

# **TECHNICAL REPORT ON THE SHIRLEY BASIN URANIUM PROPERTIES, WYOMING**

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**PREPARED FOR UR-ENERGY INC.**



**ROSCOE POSTLE ASSOCIATES INC.**

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**PREPARED FOR UR-ENERGY INC.**

**Report for NI 43-101**

**Author:**

**Stewart Wallis, P. Geo.**



**JUNE 20, 2005  
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**ROSCOE POSTLE ASSOCIATES INC.**

**Toronto, Ontario.  
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## **SUMMARY**

### **GENERAL**

Roscoe Postle Associates Inc. (RPA) has been requested by Ur-Energy Inc. (Ur) to prepare an Independent Technical Report compliant with National Instrument 43-101 on three uranium projects located in the Shirley Basin in Wyoming. Stewart Wallis, P.Geo., Consulting Geologist with RPA, visited the property and reviewed the relevant reports and data during the period May 9 to May 14, 2005.

The Shirley Basin Properties include the Bootheel, Buck Point and Chalk Hills properties which consist of 213 unpatented 20-acre Federal Lode claims and two 640-acre State Leases, totalling 5,080 acres located in Wyoming owned by New Frontiers Uranium LLC (NFU). Effective June 30, 2005, Ur-Energy entered into the Membership Interest Purchase Agreement where under it agreed to purchase all of the issued and outstanding membership interests in NFU for US\$20 million as part of a package that includes an extensive database.

The center of the Shirley Basin is about 35 miles south of Casper and 32 miles north of Medicine Bow. The properties are readily accessible year round by an extensive system of gravel and dirt ranching roads which extend from paved highways north and east of the town of Medicine Bow.

Uranium was discovered in the Shirley Basin in 1955. Utah Mining Corp. (later Utah Construction and Mining Co.) produced the first uranium in March 1960. Mining continued through the 1980s with the last mine closing in 1992. There is currently no production from the basin and most of the open pits have been reclaimed.

The project area is located in the eastern edge of the basin, which is underlain by up to 5,000 feet of Mississippian to Tertiary sedimentary rocks. The Triassic-Jurassic rocks represent shallow water facies: red siltstones, fine-grained sandstones, shale and

limestone which are overlain unconformably by the Early Eocene Wind River Formation, host for most of the mineralization in the Shirley Basin. The Wind River consists of up to 500 ft. of fluvial silty claystone, siltstone, arkosic sandstone and conglomerate.

Large high-grade roll front uranium deposits occur in a well-defined belt extending six miles northwest through the central Shirley Basin. Mineralization is hosted by the Wind River Formation sandstones, and deposits are found at the margins of large tongues of altered sandstones.

## **BOOTHEEL PROPERTY**

The Bootheel property consists of 104 20-acre unpatented claims and one 640 acre State lease.

The Bootheel property was originally staked in 1958 by Kerr McGee Corp. In 1977, Cherokee Exploration Inc. (Cherokee) acquired the land package, as well as the Kerr McGee database and drilling from 1978 to 1981 partly delineated both shallow and deep sandstone mineralization. In 1995, Cherokee sold the project and database to Cameco which later dropped the property. Total drilling on the property is estimated to be over 100,000 feet.

The claims are underlain by the Wagonbed Formation which consists of boulders, clay and sand which has been washed out on the pediment. It ranges in thickness from a few feet to 100 ft. in thickness and is underlain by fluvial silty claystone, siltstone, arkosic sandstone and conglomerate of the 50 to 100 ft. thick Eocene Wind River Formation, which dips 1.5° northeast and which unconformably overlies basinal-lacustrine quartzose sandstones, siltstones, and shales of what is thought to be the Hannah Formation. The Hannah Formation appears to be a regular series of continental sandstones of lacustrine origin, at least 500 ft. thick, which unconformably overlies the older Jurassic-Cretaceous rocks which dip 5° southwest.

Mineralization is reported to occur as modified roll-front deposits, in which uranium was redeposited by supergene groundwater. Hannah Formation mineralization has been found at a depth of 250 to 400 ft. occurring as tabular deposits, in an arcuate complex roll front up to 600 ft. wide, and 25 ft. thick, having an average grade of 0.044%  $U_3O_8$ . Details of individual drill holes and mineralized intervals are not currently available but Ur is in the process of obtaining additional data.

## **BUCK POINT PROPERTY**

The Buck Point property consists of 107, 20-acre unpatented claims and one State Lease.

Very little detailed geological information is available for the Buck Point property. Mineralization is reported to occur in at least six sandstone units over a 250 ft. interval, with grades of up to 0.10%  $U_3O_8$ . In 1979 and 1980, the Cherokee and Mobil Oil Corp. (Mobil) joint venture carried out regional drilling and encountered deep uranium mineralization. The ground was later dropped.

The Buck Point mesa is underlain by coarse conglomeratic channel sandstones of the Wind River Formation. The channel truncates underlying permeable sandstones that include, by analogy to Bootheel, the Tertiary Hannah (?) Formation, and underlying Cretaceous units. Tertiary rocks dip  $1.5^\circ$  northeast and contain several paleodrainages. Underlying Paleozoic and Mesozoic rocks dip southwest  $5^\circ$ .

## **CHALK HILLS PROPERTY**

The Chalk Hills property consists of two 20-acre unpatented claims. Uranium mineralization was first discovered in a drillhole by Kerr McGee Corp. in the 1960s when they intersected 5 ft of 0.15%  $U_3O_8$ . The area was further explored by Cherokee and Mobil which extended the length of the mineralization to 1,000 ft along strike before

Mobil abandoned all of its uranium properties. Cameco Corporation acquired Chalk Hills from Cherokee in 1995, but abandoned the project in 1998.

Very little detailed geological information is available on the Chalk Hills property. No drill records are available, although numerous old drill sites can be seen from the air. The area is underlain by sandstones of the Tertiary Wind River Formation and the overlying Wagonbed Formation which form the Chalk Hills. Mineralization occurs in permeable, medium- to coarse-grained deep sandstones that, by analogy to the Bootheel deposit, may be the Tertiary Hannah(?) Formation underlying the Wind River Formation.

## **CONCLUSIONS AND RECOMMENDATIONS**

Ur has not carried out any exploration and their work has been limited to data compilation.

The Bootheel property is considered an advanced exploration property due to the amount of previous drilling for which Ur is in the process of obtaining the data. The Chalk Hills and Buck Point are considered exploration properties with excellent potential to expand the known mineralization. Based on the historical drilling and metallurgical testwork all the properties have potential for in-situ leaching should sufficient resources be defined.

RPA proposes a first phase program of compilation and geological mapping on the three properties at an estimated cost of US\$136,000. RPA understands that Ur is in the process of obtaining historical data on the properties. The second phase, contingent on the initial results, would consist of exploration drilling of geological targets based on the previous drilling at an estimated cost of US\$200,000.

RPA is of the opinion that the properties are of merit and warrant the proposed programs and budgets.



## INTRODUCTION AND TERMS OF REFERENCE

Roscoe Postle Associates Inc. (RPA) has been requested by Ur-Energy Inc. (Ur) to prepare an Independent Technical Report compliant with National Instrument 43-101 on the Shirley Basin properties in Wyoming. The report has been prepared to meet the requirements of NI 43-101 and Form 43-101F1.

RPA understands this report will be in support of an Initial Public Offering and a listing on the TSX Exchange.

Stewart Wallis P.Geo. Consulting Geologist with RPA visited the property and reviewed the relevant reports and data during the period May 9 to May 14, 2005. No independent samples were taken since there was no core available and the mineralized bodies of interest are below surface. Current claim posts were checked on the properties and old drill hole collars were found on a number of the claims in areas of reported mineralization. From the air, the numerous drill holes were easily observed. Discussions were held on site and in the Denver office with Bill Boberg, Ur Vice President of U.S. Projects, Harold Backer, Ur Exploration Manager, and other consultants compiling data on the properties. The various maps and technical reports provided by Ur, in addition to the public documents that were reviewed, are listed in the References section.

Currencies are United States Dollars unless otherwise stated. Measurements are generally Imperial unless otherwise stated. A list of abbreviations is shown in Table 1. Grades of uranium are expressed in pounds or percent (%)  $U_3O_8$ . However, the symbol  $U_3O_8$  as used in this report does not always mean uranium oxide but rather should read (e $U_3O_8$ ) which means equivalent uranium oxide as calculated from gamma ray logs by standard industry methods used at the time of drilling. The actual amount of contained uranium may vary depending on the equilibrium factors which are discussed later in this report.

**TABLE 1 LIST OF ABBREVIATIONS**

$\mu$	micron	$\text{km}^2$	square kilometre
$^{\circ}\text{C}$	degree Celsius	kPa	kilopascal
$^{\circ}\text{F}$	degree Fahrenheit	kVA	kilovolt-amperes
$\mu\text{g}$	microgram	kW	kilowatt
A.	acre	kWh	kilowatt-hour
A	annum	l	litre
$\text{m}^3/\text{h}$	cubic metres per hour	lbs	pounds
CFM	cubic metres per minute	m	metre
Bbl	barrels	M	mega (million)
Btu	British thermal units	$\text{m}^2$	square metre
C\$	Canadian dollars	$\text{m}^3$	cubic metre
Cal	calorie	mi.	miles
Cm	centimetre	masl	metres above sea level
$\text{cm}^2$	square centimetre	mo	month
D	day	mph	mile per hour
dia.	diameter	MVA	megavolt-amperes
Dmt	dry metric tonne	MW	megawatt
Dwt	dead-weight ton	MWh	megawatt-hour
ft.	foot	$\text{m}^3/\text{h}$	cubic metres per hour
ft./s	foot per second	oz/ton,	ounce per short ton
$\text{ft}^2$	square foot	oz	troy ounce (31.1035g)
$\text{ft}^3$	cubic foot	oz/dmt	ounce per dry metric tonne
G	gram	ppm	part per million
G	giga (billion)	psia	pound per square inch absolute
Gal	Imperial gallon	psig	pound per square inch gauge
g/l	gram per litre	s	second
g/t	gram per tonne	stpa	short ton per year
Gpm	Imperial gallons per minute	stpd	short ton per day
gr/ft.3	grain per cubic foot	ton	short ton
gr/m3	grain per cubic metre	t	metric tonne
Hr	hour	tpa	metric tonne per year
Ha	hectare	tpd	metric tonne per day
Hp	horsepower	US\$	United States dollar
in.	inch	USg	United States gallon
$\text{in}^2$	square inch	USgpm	US gallon per minute
J	joule	v	volt
K	kilo (thousand)	w	watt
kcal	kilocalorie	wmt	wet metric tonne
Kg	kilogram	$\text{yd}^3$	cubic yard
Km	kilometre	yr	year
km/h	kilometre per hour		

All monetary units in this report are US\$ unless otherwise specified.

## **DISCLAIMER**

This report has been prepared by RPA for Ur. The information, conclusions, opinions, and estimates contained herein are based upon:

- Information available to RPA at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report,
- Data, reports, and opinions supplied by Ur and other third party sources listed as references, and,
- Equivalent uranium assays from the original gamma ray logs and reports as no independent sampling has been completed.

RPA relied on Ur for information regarding the current status of legal title, property agreements, and any outstanding environmental orders. RPA has not investigated legal title of the mining claims. RPA has not investigated the permitting and reclamation status of the property.

## **PROPERTY DESCRIPTION AND LOCATION**

The Shirley Basin Properties include the Bootheel, Buck Point and Chalk Hills properties owned by New Frontiers Uranium LLC (NFU). The properties consist of 213 unpatented 20-acre Federal Lode claims and two 640-acre State Leases, totalling 5,080 acres located in Wyoming (Figure 1, 2) and listed in Appendix 1.

Effective June 30, 2005, Ur entered into the Membership Interest Purchase Agreement where under it agreed to purchase all of the issued and outstanding membership interests in NFU for US\$20 million as part of a package that includes an extensive database. Additional claims staked by Ur will fall into the area of interest of the Letter of Intent.

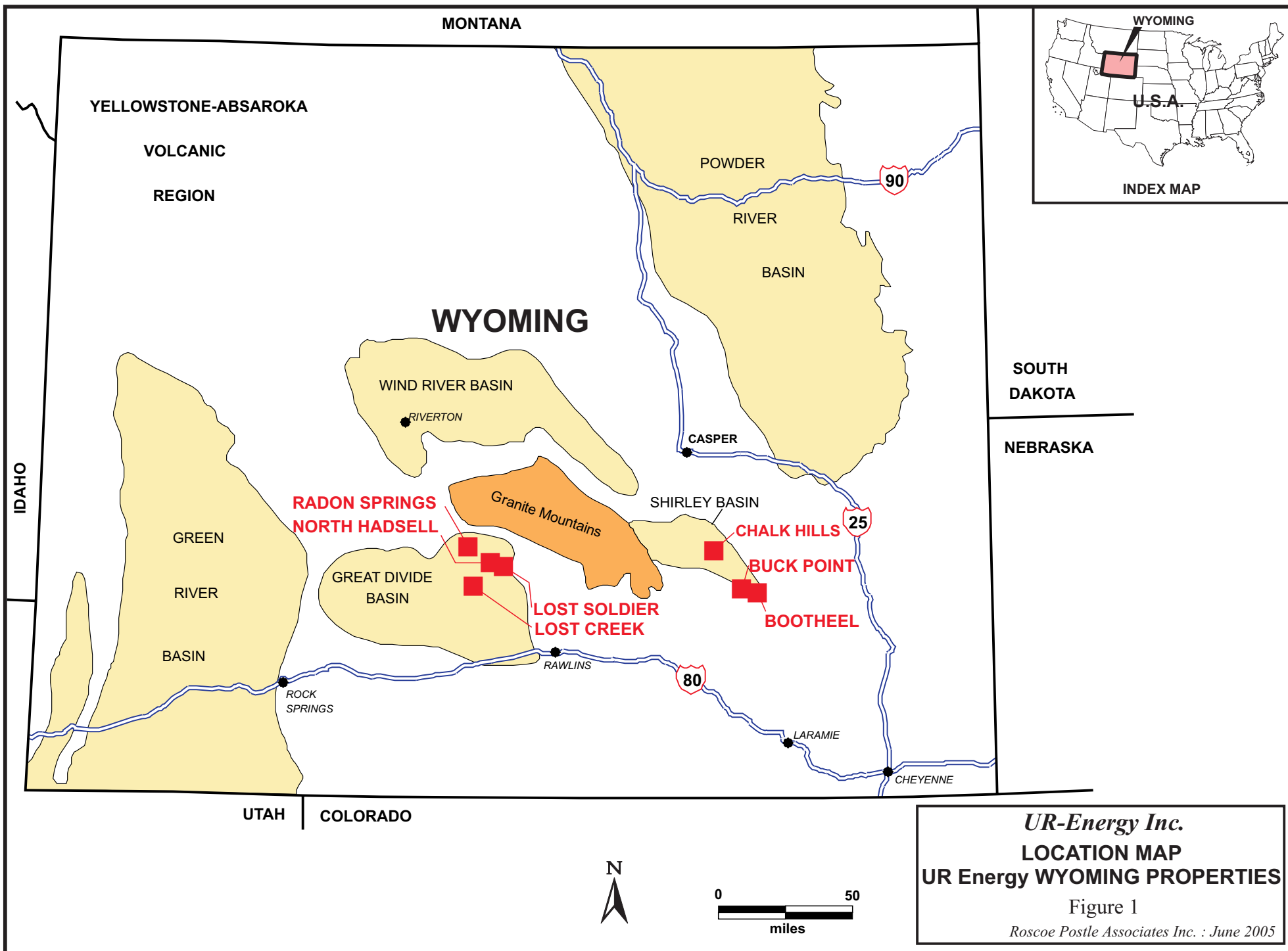
The area is a mix of federal mineral rights with both private, state and federal surface rights. The Stock Raising Homestead Act was amended in 1993 whereby on split estate

lands where the surface rights are patent and the minerals are reserved to the United States, claimants must record a Notice of Intent to Locate Mining Claims (NOITL) with the surface owner and the local Bureau of Land Management (BLM) office before entering the land or locating claims. Staking can commence 30 days after the notice has been received but must be completed within 90 days. There is a limit to the number of NOITLs that can be sent to any one owner at one time. Compensation must be paid to the surface owner for any disturbance of the land used for access or drilling.

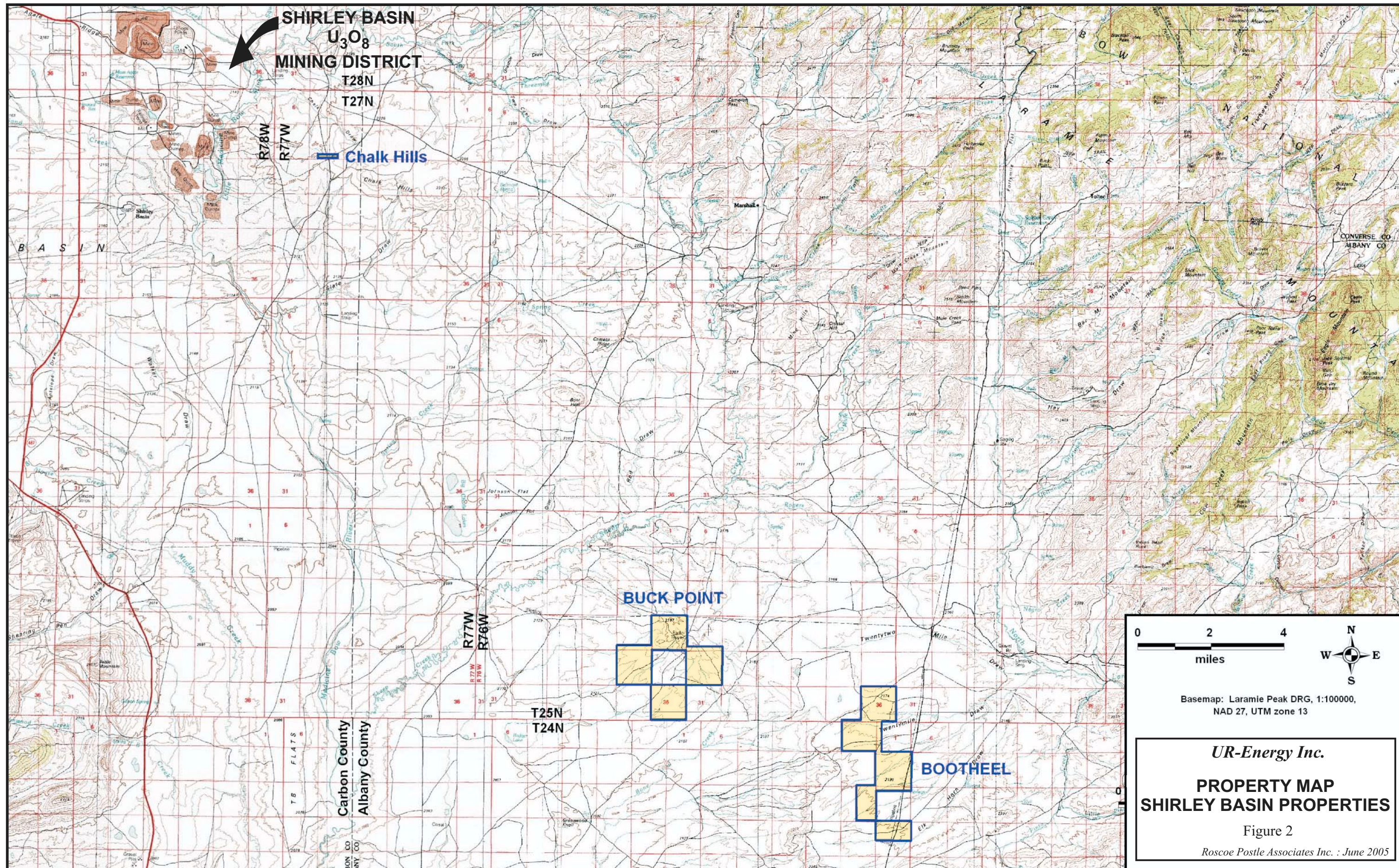
Permitting of drill sites and access roads on federal land will be through the BLM and disturbances over 5 acres will require bonding with the BLM. Effective July 2005 the yearly rental of \$125, payable to the BLM is due each year on September 1 to maintain the unpatented claims.

Lease rental is paid annually in advance on the anniversary date of the lease. The rental is US\$1.00 per acre for the first 5 years, and US\$2.00 per acre for years 6 to 10. The State retains a 5% gross royalty on the value of uranium. The Buck Point Lease, dated April 2, 2005 and the Bootheel lease dated February 2, 2001, may be renewed for successive 10 year periods at a rental of US\$2.00 per acre but if a lease is not on a commercial mining basis at the end of the second year, the state has the option of increasing the rental to a “fair and equitable” amount.

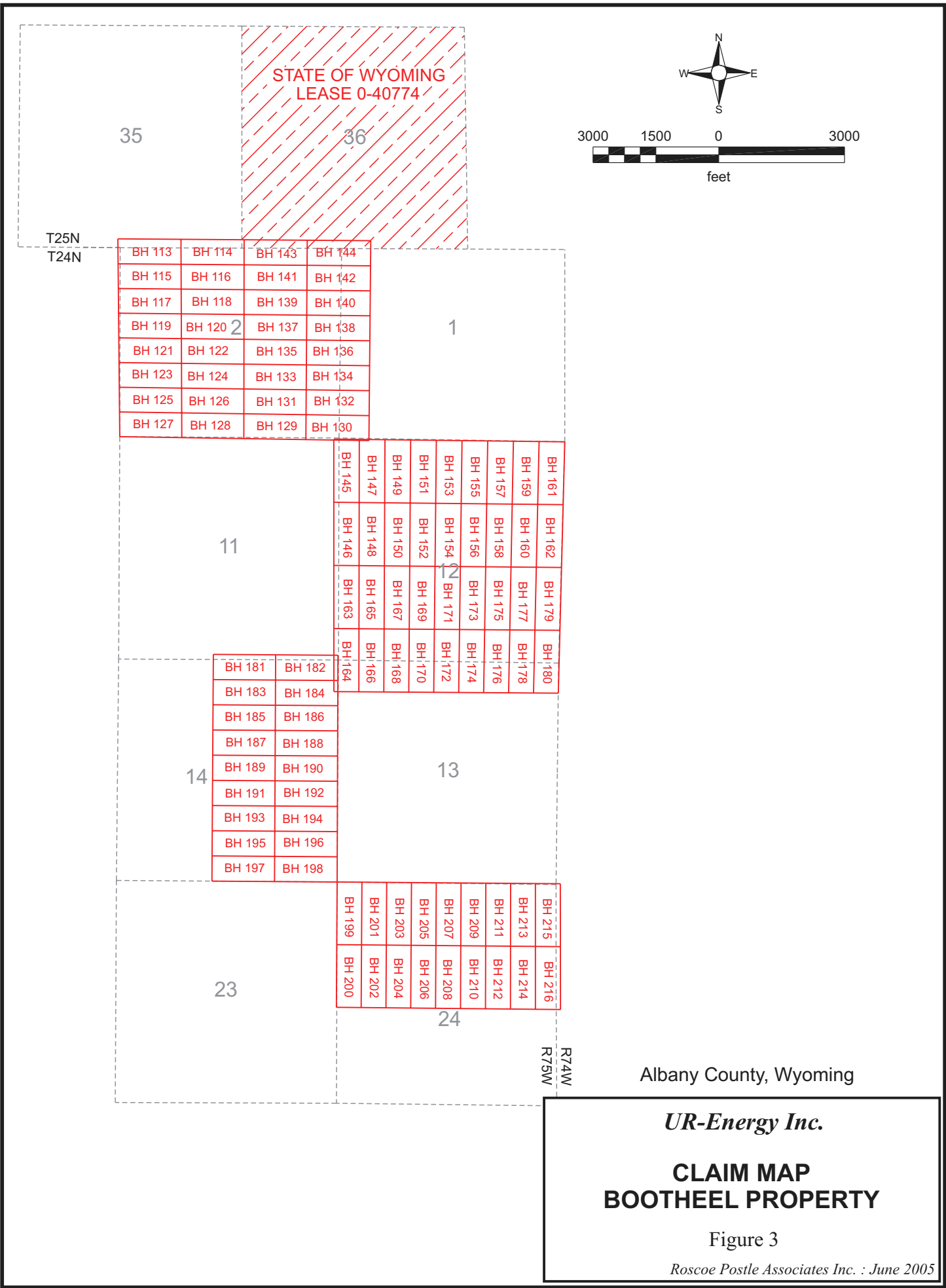
The Bootheel Project consists of 104 unpatented claims and one lease totalling 2,640 acres located in Albany County, 20 mi southeast of the historical mining district in the central part of the Shirley Basin, centered approximately 42° 05' N Latitude, 105° 45' W Longitude in Townships (T) 24N-25N, Range (R) 74W-75W (Figure 3). The claims are 60 miles southeast of Casper, Wyoming.

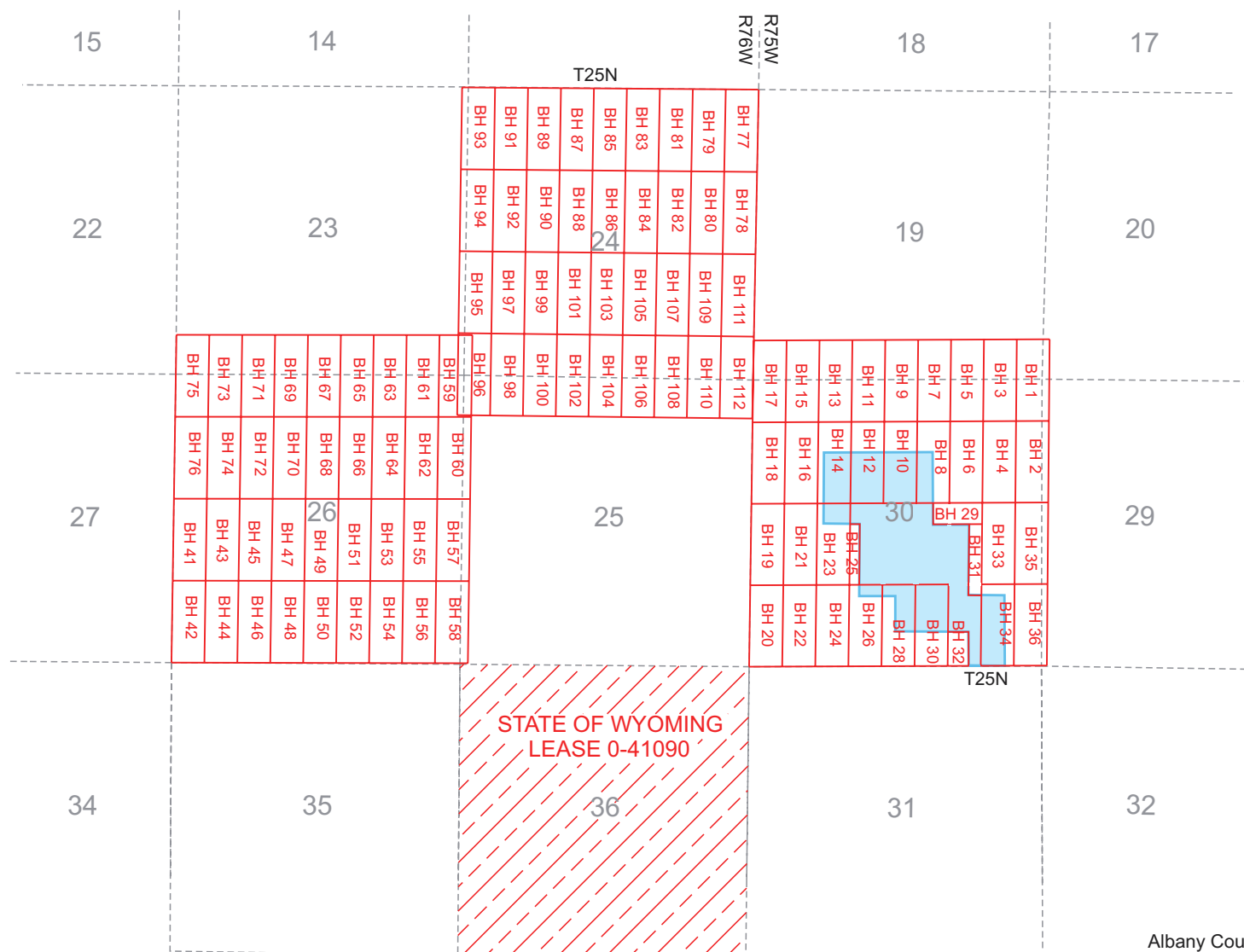








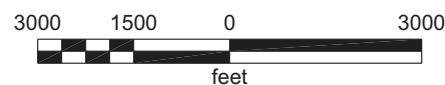




Albany County, Wyoming

LEGEND

 Fee Land

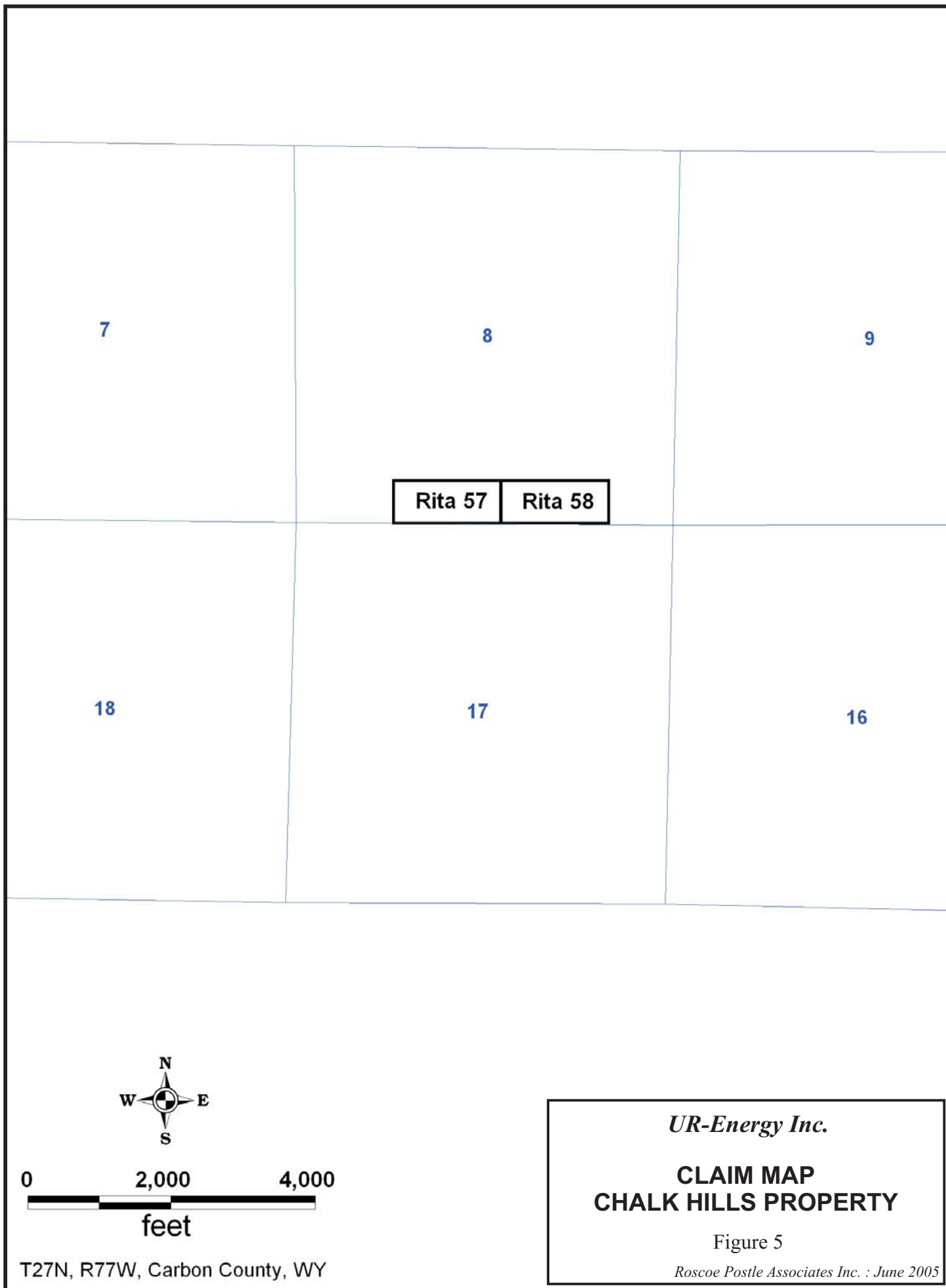


**UR-Energy Inc.**  
**CLAIM MAP**  
**BUCK POINT PROPERTY**

Figure 4

Roscoe Postle Associates Inc. : June 2005





The Buck Point Project consists of 107 unpatented claims and one lease totalling 2,400 acres located in Albany County, about 16 mi southeast of the historical mining district in the central part of the Shirley Basin, centered approximately 42° 08' N Latitude, 105° 53' W Longitude in T25N, R76W and T25N R75W (Figure 4). The claims are 60 miles southeast of Casper.

The Chalk Hills Project consists of 2 unpatented claims totalling 40 acres located in Carbon County on the western edge of the Shirley Basin, within 2 mi of the former producing open pits, centered approximately 42° 20' N Latitude, 106° 05' W Longitude in T27N, R77W (Figure 5). The claims are 40 miles south-southeast of Casper.

## **ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

The Shirley Basin covers four counties in Wyoming: Albany, Carbon, Converse, and Natrona. The center of the basin is about 35 miles south of Casper and 32 miles north of Medicine Bow. The Shirley Basin properties are readily accessible year round by an extensive system of gravel and dirt ranching roads which extend from highways #30, #287 and #487 north and east of the town of Medicine Bow (Figure 2). During the winter months, blowing snow may locally obstruct access for several days until it is removed.

Topographically the Shirley Basin properties occur in an area of low relief, up to 300 ft., with rolling hills ranging in elevation from 7,100 to 7,200 ft. above sea level (ASL). Vegetation is sparse and consists of local grasses, sagebrush, prickly pear and low bushy pine, fir and juniper at the higher elevations. Cottonwood trees and aspens grow along the river bottoms.

The climate is semi-arid with warm summers and harsh winters accompanied by strong constant winds. The average high temperature varies between 79°F and 82°F in

July with an average low varying between 4°F and 13°F in January. Yearly precipitation varies between 11 in. and 15 in. which includes 49 in. to 64 in. of snow falling between October and April. Snow cover is not extensive except as you approach the Medicine Bow Mountains as the constant winds blow much of the snow into localized drifts.

There is no existing infrastructure on the claims. The properties are close to major Interstates, the railroad, power and gas lines. Labour, materials and mining supplies are readily available in Casper, Rawlins and Cheyenne.

## **REGIONAL HISTORY**

Uranium was discovered in the Shirley Basin in 1955 by Teton Exploration Drilling Co., who found ore-grade material by drilling west of the Little Medicine Bow River in the western part of the Shirley Basin, 30 mi south of Casper. In the summer of 1957, several thousand claims were staked over 150 square miles. By the end of 1959, over 1,000,000 ft. of drilling had been completed through the mineralized Wind River Formation, and into underlying pre-Tertiary rocks. In 1959, Utah Mining Corp. later Utah Construction and Mining Co. (Utah) sank a shaft on their property and the first uranium was produced in March 1960, with ore shipped to the Lucky Mac mill in the Gas Hills area west of Casper. Late in 1964 the company stopped underground mining and commenced an in-situ leach operation using sulfuric acid and ion exchange for recovery. In July 1960, Petrotomics Co. (Petrotomics) commenced an open-pit operation in the same area and in 1962 a solvent extraction facility was built on the property. A second pit commenced operation in 1966. By late 1969, there were three operating mines in the Shirley Basin, those of Petrotomics and Utah, as well as Kerr McGee Corp. (Kerr-McGee).

Total production from the Basin amounted to about 34 million lbs of uranium. The last mine closed in 1992 and most of the pits have been reclaimed. Cogema Mining Inc.

retains one pit which is used for the disposal of low-level radioactive waste from the ISL operations in Wyoming.

## **REGIONAL GEOLOGY**

The Shirley Basin is an erosional feature governed in part by a broad northwest-trending syncline in pre-Tertiary rocks. Faults with small displacements occur in Paleozoic- to Tertiary-age horizons. Regionally, the stratigraphy consists of Paleozoic, Mesozoic, and Cenozoic units overlying a Precambrian basement. (Figure 6)

Along the west flank of the Laramie Mountains, Precambrian granitic rocks, diabase dikes, and metamorphic rocks are exposed. Within the basin, deep drilling intersected Precambrian rocks at depths of up to 5,000 ft. Overlying the basement, the Mississippian Madison Formation is comprised of limestone and dolomitic limestone, capped by a karst erosional surface. The Pennsylvanian-Permian consists of dolomitic limestone, sandstone, and quartzites are overlain by red beds and carbonate- and sulfate- bearing rocks. The Triassic-Jurassic rocks represent shallow water facies: red siltstones, fine-grained sandstones, shale and limestone which are overlain unconformably by the Early Eocene Wind River Formation, host for most of the mineralization in the Shirley Basin.

The Wind River consists of up to 500 ft. of fluvial silty claystone, siltstone, arkosic sandstone and conglomerate, overlain by the Middle to Late Eocene Wagon Bed Formation that contains 150 ft. of fluvial and lacustrine tuffaceous siltstone, sandstone, conglomerate, and limestone. The Oligocene White River Formation consists of 750 ft. of fluvial and lacustrine tuffaceous siltstone, claystone, conglomerate, and the Miocene Arikaree Formation is a 180 ft. succession of fluvial and lacustrine tuffaceous siltstone, sandstone, conglomerate, and fresh water limestone. Quaternary alluvium and terrace gravels locally overlie the succession.

Geologic time unit			Rock unit	Approximate thickness (ft )	Description	
Cenozoic	Quaternary	Holocene	Stream alluvium and terrace gravel	0-50	Surficial deposits of silt, sand, and gravel; in some areas includes terrace gravel.	
		Pleistocene				
	Tertiary	Miocene	Arikaree Formation	180	Tuffaceous siltstone, sandstone, conglomerate, and fresh-water limestone of fluvial and lacustrine origin.	
		Oligocene		White River Formation	750	Upper member — tuffaceous siltstone and conglomerate; fluvial and lacustrine. Lower member — tuffaceous siltstone and claystone; predominantly fluvial and lacustrine.
		Eocene	Late and middle	Wagon Bed Formation	150	Tuffaceous siltstone, sandstone, conglomerate, and limestone; fluvial and lacustrine.
			Early	Wind River Formation	500	Silty claystone, siltstone, arkosic sandstone, and conglomerate; fluvial.
Mesozoic	Cretaceous		Steele Shale	2,000	Thin-bedded carbonaceous shale, lenticular sandstones near top.	
			Niobrara Formation	900	Thin-bedded carbonaceous shale, in part calcareous.	
			Frontier Formation	860	Thin-bedded carbonaceous shale and sandstone; Wall Creek Sandstone Member at top.	
			Mowry Shale	110	Thin-bedded siliceous shale; contains fish scales.	
			Thermopolis Shale	185	Thin-bedded carbonaceous shale; Muddy Sandstone Member near base.	
			Cloverly Formation	200	Sandstone, moderately cemented, even-bedded to crossbedded; carbonaceous shale in middle.	
	Jurassic		Morrison Formation	200	Variegated waxy mudstone and siltstone; sandstone near base; limestone concretions.	
			Sundance Formation	240	Thin-bedded and fissile shale, sandstone, and sandy limestone.	
	Triassic		Jelm Formation	125	Shale and ledge-forming sandstone; red to buff.	
			Alcova Limestone	20	Crinkly limestone and limy sandstone.	
			Red Peak Formation	580	Siltstone and shale, red; sparse sandstone.	
			Goose Egg Formation	400	Siltstone and sandstone, red; interbedded limestone.	
Paleozoic	Permian		Casper Formation	650	Dolomitic limestone and sandstone; overlain by crossbedded sandstone and quartzite.	
	Pennsylvanian		Madison Limestone	150	Dolomitic limestone; cherty near top; conglomerate and sandstone at base.	
	Mississippian					
Precambrian			Granitic and metamorphic rocks and mafic dikes.			

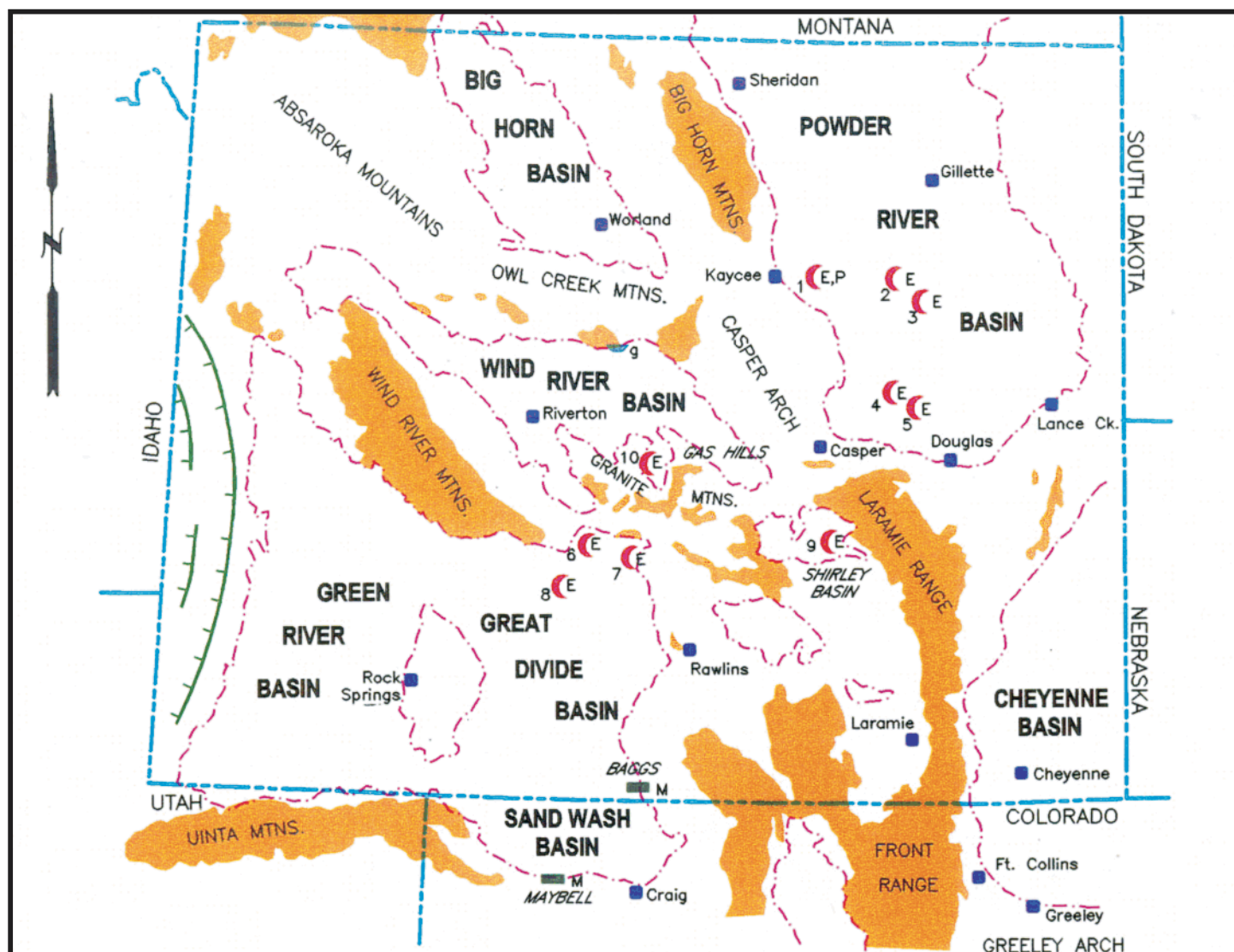
Statigraphic units in the Shirley Basin area

**UR-Energy Inc.**

## STRATIGRAPHIC SECTION







Figure 6

Roscoe Postle Associates Inc. : June 2005



Wyoming, generalized structural map of the Tertiary Basins, Precambrian uplifts and location of uranium districts. The Precambrian rocks include uraniferous granites of Archean to Lower Proterozoic age. Districts with rollfront uranium deposits include: 1 Kaycee; 2 Pumpkin Buttes; 3 Turnecrest; 4 Monument Hill; 5 Highland-Box Creek; 6 Crooks Gap; 7 Green Mountain; 8 Sweetwater-Red Desert; 9 Shirley Basin; 10 Gas Hills. (After Harshman 1970; Bailey and Childers, 1974)

## LEGEND

-  BOUNDARY OF TERTIARY BASIN
-  THRUST FAULT
-  PRE-CAMBRIAN ROCKS (Including Granite)
- U DEPOSITS
-  M TABULAR, IN MIOCENE SEDIMENTS
-  g SURFICIAL, IN BRECCIATED GRANITE (Copper Mountain)
-  E ROLLFRONT
- E = EOCENE SEDIMENTS
- P = PALEOCENE SEDIMENTS

0 50 100  
SCALE IN KILOMETERS

## *UR-Energy Inc.* GENERALIZED STRUCTURE MAP OF WYOMING

Figure 7

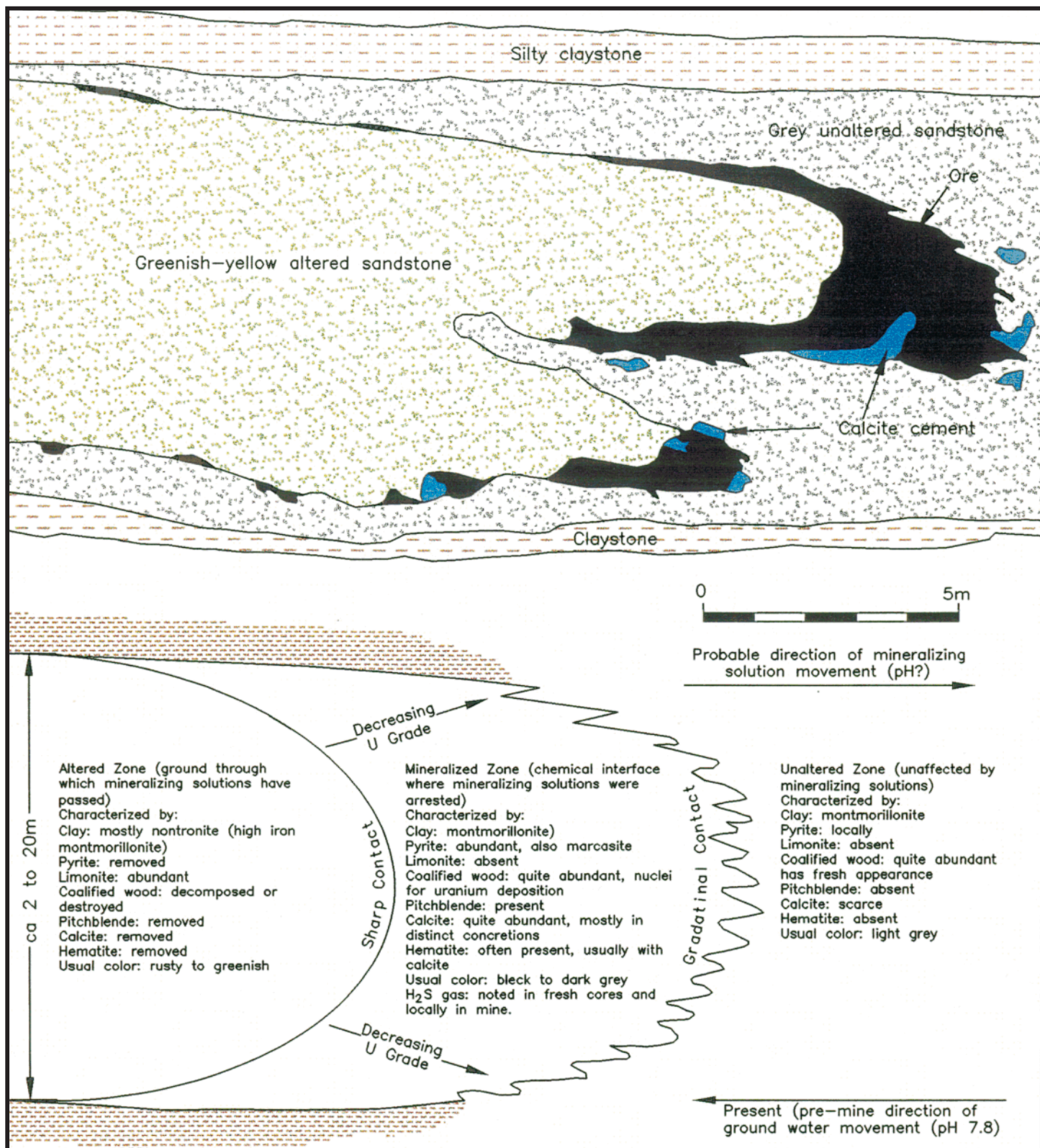
## **MINERALIZATION**

Large high-grade roll front uranium deposits occur in a well-defined belt extending six miles northwest through the central Shirley Basin. Mineralization is primarily hosted by the Wind River Formation sandstones, and deposits are found at the margins of large tongues of altered sandstones. Two principal alteration tongues occur in the area of past mining activity. The upper tongue is up to 70 ft. thick, five miles long to the northwest, and up to three miles wide, and 90 to 450 ft. deep. Unaltered sandstone is gray, whereas altered sandstone is green-yellowish, with high-iron montmorillonite. Carbonaceous material generally has been destroyed in the altered sandstone. Individual ore bodies contain a few tons to several hundred thousand tons of ore, with mined grades ranging from 0.1 to 0.7%  $U_3O_8$ . The principal mineral is uraninite, associated with pyrite, marcasite, ferroselite, hematite, calcite, and organic matter. These minerals coat sand grains and occur in interstices. The largest known deposits are up to 30 ft. thick and extend up to 2,500 ft. along edges of altered tongues.

## **DEPOSIT TYPES**

The geology and genesis of roll front uranium deposits has been studied since the 1960s. The five major uranium districts in WY are found in the Tertiary intermontaine basins (Figure 7) where the uranium occurs in the form of mineralized roll fronts emplaced at a redox interface in continental sandstones containing detrital carbonaceous material. The epigenetic deposits are formed by the down dip migration of the oxidizing solutions with the concentration of the uranium mineralization occurring in the solution front. Figure 8 illustrates the geometry and mineralogical model of a typical roll front uranium deposit. The highest grade portion of the front is the main part of the “C” shape with lesser grades found on the upper and lower limbs. The sandstone behind the front is altered but essentially barren. Alteration styles vary among the various basins (Figure 9).





Wyoming Basins, cross-sections with characteristics of roll-type uranium deposits. a Typical position and shape. b Schematic presentation of characteristic authigenic and allogenetic minerals related to alteration zones (Shirley Basin). (After a Harshman 1974; b Bailey 1965)

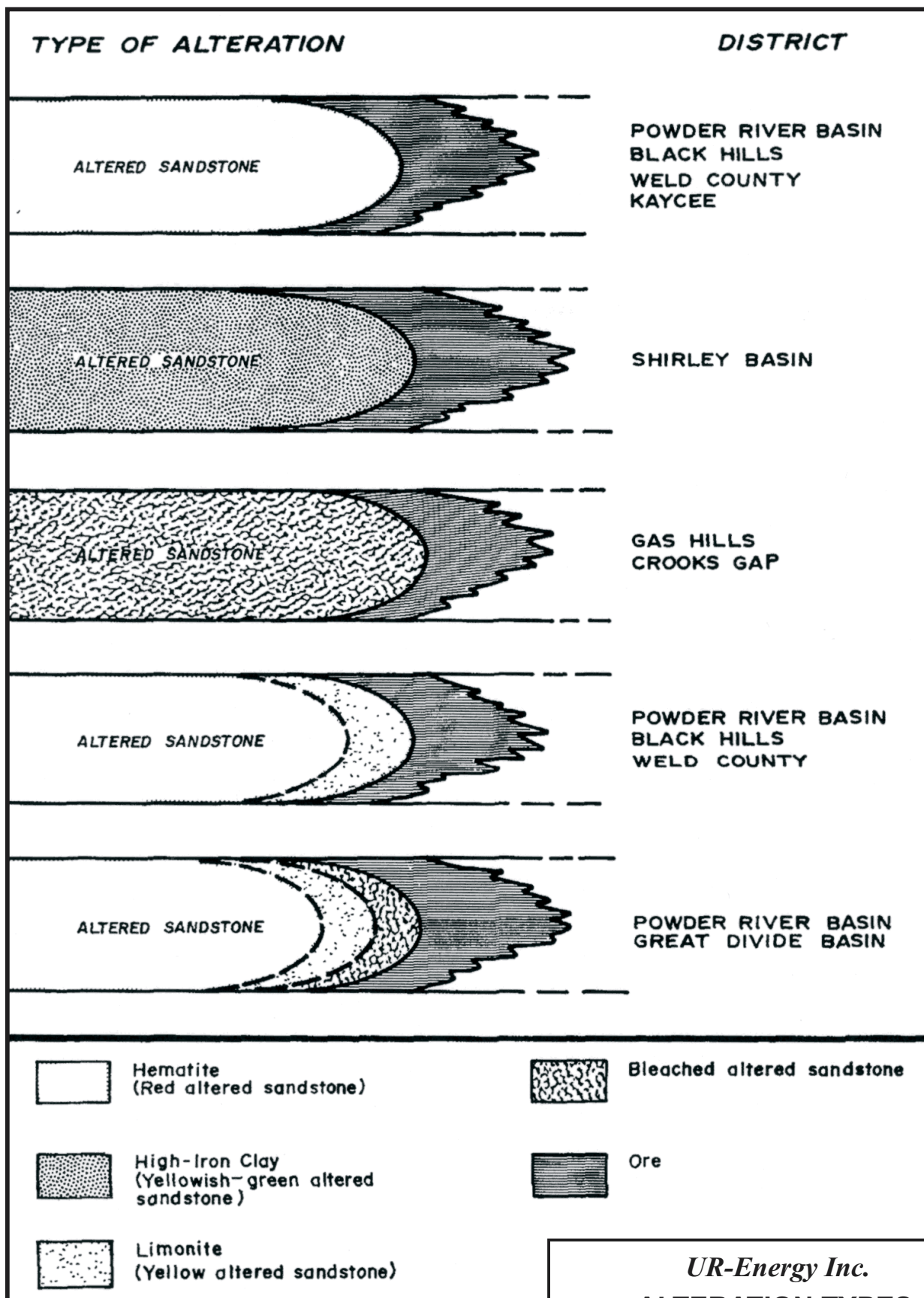
**UR-Energy Inc.**

## GEOMETRY & MINERALOGICAL MODEL OF A ROLLFRONT

Figure 8

Roscoe Postle Associates Inc. : June 2005





Simplified cross sections across the edges of altered sandstone tongues showing the most common types of alteration present in some uranium mining districts in Wyoming, Colorado and South Dakota.

**UR-Energy Inc.**  
**ALTERATION TYPES**  
**FOR ROLL FRONT**  
**URANIUM DEPOSITS**

Figure 9

Roscoe Postle Associates Inc. : June 2005

The most favourable host rocks are friable fine- to coarse-grained arkosic sandstones containing pyrite and carbonaceous material. Interbedded mudstone, claystones, and siltstone interbeds are often present and sand and silt channels with crossbedding are common. Below the water table unaltered sandstones are light grey to greenish grey with abundant pyrite and carbonaceous material while the altered sandstones are reddish or greenish yellow coloured with no pyrite and little carbonaceous material. The alteration that marks the roll front penetrates the sandstone down-dip. The fronts range in size and shape and commonly have lateral extensions of several miles and thicknesses of several feet. Within any one formation there may be many individual beds that contain roll fronts (Figure 10).

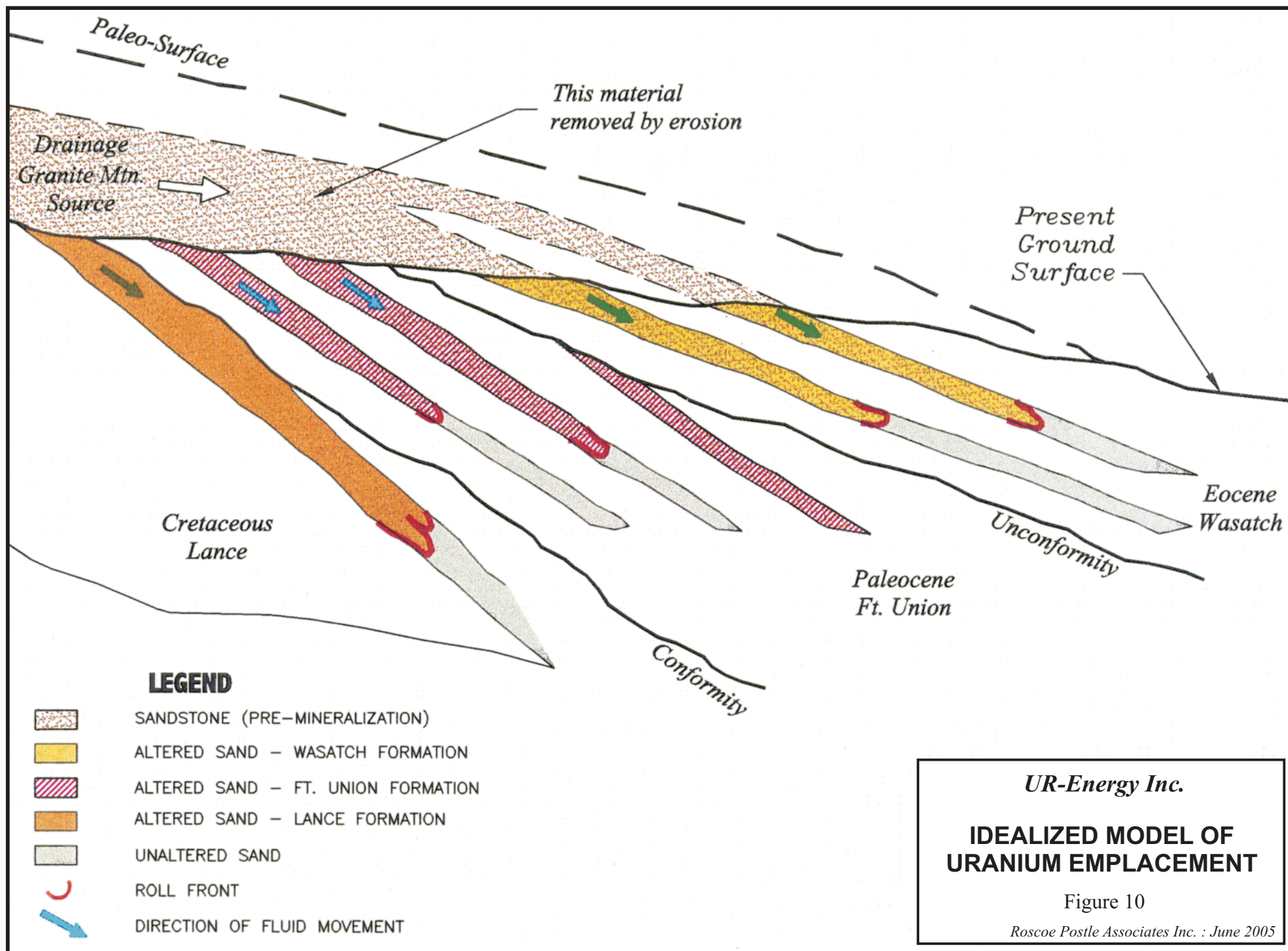
The principal ore minerals are pitchblende and coffinite often accompanied by selenium, molybdenum, arsenic and phosphorous. The two possible sources of the uranium are the uraniferous Archean granites and the uraniferous Oligocene tuffs which once covered the basins.

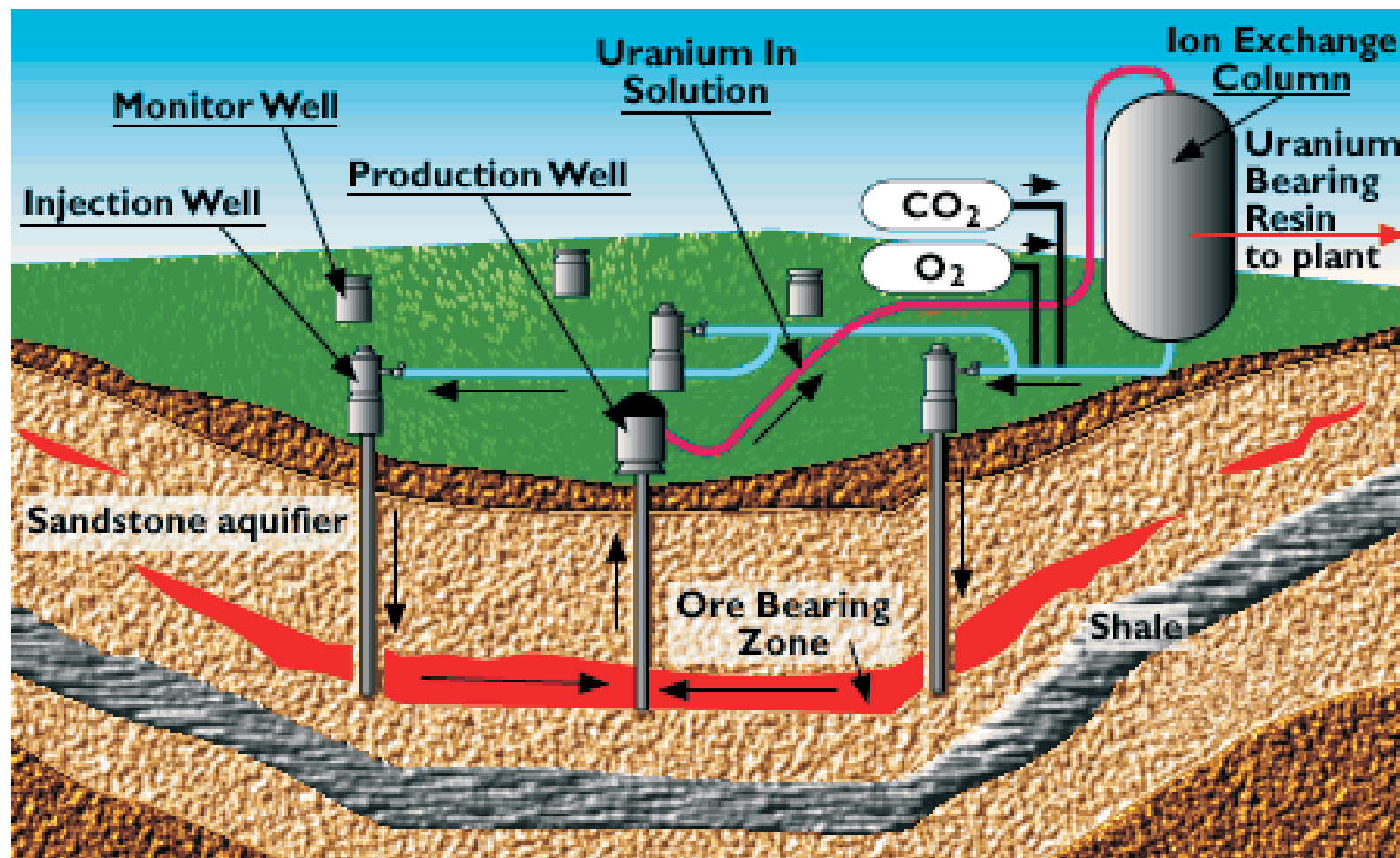
Currently, the only method for recovering uranium and vanadium in Wyoming is In-Situ Leaching, (ISL) being carried out by Cameco at the Smith Ranch-Highland Operations in the Powder River Basin (Figure 1). Total production in 2004 at the Cameco's operations was 1.24 million lbs of uranium. Open pit or underground mining and conventional milling were not viable options due to the low uranium prices in the recent past and the depth of the resources.

A grid of injection and production wells is drilled over a portion of the deposit which might cover an area 200 ft. by 500 ft. Because uranium is largely insoluble in the ground water, small amounts, of oxygen and carbon dioxide are added to the injection fluid to dissolve the uranium. The uranium bearing solution, less than 1/10 of 1% uranium, is then pumped from a production well to a satellite facility where the uranium is removed from solution using ion exchange resin which is then transported to the processing plant for elution, precipitation and drying to become the final product, yellowcake.

This is a closed-loop recirculation system since the water from the production well is reintroduced in the injection wells. Slightly less water is injected than produced to ensure that fluids are confined to the ore zones intended for extraction. Naturally occurring impermeable mudstone beds prevent the solutions from migrating beyond the uraniferous bed and mixing with other aquifers. Monitor wells are installed above, below and around the target zones to ensure that mining fluids do not move outside a permitted mining area.

ISL may be applicable to the Ur properties in the Shirley Basin. ISL has been carried out in the basin by Utah in the period 1963 to 1969. In 1970, Utah replaced ISL with open pit mining. There are no current ISL producers in the basin.





*UR-Energy Inc.*

## IN-SITU LEACHING

Figure 11

*Roscoe Postle Associates Inc. : June 2005*

## BOOTHEEL PROPERTY

### HISTORY

Bootheel was originally staked in 1958 by Kerr McGee Corp. (Kerr McGee). Kerr McGee drilling (Table 2) discovered both shallow oxidized and deeper uranium mineralization in sandstones but dropped the property in 1962. The company re-acquired the property in 1968, and again abandoned it. Rocky Mountain Energy Corporation (Union Pacific Railroad) also conducted limited drilling in the early 1970s. In 1977, Cherokee Exploration Inc. (Cherokee) obtained a land package, as well as the Kerr McGee database and formed an exploration and drilling participation agreement with Uranium Resources and Development Company (URADCO/Pennsylvania Power and Light). Drilling from 1978 to 1981 partly delineated both shallow and deep sandstone mineralization. In 1995, Cherokee sold the project and database to Cameco, who conducted limited drilling and evaluation of the in-situ leach potential. In 1998, Power Resources Inc. (Cameco) abandoned the project.

**TABLE 2 DRILLING BOOTHEEL PROPERTY**  
**Ur-Energy Shirley Basin Project Wyoming**

Company	Years	Type	Number of Drillholes	Feet
Kerr McGee	1958-1962	rotary	283	~85,000?
	1968-1969			
Rocky Mt Energy/UP	1970		?	unknown
Cherokee-URADCO	1977-1978	rotary	68	18,495
		core	2	860
Cherokee	1979-1981		?	unknown
Cameco	1995-1998		?	unknown

### PROPERTY GEOLOGY

The property occurs on the southeast flank of the Shirley Basin, adjacent to the Laramie Mountains and to the Precambrian Wyoming Lineament, which separates the

Laramie and Wind River structural basins. The associated Pinto Creek anticline forms the southeast edge of the Bootheel area which is further complicated by a major north-south graben which extends through the area. The claims are underlain by the Wagonbed Formation which consists of boulders, clay and sand which has been washed out on the pediment. It ranges in thickness from a few feet to 100 ft. in thickness and is underlain by fluvial silty claystone, siltstone, arkosic sandstone and conglomerate of the 50 to 100 ft. thick Eocene Wind River Formation, which dips 1.5° northeast and which unconformably overlies basinal-lacustrine quartzose sandstones, siltstones, and shales of what is thought to be the Hannah Formation. The Hannah Formation appears to be a regular series of continental sandstones of lacustrine origin, at least 500 ft. thick, which unconformably overlies the older Jurassic-Cretaceous rocks which dip 5° southwest. The Laramide uplift and later erosion bevelled the area and the Hannah sediments were eroded from much of the Basin. Preservation at Bootheel is presumed to be the result of downwarping in the graben area.

## MINERALIZATION

It is thought that uranium from Laramide granites was originally precipitated by organic reducing solutions. At a later date, some uranium was leached by oxidizing waters and reprecipitated locally in lower sandstone units. Mineralization is reported to occur as modified roll front deposits, in which uranium was redeposited by supergene groundwater. A north-south zone of mineralization in the Wind River Formation occurs on the west and east flanks of the main paleochannel. Hannah Formation mineralization, found at a depth of 250 to 400 ft., occurs as tabular deposits in an arcuate complex roll front up to 600 ft. wide, and 25 ft. thick, having an average grade of 0.044%  $U_3O_8$ . Details of individual drill holes and mineralized intervals are not currently available and Ur is in the process of obtaining additional data. Groth (2004) reports that tests indicated that high permeability (>3,000 millidarcies) suggested the deposit was amenable to in situ leaching and leach tests with both sulphuric acid and ammonium bicarbonate, indicated 96% to 98% recovery of the uranium.

## **BUCK POINT PROPERTY**

### **HISTORY**

In 1979, the Cherokee and Mobil Oil Corp. (Mobil) joint venture carried out regional drilling and encountered deep uranium mineralization. Follow-up drilling in 1980 was conducted at Buck Point, but Mobil then ended their uranium program and dropped the properties.

### **PROPERTY GEOLOGY**

The Buck Point mesa is underlain by coarse conglomeratic channel sandstones of the Wind River Formation. The channel truncates underlying permeable sandstones that include, by analogy to Bootheel, the Tertiary Hannah Formation, and underlying Cretaceous units. Tertiary rocks dip 1.5° northeast and the underlying Paleozoic and Mesozoic rocks dip southwest 5°.

### **MINERALIZATION**

Very little detailed information is available for the Buck Point property. Mineralization is reported to occur in at least six sandstone units over a 250 ft. interval, with grades of up to 0.10%  $U_3O_8$ .

## **CHALK HILLS PROPERTY**

### **HISTORY**

Uranium mineralization was first discovered in a drillhole by Kerr McGee in the 1960s when they intersected 5 ft. of 0.15%  $U_3O_8$ . The area was further explored by Cherokee in conjunction with their Bootheel Project in the 1970s (Table 3). A joint venture between Cherokee and Mobil was formed in 1980 and in 1982; Mobil drilled a



discovery hole that intersected mineralization at Chalk Hills. Additional drilling extended the length of the mineralization to 1,000 ft along strike before Mobil abandoned all of its uranium properties. Cameco acquired Chalk Hills from Cherokee in 1995, but abandoned the project in 1998.

**TABLE 3 DRILLING CHALK HILLS PROPERTY**  
**Ur-Energy Shirley Basin Project Wyoming**

<b>Company</b>	<b>Years</b>	<b>Type</b>	<b>Number of Drillholes</b>	<b>Feet</b>
Kerr McGee	1960s	rotary	1	?
Cherokee/Mobil Oil	1982		10 ?	?
Cameco	1995		unknown	?

## **PROPERTY GEOLOGY**

The region is underlain by sandstones of the Tertiary Wind River Formation and the overlying Wagonbed Formation which form the Chalk Hills. Tertiary rocks dip 1.5° northeast and contain several paleodrainages. Underlying Paleozoic and Mesozoic rocks dip southwest 5°.

## **MINERALIZATION**

Very little information detailed information is available on the Chalk Hills property. No drill records are available, although extensive drilling covers the area as numerous old drill sites can be seen from the air. Mineralization occurs in permeable, medium- to coarse-grained deep sandstones that, by analogy to the Bootheel deposit, may be the Tertiary Hannah Formation underlying the Wind River Formation.

## **EXPLORATION**

Ur has not carried out any exploration on the claims and their work to date has consisted of ground acquisition and data compilation.

## **DRILLING**

Ur has not carried out any drilling and the previous drilling has been described above.

## **SAMPLING METHOD AND APPROACH**

Typically the drill holes are not physically sampled but are logged by a continuously reading down-hole probe. Core samples are generally taken for chemical analysis but RPA is unaware of the procedure or sample intervals but has no reason to believe that standard industry practices were not followed. There are no records pertaining to the historical core drilling on the Shirley Basin properties.

## **SAMPLE PREPARATION, ANALYSES AND SECURITY**

Typically drilling was carried out by mud rotary drilling which is an inexpensive method to drill an open hole. The holes are then probed by an electric log system which records single-point resistivity, self potential and gamma ray counts.

The gamma ray counts can be used to calculate the  $U_3O_8$  content which as discussed previously is actually  $eU_3O_8$ . Disequilibrium refers to chemical imbalance that is the ratio between  $U_{235}$  and radioactive daughter products which are not in equilibrium. This imbalance results in the difference between assayed chemical uranium and equivalent uranium based on gamma ray logging. The difference may have a positive or negative effect on the actual uranium content. Diamond drill core holes were drilled to provide samples for chemical analysis. It was standard industry practice in the 1970s to use a disequilibrium factor in determining pounds of recoverable uranium. In general, the

higher-grade roll front deposits have a favourable disequilibrium (higher chemical assay) while the tails or limbs and protore sections may have an unfavourable disequilibrium.

Chemical assays involve the solvent extraction of uranium from an aluminium nitrate solution using a tributyl phosphate iso-octane mixture as an extractant. Dibenzolmethone is used as the chromogenic (colouring) agent for AA analysis. Typically accuracy is  $\pm$  5% to 10% of the uranium assay value. This assay can be compared to the  $eU_3O_8$  assays as determined by the downhole logging to produce a disequilibrium factor used to predict the in-situ amount of uranium from the gamma logs. There are no records available regarding chemical assays and disequilibrium factors for the Shirley Basin properties.

RPA is unaware of any particular security provisions that may have been in effect relating to the sampling and geophysical down-hole logging.

## **DATA VERIFICATION**

RPA has not verified any of the data. Only a few drill logs on cross sections are available for the Bootheel property and no drill records are available for the Buck Point or Chalk Hills Properties. Independent sampling was not carried out during the site visit as the significant mineralization is not exposed on the surface. RPA has no reason to believe that the equivalent uranium values reported are not consistent with the mineralization in general although, because of the nature of the mineralization and disequilibrium, local variations will be observed. RPA is also of the opinion that the historical work was carried out under industry standards prevalent at that time.

RPA notes that all references to %  $U_3O_8$  in the Shirley Basin Report refer to % equivalent  $U_3O_8$  (“%  $eU_3O_8$ ”) as determined by gamma-ray logging. This method of measuring the amount of uranium present in a drill hole is standard industry practice. However, the actual amount of uranium present in the rocks is dependent on the

equilibrium factor and can vary by plus or minus 0% to 25%. Chemical analysis is required to determine the equilibrium factor and calculate the actual uranium content.

## **MINERAL PROCESSING AND METALLURGICAL TESTING**

Ur has not carried out any metallurgical testing. Any available historical testwork has been reported under the history section.

## **ENVIRONMENTAL**

There were no obvious environmental liabilities seen during the site visit. Former drill sites are visible from the air but they are revegetated. As there are current ISL operations in Wyoming, permitting should proceed on a timely basis barring unforeseen difficulties.

## **INTERPRETATION AND CONCLUSIONS**

The Bootheel property is considered an advanced exploration property due to the amount of previous drilling for which Ur is in the process of obtaining the data. The Chalk Hills and Buck Point are considered to be exploration properties with excellent potential to expand the reported mineralization. Based on the historical drilling, limited metallurgical testwork and regional stratigraphy, the properties have the potential for in-situ leaching should sufficient resources be defined.

## RECOMMENDATIONS

Ur has proposed a first phase program of compilation and geological mapping on the three properties. RPA understands that Ur is in the process of obtaining historical data on the properties. The second phase, contingent on the initial results, would consist of exploration drilling of geological targets based on the previous drilling.

Proposed budgets are shown in Tables 4 and 5. RPA is of the opinion that the properties are of merit and warrant the proposed programs and budgets.

**TABLE 4 PROPOSED BUDGET PHASE I**  
**Ur–Energy Shirley Basin Project Wyoming**

<b>Task</b>	<b>Unit Costs</b>	<b>Total</b>
Data acquisition		\$100,000
Compilation	3 man mo @\$6,000	\$18,000
Geology	2 man mo @\$6,000	\$12,000
Field Expenses	60 D @ \$100	\$6,000
<b>TOTAL PHASE I</b>		<b>\$136,000</b>

**TABLE 5 PROPOSED BUDGET PHASE II**  
**Ur–Energy Shirley Basin Project Wyoming**

<b>Task</b>	<b>Unit Costs</b>	<b>Total</b>
Rotary Drilling	20,000 ft @ \$8	\$160,000
Geology	2 mo @ 8,000	\$16,000
Field expenses	60 D @ \$100	\$6,000
Collar Surveys	10 D @ \$800	\$8,000
Gamma Logging	11 D @ \$500	\$5,500
Assays	150 @ \$30	\$4,500
<b>TOTAL PHASE II</b>		<b>\$200,000</b>

## **REFERENCES**

Cameco (2005): 2004 Annual Report: filed on Sedar.

Groth, F.A., 2004a, Project Summary, Bootheel Uranium Project, Shirley Basin Mining District, Albany County, Wyoming: New Frontiers Uranium, LLC, January, 5 pp.

Groth, F.A., 2004b, Project Summary, Chalk Hills Uranium Project, Shirley Basin Mining District, Carbon County, Wyoming: New Frontiers Uranium, LLC, January, 4 pp.

Groth, F.A., 2005, Project Summary, Buck Point Uranium Prospect, Shirley Basin Mining District, Albany County, Wyoming: New Frontiers Uranium, LLC, February, 4 pp.

Harshman, E.N., 1972, Geology and Uranium Deposits, Shirley Basin Area, Wyoming, Professional Paper 745, Washington, U.S. Geological Survey, 82 pp.


Hopkins, T.A., Appel, W.T., and Groth, F.A., 1978, Final Drilling Report, Phase I Drilling Program, Bootheel Prospect, Albany County, Wyoming: Prepared for URADCO by Groth Minerals Corporation, July, 60 pp.

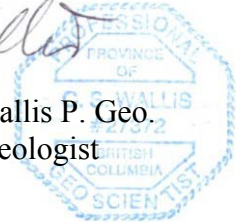
The Staff of Groth Minerals Corp., 1978, Final Report, Cherokee II, Uranium Exploration Program: Prepared for Uranium Resources and Development Company, September, 42 pp. plus Appendices.

## SIGNATURE PAGE

This report titled Technical Report on the Shirley Basin Uranium Properties, Wyoming, dated June 20, 2005 and revised October 20, 2005 was prepared by and signed by the following author:

Dated at Vancouver, British Columbia  
October 20, 2005

  
C. Stewart Wallis P. Geo.  
Consulting Geologist





## **CERTIFICATE OF QUALIFICATIONS**

I, C. Stewart Wallis P.Geo. do hereby certify that:

1. I am an independent consulting geologist employed by:  
Roscoe Postle Associates Inc.  
Suite 304, 595 Howe Street  
Vancouver, British Columbia, Canada  
V6C 2T5.
2. I graduated with a B.Sc. degree in Geology from McMaster University in 1967.
3. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia and Saskatchewan, a Professional Geologist registered in the State of Wyoming, a member of the SME, a Certified Professional Geologist as recognized by the American Institute of Professional Geologists.
4. I have worked as a geologist for a total of 37 years since my graduation from university.
5. 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, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience in uranium, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the overall preparation of the report of the technical report titled 'Technical Report on the Shirley Basin Uranium Properties', dated June 20, 2005 and revised October 20, 2005 (the "Technical Report"). I visited the properties May 14, 2005.
7. I have had no prior involvement with the properties that are the subject of the Technical Report
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
10. I have read National Instrument 43-101 and Form 43-101FI, and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 20th Day of October 2005


Signature of Qualified Person

C. Stewart Wallis P. Geo.

## APPENDIX 1

### LIST OF CLAIMS

#### Unpatented Lode Mining Claims

NEW FRONTIERS URANIUM LLC

Chalk Hills Project Area

Claim Blocks	# of Claims	Location		
		Sect	Twp	Rng
Rita 57-58	2	8	27	77
<b>TOTAL</b>	<b>2</b>			

#### Unpatented Lode Mining Claims

NEW FRONTIERS URANIUM LLC

Buck Point Project Area

Claim Blocks	# of Claims	Location		
		Sect	Twp	Rng
BH 1-26, 28-36	35	30	25	75
BH 41-76	36	26	25	76
BH 77-112	36	24	25	76
<b>TOTAL</b>	<b>107</b>			

**Unpatented Lode Mining Claims**

NEW FRONTIERS URANIUM LLC

Boot Heel Project Area

Claim Blocks	# of Claims	Location		
		Sect	Twp	Rng
BH113-144	32	2	24	75
BH145-180	36	12	24	75
BH181-198	18	14	24	75
BH199-216	18	24	24	75
TOTAL	104			