

## 9 Drilling (Item 13)

*Section 9 is extracted in-part from Powertech's Technical Report titled "Updated Technical Report on the Centennial Uranium Project, Weld County, Colorado", dated February 25, 2010. Changes to standardizations, sub-titles, and organization have been made to suit the format of this Technical Report. SRK comments and opinions, where present, contain "SRK" in the pertinent sentences and paragraphs.*

From August 2007 to October 2007 and from August 2008 to September 2008, Powertech (and its contractor) completed three drilling programs, totaling 41 drillholes and 14,931ft of drilling on the Centennial Project. The depths of these holes ranged from 103 to 900ft-below-surface. While geologic and geophysical information was collected from all drillholes, they were used for multiple purposes. There were 18 holes completed as water wells, 15 as rotary drillholes and 8 as core holes. With the exception of the holes converted to wells, all other drillholes were plugged and abandoned in accordance with State of Colorado regulations.

Since the filing of the June 2009 updated technical report on resources, 16 water wells and 2 core holes have been completed on the project. This drilling was approved by the Colorado DRMS through the filing of a NOI. These wells were developed for the purpose of conducting a pumping test to investigate the characteristics of the aquifer and the quality of groundwater in the vicinity of Powertech's initial proposed well field. As of the writing of this report, the pumping test has not yet been conducted. Four hundred and fifty-four feet of core was collected from the two core holes and selected intervals of two water wells. Laboratory analyses were performed on this core to examine the nature of the uranium mineralization, as well as chemical and physical characteristics of the host sandstones and confining units in the subsurface. A total of 8,677ft of drilling was completed during this field program.

The two core holes were plugged and abandoned in accordance with State of Colorado regulations. The latest DRMS guidelines describe filling the drillhole, from the bottom upward, with a sodium bentonite plugging gel. The viscosity of this plugging gel is measured to be, at a minimum, 20 seconds higher than the viscosity of the bottom-hole drilling fluid. After a 24-hour settling period, this method of hole sealing emplaces a solid plug in the abandoned hole that has a high degree of elasticity. This type of plug conforms to irregularity within the drillhole and is considered to provide a more effective seal than a rigid cement plug. Once the plugging gel has been allowed to settle (24-hour period), the sealing procedure is completed by filling the remaining portion of the open hole with bentonite chips to within 13ft of the surface. A 10ft cement cap is placed on the bentonite chips and the final 3ft of the hole is filled with soil.

### 9.1 Mud Rotary Drilling

Powertech has used truck-mounted rotary drilling methods, utilizing a bentonite based circulation fluid. This style of drilling is consistent with historical drilling programs from the 1970's and 1980's. A 6.5in hole was drilled and rotary cutting samples were collected at 5ft intervals. A description of these cuttings are made by the on-site geologist and compiled into a lithology log for each drillhole. This rotary drilling was used to confirm several critical issues regarding previously identified uranium resources at the Centennial Project as described below.

Electric logs and geologic logs from this drilling confirmed the presence and tenor of multiple, mineralized Fox Hills sand units in the area. This drilling also examined the geologic setting of the project and the nature of the Fox Hills host sands, by demonstrating that the depositional

environments and lithologies of the Fox Hills Sandstone and the overlying Laramie Formation were found to be consistent with descriptions presented in the geologic literature and by previous operators on the project site.

Most importantly, the observation that geochemical oxidation cells within the host sands in the subsurface were directly related to uranium mineralization, establishes well-known geologic controls to uranium resources on this project. Encountering mineralized trends associated with “oxidized” and “reduced” sands within multiple sand units, provides reliable guides to the identification of resource potential, as well as to demonstrating continuity within known resource areas. This drilling demonstrated that originally hypothesized “roll-front” deposit model is appropriately applied to this project.

## 9.2 Core Drilling

The core drilling programs designed by Powertech utilized rotary drilling to reach core point. At that point, a 10ft-long, HX or 3in diameter core barrel (with core bit) is lowered into the drillhole. In the fall of 2009, two core holes were completed. In addition, mineralized core was obtained during the drilling of two water wells, totaling 454ft of HX or 3in core. Among other purposes, the coring was planned to intercept various parts of these uranium roll front deposits to obtain samples of mineralized sandstone for chemical analyses and metallurgical testing. Two of these core holes also provided core of the entire Upper Fox Hills Sandstone, and portions of the Laramie Formation and Lower Fox Hills Sandstone. Powertech used the coring information to examine the stratigraphy of this portion of the formation in detail to gain an in-depth understanding of the geologic character of the host sands, as well as the overlying and underlying sands and confining sediments.

One hundred twenty half-foot samples of mineralized core were sent to Energy Laboratories, Inc. (ELI) in Casper, Wyoming for multi-element analyses. These analyses included values for uranium (chemical), uranium (gamma), vanadium, selenium, molybdenum, iron, arsenic, calcium, sulfur and organic carbon. This “rock chemistry” provides valuable information for the design of ISR well field operations. Results of uranium assays are included in the equilibrium analyses contained in Section 12.0 (Data Verification) of this report.

Laboratory analyses were performed on selected core samples to determine the physical parameters for permeability and porosity of the mineralized sands, as well as overlying and underlying clays. This data will be incorporated into hydrological modeling for future aquifer pumping tests in the project area. Composite bulk densities were calculated for mineralized sands, yielding a 16.75ft<sup>3</sup>/t value, which was used in the resource evaluation portion of this report.

## 9.3 Groundwater Wells

Two pumping tests in the northern portion of the project area were conducted in October 2007 and February 2008. These tests demonstrated that production rates varied from 10 to 30 gallons per minute (gpm) and that there was excellent confinement between the mineralized Fox Hills sands and sub-aquifers in the overlying Laramie Formation. These tests also determined that an additional large-scale pumping test should be conducted in this region to obtain more hydrologic data for mine planning.

In anticipation of this large-scale pump test, sixteen water wells were completed within the northern portion of the Centennial Project area. The pump well for this test is completed in a mineralized A2 Sand, while monitoring wells were installed:

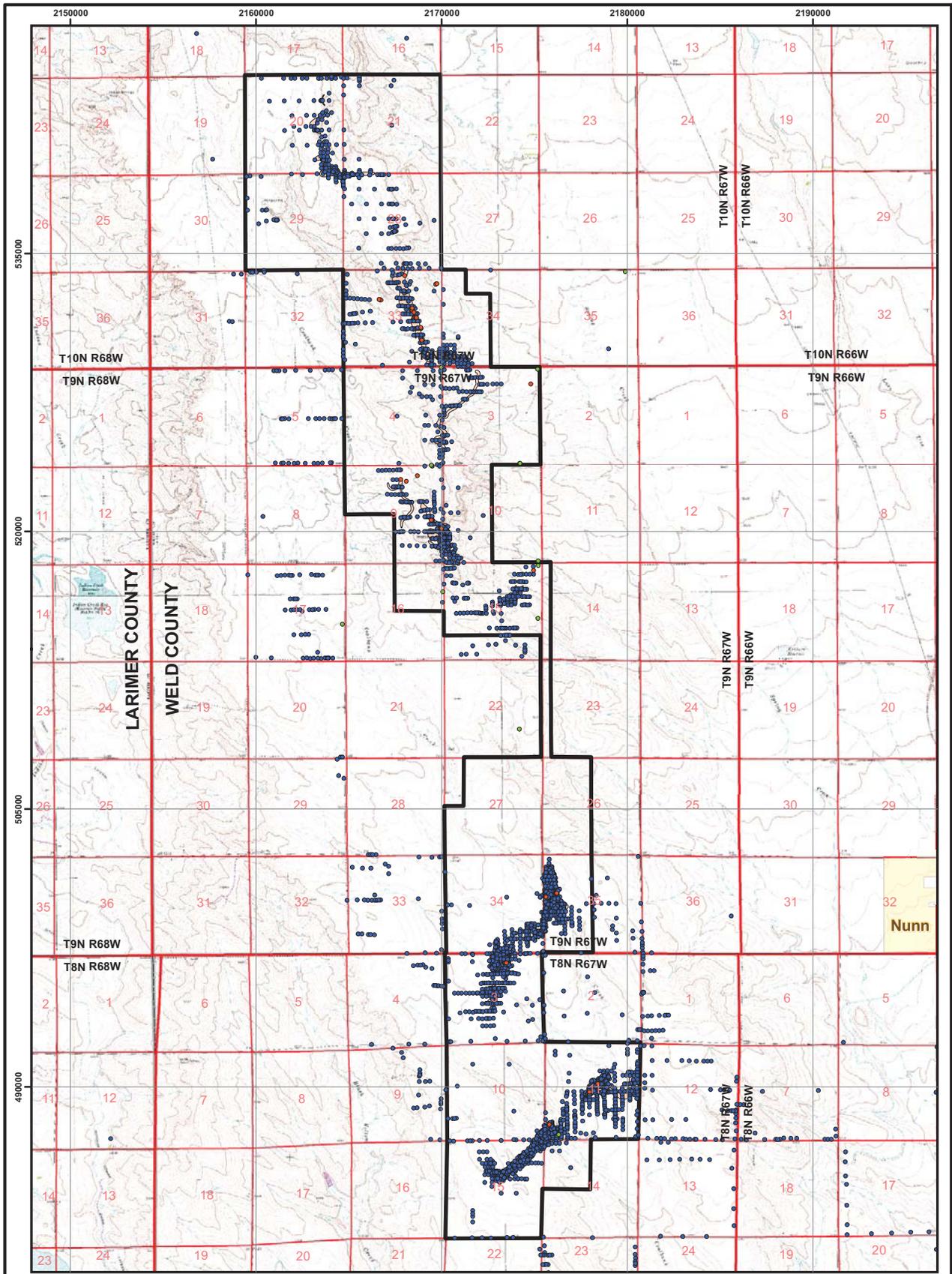
- Within the A2 Sand at varying distances from the pump well;
- Within the overlying Laramie sands; and
- Within the underlying WE and B Sands.

It is expected that the pumping test will be conducted in 2010.

## **9.4 Conclusion**

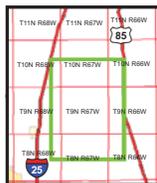
SRK concludes the drilling practices and have been conducted by industry-standard procedures. The drilling conducted by Powertech has confirmed historical drilling in terms of thickness and grade of uranium mineralization and has provided confirmatory geological controls to that mineralization – confirmation of the redox roll-front model.

Core drilling has provided the verification of the mineralization as being largely in equilibrium for those deposits that are below the current water table. Water wells have provided some information on groundwater characterization, and preliminary information to support potential ISR production parameters. See Section 17 for further discussion of the hydrogeology of the Centennial Project.



**Legend**

-  Proposed Permit Boundary
-  Powertech Exploration Wells
-  R Squared Wells
-  Historical Exploration Wells
-  Orebodies



**Figure 9-1**

Well Location and Density  
Historical and Exploraiton Wells  
Centennial Project

NAD 27 Colorado State Plane North (feet)

DRAWN BY	J. Mays, S. Hetrick
DATE	04-Aug-2010
FILENAME	WellDensityMap.mxd