individual wetlands).

Water bodies identified were either depressions within ephemeral drainages, behind dikes in ephemeral drainages, or isolated depressions. None of the water bodies contained flowing water. Approximately 29.3 acres of water bodies were identified (195 individual water bodies).

The wetlands and water bodies are summarized in Addendum 2.8-G. The boundaries of the wetlands and water bodies are shown on Figure 2.8-2. Figure 2.8-2 also provides a naming scheme for the un-named tributaries which are shown in greater detail on Figures 2.8-3 through 2.8-33. Wetland species identified in the Ludeman Project area are listed in Addendum 2.8-H. Representative photographs are provided in Addendum 2.8-I.

2.8.5.2.4 Discussion

A general description of the vegetation, soils, and hydrology for each of the three major drainages (Little Sand Creek, Running Dutchman Ditch, Sage Creek) is given below.

LITTLE SAND CREEK

Little Sand Creek is on the west side of the Ludeman Project area and flows generally north to south. The portion of the drainage within the project limits is located in T34N, R74W Sections 12 through 14, 22 and 23. There are four unnamed, ephemeral tributaries to Little Sand Creek which contain water bodies and/or wetlands. Little Sand Creek is an intermittent "creek" characterized by areas of wetlands with open water features periodically present intermixed with areas of a more defined bed and bank with a sandy bottom. No flowing surface water was present, or evidence of flow, in this drainage. Within the entire Little Sand Creek drainage area, 21 wetlands and 16 water bodies were identified. Within the main Little Sand Creek drainage, 20 wetlands (WL-1a through WL-1o and WL-3a through WL-3c) were identified as well as five water bodies (WB-4 through WB-8). Because Little Sand Creek connects to the North Platte River, all of the wetlands and water bodies within this drainage are likely jurisdictional, with the exception of WB-8 which is isolated.

Within the ephemeral tributaries to Little Sand Creek, one wetland and eleven water bodies were identified. These wetlands and water bodies are likely non-jurisdictional because they are either disconnected depressions within ephemeral drainages, artificially ponded areas that are diked and therefore do not contribute to the drainage, or isolated features.

The wetland vegetation within Little Sand Creek (WL-3a, b & c) was more diverse than that within the ephemeral tributaries to Little Sand Creek. Wetlands within Little Sand Creek contained water sedge (*Carex aquatilis*, OBL), Nebraska sedge (*Carex nebrascensis*, OBL), foxtail barley (*Hordeum jubatum*, FACW), common rush (*Juncus*

effusus, OBL), slimstem reedgrass (*Calamagrostis neglecta*, OBL), three-square bulrush (*Scirpus americanus*, OBL) and soft-stem bulrush (*Scirpus validus*, OBL). Wetland 1 (WL-1), which is also within Little Sand Creek, was primarily vegetated with creeping spikerush (*Eleocharis palustris*, OBL). Wetland 2 (WL-2), which is within an ephemeral tributary, was vegetated with Baltic rush (*Juncus balticus*, OBL), water sedge (*Carex aquatilis*, OBL), and a Poa species. A complete list of wetland species identified within the Ludeman Project area, including the indicator status, is provided in Addendum 2.8-H.

The soil types within the Little Sand Creek drainage are described below and a Soils Map is provided as Figure 2.8-34 which illustrates the location of the wetlands and water bodies in relation to the NRCS mapped soil types. The soils that contain wetlands/water bodies within the Little Sand Creek drainage are:

164 – Haverdad loam, wet, 0 to 3 percent slopes
172 – Hiland-Bowbac fine sandy loams, 0 to 6 percent slopes
173 – Hiland-Bowbac fine sandy loams, 6 to 15 percent slopes
187 – Kishona-Cambria loams, 0 to 6 percent slopes
189 – Kishona-Cambria-Theedle loams, 3 to 20 percent slopes
230- Shingle-Badland-Samday complex, 10 to 30 percent slopes
250 – Theedle-Kishona loams, 6 to 15 percent slopes
251 – Theedle-Kishona-Shingle loams, 3 to 30 percent slopes
269 – Worf –Shingle-Taluce complex, 3 to 30 percent slopes

None of the soils that contain wetlands/water bodies within the Little Sand Creek drainage are listed as hydric by the NRCS for southern Converse County in Wyoming. The soils identified in the field investigation were generally a loamy, mucky mineral with mottles.

Wetland hydrology was determined to exist in the wetlands by the presence of surface water and a flow pattern, as defined by the existence of an ordinary high water mark, in a surface water drainage feature. Wetlands delineated in June generally had primary indicators present such as standing water or soil saturation within the top 12 inches. Primary indicators were no longer present for the majority of those wetlands delineated in August. Therefore, secondary indicators such as the drainage pattern and FAC-Neutral test were used as indicators of wetland hydrology.

RUNNING DUTCHMAN DITCH

Running Dutchman Ditch is located just south of the southern project boundary and flows generally from west to east. There are five unnamed, ephemeral tributaries to Running Dutchman Ditch which contain water bodies and/or wetlands that connect to Running

Dutchman Ditch. The portion of the drainage within the proposed project boundary is located in T34N, R73W Sections 19, 20, 27, 28, 34 and 35, and in T33N, R73W Sections 2 and 3. The tributaries to Running Dutchman Ditch are characterized as steep, narrow, gullied drainages with depressions in the bottom of the drainage which contain either wetlands or water bodies. Within the Running Dutchman Ditch drainage, three wetlands and 50 water bodies were identified. The wetlands and water bodies within the Running Dutchman Ditch drainage area are likely non-jurisdictional, as they are located within ephemeral drainages and are either erosional features characterized by low volume, infrequent, and short duration flow or they are isolated depressions. Wetland 5 (WL-5) is an isolated depression as are WB-63 and WB-64. Waterbody 17 (WB-17) is an isolated, excavated depression at a windmill.

One wetland formed on the downstream side of a dike (WL-4). WL-4 contained the most diverse vegetation within the Running Dutchman Ditch drainage area. The vegetation within WL-4 consisted of foxtail barley (*Hordeum jubatum*, FACW), three-square bulrush (*Scirpus americanus*, OBL), narrow-leaf dock (*Rumex stenophyllus*, FACW+), blue-bunch wheatgrass (*Agropyron spicatum*, FACU-), and creeping thistle (*Cirsium arvense*, FACU). The vegetation within the isolated wetland (WL-5) consisted of creeping spikerush (*Eleocharis palustris*, OBL) and western wheatgrass (*Agropyron smithii,* FACU). Wetland 6 (WL-6) is located behind a dike in the drainage. The vegetation within WL-6 consisted of foxtail barley, creeping spikerush, rattlesnake brome (*Bromus briziformis*, NL), and curly-cup gumweed (*Grindelia squarrosa*, UL). A complete list of wetland species identified within the Ludeman Project area, including the indicator status, is provided in Addendum 2.8-H.

The soil types within the Running Dutchman Ditch drainage are described below and a Soils Map is provided as Figure 2.8-34 which illustrates the location of the wetlands and water bodies in relation to the NRCS mapped soil types. The soils that contain wetlands/water bodies within the Running Dutchman Ditch drainage are:

187 – Kishona-Cambria loams, 0 to 6 percent slopes
189 – Kishona-Cambria-Theedle loams, 3 to 20 percent slopes
244 - Taluce-Turnercrest-Keeline fine sandy loams, 3 to 20 percent slopes.
251 – Theedle-Kishona-Shingle loams, 3 to 30 percent slopes.
263 – Ustic Torriorthents, gullied, 3 to 45 percent slopes.

Soil map unit 263 is listed as hydric by the NRCS for southern Converse County in Wyoming and is usually found in drainageways. Water bodies 20 and 21 (WB-20 and WB-21) lie within the area mapped as having hydric soils. However, neither area contained more than five percent cover by hydrophytic vegetation. Therefore, the areas were mapped as water bodies. See Figure 2.8-6 for the location of WB-20 and -21. The

soils identified in wetlands during the field investigation were generally a loamy, mucky mineral with mottles.

Wetland hydrology was determined to exist in the wetlands by the presence of surface water and a flow pattern, as defined by the existence of an ordinary high water mark, in a surface water drainage feature. Wetlands delineated in June generally had primary indicators present such as standing water or soil saturation within the top 12 inches. Primary indicators were no longer present for the majority of those wetlands delineated in August therefore secondary indicators such as the drainage pattern and FAC-Neutral test were used as indicators of wetland hydrology.

SAGE CREEK

Sage Creek is on the east side of the Ludeman Project area and flows generally from north to south. The majority of the wetlands and water bodies identified in the project area are within the Sage Creek drainage area. The portion of the drainage within the project limits is located in T34N, R72W Sections 19 and 30, and in T34N, R73W Sections 2 through 10, 14 through 23, 25, 26, 35 and 36, and Section 12 of T34N, R74W. Sage Creek is an intermittent "creek" characterized by areas of wetlands with open water features periodically present intermixed with areas having a wide, sandy bottom varying in width and poorly defined in some areas. The delineators were able to "ford" Sage Creek during the wet season without getting wet. No flowing surface water was present, or evidence of flow, in this drainage. There are seven unnamed, ephemeral tributaries to Sage Creek where water bodies and/or wetlands were identified. The wetlands or water bodies identified within the tributaries were depressions within the drainage or behind dikes along the drainage. Within the Sage Creek drainage, 209 wetlands and 129 water bodies were identified. Additional information is provided on Sage Creek and each of the ephemeral tributaries due to the large number of wetlands/water bodies in the Sage Creek drainage area.

Sage Creek is located within Sections 2, 14, 23, 25, 26 and 36 of T34N, R73W. The portion of Sage Creek within the Ludeman Project area, which does not include the unnamed tributaries, contains 37 wetlands and two water bodies (see Figures 2.8-30 through 2.8-33). The wetlands identified along Sage Creek were either groundwater slope wetlands or depressions within the creek bed. None of the wetlands are isolated. Therefore, they are likely jurisdictional. The water bodies are all also depressions within the drainage and are likely jurisdictional. WB-134 is an exception. It is a depression at a windmill, is isolated, and therefore likely non-jurisdictional.

Tributary One to Sage Creek is within Sections 5 and 6 of T34N, R73W and contains 10 wetlands (see Figure 2.8-11). Two of the wetlands are in natural topographic depressions and are isolated (WL-7 and -8). WL-7 is just less than five acres and has some areas of open water. WL-8 is approximately 1,400 square feet and was dry at the time of the

delineation. The remainder of the wetlands are disconnected depressions within an ephemeral drainage. All of the wetlands and water bodies are likely non-jurisdictional.

Tributary Two to Sage Creek is located within Section 3 of T34N, R73W and contains 2 wetlands (see Figure 2.8-12). One is a depression within a drainage (WL-12) and the other is an isolated pond at a solar powered water well (WL-13). All of the wetlands and water bodies are likely non-jurisdictional.

Tributary Three to Sage Creek is located within Sections 3 and 4 of T34N, R73W and contains 3 wetlands and 13 water bodies (see Figure 2.8-13). One of the wetlands is in a natural depression and is isolated (WL-10). WL-10 is approximately 1/2 acres in size. The remaining wetlands and water bodies are either depressions in an ephemeral drainage or diked water bodies. All of the wetlands and water bodies are likely non-jurisdictional.

Tributary Four to Sage Creek is a large drainage area with several branches. The main drainage is within Sections 9, 16, and 20 through 23 of T34N, R73W. Tributary 4 contains 71 wetlands and 31 water bodies (see Figures 2.8-14 through 2.8-18), which does not include the branches off of Tributary Four. One of the wetlands is in a natural depression and is isolated (WL-16). WL-16 is approximately 1.3 acres in size. Two of the water bodies are isolated (WB-82 and -89). The remainder of the wetlands and water bodies are disconnected depressions with an ephemeral drainage or diked ephemeral drainages. All of the wetlands and water bodies are likely non-jurisdictional.

Tributary Four to Sage Creek – North Branch is within located Sections 8 and 9 of T34N, R73W and contains 19 wetlands and two water bodies (see Figures 2.8-19 and 2.8-20). The wetlands identified were all discontinuous depressions within the ephemeral drainage. The water bodies are all depressions within the drainage except for WB-80 which is an isolated depression. All of the wetlands and water bodies are likely non-jurisdictional.

Tributary Four to Sage Creek – North West Branch is located within Sections 7, 17 and 18 of T34N, R73W and Section 12 of T34N, R74W and contains 16 wetlands and six water bodies (see Figures 2.8-21 and 2.8-22). One of the wetlands is in a depression at a solar powered water well and is isolated (WL-20). WL-20 is approximately 1,300 square feet in size. Two of the water bodies are isolated (WB-95 and -96). The remainder of the wetlands and water bodies are disconnected depressions with an ephemeral drainage or diked ephemeral drainages. All of the wetlands and water bodies are likely non-jurisdictional.

Tributary Four to Sage Creek – West Branch is located within Sections 19 and 20 of T34N, R73W and contains two wetlands and five water bodies (see Figures 2.8-25 and 2.8-26). The wetlands identified were all discontinuous depressions within the drainage.

The water bodies are either depressions in a drainage or diked water bodies. All of the wetlands and water bodies are likely non-jurisdictional.

Tributary Four to Sage Creek – South Branch is located within Sections 21 and 22 of T34N, R73W and contains 32 wetlands and eight water bodies (see Figures 2.8-23 and 2.8-24). The wetlands identified were all discontinuous depressions within the ephemeral drainage. The water bodies are all depressions within the drainage except for WB-103 which is an isolated depression. All of the wetlands and water bodies are likely non-jurisdictional.

Tributary Five to Sage Creek is located within Sections 10, 14, and 15 of T34N, R73W and contains six wetlands and two water bodies (see Figure 2.8-27). The wetlands identified were all discontinuous depressions within the drainage. The water bodies are either depressions in a drainage or diked water bodies. All of the wetlands and water bodies are likely non-jurisdictional.

Tributary Six to Sage Creek is located within Sections 23 and 26 of T34N, R73W and contains four wetlands and 56 water bodies (see Figure 2.8-28). The wetlands identified were all discontinuous depressions within the ephemeral drainage except for WL-38a which is behind a dike in a drainage. The water bodies are all discontinuous depressions in an ephemeral drainage. All of the wetlands and water bodies are likely non-jurisdictional.

Tributary Seven to Sage Creek is located within Sections 19 and 30 of T34N, R72W and contains seven wetlands and four water bodies (see Figure 2.8-29). The wetlands identified were all discontinuous depressions within the drainage except for one wetland behind a dike in a drainage (Gilbert Lake), and WL-42 which is an isolated depression. WL-42 is approximately one-half acre in size. The water bodies are all discontinuous depressions in an ephemeral drainage. All of the wetlands and water bodies are likely non-jurisdictional.

The wetland vegetation within Sage Creek was more diverse than that found in the tributaries that flow to Sage Creek. The wetlands within Sage Creek (WL-14, WL-37a through dd, WL-38, WL-39, and WL-40) contained water sedge (*Carex aquatilis*, OBL), wooly sedge (*Carex lanuginosa*, OBL), creeping spikerush (*Eleocharis palustris*, OBL), field horsetail (*Equisetum arvense*, FAC) smooth scouring rush (*Equisetum laevigatum*, FAC), foxtail barley (*Hordeum jubatum*, FACW), field mint (*Mentha arvensis*, FACW), alkali muhly (*Muhlenbergia asperifolia*, FACW), rabbitfoot grass (Polypogon monspeliensis, OBL), silverweed (*Potentilla anserina*, OBL), narrow-leaf dock (*Rumex stenophyllus*, FACW+), three-square bulrush (*Scirpus americanus*, OBL), soft-stem bulrush (*Scirpus validus*, OBL), alkali cordgrass (*Spartina gracillis*, FACW), and common dandelion (*Taraxacum officinale*, FACU). The wetland vegetation within the tributaries varied however the depressions within drainages were often vegetated solely

with creeping spikerush (*Eleocharis palustris*, OBL) or a combination of creeping spike rush, foxtail barley, western wheat grass (*Agropyron smithii*, FACU), and skeletonleaf bursage (*Ambrosia tomentosa*, NL). A complete list of wetland species identified within the Ludeman Project area, including the indicator status, is provided in Addendum 2.8-H.

The soil types within the Sage Creek drainage are described below and a Soils Map is provided as Figure 2.8-34 which illustrates the location of the wetlands and water bodies in relation to the NRCS mapped soil types. The soils that contain wetlands/water bodies within the Sage Creek drainage are:

127 – Clarkelen-Draknab complex, wet, 0 to 3 percent slopes
129 – Clarkelen-Haverdad-Bigwinder complex, 0 to 3 percent slopes
141 – Dwyer-Orpha loamy sands, 3 to 15 percent slopes
152 – Forkwood-Cambria loams, 0 to 6 percent slopes
172 – Hiland-Bowbac fine sandy loams, 0 to 6 percent slopes
175 – Hiland-Bowbac complex, 6 to 15 percent slopes
187– Kishona-Cambria loams, 0 to 6 percent slopes
189 – Kishona-Cambria-Theedle loams, 3 to 20 percent slopes
230- Shingle-Badland-Samday complex, 10 to 30 percent slopes
233- Shingle-Taluce-Badland complex, 10 to 40 percent slopes
246 - Tassel-Tullock-Vonalee association, 6 to 30 percent slopes.
251 – Theedle-Kishona-Shingle loams, 3 to 30 percent slopes
257 – Ulm-Bidman complex, 0 to 6 percent slopes.
258 – Ulm-Forkwood loams, 0 to 6 percent slopes.
263 – Ustic Torriorthents, gullied, 3 to 45 percent slopes.
269 – Worf –Shingle-Taluce complex, 3 to 30 percent slopes

Soil map units 129 and 263 are listed as hydric by the NRCS for southern Converse County in Wyoming. Soil map unit 129 is usually found in stream terraces and 263 is usually found in drainageways. Thirty-two of the wetlands fall within map unit 129 or 263 as do 4 of the water bodies. The soils identified in the field investigation were generally a loamy, mucky mineral. There were three wetlands with sandy mucky mineral soils (WL-9, WL-25, and WL-41). The soil in WL-33 was identified as being a depleted dark surface, the soil in WL-38 was identified as mucky peat or peat, and the soil in WL-40 was identified as a histosol.

Wetland hydrology was determined to exist in the wetlands by the presence of surface water and a flow pattern, as defined by the existence of an ordinary high water mark, in a surface water drainage feature. Wetlands delineated in June generally had primary indicators present such as standing water or soil saturation within the top 12 inches.

Primary indicators were no longer present for the majority of those wetlands delineated in August. Therefore, secondary indicators such as the drainage pattern and FAC-Neutral test were used as indicators of wetland hydrology.

2.8.5.2.5 Impact Analysis

The Ludeman Project has seven planned wellfields and three satellite processing plants. Other mining infrastructure locations have not yet been finalized such as the offices and header houses.

Wetlands will not be impacted by the construction of the processing plant facilities or associated support facilities. Wetlands or surface water channels may be impacted by the construction of wellfields. Approximately 6.6 acres of wetlands or water bodies fall within the boundaries of the ore bodies. Of those, approximately 1.8 acres are potentially jurisdictional. The actual acreage of impacted wetlands and water bodies will be determined when the final design for the wellfields is complete. Final determination of jurisdictional decision lies with the USACE.

2.8.5.2.6 Conclusion

The investigation identified approximately 59.64 acres of wetlands which represents emergent depressional wetlands associated with surface water drainage features, or emergent isolated depressions. Approximately 0.3 percent of the 19,888-acre Ludeman Project area meets the wetland criteria. The investigation identified approximately 29.31 acres of water bodies within the 19,888 acre site which is approximately 0.15 percent of the site. The wetlands and water bodies are summarized and provided in Addendum 2.8-G.

The summary found in Addendum 2.8-G also includes the wetland classification using the Cowardin classification system as well as the acreage, and likelihood of regulation under the Section 404 of the Clean Water Act for each wetland area.

Based upon published guidance, those wetlands and water bodies within intermittent waterways are likely jurisdictional and those wetlands and water bodies within ephemeral drainages are likely non-jurisdictional. Isolated features are also likely non-jurisdictional. Those features which are likely jurisdictional include 43 wetlands and four water bodies which represent 29.046 acres of the Ludeman Project area.

The USACE and EPA reserve the right to determine jurisdiction on a case-by-case basis (FR Vol. 51 No. 219). Jurisdiction will ultimately be decided by the USACE relative to each of the wetlands identified within the project. The full Ludeman Wetlands report was received by the Cheyenne office of the USACE on December 5, 2008.

2.8.5.3 Wildlife

2.8.5.3.1 Introduction

ICF Jones & Stokes (formerly Thunderbird Wildlife Consulting) was contracted to conduct wildlife baseline investigations in the proposed license area and surrounding lands during 2008.

The objective of the baseline study was to collect both quantitative and qualitative data on vertebrate occurrence, abundance, diversity, and general habitat affinity in the project area. This included identification of habitats that could support Threatened and Endangered (T&E) species and other high value or unusual wildlife habitats. Some wildlife surveys were expanded to include a larger perimeter around the area, referred to as the Ludeman survey area. Prior to field work, the Wyoming Game and Fish Department (WGFD), Bureau of Land Management (BLM), and U.S. Fish and Wildlife Service (USFWS) were contacted to obtain existing databases for the project area and determine whether any special species or habitats were known to occur there, and the type of surveys that would be required for the baseline inventory. All existing data was reviewed prior to beginning field surveys.

During the 2008 baseline study, specific surveys were conducted for bald eagle (*Haliaeetus leucocephalus*) winter roosts, nesting raptors, upland game bird leks, prairie dog (*Cynomys* spp.) colonies, and T&E species. In addition, a list of all observed BLM Sensitive Species and USFWS Migratory Bird Species of Management Concern in Wyoming (non-coal) was maintained during every site visit, as well as a list of all other vertebrate species encountered during each survey. Most of those surveys included the proposed license area and a surrounding one-mile perimeter. Maps illustrating big game range delineations in the project area were generated, as requested by the WGFD, but no big game surveys were required for this project.

The survey types and methods used for the Ludeman Project were in compliance with applicable sections of WDEQ-LQD Non-coal Chapters 2, 3, and 11; Guidelines 4 and 5; and the Draft In-Situ Mining Permit Application Requirements Handbook (March 2007 update). The suite of baseline wildlife surveys was approved by the WGFD (Habitat Protection Supervisor, letter dated April 7, 2008). The USFWS Ecological Services Office (ESO) in Cheyenne, Wyoming, has not typically provided project-specific guidance in recent years, but instead refers project applicants to the list of T&E species for each Wyoming county, as posted on their website. Data files and confirmation of BLM species of concern were obtained from a biologist in the BLM Casper Field Office (S. Gray, verbal communication and data files, received February 15, 2008). The wildlife survey requirements for the Ludeman Project were based on the nature of the expected disturbance and the lack of any unique, critical, or previously un-sampled wildlife habitats in or near the project area. The survey requirements were also in keeping with

those applied to baseline studies completed at other ISR properties on private and federal surface in Wyoming in recent years.

The wildlife baseline survey area, methods, and results for the Ludeman Project are described below, with information presented by animal group.

2.8.5.3.2 Survey Area Description

The Ludeman Project is located approximately 14.0 miles northeast of Glenrock in western Converse County, Wyoming. The proposed project area encompasses approximately 19,888 acres, and includes all or portions of the following Townships (T) and Ranges (R) (Figure 2.8-35):

- T34North (N) R74West (W) –Sections 12-14 and 22-24;
- T34N R73W – Sections 2-11, 14-28, and 34-36;
- T34N R72W – Sections 19 and 30; and
- T33N R73W – Sections 1-3.

Ludeman Project

Figure 2.8-35: Wildlife Features

Universal Transverse Mercator, 1983 NAD Zone 13

Source: G:/Mines/Uranium One /Lud-Peterson/2008 Report.mxd

Date: 03/10/2009

Created by: JM
Edited by: TL

Jones & Stokes

N

North 95

T35N:R74W | T35N:R73W | T35N:R73W | T35N:R72W
T34N:R74W | T34N:R73W | T34N:R73W | T34N:R72W
T34N:R74W | T34N:R73W | T34N:R73W | T34N:R72W
T33N:R74W | T33N:R73W | T33N:R73W | T33N:R72W

5138 (2 nests)
347421
347422
5172
5162
5255
337310
337310
337311

Scale 1:56,000

Legend

- Ludeman Project Area
- 1.0 Mile Survey Area
- Sage-grouse Lek
- Prairie Dog Colony

Raptor Nests: Species

- Red-tailed Hawk
- Ferruginous Hawk
- Unknown Raptor
- Golden Eagle/Red-tailed Hawk
- Great Horned Owl
- Great Horned Owl/Red-tailed Hawk
- D-N in 2008
- Potential nest location

337310 - Indicates current CFO BLM nest record
5130 - Indicates long-term BLM nest record

The project area is within the Grama-Needlegrass-Wheatgrass section of the Northwestern Great Plains Ecoregion of Omernik (Environmental Protection Agency 1993). Annual precipitation in the vicinity is approximately 15 inches, 75 percent of which falls from April through September. Topography within the Ludeman Project area and surrounding perimeter is gently rolling in the eastern half, with more varied relief in the western half. Scattered areas of steeper terrain occur in the northeastern and western portions of the license area and perimeter. Elevation within the overall Ludeman Project survey area ranges from approximately 4,880 feet above sea level along the North Platte River to 5,480 feet above sea level in the northwestern hills.

The North Platte River and its major tributaries drain the entire project area (Figure 2.8-35). The main river channel flows from west to east approximately 0.75 to 3 miles south of the project area. Two primary tributaries intersect the outer edges of the project area: Little Sand Creek in the western portion and Sage Creek in the eastern portion. Two man-made irrigation ditches also pass through the survey area: Gilbert Ditch in the east and the Running Dutchman Ditch in the south. Flow within Little Sand Creek and Sage Creek is categorized as intermittent, while the North Platte River is perennial. Numerous ephemeral drainages are also present in the area. Several stock tanks and reservoirs occur in the project area, though many were dry during the baseline survey period. The largest water body is Gilbert Lake, located at the extreme eastern extent of the project area. The lake held water throughout the 2008 baseline study period.

The vast majority of the Ludeman Project area is privately owned, with scattered sections and partial sections managed by the State of Wyoming or an electric utility. The BLM manages portions of Sections 3, 5, and 6, T34N, R73W along the northern boundary between the project area and one-mile perimeter, and part of Section 19, T34N, R72W at the extreme eastern edge of the project area. Traditionally, this semi-arid rangeland has been used for year-round livestock grazing (cattle and sheep) and some dry land hay production. Other land uses in the area include energy development (including limited oil and gas production), electric utility projects, and hunting. Two new wind projects are being developed in the general region, but both are several miles from the Ludeman Project area.

2.8.5.3.3 Methods

The baseline wildlife surveys followed standard survey requirements and protocols used by the WGFD, USFWS, and BLM, as well as the non-coal permitting guidelines issued by the WDEQ-LQD. Procedures and schedules recommended in the Handbook of Biological Techniques (WGFD 1982) were reviewed, and those in keeping with project-specific guidance from the WGFD were followed. The survey period extended from early February through early September 2008. Biologists used binoculars and spotting scopes to make observations. Standard field guides and references (Stebbins 1966, Baxter and Stone 1985, Clark and Stromberg 1987, Peterson 1990, Stokes and Stokes

Baxter and Stone 1985, Clark and Stromberg 1987, Peterson 1990, Stokes and Stokes 1996, and Cerovski et. al. 2004) were used to identify animals and their sign. Those resources, as well as the USFWS Migratory Bird Species of Management Concern (non-coal) and the BLM Vertebrate Sensitive Species lists were used to generate a potential species list for the area. Species' habitat requirements and availability were considered when the species list was developed.

Habitat Assessments

For the purposes of the wildlife baseline studies, habitats within the Ludeman Project area were assessed in the field and classified using broad categories (e.g., grassland, sagebrush, etc.). The license area was also evaluated for the presence of any unusual or high value wildlife habitat features. Detailed vegetative data, including maps and photographs, were collected during the baseline vegetation assessment (see Section 2.8.5.1 Vegetation of the Ludeman Project USNRC Technical Report).

Raptors

The raptor survey area included the Ludeman Project area and accessible portions of the one-mile perimeter. As described above, biologists reviewed current BLM and WGFD databases for previously known raptor nests prior to entering the field. Searches for additional nest sites were conducted from February through early September 2008, either as targeted surveys or concurrent with other field work. Raptor use of the survey area was documented through both comprehensive nest searches and monitoring, and opportunistic observations, especially during the non-breeding season for the latter efforts.

Aerial surveys for bald eagle winter roosts and nests were conducted over the entire survey area in February 2008; details of those surveys are provided in the *Sensitive Species* section of this report, below. Ground surveys for raptor nests covered all accessible portions (about 74 percent) of the Ludeman Project survey area from early spring through late summer. An early September raptor nest flight was conducted to cover those areas where ground access was denied by the landowner; biologists also watched for raptor nests during all other flights over the survey area.

During all field work, guidelines recommended by Grier and Fyfe (1987) were followed to prevent nest abandonment, damage to eggs, or injury to young. Searches for nesting raptors and productivity checks were conducted from February through early August 2008 to accommodate the nesting habits of the species present in the area. Early in the season, nest monitoring and searches were conducted primarily from vehicles using spotting scopes. Nests were located by slowly driving throughout the survey area and

frequently stopping to examine typical nesting habitat. Rough breaks and trees were searched on foot. The occasional pedestrian surveys were carefully conducted to avoid disturbing active ground nests. While in the field, biologists also continually watched for adult raptors. Areas where individuals or pairs were repeatedly seen were thoroughly searched for nests. All previously identified nests within accessible portions of the Ludeman Project survey area were checked for activity at least once during the 2008 breeding season. All active nests were monitored until the pair's breeding attempt failed or young fledged.

Nest locations were obtained using hand-held Garmin® Global Positioning System (GPS) receivers and were recorded in Universal Transverse Mercator (UTM) coordinates (Zone 13, NAD 83). Nest locations were then plotted on topographic maps. The status (active, inactive, alternate, etc.) and condition of all nests and production of young were recorded.

Upland Game Birds

No known greater sage-grouse (*Centrocercus urophasianus*) or sharp-tailed grouse (*Tympanuchus phasianellus*) leks were documented within the Ludeman Project survey area (project area and one-mile perimeter, defined by the WGFD) prior to baseline surveys in 2008. That area is dominated by upland grasslands, though some stands of big sagebrush (*Artemisia tridentata*) are also present throughout the area.

Searches for new grouse leks were conducted between mid-April and early May 2008, and employed both ground and aerial surveys. The ground efforts included all accessible portions of the Ludeman Project survey area. Due to its large acreage, ground searches for new leks in that area were conducted each day from April 21-24, 2008. Searches began one-half-hour before sunrise and continued until one hour after sunrise. Searches for displaying grouse were conducted by slowly driving through the area, making frequent stops at vantage points to scan and listen for strutting birds. Personnel searched all accessible portions of the survey area, but concentrated their efforts in likely lek habitat (level to rolling habitats). One aerial search for new grouse leks was conducted on May 2, 2008. The survey was conducted between one-half hour before sunrise and one hour after sunrise, and included the entire Survey Area. All lek searches were conducted during favorable weather conditions (i.e., no precipitation, calm to light winds).

Sage-grouse use of the Ludeman Project survey area during other seasons was tracked through opportunistic observations of birds and their sign while conducting other surveys. All upland game bird sightings were recorded, including the number of birds, sex and age (when possible), location (UTM and quarter-quarter section), habitat, and activity.

Grouse sightings were also provided by other project contractors, including general locations of observations.

Threatened and Endangered Species

The USFWS has identified five federally listed vertebrate species that could occur in Converse County and require monitoring (USFWS 2008): the black-footed ferret (*Mustela nigripes*-Endangered), interior least tern (*Sternula antillarum*-Endangered), pallid sturgeon (*Scaphirhynchus albus*-Endangered), whooping crane (*Grus americana*-Endangered), and piping plover (*Charadrius melodus*-Threatened). Information regarding plant T&E species is provided in Section 2.8.5.1 Vegetation of the Ludeman Project area USNRC Technical Report .

The USFWS ESO in Cheyenne, Wyoming, issued a letter on February 2, 2004 announcing that surveys for black-footed ferrets are no longer required in black-tailed prairie dog (*Cynomys ludovicianus*) colonies throughout the state (file letter ES-61411/BFF/WY7746). The remaining four vertebrate T&E species are associated with the Platte River (USFWS 2008). The river does not flow through the proposed project area; it is located approximately 0.75 to 3 miles south of that boundary (Figure 2.8-35).

Due to the block clearance for black-footed ferrets in the Ludeman Project survey area, and the lack of suitable habitat in the project area (future area of project-related surface disturbance) for species associated with the North Platte River, specific surveys targeting vertebrate T&E species were not required or conducted for this project. Nevertheless, biologists watched for all federally listed vertebrate species (including endangered, threatened, petitioned, and candidate species) and habitats that could support them while conducting other surveys, with the intent to record all sightings, including notes on location, habitat, and activity.

Sensitive Species

In May 2002, the USFWS ESO in Cheyenne, Wyoming, released a revised *Non-coal Mine List of 77 Migratory Bird Species of Management Concern in Wyoming.* In addition, the BLM issued the *BLM Wyoming State Director's Sensitive Species List* in September 2002. Both lists were current through 2008, and were obtained and reviewed prior to commencing field surveys. Species that have been delisted or removed from the federal listing process under the Endangered Species Act automatically revert to Sensitive Species status for the BLM. Therefore, the black-tailed prairie dog, bald eagle, and mountain plover (*Charadrius montanus*) were added to the September 2002 Casper BLM Field Office Sensitive Species list for this project.

Incomplete sentence

winds. The searches were conducted by examining all trees within the Ludeman Project survey area using a high-wing, light plane (Cessna 182). Flight speed and altitude were approximately 80-85 miles per hour (mph), and 300-350 feet above ground level, respectively. All roost surveys were completed between one hour before and one-half hour after sunset, following current procedures outlined in the *Wildlife Survey Protocol for Coal Bed Methane Development* issued by the Buffalo BLM Field Office (February 2005); the USFWS defers to this document for recommended survey protocols for this species. Searches for nesting bald eagles were performed in conjunction with roost flights and surveys for other nesting raptor species.

Specific surveys for other avian species of concern were not required for the Ludeman Project during 2008. However, biologists watched for all sensitive species (both BLM vertebrate species and USFWS migratory bird species of management concern) and habitats that could support them while conducting all aerial and ground surveys. All sightings were recorded, including notes on location, habitat, and activity. The survey area for species of concern other than raptors and sage-grouse included all accessible lands within the Ludeman Project area and a one-half mile project area buffer.

Locations and boundaries of black-tailed prairie dog colonies within 1 mile of the project area were recorded in UTM coordinates (Zone 13, NAD 83) using a hand-held GPS unit, and subsequently plotted on the project area map (Figure 2.8-35). Surveys for mountain plovers were conducted in conjunction with searches for other targeted species, but followed current procedures outlined in the *Wildlife Survey Protocol for Coal Bed Methane Development* issued by the Buffalo BLM Field Office.

Other Animals

No quantitative surveys for big game, lagomorphs, breeding birds, waterfowl, small mammals, mammalian predators, furbearers, reptiles, amphibians, or fish were required or conducted specifically for the Ludeman Project wildlife baseline study. However, all sightings of non-target animals within the project area and one-mile perimeter were recorded, and a species list maintained, during baseline surveys (February through September 2008) to document wildlife use of the Ludeman Project survey area. WGFD big game range maps were used to determine which range delineations overlapped the survey area for future reclamation efforts.

2.8.5.3.4 Results and Discussion

Addendum 2.8-K presents summary tables for vertebrate BLM Sensitive Species (Table 2.8-20) and Migratory Bird Species of Management Concern in Wyoming (non-coal list) (Table 2.8-21) that could potentially reside in the Ludeman Project area and nearby vicinity, or pass through during migration, with notations for those species that were observed within or near the project area during 2008. Lists of other species that could potentially reside in or pass through the project area are also included, along with notations indicating which species were observed during the 2008 baseline period (Addendum 2.8-K, Table 2.8-22).

Habitat Assessments

The Ludeman Project area is dominated by two major wildlife habitat types: upland grasslands (62 percent) and sagebrush shrublands (30 percent). Those habitats correspond with similar plant communities defined during the baseline vegetation assessment (Table 2.8-23). Other habitat types, such as lowland grassland (6 percent) and disturbed areas (2 percent) were present in more limited extent and are not considered as separate "wildlife habitats" for this discussion. A distribution map and detailed descriptions of the composition and extent of all vegetative communities are provided in Section 2.8.5.1 Vegetation of the Ludeman Project area Technical Report USNRC. Addendum 2.8-E and Addendum 2.8-I provides representative photographs of the project area.

Upland Grasslands

The upland grassland community is the most prevalent habitat type in the Ludeman Project area, and is characterized by level to rolling terrain with limited shrub cover. Upland grasslands are comprised of both native and introduced cool- and warm-season species including, but not limited to, western wheatgrass (*Elymus smithii*), needle-and-thread (*Hesperopstipa comata*), blue grama (*Bouteloua gracilis*), cheatgrass (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), and crested wheatgrass (*Agropyron cristatum*). The forb component is comprised of annual, biennial, and perennial species such as desert alyssum (*Alyssum desertorum*), Pursh's plantain.

Table 2.8-23 Wildlife habitats within the Ludeman Project area and corresponding vegetation types (see Section 2.8.5.1 Vegetation)

WILDLIFE HABITAT	CORRESPONDING D8 VEGETATION TYPES
Upland Grassland	Upland Grassland, Upland Grassland Rough Breaks Complex, Crested Wheatgrass Field
Sagebrush Shrubland	Big Sagebrush Shrubland, Silver Sagebrush Shrubland
Not Classified for Wildlife[1]	Lowland Grassland
Not Classified for Wildlife[1]	Disturbed

[1] Habitat too limited (≤ 6 percent) and similar to grasslands to categorize as a distinct wildlife habitat.

(*Plantago patagonica*), and scarlet globemallow (*Sphaeralcea coccinea*), among others. Shrubs and sub-shrubs such as big sagebrush and fringed sagewort (*Artemisia frigida*), respectively, have a limited presence in this habitat type. The plains prickly pear (*Opuntia polyacantha*) is scattered throughout grassland areas. Grasslands are used primarily for livestock grazing.

Sagebrush Shrublands

Sagebrush shrublands are most common in the western third of the Ludeman Project area. Despite its name, this plant community is actually dominated by grass species (66 percent combined relative cover), whereas shrubs and sub-shrubs comprise only 15.8 percent relative cover. Forbs and succulents make up the remainder of the relative cover in this habitat type. Big sagebrush is the dominant shrub in this habitat type. Other shrubs and half/sub-shrub species include birdsfoot sagewort (*Artemisia pedatifida*), silver sagebrush (*Artemisia cana*), fringed sagewort, and winterfat (*Krascheninnikovia lanata*). Grass species include, but are not limited to, cheatgrass, Japanese brome, western wheatgrass, and blue grama. The forb component is similar to that of the upland grassland community; prickly pear cactus is also present. Sagebrush shrublands are also used primarily for livestock grazing.

Raptors

A search of the BLM raptor database revealed nine previously existing nests within the Ludeman Project survey area (project area and one-mile perimeter) (Table 2.8-24, Figure 2.8-35); all nine were in cottonwood (*Populus* spp.) trees. Two BLM nests have identical numbers (337310), and are further distinguished in Table 2.8-24 with "E" (east) or "W" (west). Thirty-one additional nests were documented and 3 potential nests were recorded

during ground and aerial searches of the survey area in 2008 (Figure 2.8-35). The potential nests were located during the final flight over the survey area in September 2008, with no additional time for ground-truthing. Those sites will be verified prior to actual surface disturbance in the project area. Based on their proximity to one another, it is likely that some nests are within the same territory.

One of the previously identified BLM nests (337310-E, unknown species) was destroyed by natural causes prior to 2008 (Table 2.8-24, Figure 2.8-35). Another BLM nest (337311, unknown species) was not accessible as it was on an island within the North Platte River. A third BLM nest (5138) has a new, unnumbered nest in the same tree (Figure 2.8-35). Therefore, 38 of the 40 confirmed nests were known to be intact as of September 2008; the potential nests were not included in that tally. Thirty-two of the 38 intact nests were within the Ludeman Project area and 6 were in the one-mile perimeter. Existing nests included:

30 ferruginous hawk (*Buteo regalis*) nests,
2 great horned owl (*Bubo virginianus*) nests,
1 red-tailed hawk (*Buteo jamaicensis)* nest,
2 golden eagle (*Aquila chrysaetos*)/red-tailed hawk nests,
1 great horned owl/red-tailed hawk nest, and
2 unknown raptor species nests.

Table 2.8-24 gives the locations of all nests, 2007 status of BLM nests (if available), and the status of all nests in 2008. Nest locations are illustrated on Figure 2.8-35.

Eight ferruginous hawk nests exhibited some level of activity in 2008 (Table 2.8-24). Seven pairs actively nested (laid eggs); six pairs fledged a total of nine young. One of those seven nests was found with new material and broken eggshells in the nest. That evidence and the absence of additional sign (feathers, droppings, prey remains) in the nest area indicated that no young fledged from the site. Another nest was discovered with fresh material and droppings nearby, but it did not appear that any eggs or young had been present; the nest was classified as tended. Seven of the eight active ferruginous hawk nests were located within the Ludeman Project area.

Three of the nine previously identified BLM tree nests were occupied by red-tailed hawks in 2008. Two of those nests (5162 and 5172) were originally built by golden eagles (Table 2.8-24). The third BLM nest (5138) was successfully used by great horned owls in 2007. All three red-tailed hawk pairs successfully fledged a total of five young from the nests in 2008. A fourth BLM tree nest (337310-W) of unknown origin located near the North Platte River was monitored from a distance in 2008, and was determined

to be inactive that year. Based on its size, structure, and location in the tree, the nest is presumed to be associated with red-tailed hawks and is labeled as such in Table 2.8-24.

Great horned owls also nested within the Ludeman Project area in 2008. An owl was observed incubating on BLM nest 347422 (formerly listed as unknown species) located in the southwestern portion of the project area in April. However, no owls or sign were seen at this location during subsequent checks, and two adult golden eagles were observed perched in the nest tree in July. Therefore, the owl nest was determined to have failed. No other great-horned owl activity was noted in the Ludeman Project survey area in 2008. Great horned owls do not build their own nests, but instead often use nests of other raptor species. Consequently, the number of owls nesting in an area can be affected by the presence and availability of intact nests in their territories. The secretive nature of great horned owls may also result in searches overlooking some nesting pairs, which may result in undercounting.

Table 2.8-24 Raptor nest locations and productivity in and within 1 mile of the Ludeman Project area in 2007 (BLM nests) and 2008

DELETED

Table 2.8-24 Continued

DELETED

As indicated, none of the BLM tree nests previously identified with golden eagles were actively used by that species in 2008, though golden eagles were observed perched within and flying over the Ludeman Project survey area on multiple occasions. The remaining BLM tree nests were not identified with a particular species, and were inactive in 2008 (Table 2.8-24).

Six additional raptor species were recorded in the Ludeman Project survey area during 2008: the turkey vulture (*Cathartes aura*), bald eagle, Swainson's hawk (*Buteo swainsoni*), northern harrier (*Circus cyaneus*), short-eared owl (*Asio flammeus*), and burrowing owl (*Athene cunicularia)*. The bald eagle, Swainson's hawk, short-eared owl, and burrowing owl are discussed in greater detail in the *Sensitive Species* section, below. Turkey vultures were seen soaring over the eastern portion of the Ludeman Project area in July and early August, and a vulture was documented soaring with a northern harrier over grassland in the north-central part of the project area in late August. Northern harriers were also observed flying over the extreme eastern portion of the project area and one-mile perimeter in late August. The northern harrier is a potential breeder in the area, but no nests were discovered in 2008. As with great horned owls, it is possible that northern harrier nests were overlooked during surveys. This ground-nesting species builds inconspicuous nests in tall vegetation, and ranges over a relatively large area when hunting. Consequently, locating nest sites often depends on chance discoveries or sightings of adults delivering prey to nest sites.

Upland Game Birds

The Ludeman Project survey area is dominated by upland grasslands, but does contain marginal sage-grouse habitat in the western third of the area in the form of sagebrush shrublands and drainage bottoms (i.e., Lowland Grasslands); potential sharp-tailed grouse habitat is present throughout the area. No greater sage-grouse or sharp-tailed grouse leks were identified in BLM or WGFD databases within the WGFD prescribed one-mile survey area prior to field surveys in 2008, and no leks were found in that area during ground or aerial surveys conducted that year. The nearest known grouse lek is the North 95 sage-grouse lek, approximately 2.75 miles northwest of the Ludeman Project area (Figure 2.8-35).

Few sage-grouse and no sharp-tailed grouse were observed in the Ludeman Project survey area during numerous site visits conducted by ICF Jones & Stokes from February through early September 2008, and by other contracting personnel through early November of that year. Only three groups of sage-grouse were reported in the Ludeman Project area during that period; none were documented in the surrounding one-mile perimeter. Four sage-grouse were seen in June in T34N, R74W, SW¼ SW¼ Section 12. Two sage-grouse were observed near Little Sand Creek in T34N, R74W, NW¼ NE¼ Section 22 in early October. Two sage-grouse were also recorded near a reservoir in

T34N, R73W, NE¼ SW¼ Section 9 in early November. A small area of sage-grouse droppings was encountered near the head of a sagebrush draw in the southwestern portion of the project area, in T34N, R74W, NE¼ NW¼ Section 24 in late August. The droppings were scattered about as if in a foraging area rather than in distinct roost piles.

The mourning dove (*Zenaida macroura*) was the only other upland game bird that was observed in or near the Ludeman Project area during 2008. Mourning doves were most often recorded along the North Platte River as it passes through the extreme southern portion of the one-mile perimeter. Doves were also documented in tree windbreaks at occupied ranches or in individual trees located throughout the project area.

Sensitive Species

Addendum 2.8-K lists the BLM Casper Field Office vertebrate Sensitive Species (Table 2.8-20) and the non-coal list of 77 migratory bird species considered by the USFWS to be of current management concern in Wyoming (Table 2.8-21). Both tables also provide brief descriptions of each species' primary nesting habitat and records of their occurrence and status in the vicinity of the Ludeman Project area during 2008.

BLM Sensitive Species

One mammal and four avian BLM Sensitive Species were observed within the Ludeman Project area during baseline wildlife surveys completed in 2008 (Addendum 2.8-K, Table 2.8-20). As described above, one small (11 acres), occupied black-tailed prairie dog colony is present just beyond the southern edge of the project area (Figure 2.8-35). Ferruginous hawks and sage-grouse were discussed in the previous *Raptors* and *Upland Game Bird* sections, respectively. Loggerhead shrikes (*Lanius ludovicianus*) were seen on several occasions during the summer in isolated trees throughout the project area. No shrikes were observed within the one-half mile survey perimeter for this species, though individuals were recorded along the riparian corridor in the southern portion of the one-mile perimeter. Two adult burrowing owls were recorded in the eastern portion of the project area in T34N, R73W, NW¼ SE¼ Section 23 during spring surveys in April. No nesting behavior or active nests for either species were recorded during the baseline surveys.

One mammal and three avian BLM Sensitive Species were documented in the Ludeman Project survey area (one-half to one-mile perimeter, depending on the species). One swift fox (*Vulpes velox*) carcass was found along Wyoming State Highway 93 just east of the License Area in early August. The cause of death was due to a vehicle collision. Ferruginous hawks and loggerhead shrikes were already addressed in previous sections. The bald eagle is discussed below.

The final rule delisting the bald eagle was published in the Federal Register on July 9, 2007 (Federal Register: Vol. 72, No. 130, pg. 37345-37372 July 9, 2007). Delisting became effective 30 days after publication of this rule, on August 8, 2007. However, this species will continue to be protected under both the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The bald eagle is considered a breeder in portions of Converse County, Wyoming (Cerovski et al. 2004). In the Ludeman Project survey area, nesting and winter roosting habitat for this species is primarily limited to the cottonwood corridor in the southeastern portion of the one-mile perimeter along the North Platte River.

Searches of the BLM database revealed no existing bald eagle winter roosts or nests in or within the Ludeman Project survey area (project area and one-mile perimeter for this species). No new nests were discovered in that area during baseline surveys conducted in 2008, nor were any consistent roost sites identified. Three bald eagles were observed within the one-mile perimeter on one occasion each during 2008. One adult eagle was seen perched in a cottonwood tree along Little Sand Creek in T34N, R74W, NW¼ NW¼ Section 26 during the late February winter roost survey. An immature bald eagle was observed perched in a cottonwood along the North Platte River and a sub-adult eagle was recorded flying nearby in T33N, R73W, NW¼ NE¼ Section 10 during ground surveys conducted in early August 2008. The nearest known active bald eagle nest in 2008 was located near an occupied residence along the Running Dutchman Ditch in T33N, R73W, NE¼ NE¼ Section 5. The nest was not monitored during the wildlife baseline studies due to its location on inaccessible private lands beyond the required one-mile survey area for the Ludeman Project.

Migratory Bird Species of Management Concern in Wyoming (non-coal)

Eleven USFWS avian species of concern were recorded within the Ludeman Project survey area during 2008 (Addendum 2.8-K, Table 2.8-21). Six of those 11 species are categorized as Level I, which indicates a need for conservation action (i.e., having a monitoring and mitigation plan): the greater sage-grouse, ferruginous hawk, burrowing owl, bald eagle, Swainson's hawk, and short-eared owl. The remaining five species are considered Level II, for which continued monitoring is recommended: the lark bunting (*Calamospiza melanocorys*), grasshopper sparrow (*Ammodramus savannarum*), loggerhead shrike, vesper sparrow (*Pooecetes gramineus*), and lark sparrow (*Chondestes grammacus*). Note that some of these species are also included on the BLM Sensitive Species list.

Five of the six Level I species were recorded at least once each within the Ludeman Project area; bald eagles were observed only in the one-mile perimeter. The greater sage-grouse, ferruginous hawk, burrowing owl, and bald eagle were discussed in the *Upland Game Birds*, *Raptors*, or *BLM Sensitive Species* sections, above. Three Swainson's hawks were observed within the project area on the same day in early August. An adult

was seen flying with an immature bird over grasslands in T34N, R73W, SW¼ NW¼ Section 17, and a juvenile was recorded flying in T34N, R73W, NW¼ NE¼ Section 7 near Wyoming Highway 95. One short-eared owl was also observed perched on a fence post in sagebrush-grassland in T34N, R73W, NW¼ NW¼ Section 23 during early August surveys. No nesting activity for Swainson's hawks or short-eared owls was documented in the Ludeman Project area or survey area during 2008.

Four of the five Level II species were documented within the Ludeman Project area in 2008: the lark bunting, loggerhead shrike, vesper sparrow, and lark sparrow. Grasshopper sparrows were only observed in the one-half mile perimeter. Loggerhead shrikes were discussed in the *BLM Sensitive Species* section, above. Lark buntings and vesper sparrows were the most common Level II species recorded in the Ludeman Project survey area. Both species are relatively ubiquitous and were observed in most habitats in and near the project area in 2008. Although actual nests were not encountered, the presence and behavior (singing, display flights) of birds throughout spring and summer suggest that both species nested in the area. The lark sparrow was documented once in the rougher terrain in the western portion of the project area in July 2008. Grasshopper sparrows were recorded in areas of taller grass in the one-half mile perimeter during spring 2008. In the Great Plains Region, this species is typically associated with taller grassland vegetation (Vickery 1996).

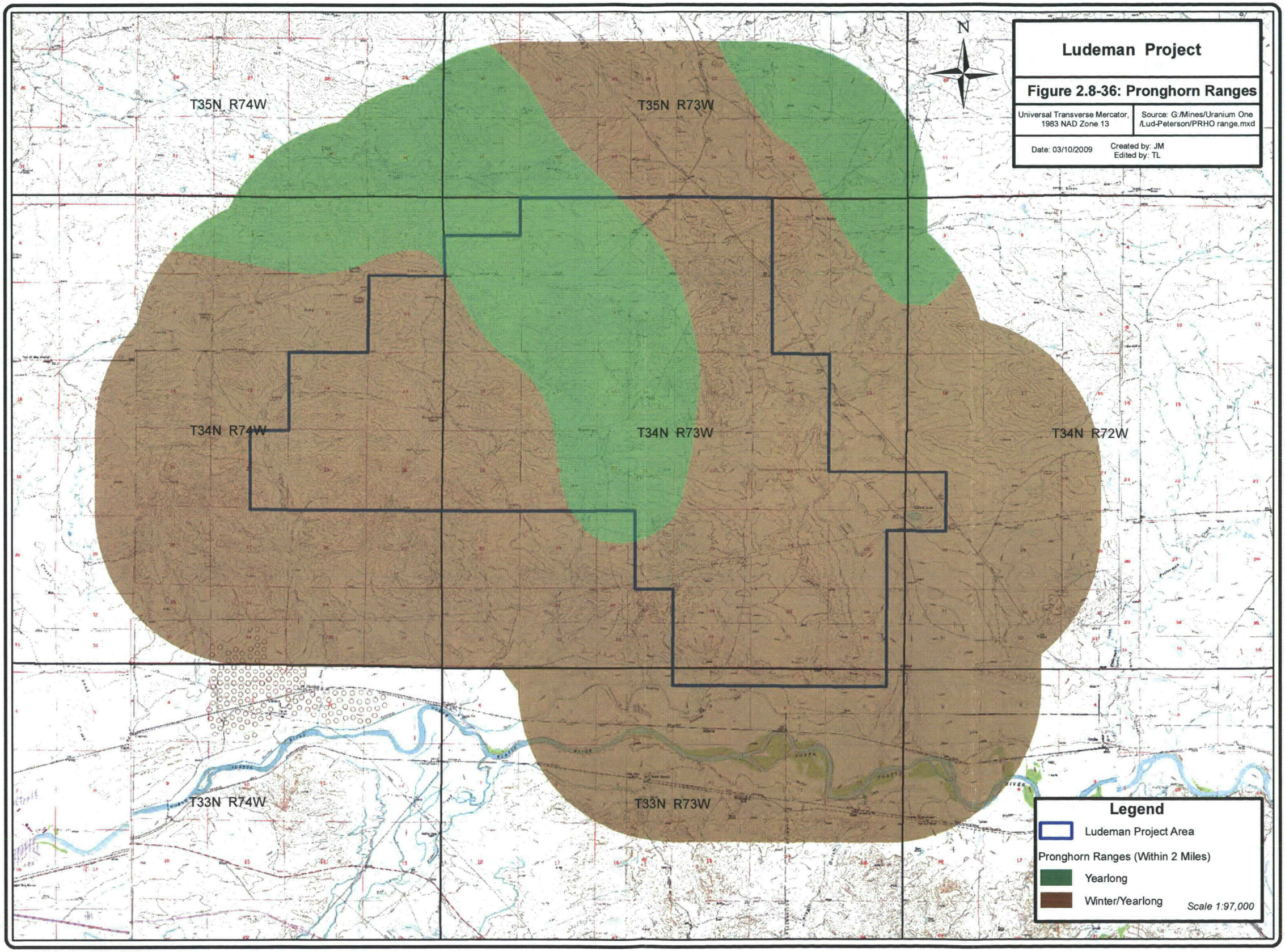
The remaining species of concern were not documented in the vicinity of the Ludeman project area or survey area. Although they could migrate through the area, range and habitat considerations such as the lack of coniferous woodlands, limited riparian corridors, and large persistent bodies of water make it unlikely that most of those species would occur in the immediate vicinity of the Ludeman Project. Suitable habitat for mountain plovers is present in some areas where sheep graze in the eastern portion of the survey area, but no plovers were observed during the baseline study period.

2.8.5.3.5 Other Animals

Big Game

Pronghorn (*Antilocapra americana*) and mule deer (*Odocoileus hemionus*) were the only two big game species observed within the Ludeman Project area and two-mile perimeter (WGFD area of interest for big game). Both species were observed throughout the baseline survey period, though pronghorn were more prevalent. Those are also the only two big game species with range delineations that overlap the Ludeman Project survey area. No crucial big game habitat is recognized by the WGFD in or within 2 miles of the project area (Figures 2.8-36 and 2.8-37).

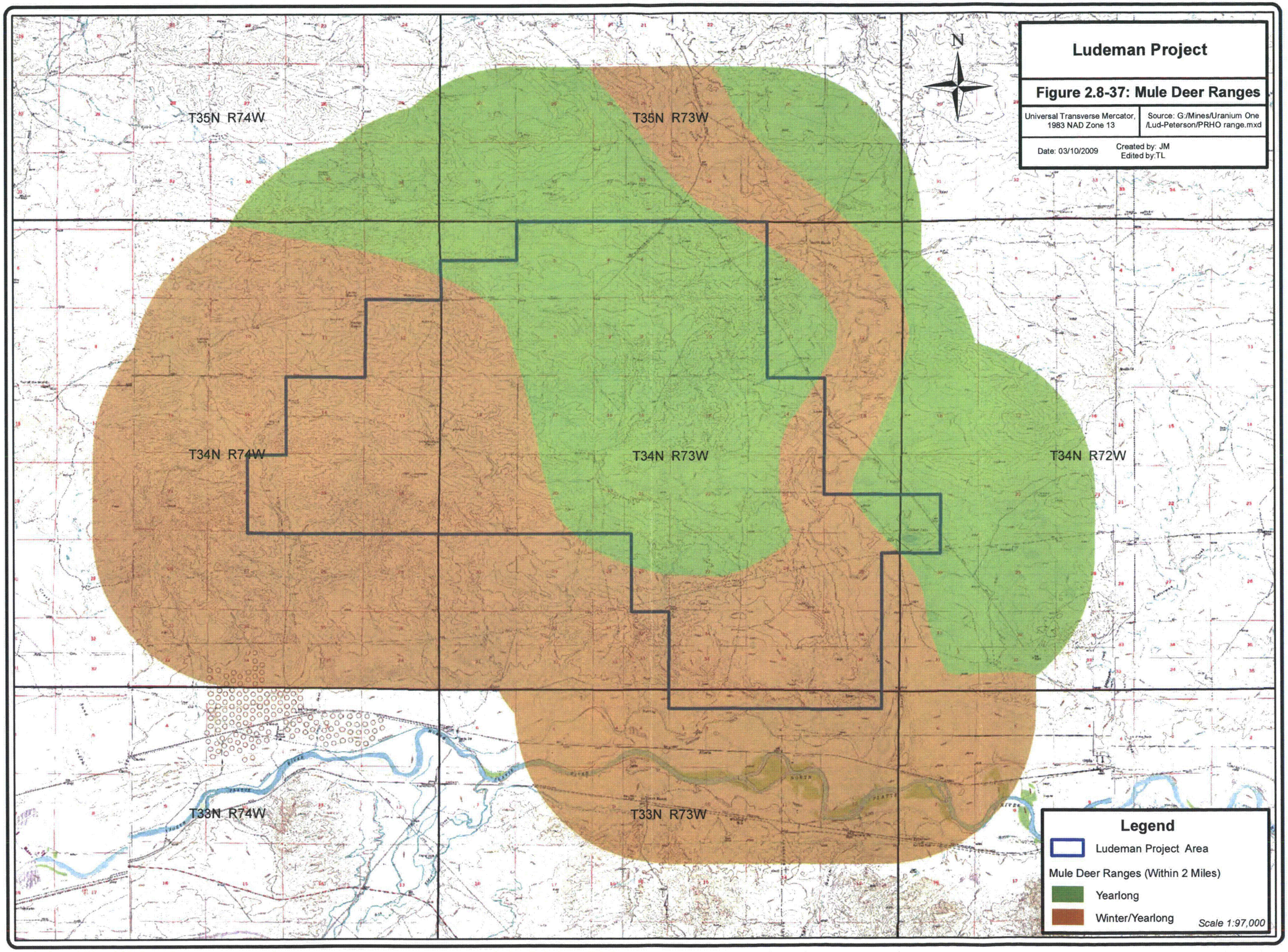
The WGFD has classified the majority (77 percent) of the pronghorn range as winter/yearlong (Figure 2.8-36). That range indicates that a population or a portion of a population of animals makes general use of this habitat on a year-round basis, with a significant influx of additional animals from other seasonal ranges in the winter. The remaining 23 percent of the Ludeman Project survey area is classified as yearlong pronghorn range, which means that a population or substantial portion of a population of animals makes general use of this habitat on a year-round basis, but may occasionally leave the area under severe conditions. The Ludeman Project survey area is within the North Converse Pronghorn Herd Unit No. 748. In post-season 2007, WGFD estimated the pronghorn population in that Herd Unit to be 31,028. That was approximately 11percent above the management objective of 28,000 animals (WGFD 2008).


T35N R74W
T35N R73W
T34N R74W
T34N R73W
T34N R72W
T33N R74W
T33N R73W
N
Ludeman Project
Figure 2.8-36: Pronghorn Ranges
Universal Transverse Mercator, 1983 NAD Zone 13
Source: G:/Mines/Uranium One /Lud-Peterson/PRHO range.mxd
Date: 03/10/2009
Created by: JM
Edited by: TL
Legend
Ludeman Project Area
Pronghorn Ranges (Within 2 Miles)
Yearlong
Winter/Yearlong
Scale 1:97,000

Ludeman Project

Figure 2.8-37: Mule Deer Ranges

Universal Transverse Mercator, 1983 NAD Zone 13	Source: G:/Mines/Uranium One /Lud-Peterson/PRHO range.mxd
Date: 03/10/2009	Created by: JM Edited by:TL



The WGFD has classified 60 percent of the Ludeman Project survey area as mule deer winter/yearlong range, with the remaining 40 percent as yearlong range (Figure 2.8-37). The survey area is within the North Converse Mule Deer Herd Unit No. 755. In post-season 2007, WGFD estimated the mule deer population in that Herd Unit to be 9,300, with a management objective of 9,100 animals (WGFD 2008).

Other Non-target Animals

Incidental sightings of animals not targeted by systematic surveys were recorded during all wildlife monitoring efforts in and within 1 mile of the Ludeman Project area during 2008 (Addendum 2.8-K, Table 2.8-22). One coyote (*Canis latrans*) was observed within the project area during a raptor nest aerial survey in early September. One badger (*Taxidea taxus*) carcass was discovered in the eastern one-mile perimeter on Wyoming State Highway 93 during the August surveys. A live badger was seen crossing that road in the perimeter during that same month. Cottontails (*Sylvilagus* spp.) and white-tailed jackrabbits (*Lepus townsendii*) were observed in various habitats within the project area and surrounding perimeter throughout the baseline survey period.

Avian species recorded in the project area included several common waterfowl, wading bird, and shorebird species, such as the mallard (*Anas platyrhynchos*), gadwall (*A. strepera*), green-winged teal (*A.* crecca), American wigeon (*A. Americana*), great blue heron (*Ardea herodias*), killdeer (*Charadrius vociferous*), and Wilson's phalarope (*Phalaropus tricolor*). The majority of these wetland birds were observed at Gilbert Lake in the extreme eastern portion of the project area. The western kingbird (*Tyrannus verticalis*), Say's phoebe (*Sayornis saya*), common nighthawk (*Chordeiles minor*), and rock wren (*Salpinctes obsoletus*) were also seen within the Ludeman Project area, as were other common species (Addendum 2.8-K, Table 2.8-22). The nighthawk, eastern kingbird (*Tyrannus tyrannus*), and other species were also documented in the surrounding perimeter.

The only amphibian that was encountered in the Ludeman Project area was the boreal chorus frog (*Pseudacris triseriata*). One bullsnake (*Pituophis melanoleucas*) was observed in the western portion of the project area in early August. Although they were not observed, dry land species such as the eastern shorthorned lizard (*Phrynosoma douglassi*) and prairie rattlesnake (*Crotalus viridis*) are likely to occur in the project area. No fish were sampled or observed incidentally in the North Platte River during baseline studies for this project.

2.8.5.3.6 Conclusions

No current endangered, threatened, proposed, candidate, or petitioned vertebrate species reside in or rely on the Ludeman Project area or one-mile survey area. No designated critical or crucial habitats for any species occur in the area, including big game. All of the BLM Sensitive Species and USFWS avian species of management concern that were documented in the project area during the baseline study period are common in the region, either seasonally or year-round. Potential habitat for bald eagles is present, but is largely limited to the small reach of the North Platte River that flows through a limited portion of the one-mile survey area. No bald eagle nests or consistent winter roost sites were identified in or within 1 mile of the Ludeman Project area; the most suitable habitat for those activities is located at the extreme southern edge or beyond the one-mile Survey Area.

Numerous raptor nests are present in the area, but most have been identified as those of ferruginous hawks. That species is known to build multiple nests within a given territory, so the number of active nests in any given year would likely be considerably less than the number of individual nest sites discovered during the baseline surveys. That was demonstrated in 2008, when only 8 of the 30 classified ferruginous hawk nest sites were active. All species documented as actively nesting within the survey area during 2008 are known to regularly nest elsewhere in the immediate vicinity and throughout the region.

No sage-grouse or sharp-tailed grouse leks are present within the one-mile Survey Area prescribed by the WGFD for this project. The nearest lek is a sage-grouse lek approximately 2.75 miles northwest of the Ludeman Project area. Additionally, the relatively limited (approximately 16 percent, overall) occurrence and marginal quality of sagebrush shrublands, and the paucity of sage-grouse sightings and grouse sign within the project area, indicate that this species is not abundant in that area; no sharp-tailed grouse were observed during the baseline survey period. Potential upland game bird brood habitat is present along the primary drainages in the area, but no grouse or young were recorded there during general wildlife surveys conducted across all seasons during 2008.

No perennial streams and only one sizeable reservoir occur in the Ludeman Project area. Therefore, no fisheries and only limited waterfowl habitat would be affected by the project. The only waterfowl, shorebird, and wetland-associated species observed in 2008 are common and widespread. The pronghorn and mule deer were the only big game species documented in the survey area during the baseline survey period; those and other mammalian species observed during 2008 are also common to the region.

Likewise, the habitats present within the Ludeman Project area and survey area are common in central Wyoming. The project area is dominated (62 percent) by upland grassland habitats, with no unique or unusual habitats present. Sagebrush shrubland, a

habitat of growing concern throughout the west, is limited in extent and marginal in quality within the project area. Sagebrush stands are largely confined to the western third of the area. The shrublands themselves comprise only 16 percent of the total relative cover in the Ludeman Project area; this habitat type is actually dominated (66 percent) by upland grassland species. Therefore, although they provide limited value to some species, the shrublands in the Ludeman Project area would not support sagebrush obligates such as the greater sage-grouse or Brewer's sparrow (*Spizella breweri*) with any regularity. Lowland grassland (i.e., bottomland) and tree habitats, which often support considerable wildlife diversity, are also limited within the project area. The greatest presence of either habitat occurs at Gilbert Lake (open water and wetlands) in the extreme eastern portion of the project area, and along the North Platte River (open water, mud banks, and cottonwood corridors) as it flows through the extreme southern portion of the one-mile survey perimeter. The tree windbreaks that are present in the project area are quite small and are located adjacent to occupied residences, which may reduce their value to those wildlife species that require a more secluded setting. The natural drainages within the project area itself do not have persistent flow. However, Gilbert Lake and the two irrigation ditches within the survey area likely provide more reliable water sources throughout the year. The lone prairie dog colony in the area is extremely small and lies just beyond the southern edge of the project area.

The Ludeman Project area currently experiences various levels of regular human disturbance, depending on the time of year. The area is encircled by paved roads, with a railroad running along the Platte River at its southern extent. Additional disturbances in the area include active ranching and livestock herding, seasonal hunting, existing oil and gas activity, and occupied residences.

As described above, the Ludeman Project area supports an array of common wildlife species, despite the relatively limited variety of habitat types and the presence of existing disturbances within the area. Given the physical and faunal characteristics of the area described above, no significant impacts to wildlife or their habitats are anticipated from ISR operations and reclaiming the Ludeman Project area. Development will result in short-term habitat loss for some species, but careful reclamation efforts should allow for their eventual recovery.

2.8.5.4 Threatened and Endangered Species

No Threatened or Endangered vertebrate species have been documented in the Ludeman Project survey area, and none were observed there during baseline wildlife surveys conducted in 2008. Likewise, no current (as of September 2008) candidate, petitioned, or proposed vertebrate species were recorded during recent or previous surveys. No T&E plant species were encountered during the baseline vegetation assessment, either. Details describing survey results for the vegetation sampling are provided in Section 2.8.5.1 Vegetation of the Ludeman Project USNRC Technical Report.

As noted in the *Methods* section, the USFWS declared in February 2004 that surveys for black-footed ferrets are no longer required in black-tailed prairie dog colonies throughout Wyoming. No black-footed ferrets, or their sign, have ever been documented in the Ludeman Project area or surrounding region, including during surveys completed for other species in 2008. The only potential habitat for this species in the survey area consists of one small, occupied prairie dog colony of approximately 11 acres located just beyond the southern License boundary (Figure 2.8-35). The colony itself would not be considered large enough (30 acres or more) to potentially support individual black-footed ferrets (Forrest et al. 1985), though it could be part of a larger complex of colonies outside the baseline survey area. Regardless, the Ludeman Project survey area is beyond the focus area for ferret reintroduction efforts in Wyoming (USFS 2004, Grenier 2003).

The remaining four vertebrate T&E species are associated with the Platte River system (USFWS 2008), which flows at least 0.75 mile beyond the proposed Ludeman Project area. Information regarding those species' habitat needs and/or recovery efforts can be found in the USFWS recovery plans and/or on that agency's website (Canadian Wildlife Service and USFWS 2007; USFWS 1988, 1993, and 2008).

2.8.5.5 Aquatic Resources

Under natural conditions, aquatic habitat on and near the Ludeman Project is limited by the ephemeral nature of surface waters in the analysis area. The lack of deep-water habitat and extensive and persistent sources of water precluded the presence of fish, and limits the abundance and diversity of other aquatic species. The collection of water for stock watering has enhanced the water supply within some of the drainages in the general analysis area. However, those enhanced areas are still relatively limited and/or isolated in nature and no perennial drainages are present in the general analysis area.

As described above, the only amphibian that was encountered in the Ludeman Project area was the boreal chorus frog (*Pseudacris triseriata*). One bullsnake (*Pituophis melanoleucas*) was observed in the western portion of the projec area in early August. Although they were not observed, dry land species such as the eastern shorthorned lizard (*Phrynosoma douglassi*) and prairie rattlesnake (*Crotalus viridis*) are likely to occur in the proposed project area. No fish were sampled or observed incidentally in the North Platte River during baseline studies for this project.

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http://ecos.fws.gov/docs/recovery_plan/070604_v4.pdf (whooping crane)
http://ecos.fws.gov/docs/recovery_plan/931107.pdf (pallid sturgeon)

ADDENDUM 2.8-A

VEGETATION SPECIES SUMMARY

Acronym	Current Nomenclature	Common Name	Upland Grassland	Big Sagebrush Shrubland	Upland Grassland/ Rough Breaks Complex	Lowland Grassland	Silver Sagebrush Shrubland	Crested Wheatgrass
Cool Season Perennial Grasses and Grasslike Plants								
ACHHYM	*Achnatherum hymenoides*	Indian ricegrass	X	X	X		X	
AGRCRI	*Agropyron cristatum*	Crested wheatgrass	X		X	X	X	X
BROINE	*Bromus inermis*	Smooth brome					X	
CARDOU	*Carex douglasii*	Douglas sedge				X	X	
CARFIL	*Carex filifolia*	Threadleaf Sedge	X	X	X	X		
CARNEB	*Carex nebrascensis*	Nebraska sedge				X		
CARPRA	*Carex praegracilis*	Silver sedge				X		
CARSTE	*Carex stenophylla*	Needleleaf Sedge				X		
ELEPAL	*Eleocharis palustris*	Common spikerush				X		
ELYHIS	*Elymus hispidus*	Intermediate wheatgrass				X	X	
ELYLAN	*Elymus lanceolatus*	Thickspike wheatgrass			X	X	X	
ELYSMI	*Elymus smithii*	Western wheatgrass	X	X	X	X	X	X
ELYSPI	*Elymus spicatus*	Bluebunch wheatgrass			X	X	X	X
ELYTRA	*Elymus trachycaulus*	Slender wheatgrass				X		
HESCOM	*Hesperostipa comata*	Needle and thread	X	X	X	X	X	X
HORJUB	*Hordeum jubatum*	Foxtail barley		X	X	X		
JUNBAL	*Juncus balticus*	Baltic rush				X		
KOEMAC	*Koeleria macrantha*	Prairie junegrass	X	X	X	X		X
NASVIR	*Nassella viridula*	Green needlegrass	X	X	X	X	X	
PHLPRA	*Phleum pratense*	Common timothy				X		
POACUS	*Poa cusickii*	Cusick bluegrass				X		
POAPRA	*Poa pratensis*	Kentucky bluegrass		X	X	X		
	Species obseved but not sampled							

Acronym	Current Nomenclature	Common Name	Upland Grassland	Big Sagebrush Shrubland	Upland Grassland/ Rough Breaks Complex	Lowland Grassland	Silver Sagebrush Shrubland	Crested Wheatgrass
Cool Season Perennial Grasses and Grasslike Plants (Continued)								
POASEC	*Poa secunda*	Sandberg bluegrass	X	X	X	X	X	X
POASPP	*Poa species*	Bluegrass					X	
SCHTAB	*Schoenoplectus tabernaemontani*	Softstem bulrush				X		
SCIACU	*Scirpus acutus*	Hardstem bulrush				X		
Warm Season Perennial Grasses								
ARIPUR	*Aristida purpurea*	Purple threeawn					X	X
BOUGRA	*Bouteloua gracilis*	Blue grama	X	X	X	X	X	X
CALLON	*Calamovilfa longifolia*	Prarie sandreed	X			X		
DISSTR	*Distichilis stricta*	Inland saltgrass				X		
PANVIR	*Panicum virgatum*	Switchgrass				X		
SPAPEC	*Spartina pectinata*	Prairie cordgrass				X		
SPOAIR	*Sporobolus airoides*	Alkali sacaton				X	X	
SPOCRY	*Sporobolus cryptandrus*	Sand dropseed	X			X	X	
Annual Grasses								
BROJAP	*Bromus japonicus*	Japanese brome	X	X	X	X	X	
BROTEC	*Bromus tectorum*	Cheatgrass	X	X	X	X	X	X
HORVUL	*Hordeum vulgare*	Sixrow barley				X	X	
VULOCT	*Vulpia octoflora*	Sixweeks fescue	X	X	X	X	X	X
Annual Forbs								
ALYALY	*Alyssum alyssoides*	Pale alyssum					X	
ALYDES	*Alyssum desertorum*	Desert alyssum	X	X	X	X	X	X
CAMMIC	*Camelina microcarpa*	Littleseed falseflax			X	X	X	X
CHEALB	*Chenopodium album*	Common lambsquarter	X		X		X	
X	Species obseved but not sampled							

Acronym	Current Nomenclature	Common Name	Upland Grassland	Big Sagebrush Shrubland	Upland Grassland/ Rough Breaks Complex	Lowland Grassland	Silver Sagebrush Shrubland	Crested Wheatgrass
Annual Forbs (Continued)								
CHELEP	*Chenopodium leptophylum*	Narrowleaf goosefoot				X	X	X
CLESER	*Cleome serrulata*	Rocky Mountain bee plant					X	
COLLIN	*Collomia linearis*	Linearleaf collomia				X		
CRYMIN	*Cryptantha minima*	Little cryptantha				X	X	
CRYSPP	*Crypantha species*	Miners candle			X			
DESPIN	*Descurainia pinnata*	Tansey mustard			X	X	X	
DESSOP	*Descurainia sophia*	Flixweed	X		X	X	X	X
LAPRED	*Lappula redowskii*	Bluebur stickseed	X	X	X	X	X	X
LEPDEN	*Lepidium denisflorum*	Prairie pepperweed		X		X	X	X
MONNUT	*Monolepis nuttalliana*	Nuttall's povertyweed			X	X	X	X
OENSTR	*Oenothera stricta*	Chilean evening primrose				X		
PLAPAT	*Plantago patagonica*	Pursh's plantain	X	X	X	X	X	X
POLAVI	*Polygonum aviculare*	Prostrate knotweed			X		X	
SALTRA	*Salsola tragus*	Russian thistle			X		X	
SISALT	*Sisymbrium altissimum*	Tumble mustard					X	
THLARV	*Thlaspi arvense*	Field pennycress				X		
Annual/Biennial Forbs								
MELOFF	*Melilotus officinalis*	Yellow sweetclover				X		X
TRADUB	*Tragopogon dubius*	Goat's beard (Western salsify)		X	X	X	X	X
Perennial Forbs								
ACHMIL	*Achillea millefolium*	Western yarrow			X	X		
ALLTEX	*Allium textile*	Textile onion	X	X	X	X	X	X
	Species obseved but not sampled							

Acronym	Current Nomenclature	Common Name	Upland Grassland	Big Sagebrush Shrubland	Upland Grassland/ Rough Breaks Complex	Lowland Grassland	Silver Sagebrush Shrubland	Crested Wheatgrass
Perennial Forbs (Continued)								
ANTMIC	*Antennaria microphylla*	Littleleaf pussytoes			X	X		
ASTASC	*Aster ascendens*	Aster						X
ASTBIS	*Astragalus bisulcatus*	Twogrooved milkvetch			X	X	X	
ASTCRA	*Astragalus crassicarpus*	Groundplum milkvetch	X					
ASTMOL	*Astragalus mollisimus*	Woolly locoweed						X
ASTPEC	*Astragalus pectinatus*	Woolly locoweed			X			
ASTSPA	*Astragalus spatulatus*	Spoonleaf milkvetch			X			X
ASTSPP	*Astragalus species*	Milkvetch			X	X		X
CALNUT	*Calochortun nuttallii*	Sego lily	X	X	X			X
CAMROT	*Campanula rotundigolia*	Bluebell bellflower	X					
CARDRA	*Cardaria draba*	White-top				X		
CIRFLO	*Cirsium flodmanii*	Flodman thistle					X	X
CIRSPP	*Cirsium species*	Thistle	X			X	X	
CIRUND	*Cirsium undulatum*	Wavyleaf Thistle			X			
CONARV	*Convolvulus arvensis*	Field bindweed						X
CRERUN	*Crepis runcinata*	Fiddleaf hawksbeard				X		
CRYCEL	*Crypantha celosioides*	Buttecandle				X	X	
CRYCIN	*Cryptantha cinerea*	Minerscandle					X	
DELBIC	*Delphinium bicolor*	Little larkspur	X				X	
DELSPP	*Delphinium species*	Larkspur		X	X			
EQULAE	*Equisetum laevigatum*	Smooth horsetail				X	X	
EREHOO	*Eremogone hookeri*	Hooker sandwort				X	X	X
ERICAE	*Eriogonum caespitosum*	Matted buckwheat	X	X		X		
	Species obseved but not sampled							

Acronym	Current Nomenclature	Common Name	Upland Grassland	Big Sagebrush Shrubland	Upland Grassland/ Rough Breaks Complex	Lowland Grassland	Silver Sagebrush Shrubland	Crested Wheatgrass
Perennial Forbs (Continued)								
ERISPP	*Eriogonum species*	Wild buckwheat		X		X		X
GAUCOC	*Gaura coccinea*	Scarlet gaura	X	X	X	X	X	X
GLYLEP	*Glycyrrhiza lepidota*	American licorice				X		
GRISQU	*Grindelia squarrosa*	Curlycup gumweed						X
HAPMUL	*Haplopappus mulitcaulis*	Stemmy goldenweed			X			
HAPSPP	*Haplopappus species*	Goldenweed		X	X			
HETVIL	*Heterotheca villosa*	Golden aster			X			
LESLUD	*Lesquerella ludoviciana*	Foothill bladderpod					X	
LIAPUN	*Liatris punctata*	Dotted blazing star				X		
LOMFOE	*Lomatium foeniculaceum*	Biscuitroot	X	X	X	X		X
LUPARG	*Lupinus argenteus*	Silvery lupine			X			
LYGJUN	*Lygodesmia juncea*	Skeletonweed					X	X
MACGRI	*Machaeranthera grindeliodes*	Nuttall goldenweed	X			X		
MACTAN	*Machaeranthera tanacetifolia*	Tansy aster				X	X	
MAIDIL	*Maianthemum dilatatum*	False lily of the valley						X
MEDSAT	*Medicago sativa*	Alfafa medic						X
MUSDIV	*Musineon divaricatum*	Biscuitroot		X	X			
MUSSPP	*Musineon species*	Wildparsley				X		
OENCOR	*Oenothera coronopifolia*	Evening primrose				X		X
OENSPP	*Oenothera species*	Evening primrose		X	X			
OONMUL	*Oonopsis multicaulis*	Branched False Goldenweed						
OXYLAM	*Oxytropis lambertii*	Lambert locoweed (Crazyweed)						X
PLAERI	*Plantago eriopoda*	Redwoll plantain				X		
X	Species obseved but not sampled							

Acronym	Current Nomenclature	Common Name	Upland Grassland	Big Sagebrush Shrubland	Upland Grassland/ Rough Breaks Complex	Lowland Grassland	Silver Sagebrush Shrubland	Crested Wheatgrass
Perennial Forbs (Continued)								
PEDESC	*Pediomelum esculentum*	Breadroot scurfpea					X	X
PEDSPP	*Pediomelum species*	Scurfpea				X		
PENALB	*Penstemon albidus*	White beardtongue		X	X		X	
PENPRO	*Penstemon procerus*	Littleflower penstemon	X					
PENSPP	*Penstemon species*	Penstemon					X	X
PHLHOO	*Phlox hoodii*	Hoods phlox	X	X	X	X		X
PHLLON	*Phlox longifolia*	Longleaf phlox		X	X		X	
PSOESC	*Psoralea esculenta*	Breadroot scurfpea		X	X			
PSOSPP	*Psoralea species*	Scurfpea			X			
PSOTEN	*Psoralea tenuiflora*	Slimflower scurfpea		X		X		X
RANCYM	*Ranunculus cymbalaria*	Shore buttercup				X		
SPHCOC	*Sphaeralcea coccinea*	Scarlet globemallow	X	X	X	X	X	X
TAROFF	*Taraxacum officinale*	Common dandelion			X	X	X	X
THERHO	*Thermopsis rhombifolia*	Golden banner			X			X
TRAOCC	*Tradescantia occidentalis*	Spiderwort					X	
VICAME	*Vicia americana*	American vetch	X	X	X	X	X	X
ZYGVEN	*Zygadenus venenosus*	Death camas			X		X	X
Perennial Shrubs								
ARTCAN	*Artemisia cana*	Silver sagebrush		X	X	X	X	
ARTTRI	*Artemisia tridentata*	Big sagebrush	X	X	X	X	X	X
ATRCAN	*Atriplex canescens*	Fourwing saltbrush			X			
CHRSPP	*Chrysothamnus species*	Rabbitbrush			X			
X	Species obseved but not sampled							

Acronym	Current Nomenclature	Common Name	Upland Grassland	Big Sagebrush Shrubland	Upland Grassland/ Rough Breaks Complex	Lowland Grassland	Silver Sagebrush Shrubland	Crested Wheatgrass
Perennial Shrubs (Continued)								
CHRVIS	*Chrysothamnus viscidflorus*	Sticky-leaved Rabbitbrush					X	X
ERINAU	*Ericameria nauseosa*	Rubber rabbitbrush						X
ROSWOO	*Rosa woodsii*	Wood's rose			X	X		
SYMOCC	*Symphoricarpos occidentalis*	Western snowberry				X		
Perennial Half & Sub-Shrubs								
ARTFRI	*Artemisia frigida*	Fringed sagewort	X	X	X	X	X	X
ARTLUD	*Artemisia ludoviciana*	Louisiana sagewort	X		X	X		
ARTPED	*Artemisia pedatifida*	Birdsfoot sagewort		X	X			X
ATRGAR	*Atriplex gardneri*	Gardner saltbrush		X	X		X	X
GUTSAR	*Gutierrezia sarothrae*	Broom snakeweed	X			X		
KRALAN	*Krascheninnikovia lanata*	Winterfat		X	X	X	X	X
LINPUN	*Linanthus pungens*	Granite prickly gilia					X	X
LUPSER	*Lupinus sericeus*	Silky lupine	X					
YUCGLA	*Yucca glauca*	Small soapweed			X	X		X
Succulents								
CORVIV	*Coryphantha vivipara*	Pincushion cactus	X					X
OPUPOL	*Opuntia polyacantha*	Plains prickly pear	X	X	X	X	X	X
Lichen								
LICHEN	*Lichen*	Lichen	X	X	X	X	X	X
	Species obseved but not sampled							

ADDENDUM 2.8-B

VEGETATION COVER SUMMARIES

Ludeman
Report: Cover Summary

Site Id: Upland Grassland
Name:
Comm. Type/Form:
Sample Date: 7/1/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 25
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute *	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Annual Forbs							
Alyssum desertorum	10.48(0.96)	15.45	11.77	84.00	8.97	24.42	2
Collomia linearis	0.08	0.12	0.40	4.00	0.43	0.55	23
Descurainia sophia	0.08(0.08)	0.12	0.40	4.00	0.43	0.55	25
Lappula redowskii	0.08	0.12	0.40	4.00	0.43	0.55	26
Plantago patagonica	3.92(0.08)	5.78	5.28	68.00	7.26	13.04	6
Sub-Total	14.64	21.59					
Annual Grasses							
Bromus japonicus	0.32	0.47	1.25	8.00	0.85	1.32	19
Bromus tectorum	3.28(0.40)	4.83	7.91	24.00	2.56	7.39	11
Vulpia octoflora	1.60(0.16)	2.36	2.58	44.00	4.70	7.06	12
Sub-Total	5.20	7.66					
Cacti & Succulents							
Opuntia polyacantha	2.16(0.08)	3.18	1.99	64.00	6.84	10.02	9
Sub-Total	2.16	3.18					
Cool Season Perennial Grasses							
Carex filifolia	6.08(0.08)	8.96	7.67	68.00	7.26	16.22	5
Elymus smithii	12.56(0.16)	18.51	8.18	92.00	9.83	28.34	1
Hesperostipa comata	7.52(0.16)	11.08	9.12	68.00	7.26	18.34	3
Koeleria macrantha	0.48	0.71	1.33	16.00	1.71	2.42	16
Nassella viridula	0.16(0.08)	0.24	0.55	8.00	0.85	1.09	21
Poa secunda	2.16(0.48)	3.18	2.37	72.00	7.69	10.87	7
Sub-Total	28.96	42.68					
Full Shrubs							
Artemisia tridentata	0.56	0.83	1.78	12.00	1.28	2.11	17
Sub-Total	0.56	0.83					
Introduced Perennial Grasses							
Agropyron cristatum	0.48	0.71	2.40	4.00	0.43	1.14	20
Sub-Total	0.48	0.71					
Lower Plants							
Lichens	3.68(0.08)	5.42	5.79	40.00	4.27	9.69	10
Sub-Total	3.68	5.42					
Perennial Forbs							
Allium textile	0.08	0.12	0.40	4.00	0.43	0.55	22
Delphinium bicolor	0.08	0.12	0.40	4.00	0.43	0.55	24
Lomatium foeniculaceum	0.08	0.12	0.40	4.00	0.43	0.55	27
Machaeranthera grindelioides	0.08	0.12	0.40	4.00	0.43	0.55	29
Phlox hoodii	1.76	2.59	3.89	36.00	3.85	6.44	13
Sphaeralcea coccinea	2.56	3.77	2.55	60.00	6.41	10.18	8
Taraxacum officinale	*0.00(0.08)*	*0.00*	*0.00*	4.00	0.43	0.43	31
Vicia americana	0.72	1.06	1.62	20.00	2.14	3.20	14
Sub-Total	5.36	7.90					
Sub-Shrubs & Half-Shrubs							
Artemisia frigida	0.24	0.35	0.66	12.00	1.28	1.63	18
Lupinus sericeus	0.08	0.12	0.40	4.00	0.43	0.55	28
Sub-Total	0.32	0.47					
Warm Season Perennial Grasses							

Ludeman
Report: Cover Summary

Site Id: Upland Grassland
Name:
Comm. Type/Form:
Sample Date: 7/1/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 25
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute *	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Bouteloua gracilis	5.68(0.08)	8.37	4.27	80.00	8.55	16.92	4
Calamovilfa longifolia	0.72	1.06	1.81	16.00	1.71	2.77	15
Sporobolus cryptandrus	0.08	0.12	0.40	4.00	0.43	0.55	30
Sub-Total	6.48	9.55					
Total Stratified Vegetation Cover	67.04	0.64	11.03				
Total Non-Stratified Vegetation Cover	64.16	0.64	11.09				
LITTER/ROCK	14.40		7.59				
Total Ground Cover	82.24		6.67				
BARE SOIL	18.08		6.67				
Total Cover	97.00		0.00				
Species Abundance (No. of Species/Sample)	31.00						

Ludeman
Report: Cover Summary

Site Id: Big Sage Shrubland
Name:
Comm. Type/Form:
Sample Date: 6/30/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 26
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute*	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Annual Forbs							
Alyssum desertorum	3.92	6.43	5.50	57.69	6.79	13.22	8
Lappula redowskii	0.08	0.13	0.39	3.85	0.45	0.58	24
Plantago patagonica	0.23	0.38	0.65	11.54	1.36	1.74	19
Sub-Total	4.23	6.94					
Annual Grasses							
Bromus japonicus	0.23	0.38	1.18	3.85	0.45	0.83	20
Bromus tectorum	8.54	14.00	14.67	73.08	8.60	22.60	2
Vulpia octoflora	1.69	2.77	3.33	30.77	3.62	6.39	12
Sub-Total	10.46	17.15					
Cacti & Succulents							
Opuntia polyacantha	4.15(0.08)	6.81	4.00	73.08	8.60	15.41	6
Sub-Total	4.15	6.81					
Cool Season Perennial Grasses							
Carex filifolia	7.00	11.48	8.36	65.38	7.69	19.17	4
Elymus lanceolatus	0.08	0.13	0.39	3.85	0.45	0.58	23
Elymus smithii	4.46(0.08)	7.31	5.69	73.08	8.60	15.91	5
Hesperostipa comata	4.00	6.56	4.27	69.23	8.14	14.70	7
Hordeum jubatum	0.15	0.25	0.78	3.85	0.45	0.70	21
Koeleria macrantha	0.23	0.38	0.65	11.54	1.36	1.74	18
Nassella viridula	0.54	0.88	1.65	15.38	1.81	2.69	14
Poa secunda	2.46	4.04	5.19	23.08	2.71	6.75	10
Sub-Total	18.92	31.03					
Full Shrubs							
Artemisia tridentata	9.54	15.64	6.75	88.46	10.41	26.05	1
Sub-Total	9.54	15.64					
Introduced Perennial Grasses							
Agropyron cristatum	1.00	1.64	5.10	3.85	0.45	2.09	15
Poa pratensis	2.92	4.79	3.63	50.00	5.88	10.67	9
Sub-Total	3.92	6.43					
Lower Plants							
Lichens	1.31(0.08)	2.14	1.95	38.46	4.52	6.66	11
Sub-Total	1.31	2.14					
Perennial Forbs							
Allium textile	0.23	0.38	0.65	11.54	1.36	1.74	17
Musineon divaricatum	0.08	0.13	0.39	3.85	0.45	0.58	25
Phlox longifolia	0.08	0.13	0.39	3.85	0.45	0.58	26
Psoralea tenuiflora	0.08	0.13	0.39	3.85	0.45	0.58	27
Sphaeralcea coccinea	0.54	0.88	0.90	26.92	3.17	4.05	13
Vicia americana	0.31	0.50	0.93	11.54	1.36	1.86	16
Sub-Total	1.32	2.15					
Sub-Shrubs & Half-Shrubs							
Artemisia pedatifida	0.08	0.13	0.39	3.85	0.45	0.58	22
Sub-Total	0.08	0.13					
Warm Season Perennial Grasses							
Bouteloua gracilis	7.08	11.60	6.31	84.62	9.95	21.55	3

Ludeman
Report: Cover Summary

Site Id: Big Sage Shrubland
Name:
Comm. Type/Form:
Sample Date: 6/30/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 26
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute *	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Sub-Total	7.08	11.60					
Total Stratified Vegetation Cover	59.86	4.77	13.82				
Total Non-Stratified Vegetation Cover	59.70	4.77	13.90				
LITTER/ROCK	15.62		7.69				
Total Ground Cover	76.63		10.13				
BARE SOIL	23.38		10.13				
Total Cover	99.00		0.00				
Species Abundance (No. of Species/Sample)	27.00						

Ludeman
Report: Cover Summary

Site Id: UG/RB
Name:
Comm. Type/Form:
Sample Date: 7/3/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 25
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute *	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Annual Forbs							
Alyssum desertorum	2.80	6.16	5.03	44.00	4.85	11.01	7
Descurainia pinnata	0.08	0.18	0.40	4.00	0.44	0.62	41
Lappula redowskii	0.56	1.23	1.58	12.00	1.32	2.55	20
Monolepis nuttalliana	0.40	0.88	1.29	12.00	1.32	2.20	22
Plantago patagonica	0.56	1.23	1.08	24.00	2.64	3.87	14
Polygonum aviculare	0.08	0.18	0.40	4.00	0.44	0.62	43
Salsola tragus	0.16	0.35	0.80	4.00	0.44	0.79	33
Sub-Total	4.64	10.21					
Annual Grasses							
Bromus japonicus	0.64	1.41	1.38	20.00	2.20	3.61	15
Bromus tectorum	5.76(0.08)	12.68	7.51	60.00	6.61	19.29	3
Vulpia octoflora	0.48	1.06	1.33	16.00	1.76	2.82	18
Sub-Total	6.88	15.15					
Cacti & Succulents							
Opuntia polyacantha	1.60	3.52	2.38	44.00	4.85	8.37	8
Sub-Total	1.60	3.52					
Cool Season Perennial Grasses							
Achnatherum hymenoides	0.08	0.18	0.40	4.00	0.44	0.62	35
Carex filifolia	4.40	9.68	5.89	60.00	6.61	16.29	4
Elymus lanceolatus	0.64	1.41	1.50	20.00	2.20	3.61	16
Elymus smithii	5.04	11.09	4.66	80.00	8.81	19.90	2
Elymus spicatus	0.08	0.18	0.40	4.00	0.44	0.62	42
Hesperostipa comata	3.92	8.63	4.67	60.00	6.61	15.24	5
Koeleria macrantha	0.88	1.94	1.83	24.00	2.64	4.58	13
Nassella viridula	0.56	1.23	1.47	16.00	1.76	2.99	17
Poa secunda	0.96	2.11	2.24	24.00	2.64	4.75	12
Sub-Total	16.56	36.45					
Full Shrubs							
Artemisia tridentata	2.48	5.46	3.23	56.00	6.17	11.63	6
Rosa woodsii	0.16	0.35	0.80	4.00	0.44	0.79	32
Sub-Total	2.64	5.81					
Introduced Perennial Grasses							
Agropyron cristatum	0.32	0.70	1.11	8.00	0.88	1.58	25
Poa pratensis	0.24	0.53	0.88	8.00	0.88	1.41	26
Sub-Total	0.56	1.23					
Lower Plants							
Lichens	0.48	1.06	1.33	12.00	1.32	2.38	21
Sub-Total	0.48	1.06					
Perennial Forbs							
Achillea millefolium	0.08	0.18	0.40	4.00	0.44	0.62	34
Allium textile	0.08	0.18	0.40	4.00	0.44	0.62	36
Astragalus bisulcatus	0.08	0.18	0.40	4.00	0.44	0.62	38
Astragalus pectinatus	0.24	0.53	0.66	12.00	1.32	1.85	23
Astragalus spatulatus	0.08	0.18	0.40	4.00	0.44	0.62	39
Heterotheca villosa	0.16	0.35	0.80	4.00	0.44	0.79	30
Oonopsis multicaulis	0.16	0.35	0.80	4.00	0.44	0.79	31

Ludeman
Report: Cover Summary

Site Id: UG/RB
Name:
Comm. Type/Form:
Sample Date: 7/3/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 25
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute *	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Phlox hoodii	1.04	2.29	2.39	24.00	2.64	4.93	10
Phlox longifolia	0.24(0.08)	0.53	0.66	12.00	1.32	1.85	24
Psoralea esculenta	0.16	0.35	0.55	8.00	0.88	1.23	28
Sphaeralcea coccinea	1.20	2.64	1.41	48.00	5.29	7.93	9
Taraxacum officinale	0.08	0.18	0.40	4.00	0.44	0.62	44
Thermopsis rhombifolia	1.04	2.29	2.89	24.00	2.64	4.93	11
Vicia americana	0.40	0.88	1.00	16.00	1.76	2.64	19
Sub-Total	5.04	11.11					
Sub-Shrubs & Half-Shrubs							
Artemisia frigida	0.16	0.35	0.55	8.00	0.88	1.23	27
Artemisia ludoviciana	0.08	0.18	0.40	4.00	0.44	0.62	37
Atriplex gardneri	0.08	0.18	0.40	4.00	0.44	0.62	40
Yucca glauca	0.16	0.35	0.55	8.00	0.88	1.23	29
Sub-Total	0.48	1.06					
Warm Season Perennial Grasses							
Bouteloua gracilis	6.56	14.44	6.57	88.00	9.69	24.13	1
Sub-Total	6.56	14.44					
Total Stratified Vegetation Cover	45.12	0.49	10.33				
Total Non-Stratified Vegetation Cover	44.96	0.49	10.17				
LITTER/ROCK	17.92		10.90				
Total Ground Cover	63.36		14.09				
BARE SOIL	36.64		14.09				
Total Cover	100.00		0.00				
Species Abundance (No. of Species/Sample)	44.00						

Ludeman
Report: Cover Summary

Site Id: Lowland Grassland
Name:
Comm. Type/Form:
Sample Date: 7/1/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 25
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute*	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Annual Forbs							
Alyssum desertorum	3.92(0.16)	5.58	6.15	48.00	4.98	10.56	5
Collomia linearis	0.16	0.23	0.55	8.00	0.83	1.06	37
Cryptantha minima	0.08	0.11	0.40	4.00	0.41	0.52	47
Descurainia pinnata	0.16	0.23	0.80	4.00	0.41	0.64	40
Lappula redowskii	0.32	0.46	1.25	8.00	0.83	1.29	32
Melilotus officinalis	0.16	0.23	0.80	4.00	0.41	0.64	41
Monolepis nuttalliana	0.16	0.23	0.80	4.00	0.41	0.64	42
Plantago patagonica	1.36	1.94	2.43	32.00	3.32	5.26	11
Sub-Total	6.32	9.01					
Annual Grasses							
Bromus japonicus	4.88(0.08)	6.95	5.75	48.00	4.98	11.93	3
Bromus tectorum	7.12(0.08)	10.14	13.10	64.00	6.64	16.78	2
Vulpia octoflora	0.64	0.91	1.98	12.00	1.24	2.15	25
Sub-Total	12.64	18.00					
Cacti & Succulents							
Opuntia polyacantha	0.24	0.34	1.20	4.00	0.41	0.75	39
Sub-Total	0.24	0.34					
Cool Season Perennial Grasses							
Carex douglasii	0.24	0.34	0.88	8.00	0.83	1.17	34
Carex filifolia	2.08	2.96	3.63	36.00	3.73	6.69	8
Carex nebrascensis	0.32	0.46	1.60	4.00	0.41	0.87	38
Carex praegracilis	0.32	0.46	1.25	8.00	0.83	1.29	31
Carex stenophylla	0.08	0.11	0.40	4.00	0.41	0.52	45
Elymus lanceolatus	0.08	0.11	0.40	4.00	0.41	0.52	48
Elymus smithii	17.12(0.48)	24.37	15.58	84.00	8.71	33.08	1
Elymus spicatus	0.80	1.14	3.00	8.00	0.83	1.97	27
Elymus trachycaulus	0.24	0.34	0.88	8.00	0.83	1.17	35
Hesperostipa comata	1.36	1.94	1.89	40.00	4.15	6.09	9
Hordeum jubatum	0.64(0.08)	0.91	1.38	20.00	2.07	2.98	20
Juncus balticus	2.24	3.19	7.06	16.00	1.66	4.85	13
Koeleria macrantha	0.64	0.91	1.25	24.00	2.49	3.40	18
Nassella viridula	2.16	3.08	5.62	20.00	2.07	5.15	12
Poa cusickii	0.96	1.37	3.52	8.00	0.83	2.20	24
Poa secunda	3.20(0.16)	4.56	3.61	60.00	6.22	10.78	4
Scirpus acutus	0.16(0.08)	0.23	0.80	4.00	0.41	0.64	43
Sub-Total	32.64	46.48					
Full Shrubs							
Artemisia tridentata	1.20	1.71	2.38	28.00	2.90	4.61	14
Rosa woodsii	0.40	0.57	1.63	8.00	0.83	1.40	29
Symphoricarpos occidentalis	2.64	3.76	6.60	20.00	2.07	5.83	10
Sub-Total	4.24	6.04					
Introduced Perennial Grasses							
Agropyron cristatum	1.44	2.05	4.45	12.00	1.24	3.29	19
Phleum pratense	0.96(0.16)	1.37	4.80	4.00	0.41	1.78	28
Poa pratensis	0.64	0.91	2.06	16.00	1.66	2.57	22
Sub-Total	3.04	4.33					
Lower Plants							

Ludeman
Report: Cover Summary

Site Id: Lowland Grassland
Name:
Comm. Type/Form:
Sample Date: 7/1/2008

*0 Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 25
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute*	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Lichens	0.08	0.11	0.40	4.00	0.41	0.52	51
Sub-Total	0.08	0.11					
Perennial Forbs							
Achillea millefolium	0.64(0.08)	0.91	1.38	28.00	2.90	3.81	16
Antennaria microphylla	0.16	0.23	0.55	8.00	0.83	1.06	36
Crepis runcinata	0.08	0.11	0.40	4.00	0.41	0.52	46
Echinacea angustifolia	0.00(0.08)	0.00	0.00	4.00	0.41	0.41	57
Equisetum laevigatum	0.32(0.24)	0.46	0.95	16.00	1.66	2.12	26
Gaura coccinea	0.08	0.11	0.40	4.00	0.41	0.52	49
Liatris punctata	0.08	0.11	0.40	4.00	0.41	0.52	50
Phlox hoodii	0.08	0.11	0.40	4.00	0.41	0.52	53
Plantago eriopoda	0.32	0.46	1.25	8.00	0.83	1.29	33
Psoralea tenuiflora	0.08	0.11	0.40	4.00	0.41	0.52	54
Ranunculus cymbalaria	0.08	0.11	0.40	4.00	0.41	0.52	55
Sphaeralcea coccinea	0.64	0.91	1.70	20.00	2.07	2.98	21
Taraxacum officinale	0.56(0.16)	0.80	1.08	28.00	2.90	3.70	17
Vicia americana	1.76(0.16)	2.51	2.03	52.00	5.39	7.90	7
Sub-Total	4.88	6.94					
Sub-Shrubs & Half-Shrubs							
Artemisia frigida	0.32	0.46	1.25	8.00	0.83	1.29	30
Artemisia ludoviciana	0.48(0.08)	0.68	1.33	16.00	1.66	2.34	23
Sub-Total	0.80	1.14					
Warm Season Perennial Grasses							
Bouteloua gracilis	2.88	4.10	5.60	40.00	4.15	8.25	6
Calamovilfa longifolia	0.08	0.11	0.40	4.00	0.41	0.52	44
Panicum virgatum	0.08	0.11	0.40	4.00	0.41	0.52	52
Sporobolus airoides	2.24	3.19	6.72	12.00	1.24	4.43	15
Sporobolus cryptandrus	0.08	0.11	0.40	4.00	0.41	0.52	56
Sub-Total	5.36	7.62					
Total Stratified Vegetation Cover	72.24	1.23	17.34				
Total Non-Stratified Vegetation Cover	70.16	1.23	14.59				
LITTER/ROCK	13.04		8.51				
Total Ground Cover	83.28		8.75				
BARE SOIL	16.72		8.75				
Total Cover	100.00		0.00				
Species Abundance (No. of Species/Sample)	57.00						

Ludeman
Report: Cover Summary

Site Id: Silver Sage
Name:
Comm. Type/Form:
Sample Date: 7/1/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 25
Report Date: 11/6/2008

Species	Cover (%) Mean	Absolute *	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Annual Forbs								
Alyssum alyssoides	0.24	0.36	1.20	4.00	0.51	0.87	25	
Alyssum desertorum	1.44	2.19	2.68	32.00	4.10	6.29	8	
Camelina microcarpa	0.16	0.24	0.55	8.00	1.03	1.27	23	
Cryptantha minima	0.32	0.49	0.95	12.00	1.54	2.03	17	
Descurainia pinnata	0.32	0.49	0.95	12.00	1.54	2.03	18	
Descurainia sophia	1.68	2.55	4.61	24.00	3.08	5.63	10	
Lappula redowskii	0.24	0.36	0.66	12.00	1.54	1.90	20	
Monolepis nuttalliana	0.08	0.12	0.40	4.00	0.51	0.63	32	
Plantago patagonica	0.08	0.12	0.40	4.00	0.51	0.63	33	
Polygonum aviculare	0.32	0.49	0.95	12.00	1.54	2.03	19	
Sisymbrium altissimum	0.64	0.97	1.11	28.00	3.59	4.56	13	
Tragopogon dubius	0.08	0.12	0.40	4.00	0.51	0.63	35	
Sub-Total	5.60	8.50						
Annual Grasses								
Bromus tectorum	18.96	28.83	14.26	88.00	11.28	40.11	1	
Hordeum vulgare	0.56	0.85	2.42	8.00	1.03	1.88	22	
Vulpia octoflora	4.80	7.30	6.76	48.00	6.15	13.45	5	
Sub-Total	24.32	36.98						
Cacti & Succulents								
Opuntia polyacantha	5.20	7.91	5.83	56.00	7.18	15.09	4	
Sub-Total	5.20	7.91						
Cool Season Perennial Grasses								
Elymus lanceolatus	0.32	0.49	0.75	16.00	2.05	2.54	16	
Elymus smithii	3.68	5.60	5.68	40.00	5.13	10.73	6	
Elymus spicatus	0.08	0.12	0.40	4.00	0.51	0.63	29	
Hesperostipa comata	4.96	7.54	6.25	60.00	7.69	15.23	3	
Poa secunda	0.56	0.85	0.92	28.00	3.59	4.44	14	
Sub-Total	9.60	14.60						
Full Shrubs								
Artemisia cana	12.72	19.34	7.79	96.00	12.31	31.65	2	
Chrysothamnus viscidflorus	2.00	3.04	5.07	16.00	2.05	5.09	11	
Sub-Total	14.72	22.38						
Introduced Perennial Grasses								
Agropyron cristatum	0.08	0.12	0.40	4.00	0.51	0.63	27	
Bromus inermis	1.68	2.55	3.64	24.00	3.08	5.63	9	
Sub-Total	1.76	2.67						
Lower Plants								
Lichens	0.96	1.46	1.74	28.00	3.59	5.05	12	
Sub-Total	0.96	1.46						
Perennial Forbs								
Allium textile	0.08	0.12	0.40	4.00	0.51	0.63	28	
Eremogone hookeri	0.08	0.12	0.40	4.00	0.51	0.63	30	
Sphaeralcea coccinea	0.16	0.24	0.55	8.00	1.03	1.27	24	
Taraxacum officinale	0.08	0.12	0.40	4.00	0.51	0.63	34	
Vicia americana	0.16	0.24	0.80	4.00	0.51	0.75	26	
Zygadenus venenosus	0.08	0.12	0.40	4.00	0.51	0.63	36	

Ludeman
Report: Cover Summary

Site Id: Silver Sage
Name:
Comm. Type/Form:
Sample Date: 7/1/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 25
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute *	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Sub-Total	0.64	0.96					
Sub-Shrubs & Half-Shrubs							
Krascheninnikovia lanata	0.08	0.12	0.40	4.00	0.51	0.63	31
Sub-Total	0.08	0.12					
Warm Season Perennial Grasses							
Bouteloua gracilis	2.08	3.16	2.91	48.00	6.15	9.31	7
Sporobolus airoides	0.56	0.85	1.47	16.00	2.05	2.90	15
Sporobolus cryptandrus	0.24	0.36	0.66	12.00	1.54	1.90	21
Sub-Total	2.88	4.37					
Total Stratified Vegetation Cover	64.80	0.93	6.83				
Total Non-Stratified Vegetation Cover	64.80	0.93	6.83				
LITTER/ROCK	20.88		4.44				
Total Ground Cover	86.64		5.65				
BARE SOIL	13.36		5.65				
Total Cover	99.00		0.00				
Species Abundance (No. of Species/Sample)	36.00						

Ludeman
Report: Cover Summary

Site Id: Crested Wheatgrass
Name:
Comm. Type/Form:
Sample Date: 7/1/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 25
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute *	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Annual Forbs							
Alyssum desertorum	4.88	9.31	4.44	88.00	16.06	25.37	2
Lappula redowskii	0.16(0.08)	0.31	0.55	8.00	1.46	1.77	21
Melilotus officinalis	0.32	0.61	0.95	12.00	2.19	2.80	14
Monolepis nuttalliana	0.08	0.15	0.40	4.00	0.73	0.88	29
Plantago patagonica	0.64	1.22	1.11	28.00	5.11	6.33	6
Sub-Total	6.08	11.60					
Annual Grasses							
Bromus tectorum	1.68	3.21	4.15	24.00	4.38	7.59	4
Vulpia octoflora	0.80	1.53	1.29	32.00	5.84	7.37	5
Sub-Total	2.48	4.74					
Cacti & Succulents							
Opuntia polyacantha	0.24	0.46	0.88	8.00	1.46	1.92	19
Sub-Total	0.24	0.46					
Cool Season Perennial Grasses							
Elymus smithii	0.16	0.31	0.80	4.00	0.73	1.04	24
Elymus spicatus	0.56	1.07	2.42	8.00	1.46	2.53	16
Hesperostipa comata	0.80	1.53	1.73	20.00	3.65	5.18	11
Koeleria macrantha	0.24	0.46	0.88	8.00	1.46	1.92	18
Poa secunda	0.40	0.76	2.00	4.00	0.73	1.49	23
Sub-Total	2.16	4.13					
Full Shrubs							
Artemisia tridentata	0.80(0.08)	1.53	2.16	24.00	4.38	5.91	8
Sub-Total	0.80	1.53					
Introduced Perennial Grasses							
Agropyron cristatum	33.60	64.12	8.21	100.00	18.25	82.37	1
Sub-Total	33.60	64.12					
Lower Plants							
Lichens	0.56	1.07	1.08	24.00	4.38	5.45	9
Sub-Total	0.56	1.07					
Perennial Forbs							
Astragalus spatulatus	0.16	0.31	0.55	8.00	1.46	1.77	20
Calochortus nuttallii	0.08	0.15	0.40	4.00	0.73	0.88	26
Convolvulus arvensis	0.08	0.15	0.40	4.00	0.73	0.88	27
Gaura coccinea	0.24	0.46	0.66	12.00	2.19	2.65	15
Lomatium foeniculaceum	0.08	0.15	0.40	4.00	0.73	0.88	28
Lygodesmia juncea	0.56	1.07	1.36	16.00	2.92	3.99	12
Medicago sativa	1.12	2.14	4.25	8.00	1.46	3.60	13
Psoralea tenuiflora	1.28	2.44	3.26	20.00	3.65	6.09	7
Sphaeralcea coccinea	0.48	0.92	0.87	24.00	4.38	5.30	10
Vicia americana	0.16	0.31	0.55	8.00	1.46	1.77	22
Sub-Total	4.24	8.10					
Sub-Shrubs & Half-Shrubs							
Artemisia frigida	0.08	0.15	0.40	4.00	0.73	0.88	25
Sub-Total	0.08	0.15					
Warm Season Perennial Grasses							
Aristida purpurea	1.68	3.21	3.30	32.00	5.84	9.05	3

Ludeman
Report: Cover Summary

Site Id: Crested Wheatgrass
Name:
Comm. Type/Form:
Sample Date: 7/1/2008

*() Represents Second Hit Data

Sample Method: Point Intercept
Sample Size: 50 Meter Transect
Number of Samples: 25
Report Date: 11/6/2008

Species	Cover (%) Mean Absolute *	Relative	Std. Dev. n - 1	Frequency (%) Absolute	Relative	I.V.	Rank
Bouteloua gracilis	0.48	0.92	2.02	8.00	1.46	2.38	17
Sub-Total	2.16	4.13					
Total Stratified Vegetation Cover	52.00	1.83	7.35				
Total Non-Stratified Vegetation Cover	51.84	1.83	7.14				
LITTER/ROCK	23.68		5.91				
Total Ground Cover	76.08		5.87				
BARE SOIL	23.92		5.87				
Total Cover	99.00		0.00				
Species Abundance (No. of Species/Sample)	29.00						

ADDENDUM 2.8-C

VEGETATION DENSITY SUMMARIES

Ludeman
Report: Density Summary

Site Id: Upland Grassland
Name:
Comm. Type/Form:
Sample Date: 6/30/2008

Sample Method: Transect
Sample Size: 50 sq. m.
Number of Samples: 25
Report Date: 8/26/2008

	Mean (Number/Plot)	Relative Density	Std. Dev. n - 1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia tridentata	2.32	13.98	6.13	0.05	187.85
Sub-Total	2.32	13.98	6.13	0.05	187.85
Sub-Shrubs & Half-Shrubs					
Artemisia frigida	13.68	82.41	21.65	0.27	1,107.69
Artemisia ludoviciana	0.12	0.72	0.60	0.00	9.72
Gutierrezia sarothrae	0.48	2.89	1.58	0.01	38.87
Sub-Total	14.28	86.02	23.83	0.29	1,156.28
Total	16.60	100.00	22.19	0.33	1,344.13

Ludeman
Report: Density Summary

Site Id: Big Sage Shrubland
Name:
Comm. Type/Form:
Sample Date: 6/23/2008

Sample Method: Transect
Sample Size: 50 sq. m.
Number of Samples: 26
Report Date: 8/27/2008

	Mean (Number/Plot)	Relative Density	Std. Dev. n - 1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia cana	0.50	1.00	1.66	0.01	40.49
Artemisia tridentata	46.00	91.93	23.91	0.92	3,724.70
Sub-Total	46.50	92.93	25.56	0.93	3,765.18
Sub-Shrubs & Half-Shrubs					
Artemisia frigida	2.04	4.07	5.30	0.04	165.06
Artemisia pedatifida	1.38	2.77	7.06	0.03	112.11
Krascheninnikovia lanata	0.12	0.23	0.43	0.00	9.34
Sub-Total	3.54	7.07	12.79	0.07	286.52
Total	50.04	100.00	25.22	1.00	4,051.70

Ludeman
Report: Density Summary

Site Id: UG/RB
Name:
Comm. Type/Form:
Sample Date: 7/2/2008

Sample Method: Transect
Sample Size: 50 sq. m.
Number of Samples: 25
Report Date: 8/26/2008

	Mean (Number/Plot)	Relative Density	Std. Dev. n - 1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia tridentata	8.52	55.61	10.10	0.17	689.88
Atriplex canescens	0.16	1.04	0.47	0.00	12.96
Chrysothamnus sp.	0.40	2.61	2.00	0.01	32.39
Sub-Total	9.08	59.27	12.58	0.18	735.22
Sub-Shrubs & Half-Shrubs					
Artemisia frigida	5.76	37.60	14.32	0.12	466.40
Artemisia pedatifida	0.04	0.26	0.20	0.00	3.24
Yucca glauca	0.44	2.87	2.20	0.01	35.63
Sub-Total	6.24	40.73	16.72	0.12	505.26
Total	15.32	100.00	17.51	0.31	1,240.49

Ludeman
Report: Density Summary

Site Id: Lowland Grassland
Name:
Comm. Type/Form:
Sample Date: 7/1/2008

Sample Method: Transect
Sample Size: 50 sq. m.
Number of Samples: 25
Report Date: 8/28/2008

	Mean (Number/Plot)	Relative Density	Std. Dev. n - 1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia cana	0.08	0.13	0.40	0.00	6.48
Artemisia tridentata	7.28	12.24	13.91	0.15	589.47
Rosa woodsii	1.12	1.88	3.41	0.02	90.69
Symphoricarpos occidentalis	45.56	76.60	108.70	0.91	3,689.07
Sub-Total	54.04	90.85	126.42	1.08	4,375.71
Sub-Shrubs & Half-Shrubs					
Artemisia frigida	4.92	8.27	23.98	0.10	398.38
Artemisia ludoviciana	0.40	0.67	1.12	0.01	32.39
Gutierrezia sarothrae	0.08	0.13	0.40	0.00	6.48
Krascheninnikovia lanata	0.04	0.07	0.20	0.00	3.24
Sub-Total	5.44	9.15	25.70	0.11	440.49
Total	59.48	100.00	107.44	1.19	4,816.19

Ludeman
Report: Density Summary

Site Id: Silver Sage
Name:
Comm. Type/Form:
Sample Date: 7/3/2008

Sample Method: Transect
Sample Size: 50 sq. m.
Number of Samples: 25
Report Date: 8/29/2008

	Mean (Number/Plot)	Relative Density	Std. Dev. n - 1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia cana	54.32	71.51	35.30	1.09	4,398.38
Artemisia tridentata	2.28	3.00	10.58	0.05	184.62
Chrysothamnus viscidflorus	17.32	22.80	40.55	0.35	1,402.43
Sub-Total	73.92	97.31	86.43	1.48	5,985.43
Sub-Shrubs & Half-Shrubs					
Artemisia frigida	1.76	2.32	4.55	0.04	142.51
Atriplex gardneri	0.04	0.05	0.20	0.00	3.24
Krascheninnikovia lanata	0.12	0.16	0.44	0.00	9.72
Linanthus pungens	0.12	0.16	0.60	0.00	9.72
Sub-Total	2.04	2.69	5.79	0.04	165.18
Total	75.96	100.00	52.35	1.52	6,150.61

Ludeman
Report: Density Summary

Site Id: Crested Wheatgrass
Name:
Comm. Type/Form:
Sample Date: 6/30/2008

Sample Method: Transect
Sample Size: 50 sq. m.
Number of Samples: 25
Report Date: 8/18/2008

	Mean (Number/Plot)	Relative Density	Std. Dev. n - 1 (Number/Plot)	Mean (Number/sq.m.)	Mean (Number/Acre)
Full Shrubs					
Artemisia tridentata	5.64	56.63	13.93	0.11	456.68
Chrysothamnus viscidflorus	0.36	3.61	1.44	0.01	29.15
Ericameria nauseosa	0.16	1.61	0.55	0.00	12.96
Sub-Total	6.16	61.85	15.92	0.12	498.79
Sub-Shrubs & Half-Shrubs					
Artemisia frigida	3.28	32.93	7.30	0.07	265.59
Artemisia pedatifida	0.04	0.40	0.20	0.00	3.24
Krascheninnikovia lanata	0.12	1.20	0.60	0.00	9.72
Linanthus pungens	0.36	3.61	1.80	0.01	29.15
Sub-Total	3.80	38.15	9.90	0.08	307.69
Total	9.96	100.00	18.39	0.20	806.48

ADDENDUM 2.8-D

VEGETATION MAP