Technical Report on Resources
Ludeman Uranium Project
Converse County, Wyoming, USA

Technical Report for NI 43-101

Effective Date: January 25, 2019

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1.0 SUMMARY

Western Water Consultants, Inc., d/b/a WWC Engineering, has been retained by Uranium One to oversee and supervise preparation of this independent Technical Report for the Ludeman Uranium Project (the Project), in accordance with Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101). The objective is to disclose a uranium resource estimate for the Project that meets the established definitions and guidance of NI 43-101. The estimate results from analysis of historical data on the Project and recent confirmation drilling. An independent technical report is necessary to comply with NI 43-101, Section 5.3(1)(c).

The Project consists of two previously separate, but adjacent, projects (the Ludeman and Peterson properties) held by Uranium One. The Project area boundary shown in this report is not a permit or license boundary, it is an area where Uranium One controls the mineralization and has drill hole data.

This report addresses the geology and uranium mineralization of the mineral holdings for the Project located in Converse County, Wyoming, approximate Latitude 42° 54' North and Longitude 105° 38’ West. The Project is in the South Powder River Basin Uranium Mining District of the Powder River Basin (PRB), approximately 30 air miles east-northeast of Casper, Wyoming (see Figure 1). Uranium One controls the mineral rights of the Project with 799 unpatented federal lode mining claims, 8 State of Wyoming mining leases, and 2 fee mineral leases.

Mineral Resources within the Ludeman property occur in sands of the Paleocene age Fort Union Formation. The Fort Union is a fluvial deposit composed of sandstones interbedded with claystone, siltstone, carbonaceous shale, and thin coals. The uranium mineralization is typical of Wyoming type roll-front deposits. Uranium One developed a geologic unit identification nomenclature for the Project that describes sand and shale units in ascending order from the 40 sand to the 120 sand. Mineral Resources within Ludeman occur in the 40 through 100 host sands. The depths to the mineralized zones range from 100 feet to 600 feet below the ground surface depending on the topography and changes in the formation elevation and which stratigraphic horizon is mineralized.

Approximately 5,495 historic exploratory drill holes were completed within the Ludeman Area between 1967 and 2000 with the majority being drilled by Teton Exploration (Teton). Power Resources, Inc. (PRI), now Cameco Resources, held the area during the early 1990’s. Since 2007, Uranium One has drilled an additional 2,181 new exploration and development holes on the Ludeman property (Uranium One 2017). Through the years, several phases of drilling took place. These drilling programs included regional exploration holes and development drill holes designed to establish continuity along regional trends and to determine the lateral extent of the orebody. Uranium One’s drilling program is described in Section 10 of this report.

Data available for the resource estimate presented in this technical report include lithologic and geophysical logs from drilling described above. A total of 7,676 geophysical logs were evaluated for this report.
Figure 1. Ludeman Uranium Project Location
This technical report presents an estimate of Mineral Resources as defined in Section 1.2 of NI 43-101. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. The estimated mineral quantity and grade described in this technical report were calculated using accepted protocols. The estimate meets the NI 43-101 classification of Measured and Indicated Mineral Resources as defined by NI 43-101 and the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definitions Standards incorporated by reference therein.

The Mineral Resource estimates shown below in Table 1, were calculated using the grade thickness (GT) contour method where uranium grade is multiplied by the mineralization thickness. The GT values of the subject sand intervals for each hole were plotted on a drill hole map along with notations of where the roll front intercept was located. The roll front was then mapped and contour lines for the GT values were drawn. The areas within the GT contour boundaries were used for calculating resource estimates utilizing the following criteria:

- Measured Resource: < 70’ between data points (locations) area of influence ~5,000 ft²
- Indicated Resource: from 70’ to 200’ between data points: area of influence ~ 40,000 ft²
- Inferred Resources: from 200’ to 400’ between data points: area of influence ~160,000 ft²

The minimum grade cut-off was 0.02% eU₃O₈ and a thickness cut-off of 2’ was utilized. The Mineral Resources are reported based on a GT cut-off of 0.25 which is recommended for reporting purposes and is presented in Table 1. Section 14.0 provides a detailed description and tabulation of the resources by section.

Based upon data from the above-described historical and confirmation drilling, the current resource estimate yielded a total of 9.7 million pounds eU₃O₈ in the Measured and Indicated categories. The Uranium One resource estimation is based on geologic cutoffs as described above. The current resources at the Project are reported in Table 1. The Author, a Wyoming Professional Geologist (PG) and the independent QP, is of the opinion that the classification of the resources as stated meets the CIM definitions as adopted by the CIM Council on May 2014. The mineral resource estimates in this report, based on historical and recent drilling, were reviewed and accepted by the Author.

Recommendations for further work on the Project are summarized in the following bullets. None is contingent on positive results of the other.

- Complete State of Wyoming permitting efforts.
- Continue delineation and in-filling drilling as necessary to better refine future wellfields, convert inferred resources to higher categories and to evaluate potential for additional resource targets.
- Complete additional core drilling and analysis to refine disequilibrium data.
Table 1. Summary of Estimated Mineral Resources for the Project

<table>
<thead>
<tr>
<th>Township/Range</th>
<th>Ore Tonnes, (000's)</th>
<th>Average Grade % eU3O8</th>
<th>eU3O8 Pounds</th>
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</thead>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Measured</td>
</tr>
<tr>
<td>T34N R74W</td>
<td>1,162</td>
<td>0.096</td>
<td>2,465,500</td>
</tr>
<tr>
<td>T34N R74W</td>
<td>1,064</td>
<td>0.091</td>
<td>2,128,600</td>
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<tr>
<td>T34N R74W</td>
<td>595</td>
<td>0.069</td>
<td></td>
</tr>
<tr>
<td>T34N R73W</td>
<td>1,264</td>
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<td>T34N R73W</td>
<td>1,349</td>
<td>0.086</td>
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<tr>
<td>T34N R74W</td>
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<td>0.085</td>
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</tr>
<tr>
<td>Measured</td>
<td>2,426</td>
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<td>Indicated</td>
<td>2,413</td>
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</tr>
<tr>
<td>Inferred</td>
<td>786</td>
<td>0.073</td>
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Notes: 1) Township (T) and Range (R) are in reference to the Public Land Survey System. They are used herein to indicate geographical position of resources within the Project area. 2) Resources calculated at a 0.25 GT Cut-Off

The Author concludes the Measured and Indicated resources of approximately 9.7 million pounds of U_3O_8 for the Project are compliant with Canadian NI 43-101 guidelines. There is limited risk that the estimate of quantity, quality, and physical characteristics of the resources of the Project will be unfavorably affected by future investigations. The Author recommends that Uranium One proceed with their proposed drilling program summarized previously and the completion of a Preliminary Economic Analysis (PEA) or similar.

The reader is cautioned that due to the uncertainty, which may attach to Inferred Mineral Resources, it cannot be assumed that all or any part of an Inferred Mineral Resource will be upgraded to an Indicated or Measured Mineral Resource, because of continued exploration. Confidence in the Inferred Mineral Resource estimate is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Inferred Mineral Resources must be excluded from estimates forming the basis of a PEA or other feasibility studies.

2.0 INTRODUCTION

2.1 PURPOSE OF THE REPORT

This Technical Report was developed for Uranium One to assess the resource potential based on all information available for the Ludeman Uranium Project in compliance with the requirements of Canadian NI 43-101 and 43-101F1.
2.2 **SOURCE OF INFORMATION AND DATA**

This report has been constructed and compiled from information and data including drill hole location maps, grade-thickness (GT) maps, gamma-ray, resistivity, self-potential curves plotted by depth, core hole data from drilling, and other historical data. The findings of this report are based on both published and unpublished data.

2.3 **AUTHOR**

Completion of this report was under the direction and supervision of Mr. Benjamin J. Schiffer, P.G., WWC Engineering. Mr. Schiffer has personal work experience employed as a geologist at Cogema’s Christensen Ranch In-Situ Leach (ISL) Mine, now a part of the Willow Creek Mine, from 1995 to 1999. Mr. Schiffer also worked at Cogema’s Holiday-El Mesquite mine and at Pathfinder’s Shirley Basin project. Mr. Schiffer is an independent QP as defined by NI 43-101 and visited the site on October 18, 2018. The purpose of the visit was to observe the geography and geology of the Project site and view the location of the uranium resource areas. Additionally, Mr. Schiffer has approved the technical disclosure contained in this report and has verified the sampling, analytical, and test data underlying the mineral resource estimate.

2.4 **CURRENCY AND UNITS OF MEASUREMENT**

All references to currency are US dollars (US$). Units of measurement are the English system of inches, miles, tons, etc. Uranium is expressed as pounds U$_3$O$_8$, the standard market unit. Unless otherwise stated, historical reported grades for resources and Mineral Resources estimated are percent eU$_3$O$_8$, which is the equivalent U$_3$O$_8$ measured by calibrated geophysical logging probes. ISR refers to in situ recovery, which is also sometimes referred to as ISL.

3.0 **RELIANCE ON OTHER EXPERTS**

This Technical Report has been prepared under the supervision of Benjamin J. Schiffer. P.G. Scott Schierman, the Health Safety and Environmental Manager (HSE Manager) at Uranium One, provided information on the regulatory status and environmental liabilities on the Project.

Mr. Scott L. Schierman, the HSE Manager for Uranium One has been the responsible person assigned to move the permitting process forward for the company and has served as a contact point to address both federal and state regulatory agencies comments related to the Ludeman permitting process. Mr. Schierman has 38 years of experience in permitting and regulatory compliance related to the uranium industry and 10 years of experience working with Uranium One that have been focused on permitting and regulatory compliance for its various operations and projects.

Content for this Technical Report is based on information provided by Uranium One and generally accepted uranium ISR practices. Mineral resource estimates are based on historical exploration, delineation and production drilling, and results of recent confirmation drilling provided by Uranium One and independently evaluated by the Author.
4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 PROPERTY DESCRIPTION

The Project is located in the southern portion of the Powder River Uranium District of Wyoming, within Converse County (Figure 1). The proposed Ludeman permit area covers all, or portions of, approximately 31 sections (19,888 acres) and its location is 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; and
- 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.

Uranium One controls additional acreage outside this area and further describes it in Section 4.3 below.

4.2 LOCATION

The Ludeman Project is located approximately 12 miles northeast of Glenrock and 30 miles east-northeast of Casper, Wyoming (Figure 1). State Highway 95 provides access to the Ludeman Project 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 Project. The Project area is primarily located on private surface land with some areas of Federal or State lands.

4.3 MINERAL TENURE, RIGHTS, AND ROYALTIES

Uranium One holds 799 unpatented lode claims on federally owned minerals. No royalties are due to the federal government from mining on lode claims. The claims will remain under Uranium One’s ownership and control, provided that Uranium One adheres to required Bureau of Land Management (BLM) annual filing and payment requirements. Legal surveys of unpatented claims are not required and to the authors’ knowledge have not been completed.

Uranium One also holds eight State of Wyoming Uranium Leases on state lands with a combined acreage of 3,520 acres. An additional two fee mineral leases are held with private mineral owners. In total, the project mineral holdings total approximately 21,297 acres.
Royalties on fee mineral leases vary with the mineral rights owners. State mineral leases have a 5% gross royalty attached. Fee or private minerals have varying royalty rates and calculations, depending on the agreements negotiated with individual mineral owners. In addition, surface use and access agreements may include a production royalty, depending on agreements negotiated with individual surface owners at various levels. Uranium One’s average combined mineral plus surface production royalty applicable to the Project is variable, based upon the selling price of U3O8. At a selling price below $50 per pound, the combined royalty is 7.74 percent and at or above that price the combined royalty is 8.87 percent.

Legal surveys of unpatented lode claims are not required, and, to the Authors’ knowledge, have not been completed to advance the subject property toward patent. The area covered by the surface use and access agreements is based on the legal subdivision descriptions as set forth by the U.S. Cadastral Survey and the area covered by the surface use and access agreements has not been verified by legal survey.

The unpatented lode mining claims will remain the property of Uranium One provided they adhere to required filing and annual payment requirements with Converse County and the BLM. The SUA will remain in force so long as the mining claims are maintained. Legal surveys of unpatented lode mining claims are not required and are not known to have been completed.

Payments for state and private leases and BLM mining claim filing payments are up to date as of the effective date of this report.

Exploration activities are covered under a Drill Notification with the Wyoming DEQ that is in effect for the Ludeman property.

4.4 ENVIRONMENTAL LIABILITIES

The environmental liability for the Project falls under the jurisdiction of the State of Wyoming, Department of Environmental Quality (WDEQ)-Land Quality Division (LQD), which regulates the Mine Permit activities and Source Materials License.

4.5 PERMITTING

Uranium One was issued the final environmental assessment for the Uranium One Ludeman Satellite facility on August 8, 2018 by the Nuclear Regulatory Commission (NRC). On August 24, 2018 the NRC issued a license amendment to source materials license SUA-1341 to expand operations to the Ludeman Project. The mine permit application for Ludeman is currently under review with the WDEQ-LQD with the last remaining review activity being the aquifer exemption for Ludeman. Uranium One anticipates this process will be completed within the first six months of 2019.
5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 TOPOGRAPHY, ELEVATION, AND VEGETATION

The Project is located within the Wyoming Basin physiographic province in the south portion of the PRB. The site is near the Deep Basinal Axis. Regional structural features also include the Laramie Mountains to the south, Casper Arch to the west, and the Black Hills and Hartville Uplift to the east.

The site is located at approximately Latitude 42° 54’ North and Longitude 105° 38’ West in the southern end of the PRB and within the drainage basin of the North Platte River which lies approximately 1 mile south of the Project. The area is a low lying plain, roughly 5,000 feet in elevation. Vegetation within the PRB is generally described as mixed grass prairie dominated by wheat grasses, various bunch grasses, and shrubs and within the Project area is comprised primarily of sagebrush shrub land and upland grassland. Interspersed among these major vegetation communities, within and along the ephemeral drainages, are less abundant vegetation types of grassland and meadow grassland (Figure 2).

Figure 2. Ludeman Project – Looking west at the Former Leuenberger ISR Production Building
5.2 **ACCESS TO THE PROPERTY**

The site is accessible via 2-wheel drive vehicles via two different routes. From Casper take I-25 east and at Glenrock turn north onto Highway 95. Alternatively, from Douglas take Highway 93 northwest approximately 10 miles.

The Project is accessible via Wyoming State Highway 95, approximately 12 miles northeast of Glenrock, Wyoming. Existing public and private gravel and two-track roads provide access though most of the Project. Some road development and improvements may be required at a later time to facilitate future development of well fields or satellite facilities. Recent increases in oil & gas activity have led to more roads being improved through the Project area.

5.3 **PROXIMITY OF THE PROPERTY TO POPULATION CENTERS AND TRANSPORTATION**

The closest incorporated population center to the Project is the town of Rolling Hills, approximately 7 road miles to the west-southwest along Wyoming State Highway 95. The Project is also approximately 12 road miles northeast of Glenrock, Wyoming and 37 road miles northeast of Casper, Wyoming. The Project is additionally accessed from the southeast by Wyoming Highway 93 from Douglas, Wyoming. The Project boundary is shown on Figure 1.

The Negley subdivision is a small group of residences in the vicinity of the Project. It is located in the east half of Section 11, T34N R74W.

5.4 **CLIMATE AND LENGTH OF OPERATING SEASON**

The Project area is located in a semi-arid or steppe climate. The region is characterized seasonally by cold harsh winter, hot dry summers, relatively warm moist springs and cool autumns. Though summer nights are normally cool, the daytime temperatures can be quite high. Conversely, there can be rapid changes during the spring, autumn and winter when frequent variations of cold-to –mild or mild-to-cold weather can occur.

As noted in NUREG-1910, the Wyoming East Uranium region’s relatively cool temperatures are a result of Wyoming’s higher elevation (NRC 2009). Temperature extremes range from roughly -25°F in the winter to 100°F in the summer. Typically, the “last freeze” occurs during late May and the “first freeze” mid-to-late September. The region is characterized by extremely dry conditions. On average, the region experiences only about 40 to 60 days with measurable (>0.01 in) precipitation (WRCC 2007). The region of the Project has an annual average rainfall from 9 to 13 inches. Spring and early summer (May-June) thunderstorms produce 45 percent of the precipitation. May is typically the wettest month while January is the driest month of the year. Severe weather can occur throughout the region, but is limited on average to four or five severe events per year. The average snowfall ranges from 25 to 40 inches per year in the project vicinity.

Seasonal wind roses for the Project show the predominant wind direction is westerly, with high winds also coming from the west-southwest and a secondary east-southeast mode. The median wind speed for the Project is 11 mph and winds average over 18 mph 20% of the time.
5.5 Surface Rights and Infrastructure

Uranium One has executed surface use and access agreements with the majority of the landowners, who hold surface ownership at the Project, including leases on state lands.

Energy development in the vicinity of the Project over the past several decades (uranium and oil & gas) has brought considerable upgrades to the local infrastructure. The local economy is geared toward coal mining, oil and gas production, and ranching operations, all of which provide a well-trained and capable pool of workers for ISR production and processing operations. Personnel required for exploration, construction, and facility operations are available in the nearby towns of Glenrock, Douglas, and Casper, Wyoming.

Historically the land has been used for livestock grazing. Cameco Resource’s Smith Ranch-Highland Uranium ISR operation is located approximately 14 miles to the northwest. Historic conventional open pit mining was conducted in the Box Creek District approximately 12 miles north of the Project.

Non-potable water will be supplied by wells developed at or near the site. Water extracted as part of ISR operations will be recycled for reinjection. Typical ISR mining operations also require disposal wells for limited quantities of fluids that cannot be returned to the production aquifers. A deep disposal well is planned for the Ludeman ISR processing facility.

The proximity of the Project to paved roads will facilitate transportation of equipment, supplies, personnel, and products to and from the properties. High voltage transmission lines from Pacificorp’s Dave Johnston Power Plant pass within the Project boundary in Sections 11 and 15 of T34N R74W.

6.0 History

6.1 Prior Ownership and Ownership Changes

Uranium was discovered in the southern PRB during the early 1950’s and by 1956 there were several small open pit mines operating in the area. The closest to the Project area being the Box Creek mine located approximately twelve miles northeast. As geologic models progressed, extensive drill hole exploration was utilized to locate deeper uranium mineralization.

By 1969, nearly all available land in the area had been claimed or leased by uranium operators which included Teton, Nedco, Kerr McGee, and Union Pacific Resources. The primary known mineral trends within the Project area were discovered by exploration drilling in the 1970’s. Exploration was followed up by development and in the mid-1970’s Teton delineated a deposit in the southwest portion of the Project area with the goal of developing an ISR mine. For the next several years Teton constructed, operated and restored a pilot mining operation. By 1985, the former Nedco and Union Pacific properties had been consolidated into the Teton Leuenberger Project. In 1985, Central Electrical Generating Board of England, later known as PRI purchased the property and in 1987 added to the acreage through the purchase of two adjacent claim blocks.
owned by Kerr-McGee. In the early 1990’s, PRI further modified the property through acquisitions and releases.

The Leuenberger properties were released in the late 1990’s due to declining uranium market conditions. A small number of claims reverted back to previous owners in the area. The claims and leases were again picked up during the uranium upswing in the early to mid 2000’s. High Plains Uranium held the majority of claims and leases with Energy Metals having the remainder in the current Project area. These grounds were consolidated in 2007 with Energy Metals’ acquisition of High Plains. Uranium One acquired Energy Metals in late 2007.

6.2 **TYPE, AMOUNT, QUANTITY, AND RESULTS OF WORK BY PREVIOUS OWNERS**

According to historic records, mining claims were first staked in the Project area by Cordero Mining in the mid 1960’s. Numerous exploration companies held mineral rights in the area as outlined in Section 6.1 above. Most of these companies were exploring for uranium roll front mineralization and thousands of holes were drilled in the surrounding area. Three areas, now within the Project area, saw significant work towards producing uranium through ISR technology.

In 1980, United Nuclear Corp. (UNC), with their partner Teton, built and operated the Leuenberger In-Situ Uranium Project on a portion of the existing Project site. This pilot test facility produced for 12 months and resulted in the production of 12,800 pounds of U₃O₈. Groundwater restoration was completed on the pilot site and a commercial permit to mine was granted. Due to the declining uranium market, the mine was never placed into commercial operation and the permit to mine allowed to expire.

In 1981, Uranium Resources, Inc. built and operated the North Platte In-Situ Uranium Project on a portion of the existing Project site. This pilot test facility was located in Section 15, T34N R73W and produced for five months during 1982, resulting in the production of 1,515 pounds of U₃O₈. Uranium One acquired the historic data from Uranium Resources.

A third property was also permitted for pilot testing. Malapai Resources developed the Peterson Project also within the current boundaries of the Project and located in Section 35, T34N R73W. Significant hydrological and geological work was expended in the study of this area. Uranium One acquired a major portion of the historical data for this project from Malapai’s successor, Cogema Mining. This project was permitted for pilot operations but was never operated.

6.3 **SIGNIFICANT HISTORICAL MINERAL RESOURCE ESTIMATES**

Numerous historical resource estimates have been made for the Ludeman Project area by many of the previous operators, none would be considered NI 43-101 compliant. One NI 43-101 compliant resource estimate is the 2008 BRS Inc. (BRS) Technical Report for the Peterson area. This document and associated resource estimate are considered by the Author to be relevant to the project and helped provide baseline geology information for the development of this resource estimate. The BRS Technical Report is NI 43-101 compliant, authored by an independent qualified geologist and is the most recent technical resource report on southeastern portion of the Project.
Economics, mining method, and recovery will dictate the appropriate cut-off grade and/or GT to be applied to the in-the-ground Mineral Resources. The 0.10 GT cutoff estimates were reported by BRS to assess the total Mineral Resource. The 0.25 cut-off is considered to be more appropriate for current ISR operations and is recommended for reporting purposes.

6.4 PRODUCTION

As discussed above in Section 6.2, limited in-situ uranium mining has previously occurred on the property. Teton’s Leuenberger project was located in Section 14, T34N R74W and Uranium Resources, Inc.’s North Platte Uranium Project was located in Section 15, T34N R73W. Both of these were pilot uranium in-situ recovery projects operated in the late 1970’s to early 1980’s.

6.4.1 Leuenberger Pilot

The Leuenberger Research and Development (R&D) in-situ test, operated by UNC-Teton, was conducted over an eight year period which included baseline work, wellfield construction and operation, aquifer restoration, and facility decommissioning. The actual in-situ recovery phase lasted for twelve months during 1980 and 1981 (UNC Teton 1983).

A three pattern well field was installed in each of the “M” and “N” (80 and 90 respectively) sands (Section 7.3 provides more information on the stratigraphic position of the mineralized sandstones). A sodium bicarbonate / hydrogen peroxide lixiviant was utilized for both test areas. The “M” test resulted in 12,800 pounds of U_3O_8 being recovered, or 68 percent of the estimated in-place resource. Pump rates were relatively high (approximately 30 gpm) and the head grades peaked in one recovery well at 175 ppm U_3O_8.

Results from the “N” test patterns were not as favorable with 1,800 pounds recovered, 27 percent of the estimated in-place resource, and a peak head grade of 32ppm uranium. However, pumping rates approached 40 gpm in this test and compare well with current ISR production operations in the area. Groundwater restoration of the production zone aquifer was subsequently successfully achieved.

6.4.2 North Platte Pilot

Uranium Resources developed the North Platte pilot in-situ uranium project during the early 1980’s. Actual recovery operations were conducted for five months in 1982 with total uranium production of 1,515 pounds, approximately 27 percent of the estimated in-place resource (Ortiz 2005).

One five-spot pattern was installed in the 70 Sand horizon. A sodium bicarbonate / hydrogen peroxide lixiviant was utilized for test lixiviant. Groundwater restoration was subsequently successfully achieved.

6.4.3 Peterson Project

Arizona Public Service received a Research and Development (R&D) license to operate an in-situ uranium extraction project on October 29, 1981. Extensive baseline work was completed for the
R&D licensing including hydrologic testing and geologic analysis. The actual pilot scale testing was never conducted at the Peterson project as Malapai invested in another R&D at the Christensen Ranch project in Johnson County, WY, in the early to mid-1980’s. Although the pilot test was not conducted, in 1984, a laboratory agitation and column leach testing program was conducted by Hazen Research, Inc. on core from the property. The laboratory leach testing program proved successful as it was noted that the overall recovery averaged 76 percent of the estimated in-place resource (Hazen 1984).

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The Project is located in the Southern PRB. The PRB extends over much of northeastern Wyoming and southeastern Montana, and consists of a large north-northwest trending asymmetric syncline. The basement axis lies along the western edge of the basin, and the present surface axis lies to the east of the basement axis. The basin is bounded by the Big Horn Mountains and Casper Arch to the west, the Black Hills to the east, and the Hartville Uplift and Laramie Mountains to the south. Figure 3 is a generalized stratigraphic column of the Southern PRB and Figure 4 is a geologic map of the Project area.

The PRB is filled with marine, non-marine, and continental sediments ranging in age from early Paleozoic through Cenozoic. Sediments reach a maximum thickness of about 18,000 feet in the deepest parts of the basin, and probably range from 16,000-17,000 feet thick in the Project area, due to the close proximity to the deepest part of the basin. The southern part of the basin contains Lance, Fort Union, Wasatch, and White River formation outcrops.

The Upper Cretaceous Lance Formation is the oldest of these units and consists of 1,000 to 3,000 feet of thinly-bedded, brown to gray sands and shales (Sharp and Gibbons 1964). The upper part contains minor, dark carbonaceous shales and thin coal seams, indicating a changing depositional environment over time, which was in this case the gradual regression of a shallow inland sea.

The Paleocene Fort Union Formation conformably overlies the Lance and consists of poorly consolidated continental and shallow non-marine deposits. Sharp and Gibbons (1964) divide the Fort Union in the Southern PRB into two members (Upper and Lower) rather than the three members (Tongue River, Lebo, and Tullock) in the rest of the PRB due to the uncertainty of geologic contacts. The lower member consists of fine-grained, clay-rich, drab to pink sandstone with minor claystone and coal. The sandstones were deposited as alluvial fans and braided stream channels during erosion of the uplifted Black Hills, Bighorn, and Laramie Mountains. These sandstone horizons are the host rocks for the uranium deposits in the Project area.

The upper member of the Fort Union Formation consists of shale, clayey sandstone, fine to coarse-grained sandstone, and some extensive sub bituminous lignite beds. Thick coal seams have been observed in the central and northern portions of the PRB. These seams thin or
Figure 3. Stratigraphic Column of the Southern Powder River Basin
Figure 4. Geologic Map of the Southern Powder River Basin
completely disappear toward the southern portion of the PRB. The total thickness of the Fort Union formation varies between 2,000 and 3,500 feet (Sharp and Gibbons 1964).

The early Eocene Wasatch Formation unconformably overlies the Fort Union Formation around the margins of the basin. However, the two formations are conformable and gradational towards the basin center. The relative amount of coarse, permeable clastics increases near the top of Fort Union, and the overlying Wasatch Formation contains numerous beds of sandstone which are sometimes correlatable over wide areas. Except in isolated areas of the PRB, the Wasatch-Fort Union contact is arbitrarily set at the top of the thicker coals (nearby known as the Badger Coal) or of some thick sequence of clays and silts. A definitive marker bed is not present in the Project area of the basin.

The Wasatch Formation has been mostly removed by erosion and only small scattered outcrops are present in the Project area. The Wasatch is similar to the Fort Union, but also contains thick lenses of coarse, crossbedded, arkosic sands deposited in a high-energy fluvial environment. The Wasatch Formation reaches a maximum thickness of about 1,600 feet and dips northwestward from one degree to two-and-a-half degrees in the southern part of the PRB (Sharp and Gibbons 1964).

The Oligocene White River Formation overlies the Wasatch Formation and has been removed from most of the basin by erosion. Remnants of this unit crop out on the Pumpkin Buttes, located approximately 50 miles to the north of the project, and at the extreme southern edge of the Basin (about 15 miles to the south). The White River consists of clayey sandstone, claystone, a boulder conglomerate and tuffaceous sediments (Sharp and Gibbons 1964). The youngest sediments consist of Quaternary alluvial sands and gravels locally present in larger valleys. Quaternary eolian sands can also be found locally.

7.2 PROJECT GEOLOGY

The Project is located in the southwestern part of the PRB approximately three miles south of the Tertiary Wasatch-Fort Union Formation contact. The Fort Union Formation underlies the surface Wasatch Formation and is part of the thick Powder River sedimentary series. It consists of mudstones, siltstones and clays with minor cross bedded sandstone channels and occasional thin limestone and lignite beds (Lemmers and Smith 1981). The Fort Union Formation sandstones were deposited in a fluvial paleo-drainage system which flowed generally in a north-northeasterly direction. The host rocks for the uranium ore deposits in the Project area are the arkosic sandstones of the Lower member of the Fort Union Formation. These channel deposits are confined by mudstones that serve as aquitards to the water saturated aquifers.

The arkosic sandstones of the Lower member are gray to red, clay rich, cross bedded, cherty and poorly sorted, with grain sizes in individual beds ranging from fine to very coarse with coarse being the average. Minor to very abundant pyrite and carbonaceous material are present in most of the unaltered (unoxidized) channel deposits. The finer grained rocks range from medium gray siltstones to dark gray carbonaceous claystones. Structure contours indicate a gentle dip to the northeast at an average of one degree (Lemmers and Smith 1981).
7.3 **SIGNIFICANT MINERALIZATION**

Within the Project area, mineralization is found in 50- to 100-foot-thick sandstone lenses which extend over an area of two townships and ranges. On a regional scale, mineralization is localized and controlled by facies changes within the sandstone, including thinning of the sandstone unit, decrease in grain size, and increase in clay and organic material content (Galloway and Walton 1974; Sharp and Gibbons 1964). A laboratory study conducted by Hazen Research, Inc. for Uranium Resources found that the predominant uranium mineralogy is uraninite, a common uranium oxide mineral (Hazen Research, Inc. 1980).

Uranium One exploration nomenclature designated the sands in the Project area with decreasing numbers with depth. Mineralized “Production” Sands within the lower Ft. Union Formation were designated using a numeric theme so that the nomenclature designated the sands in the Project area with decreasing numbers with depth. This theme was developed so that the highest number sand (120 Sand) is designated at the top of the mineralized stratigraphic interval and the lowest mineralized sand (40 Sand) is designated as the lowest mineralized sandstone sequence. Figure 5 illustrates a typical geophysical log from the Ludeman Project.

The 40 and 50 sands are the deepest sands investigated within the Project. They are separated by the 50/40 shale and extend aerially across the Project area. The approximate thickness of the 40 and 50 sands are 11 to 146 feet and 10 to 158 feet, respectively. These sands contain lesser amounts of resource in various locations within the Project area. As these are the deeper sands, early exploration drilling was not targeted to these depths.

The 60 Sand is separated from the 50 Sand by the 60/50 shale. This sand is the first sand below the 70 Sand, which is the first unit containing significant resources in the Project area, and is therefore referred to as the underlying sand in a significant portion of the Project. The sand ranges from 0 to 160 feet thick within the Project area, pinching out in various locations.

The 70 Sand is separated from the 60 Sand by nearly 100 feet of the 70/60 shale in places. This sand is laterally extensive and ranges from 13 to 164 feet thick.

The 80 Sand is another significant host for uranium resources. This sand ranges in thickness from 0 to 161 feet thick with pinch-outs present in various locations within the Project area.

In the Project area, the uppermost mineralized sand is the 90 Sand, and it is separated from the 80 Sand by the 90/80 shale. This sand is laterally extensive within the Project area and its thickness ranges from 19 to 299 feet. The 100/90 shale overlies the 90 Sand and ranges from 3 to 119 feet thick.

The 100 and 110 sands are overlying sands within the Project area and separated by the 110/100 shale. The approximate thickness of the 100 and 110 sands are 9 to 127 feet and 29 to 147 feet, respectively. Both sands and the 110/110 shale have been eroded in various locations within the Project area.
Figure 5. Type Log of the Ludeman Uranium Project

3473-17-1007

120 Sand: Sandstone, very fine to coarse, arkosic, brown to pale yellow-orange, with interbedded shales and mudstones.

120/110 Shale: Shale, brown to gray, with thinly interbedded sands and coal.

110 Sand: Sandstone, very fine to coarse, arkosic, brown to pale yellow-orange, with interbedded shales and mudstones.

110/100 Shale: Shale, brown to gray, with thinly interbedded sands and coal.

100 Sand: Sandstone, very fine to coarse, arkosic, light to medium gray, with thinly interbedded shales and mudstones.

100/90 Shale: Shale, gray, with thinly interbedded sands

90 Sand: Sandstone, very fine to coarse, arkosic, altered, yellow-orange to brown, with interbedded shales and mudstones, minor occurrences of limonite and hematite.

90/80 Shale: Shale, light orange, with thinly interbedded sands.

80 Sand: Sandstone, very fine to coarse, arkosic, altered, yellow-orange to brown, with interbedded shales and mudstones, minor occurrences of limonite and hematite.

80/70 Shale: Shale, light orange, with thinly interbedded sands.

70 Sand: Sandstone, very fine to coarse, arkosic, altered, yellow-orange to brown, with interbedded shales and mudstones, minor occurrences of limonite and hematite.

70/60 Shale: Shale, gray to light orange, with thinly interbedded sands.

60 Sand: Sandstone, very fine to coarse arkosic light to medium gray, with interbedded shales and mudstones.

60/50 Shale: Shale, gray, with interbedded sands.

50 Sand: Sandstone, very fine to coarse, arkosic, light to medium gray, with interbedded shales and mudstones.

50/40 Shale: Shale, gray, with thinly interbedded sands.

40 Sand: Sandstone, very fine to coarse, arkosic, light to medium gray, with interbedded shales and mudstones.
The uppermost overlying sand in the Project area is the 120 Sand, which is separated from the 110 Sand by the 120/110 shale. The thickness of the 120 Sand ranges from 29 to 147 feet and is largely eroded in the southeastern portion of the Project area.

7.4 HYDROGEOLOGY

The Project is located within the Powder River Drainage Basin. The area is of moderate topographic relief with ephemeral surface water drainages to the Powder River to the west. Cottonwood Creek drains the area toward the Powder River.

Recharge to the sands of the Fort Union are mainly along their outcrops. Flow in the aquifers generally moves to the northeast along the paleodrainage trend with a small portion of the groundwater discharging to streams. Aquifer properties are variable due to changes in local lithologies. Average transmissivity within the Project has been calculated to be 370 gpd/ft.

As shown on Figure 5, confinement exists between the mineralized sand aquifers and the overlying and underlying aquifers. The aquitards are composed of siltstone and claystone. Ground water levels on the property vary with topography and range from 60 feet deep to near surface in the alluvial valleys and up to 200 feet deep under adjacent ridges.

Approximately 12 families living within the Negley subdivision rely on water wells for their drinking water source. All mapping to date has shown the Negley wells to be in aquifers above the zones of uranium mineralization.

8.0 DEPOSIT TYPE

8.1 DEPOSIT TYPE AND GEOLOGIC MODEL

Uranium mineralization at the Project is typical of Wyoming roll-front sandstone deposits. The formation of roll front deposits is largely a groundwater process that occurs when uranium-rich, oxygenated groundwater interacts with a reducing environment in the subsurface and precipitates uranium. The most favorable host rocks for roll fronts are permeable sandstones with large aquifer systems. Interbedded mudstone, claystone, and siltstone are often present and aid in the formation process by focusing groundwater flux. The geometry of mineralization is dominated by the classic roll front “C” shape or crescent configuration at the alteration interface and shown conceptually in Figure 6. The highest grade portion of the front occurs in a zone termed the “nose” within reduced ground just ahead of the alteration front. Ahead of the nose, at the leading edge of the solution front, mineral quality gradually diminishes to barren within the “seepage” zone. Trailing behind the nose, in oxidized (altered) ground, are weak remnants of mineralization referred to as “tails” which have resisted re-mobilization to the nose due to association with shale, carbonaceous material, or other lithologies of lower permeability. Tails are generally not amenable to ISR because the uranium is typically found within strongly reduced or impermeable strata, therefore making it difficult to leach (Davis 1969, Rackley 1972).
Drilling is the primary method to explore for uranium roll fronts deposits at depth. This method is utilized by most operators and to the author’s knowledge, no other methodology has been utilized in the past at the Project.

The past exploration efforts by predecessor companies have been described in Sections 6.1 and 6.2.

Uranium One’s exploration efforts have been focused on developing upgraded Mineral Resources throughout the Project area based primarily on the historic work done by others see Section 10 for information on Uranium One’s drilling program.
10.0 DRILLING

10.1 TYPE AND EXTENT OF DRILLING

To date, more than 7,600 drill holes have been drilled by Uranium One and previous uranium exploration companies on the Project. Previous companies include Teton Exploration (Teton), Power Resources, Inc., Uranium Resources, Inc., and Malapai Resources Company (a subsidiary of Arizona Public Services) which collectively drilled about 5,416 holes within the project (Malapai 1985a & 1985b, Nuclear Assurance Corporation 1979). The historical data sets in Uranium One’s possession were generated by competent exploration companies that used acceptable practices of the day. All available data from geologic reports, drilling, survey coordinates, collar elevations, depths, electric log data, and grade of uranium intercepts, have been incorporated into Uranium One’s database. The data were found to be adequate and sufficient to support current NI 43-101 compliant resource estimates and other discussions contained in this report.

To the author’s knowledge, all historic drilling was conducted by mud rotary drilling, with cuttings samples taken every five feet during drilling of the hole. The color and texture of these samples were then analyzed to determine oxidation/reduction state and lithologic characteristics.

Since acquiring the Project, Uranium One has completed several drilling campaigns. A total of 2,181 mud rotary holes, core holes, and monitoring wells were completed between 2007 to 2012 by Uranium One within the Project area. The primary goals of the drilling program were:

- Exploration drilling to establish continuity of regional mineralized ore trends,
- Development drilling to determine the lateral extensions of the orebody boundaries,
- Stratigraphic investigation to confirm lithology and to confirm overlying and underlying hydrogeological confinement,
- Confirmation of the location and nature of mineralization as reported by historical drilling information, and
- Collection of core for leach testing and analysis of uranium, mineralogy, trace metals, disequilibrium, permeability, porosity and density.

The drilling campaigns commenced in January 2007 and continued on an annual basis until 2012. A summary of the best holes drilled is summarized in Table 2. All drilling was mud-rotary type conducted by contracted drill rigs. The drill rigs are truck-mounted, water well-style rigs rated to depths of 1,000-1,500 ft.

11.0 SAMPLE PREPARATION, ANALYSIS, AND SECURITY

Uranium One has Quality Assurance/Quality Control (QA/QC) procedures to guide drilling, logging, sampling, analytical testing, sample handling, and storage. It is the Author’s belief that all procedures were conducted properly.
Table 2. Summary of Uranium One Drilling From 2007 to 2012

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of drill holes</th>
<th>Best hole</th>
<th>Grade (G) (%)</th>
<th>Thickness (T) (ft)</th>
<th>Grade x Thickness (GT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>814</td>
<td>3473-15-1048</td>
<td>0.172</td>
<td>23.5</td>
<td>4.04</td>
</tr>
<tr>
<td>2008</td>
<td>345</td>
<td>3474-23-M-13</td>
<td>0.216</td>
<td>18.0</td>
<td>3.89</td>
</tr>
<tr>
<td>2009</td>
<td>443</td>
<td>3473-16-1120</td>
<td>0.178</td>
<td>11.5</td>
<td>2.05</td>
</tr>
<tr>
<td>2010</td>
<td>344</td>
<td>3473-15-1127</td>
<td>0.139</td>
<td>16.5</td>
<td>2.29</td>
</tr>
<tr>
<td>2011</td>
<td>85</td>
<td>3474-14-U-1066</td>
<td>0.154</td>
<td>33.5</td>
<td>5.16</td>
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<tr>
<td>2012</td>
<td>150</td>
<td>3474-14-U-1093</td>
<td>0.270</td>
<td>13.0</td>
<td>3.51</td>
</tr>
<tr>
<td>Total:</td>
<td>2,181</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11.1 DOWNHOLE GEOPHYSICAL LOGGING

Geophysical logging was routinely conducted for every drill hole on the Project, Uranium One utilizes and maintains their own geophysical logging units. The logging units were regularly calibrated at the Casper, WY DOE test pit. Geophysical logs typically collected data for gamma ray, single-point resistance, spontaneous potential, and drill hole deviation. Geologists use single-point resistance and spontaneous potential (SP) to identify what intervals are sandstones (aquifers) or shales (intervals of confinement). Together, these electrical properties of the formation are used as lithology indicators along with borehole drill cuttings to validate rock types from the geophysical drill logs. Natural gamma logs provide an indirect measurement of uranium content by logging gamma radiation in counts per second (CPS) at one-tenth foot intervals, CPS are then converted to equivalent $\text{U}_3\text{O}_8$ ($\text{eU}_3\text{O}_8$). The conversion requires an algorithm and several correction factors that are applied to the CPS value. The correction factors include a k-factor, dead time factor, and water factor. K-factors and dead times vary from probe to probe and can also vary in each probe over time.

In all holes drilled by Uranium One, downhole deviation surveys provided true depth, azimuth, and distance from collar location. Deviation rarely exceeded 5 feet, so true depth correction is insignificant. Uranium One staff surveyed drill hole collar locations using Trimble GPS technology to provide easting and northing coordinates and elevations.

All recent logging data is recorded in digital and hard copy paper formats and provided to Uranium One geologists by the logging operators. The logs are transferred to electronic versions with the field geologist’s lithology logs for further evaluation. Uranium One drill data is kept on a local, secure server with tape backups maintained in a safety deposit vault.

11.2 CORE DRILLING

Uranium One has completed one core hole to date on the Project. The assay results of that core were developed in 2007 by Energy Labs, Inc. of Casper, WY. Initial evaluation of the results indicates a slightly positive equilibrium. Historic data indicates that the previous operators conducted extensive coring of the mineral host sands. The author was not provided the results of Uranium One’s core drilling data or assay values from Energy Labs, Inc.
Leuenberger
Several historic core holes have been drilled in the Leuenberger area. Approximately 22 cores were drilled by Teton. Drill logs exist for the holes but no chemical assay data have been located to date.

North Platte
Data indicates that six core holes were drilled by Uranium Resources during development of the North Platte Project. Data for only one of these holes has been found. One core hole, 15-421C, returned a positive equilibrium value $U_e/U_c$ of 1.26. The limited amount of data makes this value for such a large area invalid (Ortiz 2005).

Peterson
In 1980 Malapai Resources conducted physical testing on cores from the property and contracted Hazen Research Inc. to conduct both agitation and column leach studies for alkaline lixivants.

11.2.1 Equilibrium Studies
Equilibrium occurs when the relationship of uranium with its naturally occurring radioactive daughter products is in balance. Oxygenated groundwater moving through a deposit can disperse uranium down the groundwater gradient, leaving most of the daughter products in place. The dispersed uranium will be in a favorable state of disequilibrium ($c/e = \text{greater than } 1$) and the depleted area will be in an unfavorable state ($c/e = \text{less than } 1$). The effect of disequilibrium can vary within a deposit and has been shown to be variable from the oxidized to the reduced side of the roll fronts.

The great majority of the data available for estimation of Mineral Resources is radiometric geophysical logging data from which the uranium content is interpreted. Radiometric equilibrium conditions may affect the grade and spatial location of uranium mineralization. Generally, an equilibrium ratio (Radiometric $e_{U_3O_8}$ to Chemical $U_3O_8$) is assumed to be 1, i.e. equilibrium is assumed. In the Peterson area of T34N R73W data is available for the evaluation of radiometric equilibrium (BRS 2008). Available equilibrium data from 34 core holes is summarized in Table 3. As shown on Table 3, the equilibrium for the core holes in the Peterson area is nearly 1.

In summary, given the insufficient amount of available data across the Project area an assumption of radiometric equilibrium is reasonable with respect to mineral resources.

In the opinion of the Author additional core drilling and disequilibrium analyses need to be conducted across the entire Project to expand on the data from the Peterson area and to verify the disequilibrium factor for the Project. The high variation in equilibrium factors does present some risk for development with the potential for less resources to be realized than those estimated herein.
Table 3. Historic Disequilibrium Data for the Peterson Area

<table>
<thead>
<tr>
<th>Hole ID</th>
<th>Top</th>
<th>Thickness</th>
<th>Radiometric Grade (%)</th>
<th>GT Radiometric</th>
<th>Chemical Grade (%)</th>
<th>GT Chemical</th>
<th>Equilibrium Ratio Chemical to Radiometric</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Section 19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>301c</td>
<td>191.0</td>
<td>8.0</td>
<td>0.096</td>
<td>0.768</td>
<td>0.074</td>
<td>0.592</td>
<td>0.771</td>
</tr>
<tr>
<td>195c</td>
<td>193.5</td>
<td>6.5</td>
<td>0.035</td>
<td>0.228</td>
<td>0.040</td>
<td>0.259</td>
<td>1.136</td>
</tr>
<tr>
<td>54c</td>
<td>237.0</td>
<td>9.5</td>
<td>0.194</td>
<td>1.843</td>
<td>0.117</td>
<td>1.112</td>
<td>0.603</td>
</tr>
<tr>
<td>56c</td>
<td>153.0</td>
<td>12.0</td>
<td>0.065</td>
<td>0.780</td>
<td>0.044</td>
<td>0.528</td>
<td>0.677</td>
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<tr>
<td>122c</td>
<td>286.0</td>
<td>5.0</td>
<td>0.070</td>
<td>0.350</td>
<td>0.094</td>
<td>0.470</td>
<td>1.343</td>
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<tr>
<td>152c</td>
<td>240.0</td>
<td>6.5</td>
<td>0.034</td>
<td>0.221</td>
<td>0.047</td>
<td>0.308</td>
<td>1.394</td>
</tr>
<tr>
<td>152c</td>
<td>254.0</td>
<td>2.5</td>
<td>0.046</td>
<td>0.115</td>
<td>0.059</td>
<td>0.147</td>
<td>1.278</td>
</tr>
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<td>6.754</td>
<td>1.200</td>
<td>7.798</td>
<td>1.155</td>
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<td>1.079</td>
<td>0.072</td>
<td>0.936</td>
<td>0.867</td>
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<td>0.133</td>
<td>0.058</td>
<td>0.145</td>
<td>1.094</td>
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<td>0.048</td>
<td>0.192</td>
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<td>0.650</td>
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<td>1.510</td>
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<td>76c</td>
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<td>0.517</td>
<td>0.063</td>
<td>0.348</td>
<td>0.673</td>
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<td>0.035</td>
<td>0.052</td>
<td>1.284</td>
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<td>0.078</td>
<td>0.026</td>
<td>0.077</td>
<td>0.987</td>
</tr>
<tr>
<td>335c</td>
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<td>0.036</td>
<td>0.038</td>
<td>1.056</td>
</tr>
<tr>
<td>335c</td>
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<td>0.114</td>
<td>0.064</td>
<td>0.064</td>
<td>0.561</td>
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<tr>
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<td>244.0</td>
<td>3.0</td>
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<td>0.114</td>
<td>0.030</td>
<td>0.091</td>
<td>0.798</td>
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<td>5.0</td>
<td>0.057</td>
<td>0.285</td>
<td>0.050</td>
<td>0.250</td>
<td>0.877</td>
</tr>
<tr>
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<td>0.116</td>
<td>0.056</td>
<td>0.112</td>
<td>0.966</td>
</tr>
<tr>
<td>350c</td>
<td>149.0</td>
<td>7.0</td>
<td>0.060</td>
<td>0.462</td>
<td>0.072</td>
<td>0.504</td>
<td>1.091</td>
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<td>0.070</td>
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<td>0.660</td>
<td>0.055</td>
<td>0.660</td>
<td>1.000</td>
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<td>4.254</td>
<td>4.393</td>
<td>1.033</td>
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<td>Section 36</td>
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<td>22c</td>
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<td>0.055</td>
<td>0.495</td>
<td>0.071</td>
<td>0.639</td>
<td>1.291</td>
</tr>
<tr>
<td>25c</td>
<td>149.5</td>
<td>4.5</td>
<td>0.300</td>
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<td>0.131</td>
<td>0.590</td>
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<tr>
<td>37c</td>
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<td>0.123</td>
<td>0.043</td>
<td>0.108</td>
<td>0.882</td>
</tr>
<tr>
<td>37c</td>
<td>152.5</td>
<td>8.0</td>
<td>0.125</td>
<td>1.000</td>
<td>0.076</td>
<td>0.608</td>
<td>0.608</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Total Section 36</td>
<td>2.968</td>
<td>1.945</td>
<td>0.655</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total All Sections</td>
<td>22.701</td>
<td>21.453</td>
<td>0.945</td>
<td></td>
</tr>
</tbody>
</table>
11.3 BOREHOLE DRILL CUTTINGS

During drilling of all holes, cuttings are collected at 5-ft. depth intervals. Detailed descriptions of each of these samples are then documented by the Company’s field geologists. Drill cutting samples are valuable for lithologic evaluation, confirmation of electric log (E-log) interpretation, and for description of redox conditions based on sample color. Identifying redox conditions in the host formation is critical for the interpretation and mapping of roll fronts. Note, however, that cuttings samples are not analyzed for uranium content because there is considerable dilution and mixing that occurs as the cuttings are flushed to the surface. In addition, the samples are not definitive with regard to depth due to variation in the lag time between cutting at the drill bit and when the sample is collected at the surface.

12.0 DATA VERIFICATION

The original, historic, radiometric drill data was available as a paper record. This data was input as electronic data via a spreadsheet and utilized in the development of this report. Data entry was checked and confirmed. Drill hole locations were input from coordinate listings and plotted. The resultant drill maps were then checked and confirmed by overlaying with the original maps.

Radiometric log interpretation was spot checked for the higher grade intercepts and as previously discussed the historic log interpretation followed standard methods.

Uranium One drill data included collar elevation, collar location, grade and elevation of mineralized intercepts, elevation of bottom of hole. Uranium One drill hole locations were taken from field surveys using modern survey grade GPS equipment. All historic coordinates were converted to match the Wyoming State Plane NAD83 coordinate system. This conversion included the re-surveying of approximately 10% of historic drill holes and any historic claim posts that could be located in the field. Rectification of the historic local coordinate system to the Wyoming State Plane NAD83 coordinate system was completed and combined with the new drill data. With this rectification historic drill holes could be located in the field with an estimated error of less than 10 feet.

Uranium One has offset numerous historic drill holes to conduct confirmation drilling at the Ludeman Project with results which validate the historic data. The mineral intercept data of all previous operators was selectively checked for accuracy by Uranium One geologists utilizing the U.S. Atomic Energy Commission standard methods for calculating the thickness and grade of said intercepts.

No historic core samples still exist to verify the historic data.

After a review of that data, it is The Author’s opinion that the historical mineral intercept data are valid, do not require re-calculation and are suitable for resource estimation in this Technical Report.
13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

No recent mineral processing or metallurgical testing have been conducted on material from the Project or in-situ. However, Section 6.4 describes previous R&D and metallurgical testing conducted by previous Project owners.

14.0 MINERAL RESOURCE ESTIMATES

In-place eU$_3$O$_8$ resources for the Project were estimated and classified according to the CIM definition of a Mineral Resource classification of Measured, Indicated, and Inferred resources. The Project has been drilled on quite variable drill hole spacing. In areas of historic development, 50-foot to 100-foot spacing is common but large areas of greater drill spacing exist. To date, more than 7,600 drill holes have been drilled on the Project.

Data preparation consisted predominantly of locating, editing, and compiling drill hole location and downhole mineralized interval data for each roll front across the Project area. The data utilized was from historic datasets from previous operators as well as new drill data generated by Uranium One since acquisition of the properties. These data consisted of drill hole core and cutting description logs, geophysical logs, maps, cross sections, reports, and digital databases.

14.1 ASSUMPTIONS

The mineral resource estimates were completed using accepted methods mandated by NI 43-101 and CIM standards. In order to “normalize” calculations, certain assumptions were incorporated throughout all calculations. The assumptions and methods are as follows:

Assumptions:

- Radiometric disequilibrium factor (DEF) is 1.00.
- The unit weight of the ore zone is 17.0 cubic feet per ton, based on historical data.
- All geophysical drill logs were assumed to be calibrated per normal accepted protocols.
- All geophysical logs are assumed to be calibrated per normal accepted protocols, and grade calculations are accurate.

14.2 CUTOFF SELECTION

Minerals that are reported as resources must be below the historical, pre-mining static water level and must meet several criteria. These cutoff criteria are:

- Minimum Grade: 0.020% eU$_3$O$_8$
  - Grade measured below the cutoff is considered a zero value
- Minimum GT (Grade x Thickness): 0.25
Intercepts with values lower than this cutoff are mapped outside the GT values employed for resource estimation. They are given a resource value of zero and are excluded from the reported resources.

Due to the nature of roll front deposits and production well designs, the cost of addressing low grades is minimal. The GT cutoff of 0.25 is representative of past operations in similar geologic and economic situations.

14.3 Resource Classification

In the Author’s opinion, the resource can be defined by existing drilling information, which is of sufficient density and continuity to identify numerous mineralized trends at the Project (Figure 7). The data appear to meet the criteria for “Measured and Indicated” Mineral Resources under the CIM standards on Mineral Resources. The grade and mineralized zone thickness were obtained from historical and recent exploratory drilling data as discussed in Section 10.

The mineralized roll fronts which traverse the Project display good geologic continuity, as demonstrated by drill hole results displayed on plan maps and cross sections. Thickness and grade continuity within the Project Units is also good; however, continuity vertically within roll fronts is more variable.

For the Ludeman resource estimates, the classification was based on the following three criteria.

1) Distance between data points (drill hole locations):
   a) Measured – 0 feet to 70 feet between locations.
   b) Indicated – 70 feet to 200 feet between locations.
   c) Inferred – 200 feet to 400 feet between locations.
2) A GT cut-off of 0.25.
3) Mineralization continuity within the roll front as demonstrated by drill log correlation.

These criteria were selected because they are consistent with those commonly used at the other ISR projects in the area and their application reflects the current level of geologic certainty of the resource.

14.4 Methodology

Recent and historical drilling data are used to define the Project resources. The mineral intercept and the mineral horizon are defined as the basic units of the mineral identity and the mineral resource respectively. These units are also generally used as a synonym for the roll front. By assigning mineral intercepts, mineral horizons can be identified by a geologist’s interpretation of the stratigraphy, redox, and roll front geometry and zonation characteristics. Horizons, or roll fronts, can then be used to derive and report the resources that are being targeted. Resource areas can then be defined by combining the resources in multiple mineral horizons.
Figure 7. Ludeman Uranium Mineralization
Drill hole gamma logs are used to define where the drill hole has intersected a mineralized zone and, thus, derive the uranium intercepts. The uranium content detected by gamma logs is then reported in terms of mineral grade as \( \text{eU}_3\text{O}_8 \% \) on 0.5 ft. depth intervals. The mineral intercept is defined as an interval of continuous thickness where the uranium concentration meets or exceeds the grade cutoff value, which is 0.25. Any uranium values below this cutoff value are treated as zero value when calculating the resource estimation. The mineral intercept is defined by the thickness of the mineralized interval, the average grade of the mineral, and the depth of the top of the interval.

A GT value is also assigned to each mineral intercept and is used to represent the overall quality of the mineral intercept and to characterize a potential economic intercept. Mineral intercepts with a GT ≥ 0.25 are considered potentially economic. Mineral intercepts with a GT < 0.25 are excluded from the resource calculation, however, these intercepts may be used to generate GT contours.

Geologic evaluations are used to assign stratigraphic and mineral horizons. Roll front correlation is the primary method used to assign mineral intercepts to mineral horizons and the depth and elevation of the intercepts are the secondary criteria to support correlation. Gamma ray signatures, redox states, lithologies, and relative mineral qualities are also used to interpret the roll front zonation (position within the roll front). Mineral intercept data and associated interpretations are stored in a database that is inventoried per drill hole and mineralized horizon. Map plots can then be generated using GIS software combined with this database to display GT values and interpret data for each mineral horizon.

The mineral resource estimates shown below were calculated using the GT contour method. The GT values of the subject sand intervals for each hole were plotted on a drill hole map along with notations of where in the roll front that intercept was located. The roll front was then mapped and contour lines for the GT values were drawn. The areas within the GT contour boundaries were used for calculating resource estimates utilizing the following criteria:

- **Thickness**: Average thickness of the intercepts assigned to a particular mineral horizon (inherent in GT values)
- **Grade**: Average grade of the mineral intercepts assigned to a particular mineral horizon (inherent in GT values)
- **Depth**: Average depth of a mineral intercept assigned to the top of the mineral horizon
- **Area**: The area interior to the 0.25 GT contour lines

Mineralized intervals (the thickness of the mineralized zone) for each exploratory drill hole were determined from the geophysical logs based on a 0.02 percent grade cut-off. An average grade per drill hole intercept was then determined based on conversion of the counts per second to grade. The product of the mineralized thickness and grade was used to calculate the GT. The contained pounds of uranium were calculated using the following formula:
Mineral Resource, pounds = (Area, ft$^2$) X (GT, %-ft) X (20 lbs) X (DEF) / (RD, ft$^3$/ton)

Area (ft$^2$) = Area of influence in square feet (measured from contour interval)
GT = Ore grade in percent times feet thickness of mineralization averaged within any given contour interval
20 lbs= Conversion constant: grade percent and tons to unit pounds 1% of a ton
DEF = Disequilibrium factor (1.00)
RD = Rock density (17.0 cubic feet/ton)

Tonnage was calculated based on grade, pounds and a tonnage conversion factor for a given GT contour area.

GT contouring remains the most dependable method for reliable estimation of resources in roll front uranium deposits. However, this method also depends on the competency of the roll front geologist and the accuracy of the mineral body correlation and contour.

14.5 RESOURCE ESTIMATION AUDITING

The following methods were used for quality control and assurance for the resource estimates detailed.

1. 469 random historical log files from Uranium One within the Resource Area were examined in detail to confirm gamma interpretations and grade calculations.
2. Multiple historic logs were reviewed to confirm geologic and grade continuity throughout the Ludeman Project.
3. Drilling density as depicted on maps was evaluated to demonstrate that the uranium mineralization at the project location was consistent with CIM resource definitions.
4. Detailed examination of significant resource bearing roll front systems was conducted in collaboration with Uranium One geologists to confirm log interpretations, continuity of mineralization, and the nature of GT development.
5. Random mineralized zones within the resource model were evaluated to confirm the area assigned to the particular GT contour.
6. Resource classification methods and results were reviewed against standard industrial practices and CIM resource definitions.

The Author accepts the Uranium One interpretations as properly done and as responsible representations of the minerals present. These interpretations provide a reasonable basis for calculating the uranium resources at the project location.

14.6 SUMMARY OF RESOURCES

The Author concludes the Measured and Indicated resources of approximately 9.7 million pounds of U$_3$O$_8$ for the Ludeman Uranium Project are compliant with Canadian NI 43-101 guidelines. There is limited risk that the estimate of quantity, quality, and physical characteristics of the
resources of the Project will be unfavorably affected by future investigations. The Author recommends that Uranium One proceed with their proposed drilling program summarized in Section 19 of this Technical Report and the completion of a PEA or similar feasibility analysis.

The reader is cautioned that due to the uncertainty, which may attach to Inferred Mineral Resources, it cannot be assumed that all or any part of an Inferred Mineral Resource will be upgraded to an Indicated or Measured Mineral Resource, because of continued exploration. Confidence in the Inferred Mineral Resource estimate is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Inferred Mineral Resources must be excluded from estimates forming the basis of a PEA or other feasibility studies.

The results of the estimation of U₃O₈ resource in the Project are summarized below in Tables 4 and 5.

**Table 4. Summary of Measured and Indicated Resources Ludeman Project (0.25 GT Cutoff)**

<table>
<thead>
<tr>
<th>Township/Range</th>
<th>Section</th>
<th>Sand</th>
<th>Ore Tonnes, (000's)</th>
<th>Average Grade % eU3O8</th>
<th>eU3O8 Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Measured</td>
</tr>
<tr>
<td>T34N R74W</td>
<td>14</td>
<td>80</td>
<td>976</td>
<td>0.098</td>
<td>2,107,900</td>
</tr>
<tr>
<td>T34N R74W</td>
<td>14</td>
<td>90</td>
<td>186</td>
<td>0.087</td>
<td>357,600</td>
</tr>
<tr>
<td>T34N R74W</td>
<td>11</td>
<td>80</td>
<td>183</td>
<td>0.099</td>
<td>400,000</td>
</tr>
<tr>
<td>T34N R74W</td>
<td>13-14</td>
<td>40-50</td>
<td>881</td>
<td>0.089</td>
<td>1,728,500</td>
</tr>
<tr>
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<td>166</td>
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</tr>
<tr>
<td>T34N R73W</td>
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<td>60</td>
<td>0.125</td>
<td>166,700</td>
</tr>
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<td>TOTAL</td>
<td>Measured</td>
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<td>2,426</td>
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<td>Measured + Indicated</td>
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<td>4,838</td>
<td>0.091</td>
<td>9,713,800</td>
</tr>
</tbody>
</table>

Note: 1) Township (T) Range (R) and Section are in reference to the Public Land Survey System. They are used herein to indicate geographical position of resources within the Project area.
Table 5. Summary of Inferred Resources Ludeman Project (0.25 GT Cutoff)

<table>
<thead>
<tr>
<th>Township/Range</th>
<th>Section</th>
<th>Sand</th>
<th>Ore Tonnes, (000's)</th>
<th>Average Grade % eU3O8</th>
<th>eU3O8 Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>T34N R74W</td>
<td>12</td>
<td>100</td>
<td>135</td>
<td>0.067</td>
<td>200,000</td>
</tr>
<tr>
<td>T34N R74W</td>
<td>15</td>
<td>80</td>
<td>460</td>
<td>0.069</td>
<td>699,000</td>
</tr>
<tr>
<td>T34N R73W</td>
<td>20</td>
<td>80</td>
<td>192</td>
<td>0.085</td>
<td>359,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>786</td>
<td>0.073</td>
<td>1,258,000</td>
</tr>
</tbody>
</table>

Note: 1) Township (T) Range (R) and Section are in reference to the Public Land Survey System. They are used herein to indicate geographical position of resources within the Project area.

14.7 RESOURCE ESTIMATE RISK

To the extent known, there are currently no environmental, permitting, legal, title, taxation, socio-economic, marketing, or political factors which could possibly affect the accessibility of the estimated resources.

There is risk of improper interpretation of geological data. Examples include data such as grade and continuity. Improper geologic interpretation could also impact the resource estimate in a positive or negative way. Geologists contributing to this Technical Report are thoroughly trained in understanding the nature of roll front uranium deposits to ensure realistic and accurate interpretations of the extent of mineralization.

15.0 MINERAL RESERVE ESTIMATES

This section is not applicable for this Project.

16.0 MINING METHODS

This section is not applicable for this Project.

17.0 RECOVERY METHODS

This section is not applicable for this Project.

18.0 PROJECT INFRASTRUCTURE

This section is not applicable for this Project.

19.0 MARKET STUDIES AND CONTRACTS

This section is not applicable for this Project.

20.0 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

This section is not applicable for this Project.
21.0 CAPITAL AND OPERATING COSTS

This section is not applicable for this Project.

22.0 ECONOMIC ANALYSIS

This section is not applicable for this Project.

23.0 ADJACENT PROPERTIES

The closest adjacent uranium mining property to the Ludeman Uranium Project is Cameco Resources’ Smith Ranch-Highland mine. Cameco reports that a total of 22.7 million pounds have been produced from the combined operations as of December 2017 (Cameco 2018).

24.0 OTHER RELEVANT DATA AND INFORMATION

There is no other relevant data or information to include.

25.0 INTERPRETATION AND CONCLUSIONS

The Author concludes that the Measured and Indicated resources of approximately 9.7 million pounds of U₃O₈ for the Ludeman Uranium Project are compliant with Canadian NI 43-101 guidelines. The Author concludes there is limited risk that the estimate of quantity, quality, and physical characteristics of the resources of the Project will be adversely affected by future investigation.

Uranium One, in coordination with the Author, conducted an intensive, log-by-log roll front mapping exercise that used more than 7,600 geophysical logs and resulted in a series of detailed GT contour maps. In the opinion of the Author, this method of resource estimation optimizes the data collected from drilling and is an established method for providing preliminary wellfield designs and layouts necessary for uranium ISR.

This technical report summarizes the estimated mineral resource within the Project held by Uranium One in the South Mining District of the PRB, Wyoming. The estimated Measured and Indicated Mineral Resource at a 0.02% U₃O₈ grade and 0.25 GT cut-off for the Project is approximately 9.7 million pounds of eU₃O₈ (Table 4).

Available data, including historical lithological and geophysical logs of previous exploration of the Project and data from exploration conducted by Uranium One between 2007 and 2012, support the estimate of Mineral Resources as summarized above and detailed in Section 14.5. In the opinion of the Author, the Project represents a viable mineral resource for ISR development.

The quantity and grade described in this NI 43-101 technical report is calculated using accepted protocols and therefore meets the NI 43-101 classification of indicated Mineral Resources as defined by NI 43-101 and the CIM Definitions Standards incorporated by reference therein.
26.0 RECOMMENDATIONS

The Author has the following recommendations for moving the Project towards further development:

- Continue delineation and in-fill drilling,
- Investigate areas of insufficient drilling to identify additional resource targets,
- Evaluate potential acreage for additional resources in immediate area,
- Finish obtaining the required state mining permits,
- Conduct more core drilling during development drilling of the project resources to gather more disequilibrium data for the project, and
- Progress geological and engineering components of the Project sufficient for application of capital and operational costs in an advanced technical report (PEA) or similar.
27.0 REFERENCES


 Cameco, 2018, Smith Ranch – Highland, available on the Internet as of December 2018


 Hazen Research, Inc., 1980, In-Situ Recovery of Uranium from Peterson Property Samples, Laboratory Studies.

 _____, 1984, In-situ Leach Simulations on Uranium Ores, Peterson Project, Converse County, Wyoming.


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 UNC Teton-Nedco, 1983, Leuenberger In Situ Mining Project, Converse County, Wyoming.


 WRCC, (Western Region Climate Center) 2007, Local Climate Data Summaries, available on the Internet as of December 2018: https://www.wrcc.dri.edu/summary/lcd.html.
28.0 CERTIFICATE
CERTIFICATE OF QUALIFIED PERSON

I, Benjamin J. Schiffer, Wyoming Professional Geologist, of 1849 Terra Avenue, Sheridan, Wyoming, do hereby certify that:

- I am currently employed by WWC Engineering, 1849 Terra Avenue, Sheridan, Wyoming, USA, as the Energy/Environmental Department Manager.

- I graduated with a Bachelor of Arts degree in Geology in May 1995 from Whitman College in Walla Walla, Washington.

- I am a licensed Professional Geologist in the State of Wyoming. My registration number is 3446 and I am a member in good standing. I am a Registered Member of the Society of Mining, Metallurgy and Exploration. My Registration Number is 4170811 and I am in good standing.

- I have worked as a geologist for 23 years in natural resources extraction.

- I have 14 years’ direct experience with uranium exploration, resource analysis, uranium ISR project development, project feasibility and licensing. My relevant experience for the purposes of this analysis includes Field Geologist at COGEMA Mining, Christensen Ranch Mine (now Uranium One America’s Willow Creek Project); Restoration Specialist at COGEMA Mining, Holiday-El Mesquite Mine; Project Manager on multiple due diligence assessments of ISR mines and projects in Wyoming, Texas and New Mexico; Permit Coordinator for Strata Energy, Ross ISR Uranium Project, qualified person on the NI 43-101 assessment (PEA) of Anatolia Energy’s Temrezli ISR Project in Yozgat, Turkey, qualified person on the NI 43-101 Technical Report on the Resources of the Shirley Basin Uranium Project, Carbon County, Wyoming, USA, August 27, 2014 and qualified person on the NI 43-101 Preliminary Economic Assessment (PEA) of the Shirley Basin Uranium Project, Carbon County, Wyoming, USA, January 27, 2015.

- I have read the definition of “qualified person” set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, professional registration, and relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.

- I am independent of Uranium One as described in Section 1.5 of NI 43-101.

Dated this 25th day of January 2019
Benjamin J. Schiffer, P.Geo.