ENVIRONMENTAL ASSESSMENT
CONSTRUCTION AND OPERATION OF
IN SITU LEACH SATELLITE SR-2
AMENDMENT NO. 12 TO
SOURCE MATERIALS LICENSE NO. SUA-1548

POWER RESOURCES, INC.
SMITH RANCH-HIGHLAND URANIUM PROJECT (SR-HUP)
CONVERSE COUNTY, WYOMING

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U.S. Nuclear Regulatory Commission
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Division of Waste Management and Environmental Protection

Enclosure 1

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1.0 INTRODUCTION

Power Resources, Inc. (PRI) currently holds Source Materials License SUA-1548 for the Smith Ranch-Highland Uranium Project (SR-HUP) site, located in Converse County, Wyoming (see Figure 1). Source Materials License SUA-1548 permits PRI to conduct In Situ Leach (ISL) operations at the SR-HUP site. As specified in Source Materials License SUA-1548, License Condition 10.5.1 requires the following:

> The licensee is prohibited from constructing new Satellite Facilities or waste water evaporation ponds prior to NRC review and approval of designs and specifications.

By letter dated October 11, 2006, PRI submitted a request to construct ISL Satellite SR-2 (SR-2) at the SR-HUP site (PRI 2006a). In this proposed action, an ISL satellite facility is a structure (i.e., building and associated equipment) where the ion exchange portion of the ISL processing circuit is conducted. ISL Satellite SR-2 would service Mine Units 9, 10, 11, and 12, located near the southwest corner of Smith Ranch. The satellite description and design are detailed in PRI's Reynolds Ranch Amendment (PRI 2004). Supplemental information concerning ISL Satellite SR-2 was submitted on December 28, 2006, and March 15, April 16, and May 4, 2007 (PRI 2006b, 2007a, 2007b, and 2007c).

NRC has reviewed PRI's request and supporting documentation and has completed this Environmental Assessment (EA) to analyze potential significant environmental impacts of the proposed action.

1.1 Background

PRI's SR-HUP is a commercial in-situ leach (ISL) uranium mining facility located in the South Powder River Basin, Converse County, Wyoming. The main office and Central Processing Plant complex is located at Smith Ranch, about 17 air miles (22 road miles) (27 air / 35 road kilometers (km)) northeast of Glenrock, Wyoming, and 23 air miles (25 road miles) (37 air / 40 road km) northwest of Douglas, Wyoming. NRC issued PRI's current NRC license for the SR-HUP (Source Materials License SUA-1548) on August 18, 2003, as part of a license renewal process. Commercial ISL uranium production began at the Highland site in January 1988 and at the Smith Ranch site in June 1997.

PRI current operations at the SR-HUP include an ISL Central Processing Plant (CPP) and an ISL Satellite facility (SR-1) at the Smith Ranch site and two ISL Satellite facilities (Satellite Nos. 2 and 3) at the Highland site. The CPP contains the entire ISL circuit (IX exchange through packing), while the satellite facilities contain the IX exchange portion of the circuit. After a satellite IX column is loaded with uranium, the resin is transferred to the Smith Ranch CPP by trucks for processing (i.e., completion of the ISL circuit.)

Under SUA-1548, PRI is authorized, through its ISL process, to produce up to 5.5 million pounds (2.5 million kilograms) per year of tri-uranium octoxide (U_3O_8), also known as "yellowcake." PRI's current annual production is less than half of this limit.

1.2 The Need for the Proposed Action

Construction of a second satellite facility at the Smith Ranch site would enable PRI to conduct IX exchange activities in close proximity to Mine Units 9, 10, 11, and 12; all of which are located in the southwest portion of Smith Ranch, approximately 4.5 miles southwest of the closest processing facility (Smith Ranch CPP). This would also allow PRI to continue to meet the current and future needs of its customers for U_3O_8, a product that would eventually be used in fuel for commercially-operated nuclear power reactors.

1.3 Review Scope

The NRC staff has reviewed PRI's request in accordance with the NRC's environmental protection regulations in 10 CFR Part 51. Those regulations implement section 102(2) of the National Environmental Policy Act of 1969, as amended. The EA provides the results of the NRC staff's environmental review; the NRC staff's radiation safety review of PRI's request will be documented separately in a Safety Evaluation Report.

The NRC staff has prepared the EA in accordance with NRC requirements in 10 CFR Parts 51.21 and 51.30, and with the associated guidance in NRC report NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with Nuclear Material Safety and Safeguards Programs" (NRC, 2003). In 40 CFR Part 1508.9, the Council on Environmental Quality defines an EA as a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a FONSI. The NRC staff's review addressed the environmental impacts of PRI's currently-approved mining operations at the SR-HUP only insofar as such operations would be modified by the proposed addition of SR-2.

1.4 Previous Environmental Assessments and Supporting Documents

Originally, SR-HUP was two separate facilities (Smith Ranch and Highland) licensed to different corporate entities under different Source Materials licenses. For the Smith Ranch site, the NRC first authorized Kerr-McGee Corporation (KMC) to conduct research and development (R&D) ISL operations in June 1981 under Source Materials License SUA-1387. A corresponding Environmental Impact Assessment (EIA) was issued for the R&D operation (46 FR 30924). In February 1984, SUA-1387 was amended to reflect that Sequoyah Fuels Corporation (SFC), a wholly owned subsidiary of KMC, was the NRC licensee for the Smith Ranch R&D operations (NRC 1984). The NRC renewed SFC's NRC license for continued R&D operations by letter dated January 29, 1988 (NRC 1988). In support of the license renewal, the NRC staff published a Finding of No Significant Impact (FONSI) in the *Federal Register* on January 7, 1988 (53 FR 459).

Rio Algom Mining Corp. (RAMC) acquired the Smith Ranch ISL site in December 1988 (Quivira Mining Corp. 1988) and subsequently proposed expansion of the Smith Ranch R&D operations into commercial-scale production. *Environmental Assessment for Rio Algom Mining Corporation, Smith Ranch In Situ Leach Mining Project, Converse County, Wyoming* (NRC 1991a) was developed as part of the licensing action for commercial-scale Smith Ranch production. NRC (1991a) considered ground water impacts (Section 4.1), Offsite Radiological Impacts (Section 4.2), In-Plant Radiological Safety (Section 4.3), Waste Disposal (Section 4.4), and Cultural Resources (Section 4.5) for ISL related activities (e.g., subsurface injection and

recovery of ISL solution (lixiviant) at the Smith Ranch site, including the area containing SR-2 and proposed Mine Units 9, 10, 11, and 12. An EA/FONSI documenting the staff's environmental review was published in the *Federal Register* on January 10, 1992 (57 FR 306). On March 12, 1992, the NRC issued Source Materials License SUA-1548 to RAMC, which authorized commercial-scale production at the Smith Ranch site, under a license condition requiring aquifer characterization in Township 35 North (T35N of the Baseline), Range 74 West (R74W of the Principal Meridian) prior to well-field installation (NRC 1992).

As part of the Smith Ranch - Source Materials License SUA-1548 renewal, staff developed *Environmental Assessment for Renewal of Source Materials License No. SUA-1548, Rio Algom Mining Corporation, Smith Ranch Uranium Project, Converse County, Wyoming* (NRC 2001). NRC (2001) evaluated environmental impacts of continued solution recovery of uranium at Smith Ranch; specifically in the subsurface sandstone strata of the Wasatch and Fort Union formations, at depths ranging from 450 to 1000 feet below ground surface. The analysis considered all the components of the uranium extraction process (i.e., well field design and operations) including injection/recovery wells patterns, spacing, and mechanical integrity testing, the connection of injection/recovery wells to pipeline manifolds located within headhouses, and lixiviant chemistry (Sections 3.2 and 3.3). Impacts to ground water (Section 6.4) and the potential for the loss of vertical or horizontal containment of lixiviant in the subsurface (Section 6.5) were also considered. NRC (2001) also assessed ISL related impacts including construction of wellfields, plant facilities, access roads, and pipelines to ecological systems (Section 6.7), endangered species (Section 6.8), and wildlife (Section 6.9). Based on the NRC (2001) assessment, a FONSI for the Smith Ranch ISL operation was published in the *Federal Register* on May 4, 2001 (66 FR 22620).

Per License Condition 10.1.10 of Source Materials License SUA-1548, PRI conducted an aquifer characterization study of the area containing currently undeveloped Mine Units 9, 10, 11, and 12 (located within T35N, R74W). The study was documented in PRI (2007d), which was submitted to the NRC on February 21, 2007. Based on the data and analysis presented in PRI (2007d), NRC staff concluded that the aquifer characteristics had been adequately tested and characterized and hydraulic communication throughout the Production Zone had been demonstrated. The results of the hydraulic test further supported under- and overlying shales as low-permeable confining units. PRI's findings were approved by the NRC on March 27, 2007 (NRC 2007a).

The Highland site is located east, and contiguous to, the Smith Ranch site. SR-2 is located approximately 7.6 miles from Highland's ISL Satellite No. 3. Initially, the NRC authorized Everest Minerals Corp. to conduct commercial-scale ISL operations at the Highland site under Source Materials License SUA-1511 in 1987 (NRC 1987). The staff's environmental review was documented in an EA/FONSI issued on July 2, 1987 (52 FR 25094). Everest Minerals Corp. changed its name to Power Resources, Inc. in 1989 (Everest Minerals Corp. 1989). In 1995, the NRC renewed SUA-1511 for PRI's Highland site, with the EA/FONSI published in the *Federal* Register on August 18, 1995 (60 FR 44367).

PRI acquired the Smith Ranch site in July 2002. By letter dated August 18, 2003, the NRC approved the integration of the Highland license into the Smith Ranch license (NRC 2003). With that integration, operations at the combined SR-HUP were authorized under Source Materials License SUA-1548. The NRC staff did not prepare an EA/FONSI as this action was considered administrative and organizational in nature.

Recently, PRI submitted a license amendment to add the Reynolds Ranch ISL Satellite to Source Materials License SUA-1548. Reynolds Ranch is contiguous with SR-HUP, with its southern border common to portions of the northern borders of the Smith Ranch and Highland sites. SR-2 is located approximately 7 miles from the southern boundary of the Reynolds Ranch site. An EA addressing ISL construction and operational impacts was developed as part of the Reynolds Ranch evaluation in November 2006 (NRC 2006), and the EA/FONSI was published in the *Federal Register* on January 5, 2007 (72 FR 586-588).

2.0 THE PROPOSED ACTION

As specified in Source Materials License SUA-1548, License Condition 10.5.1, PRI is requesting NRC approval to construct SR-2 at the SR-HUP site.

2.1 Location

PRI's SR-HUP is located in the South Powder River Basin, in Converse County, Wyoming. The main office and CPP complex is located at Smith Ranch, about 17 air miles (22 road miles) northeast of Glenrock, Wyoming, and 23 air miles (25 road miles) northwest of Douglas, Wyoming.

SR-2 is located in the southwest portion of SR-HUP (T35N, R74W, Section 17), adjacent to currently undeveloped Mine Units 9, 10, 11, and 12 (T35N, R74W, Sections 8, 9, 16, 17, 18, and 21, see Figure 2).

2.2 Planned Activities

<u>SR-2 Construction and Operation</u>

Construction of SR-2 would entail the clearing of about 1.5 acres of land due to satellite building and access road construction. The SR-2 facility would be the source of the barren lixiviant pumped into the uranium ore zone (i.e., barren) and the recipient of the pregnant lixiviant recovered from Mine Units 9, 10, 11, and 12. Upon recovery from the subsurface, the pregnant lixiviant would be pumped to a series of IX columns located within ISL Satellite SR-2, where uranium from the lixiviant would be extracted from the solution via adsorption onto the IX resin in the columns. Following IX extraction of the uranium, the resin would be removed from the tanks and transported to the Smith Ranch CPP for further processing (i.e., elution, precipitation, drying into a U_3O_8 powder, and packing into 55-gallon drums). As part of supporting the ISL operation at Mine Units 9, 10, 11, and 12, activities at ISL Satellite SR-2 would include lixiviant and waste water storage, ion exchange, resin transfer, reverse osmosis operations associated with ground water restoration, and deep well injection of production and restoration effluent wastes. Operation period for SR-2 and Mine Units 9, 10, 11, and 12, is estimated to be approximately nine years (PRI 2004a).

<u>Surface Reclamation</u>

PRI has stated that its goal is to return all lands disturbed by its ISL operations to their pre-operational land use of livestock grazing and wildlife habitat unless an alternate use is approved by the State and the landowner (e.g., a rancher who wishes to retain access roads and/or

buildings) (PRI 2004a). In addition, PRI's objective is to return the disturbed lands to a production capacity equal to or better than that existing prior to ISL operations (PRI 2004a).

PRI plans to keep soil disturbances caused by SR-2 operations to a minimum. In accordance with WDEQ requirements, topsoil would be salvaged from building sites, permanent storage areas, main access roads, and chemical storage sites. The salvaged topsoil would be stockpiled, seeded to minimize erosion, and later reapplied as needed.

PRI's revegetation practices are conducted in accordance with WDEQ-LQD regulations and PRI's WDEQ mine permit. Following topsoiling for final reclamation, an area would normally be seeded with oats to establish a stubble crop, and then re-seeded with grasses during the next growing season (PRI 2004a). If the area in question is to be disturbed again prior to final decommissioning, PRI may apply a long-term temporary seed mix of one or more native wheatgrasses (*i.e.*, Western Wheatgrass, Thickspike Wheatgrass) at a seeding rate of 12-14 lbs. of pure live seed per acre. A permanent seeding mixture would typically contain native wheatgrasses, fescues, and clovers, with typical seeding rates of 12-14 lbs. of pure live seed per acre.

2.3 Final Decommissioning

Decommissioning and Disposal

As part of the reclamation following the end of ISL operations in SR-2, the satellite building would need to be decommissioned. In doing so, process equipment could either be dismantled and sold to another licensed facility or decontaminated in accordance with the applicable NRC guidance. Materials that could not be decontaminated to acceptable levels would be disposed in a licensed disposal facility. Decontaminated materials having no resale value, such as building foundations, may be buried on-site.

Radiation Surveys

After the equipment, buildings, foundations, piping, and associated support facilities are removed, gamma radiation surveys would be conducted over the areas. In the wellfields themselves, gamma surveys would also be conducted during the decommissioning of each mining unit. Material with contamination levels requiring disposal in a licensed facility would be removed, packaged as needed, and shipped to a licensed disposal facility.

Re-contouring

After decommissioning and decontamination have been completed, surface areas disturbed by project operations would be re-contoured so that these areas would blend in with the natural terrain and be consistent with the post-mining land use.

2.4 Operational Wastes

Liquid wastes generated at SR-2 would be disposed through a deep injection well. These wastes would include the production bleed stream, wash down water, and ground water restoration waste water (*i.e.*, from ground water sweep and ground water treatment activities). The planned deep injection well would be similar in design and depth to current deep injection

wells at Smith Ranch and located near the SR-2 building. This deep injection well would be permitted through the WDEQ and operated according to permit requirements.

Disposal of liquid wastes via deep well injection would comply with license condition 10.1.8 of SUA-1548. This condition requires PRI to dispose of all liquid effluents stemming from mining units, process buildings, and process waste streams (with the exception of sanitary wastes) in an approved manner, including deep well injection.

Sanitary wastes from the restrooms and lunchroom at the satellite plant would be disposed of in an approved septic system. PRI's septic system is subject to continued approval by the State of Wyoming.

Solid wastes generated at the site would include both contaminated and non-contaminated wastes. Contaminated wastes would include rags, trash, packing material, worn or replaced parts from equipment, piping, and sediments removed from process pumps and vessels. Radioactive solid wastes with contamination levels requiring disposal at a licensed facility would be isolated in drums or other suitable containers prior to offsite disposal. Under license condition 10.1.7 of SUA-1548, PRI is required to maintain an area within the restricted area boundary for the storage of contaminated materials prior to their disposal. PRI would dispose of non-contaminated wastes in the SR-HUP site disposal landfill in accordance with the permit issued by the WDEQ.

3.0 ALTERNATIVES TO THE PROPOSED ACTION

3.1 The No Action Alternative

Under the provisions of the National Environmental Policy Act, one alternative that must be considered in each environmental review is the no-action alternative. In the no-action alternative, the NRC would not approve the construction of the SR-2. As such, PRI could not conduct ISL uranium recovery operations in the southwest area of SR-HUP and there would be no impacts from the proposed project, however, active ISL uranium recovery operations in other sections of the SR-HUP permit area would continue to occur.

3.2 Underground Mining and Conventional Milling

Underground mining would produce ore that is crushed and ground in a conventional uranium mill. Uranium within the crushed material would be extracted through leaching. Conventional uranium mining and milling produces considerable volumes of waste (e.g., slag, mill tailings, etc.) which must be disposed. Large uranium tailings disposal sites in Arizona, Colorado, New Mexico, Texas, Utah, and Wyoming, have leached contaminants, primarily heavy metals, into underlying surficial aquifers. The resulting ground water contamination has led to implementation of extensive corrective actions and/or monitoring programs at these disposal sites.

The environmental impacts associated with open pit and underground mining are generally recognized as being considerably greater than those associated with in-situ leach mining. Therefore, although both open pit and underground mining of uranium have occurred near SR-HUP, these alternatives will not be considered further in this analysis.

4.0 THE AFFECTED ENVIRONMENT

It should be noted that PRI's Reynolds Ranch ISL Satellite is located contiguous to the northern boundary of SR-HUP. As such, several of the affected environments identified in the Reynolds Ranch EA are identical to those for SR-2. Consequently, portions of the Reynolds Ranch EA's affected environment analysis (NRC 2006) are reiterated below.

4.1 Land Use

Land surface ownership in SR-2 is exclusively private, while mineral ownership includes both Federal (administered by the BLM) and private ownership areas. Lands within the SR-HUP, including SR-2, have historically been used for sheep and cattle grazing. In the past, homesteaders settled some areas for dry farming, but most of these farms are now abandoned. The area in and around the SR-HUP is very sparsely populated. There is one occupied home within the SR-HUP, the Vollman Ranch, located 4.2 miles east of the Smith Ranch CPP. The nearest dwelling to SR-2 is the Sundquist Ranch located approximately 3 miles directly east and just outside the SR-HUP site boundary.

4.2 Demography

The area in and around the SR-HUP is very sparsely populated. There is one occupied home within the SR-HUP, the Vollman Ranch, located 4.2 miles east of the Smith Ranch CPP. The nearest dwelling to SR-2 is the Sundquist Ranch located approximately 3 miles directly east and just outside the SR-HUP site boundary.

Recent Wyoming Department of Administration and Information (WDAI) population estimates indicate Douglas (23 air miles) and Glenrock (17 air miles), Wyoming populations at 5,581, and 2,351, respectively (Wyoming State Data Center 2006).

4.3 Air Quality

Air quality in the south Powder River Basin is relatively good. Year 2004 particulate matter observations in the south Powder River Basin are available from the Glenrock Coal Company air quality monitoring station (Converse, County) and a Casper, Wyoming monitoring station (County Building Center and C Street) (WDEQ 2007). The annual mean and maximum PM_{10} at the Glenrock station were 12.7 $\mu g/m^3$ and 47 $\mu g/m^3$, respectively, while the annual mean and maximum $PM_{2.5}$ were 3.31 $\mu g/m^3$ and 10.5 $\mu g/m^3$, respectively. For the Casper, Wyoming monitoring station, the PM_{10} annual mean and maximum values were 16.5 $\mu g/m^3$ and 60 $\mu g/m^3$, respectively. These data are generally consistent with good air quality. Given the limited air pollution emission sources near SR-HUP, low air pollution concentrations are expected.

4.4 Noise

The Noise Control Act of 1972, along with its subsequent amendments (Quite Communities Act of 1978, Title 42, United States Code, Parts 4901-4913), delegates to the states the authority to regulate environmental noise and directs government agencies to comply with local community noise and regulations. Currently, no quantitative noise-limit regulations exist in the State of Wyoming.

Currently, no noise monitoring data are available around the SR-HUP site, and no schools, hospitals, sports facilites, or parks are located within 5 miles of the SR-HUP site boundary. The nearest resident to SR-2 is approximately 3 miles east of the proposed activites. The area around SR-HUP is considered remote rural, with ambient noise levels likely far below any recommended protection guideline.

4.5 Site Geology

From ground surface to a depth of approximately 7,000 feet, the geologic sequence at SR-2 consists of the unconsolidated materials underlain by the Fort Union, and Lance Formations (Petrotek 2007). The unconsolidated materials consist mainly of locally-derived colluvium (loose and incoherent deposits) on hill slopes and alluvial (stream) deposits along water courses. The thickness of these deposits ranges from 0 to 10 feet to over 100 feet. The Fort Union Formation consists of interbedded silty/sandstone, claystones, shales, and localized thin to moderate lignitic/sub-bituminous coal beds (PRI 2003 and 2007a). The Lance Formation is composed of interbedded fluvial sandstones, siltstone, and shales (Petrotek 2007).

4.6 Water Resources

4.6.1 Surface Water

SR-2 is located in the Sage Creek drainage of the North Platte River. The only natural surface water in SR-2 is ephemeral runoff in response to intermittent precipitation and seepage into small basins at topographic low points. Surface runoff is limited.

4.6.2 Ground Water

Alluvium

Consisting of thin, unconsolidated, and poorly stratified clays, silts, sands, and gravels, the alluvium in SR-2 is estimated to range from less than 1 foot to over 100 feet in thickness. Small amounts of precipitation infiltrate the alluvium during part of the year, and intermittent flows across the alluvium may provide some recharge of the underlying aquifers. However, the water table is typically more than 100 feet below the land surface throughout most of the area. The potential for future development of alluvial ground water supplies in the SR-HUP, including SR-2, is considered poor (PRI 2003).

4.6.3 Ground Water Uses

Existing permitted well locations in SR-2 and surrounding areas are accessible through the "Water Rights Database" at the Wyoming State Engineer's Office website at http://seo.state.wy.us/. The majority of the wells within this area were installed by Solution Mining Corp., Rio Algom Mining Corp., and PRI for the purpose of collecting ground water quality data and to determine ground water aquifer characteristics as part of preparations for potential ISL activities.

Ground water use in the vicinity of SR-2 includes stock wells associated with livestock watering and domestic use (see Appendix A - Table 1). Most of the ground water usage occurs several miles from SR-2.

4.7 Ecology

SR-HUP is located in the western part of the Great Plains in a region referred to as the short-grass prairie. Vegetation studies for SR-HUP were conducted in 1976, 1978, and 1979 by Woodward-Clyde Consultants, with supplemental work performed over the entire SR-HUP site, including SR-2, in 1990 by Beartooth Environmental (PRI 2003). In addition, vegetation studies in the contiguous Reynolds Ranch area were performed in 1997 by BKS Environmental Associates (PRI 2004a). All these studies defined ground cover vegetation to be predominantly grassland and sagebrush/grassland. In the SR-2 building site and access road area soils were defined as loamy, with a fair range condition class. Ground cover averages around 40 percent, with big sagebrush (*Artemisia tridentata*), blue gramma (*Bouteloua gracilis*), needle-and-thread (*Stipa comata*), threadleaf sedge (*Carexfilifolia*), and western wheatgrass (*Agropyron smithii*) the dominant plants. SR-2 vegetation also includes a minor population of cottonwood. None of the plants identified are currently federally-listed as either endangered or threatened, or listed as state sensitive (Bureau of Land Management - Wyoming 2002 and U.S. Fish and Wildlife 2006).

Baseline wildlife studies for the SR-HUP site were conducted in 1990 by Beartooth Environmental (PRI 2003). Hayden-Wing Associates conducted baseline wildlife studies in the contiguous Reynolds Ranch area in 1997 and 1998 (PRI 2004a). These studies involved surveys of big game species, raptors, sage grouse, and other local wildlife. Depending on the species, these surveys were conducted either by air alone or alternately by air and on the ground.

Rodents were the most abundant mammals identified in SR-HUP site. Trapping associated with historical surface mining activities indicated thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), deer mouse (*Peromyscus maniculatus*), olive-backed pocket mouse (*Perognathus fasciatus*), and northern grasshopper mouse (*Onychomys leucogaster*) as the most abundant. The most commonly observed larger manmals included pronghorn antelopes (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), white-tail deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), coyote (*Canis latrans*), and cottontail rabbits (*Sylvilagus floridanus*).

Of the raptors surveyed, ferruginous hawks (*Buteo regalis*), red-tailed hawks (Buteo jamaicensis), golden eagles (*Aquila chrysaetos*), and a great horned owl (*Bubo virginianus*) were found to nest in the area. The surveys did not locate any sage grouse (*Centrocercus urophasianus*) strutting grounds (i.e., leks or breeding areas), although sage grouse were observed in both the SR-HUP and the Reynolds Ranch areas. The presence of grasslands in both areas limits preferred sage habitat.

In a January 1998 survey, a bald eagle (*Haliaeetus leucocephalus*) was observed feeding on a deer carcass. Bald eagles are known to spend the winter along the North Platte River approximately 11 miles (17.7 km) south of the SR-HUP permit area and regularly range inland to scavenge winter-killed big game carcasses (PRI 2004a). Bald eagles are listed as a threatened species under Section 7 of the Endangered Species Act.

In accordance with WDEQ-LQD requirements, PRI conducts a raptor survey in late April or early May of each year to identify any new nests and to assess whether known nests are being used (PRI 2004a). The survey covers all areas of planned activity for the life of the project and a one-

mile area around the activity. The survey program is primarily intended to protect against unforeseen conditions, such as the construction of a new nest in an area where operations may take place. In the event that it would be necessary for PRI to disturb a raptor nest, PRI would obtain a permit for a mitigation plan from the U.S. Fish and Wildlife Service. Surveys since 1992 have shown that known nest sites are used by redtailed hawks, Swainson's hawks (*Buteo swainsoni*), and great horned owls on a seasonal basis. To date, the only golden eagles nesting was observed approximately two miles from current SR-HUP activities (PRI 2005a).

4.8 Transportation

The SR-HUP facility and SR-2 are accessed via Ross Road (Converse County Road 31). Ross Road begins at the junction of State Routes 93 and 95 in south-central Converse County, and it extends generally to the northwest where it ends at the intersection with State Route 387 in Campbell County, WY. The posted speed limit on Ross Road is 55 mph.

SR-2 would be located approximately 4.5 miles southwest of the SR-HUP CPP. Resin transport from SR-2 to the SR-HUP CPP would be conducted in trucks and would occur primarily on gravel roads located within SR-HUP. However, approximately one mile of Ross Road would be utilized as part of the transportation route. Ross Road is a public highway that begins at the junction of State Routes 93 and 95 in south-central Converse County. It extends generally to the northwest where it ends at the intersection with State Route 387 in Campbell County, WY. The posted speed limit on Ross Road is 55 mph. The entrance to the access road for the SR-HUP CPP is located between Mileposts 7 and 8 on Ross Road.

The State of Wyoming Department of Transportation (WDOT) has taken traffic counts at Milepost 0 along Ross Road (i.e., the intersection of State Routes 93 and 95) in both 1998 and 2004 (WDOT 2005a and 2005b). In 1998, a total of 646 vehicles (including motorcycles, cars, pickups, buses, delivery trucks, and single- and multi-trailer trucks) were recorded. In 2004, the number of vehicles recorded was 897, an increase of approximately 39 percent since 1998. The majority of the vehicles recorded (85 percent for both years) were cars and pickup trucks/vans, as classified under the Federal Highway Administration scheme F vehicle classification system (WDOT 2005a and 2005b).

The WDOT also provided data on accidents along the Ross Road from Year 2000 to July 2005 (WDOT 2005c). This data covered accidents that had occurred between Mileposts 0 and 25 on Ross Road, as well as for the first two miles along County Road 34, which intersects with Ross Road at approximately Milepost 24. A total of eight crashes were recorded, seven of which were on Ross Road and the eighth on County Road 34. Three involved property damage only, five involved injuries, and none were fatal.

The entrance to the access road for the SR-HUP CPP is located between Mileposts 7 and 8 on Ross Road. A passenger car hit a deer in May 2000 at Milepost 8 (i.e., near the entrance to the access road for the SR-HUP CPP), resulting in property damage to the vehicle. The remaining six accidents along Ross Road occurred several miles to the north or south of the portion of Ross Road that would be utilized for SR-2 resin transport.

4.9 Cultural and Historical Resources

The initial Class III Cultural Resources Inventory for the area containing SR-2 and portions of Mine Units 9, 10, 11, and 12 was conducted by Frontier Archaeology of Worland, Wyoming in November 1985 (PRI 2003, Appendix D-3). In September 1998, Pronghorn Archeological services of Mills. Wyoming completed a Class II Cultural Resource Inventory for portions of the area that were not surveyed in 1985 (PRI 2003, Appendix D-3). From these surveys, nine sites were identified in the SR-2 area, seven of which were deemed eligible for inclusion to the National Register of Historic Places (NRHP).

4.10 Background Radiological Characteristics

A background radiological survey of SR-2 and vicinity was conducted by Western Environmental Services and Testing (Western) in January 2007. The survey included 1,600 acres in T35N, R74W, Sections 7, 8, 10, 11, 16, 17, 18, 19, and 20 (Western 2007). The background radiological survey included a direct surface gamma radiation survey and soil sampling from select locations at 5 and 15 cm below ground surface. All soil samples were analyzed for radium-226, while 10% of the samples were also analyzed for natural uranium, thorium-230, and lead-210. Direct gamma radiation readings ranged form 13 to 26 micro Roentgen/hour (uR/hr), which are consistent with other background gamma values for SR-HUP.

PRI collects background gamma and radiological air data from the Dave's Water Well Air Monitoring Station (AS-1), located within T35N, R74W, Section 8, directly adjacent to the SR-2 area. Since AS-1 is located upwind of the Smith Ranch CPP, SR-HUP operating satellite facilities, and SR-HUP wellfields, it monitors background radiological conditions for SR-HUP. In the first half of 2007, quarterly direct gamma measurements (exposure rate) from AS-1 were 49 and 30 uR/quarter (PRI 2007h). During the same period, radiological air sampling results indicated natural uranium from 1.16E-16 to 1.78E-16 uCi/ml, lead-210 from 8.0E-10 to 3.3E-14 uCi/ml, and radon-222 at 8.0E-10 uCi/ml. Thorium-230 and radium-226 were both below their analytical detection limit (<1.0E-16) in both quarterly samples (PRI 2007h).

5.0 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

The addition of SR-2 to the SR-HUP would add approximately 10 to 12 employees to the SR-HUP work force. With such a small increase in the work force, socioeconominc impacts to local housing, schools, health and social services, transportation, and other support facilities is negligible. Additionally, given the remote rural location of SR-HUP, no impacts related to environmental justice issues were identified.

5.1 Introduction

The major potential environmental impacts associated with construction and operation of SR-2 include the disturbance of about 1.5 acres of land due to satellite building construction and operation and support road construction.

5.2 Land Use Impacts

The primary impact on land use would be the temporary loss (approximately nine years) of about 1.5 acres from livestock use. These effects would be limited, temporary, and reversible

through returning the land to its former grazing use following completion of post-recovery surface reclamation.

Another potential impact to the land surface would be lixiviant releases from the SR-2 facility. Since June 1997, PRI and the previous site operator, RAMC, have reported 79 unintended releases of ISL-related solutions to the ground surface. Of the 79 reported releases, only four have been related to wastewater disposal activities related to Satellite buildings or the Smith Ranch CPP. These releases ranged from 400 to 198,500-gallons, with approximately 88 percent of the releases less than 10,000 gallons. Uranium concentrations ranged from 0.7 to 152 mg/L, with about 70 percent of the releases below 10 mg/L. Predominantly, the cause for these spills has been the failure of joints, flanges, and unions in wells or wellfield pipelines, although the large spill identified above appears to have been the result of human error. Of the 79 reported releases, only four were associated with wastewater disposal activities related to Satellite buildings or the Smith Ranch CPP.

PRI has implemented a process where equipment failures that result in releases are evaluated and parts/designs are modified in new facilities to eliminate such failures (PRI 2007e and 2007f). PRI uses high density polyethylene, fiberglass, polyvinyl chloride, plastic, stainless steel, and coated carbon steel for all wetted surfaces; tanks, wells, piping and related items for all new construction. All facilities for SR-2 and Mine Units 9 through 11 would have fiber optic based monitoring and/or controls. These are real time devices and include camera/video and audio facilities.

PRI's immediate responses for unintended liquid releases have included shutting down the affected pipeline, recovering as much of the spilled fluid as possible, and collecting samples of the affected soil from a nearby background site to be analyzed for uranium, radium-228, and selenium. As required by License Condition 12.1 of Source Materials License SUA-1548, PRI reports each of its spills to the NRC and the Wyoming Department of Environmental Quality (WDEQ) within 24 hours, followed within 30 days by a report to the NRC, describing the conditions leading to the spill, the corrective actions taken, and the results achieved. This reporting requirement allows the NRC to promptly evaluate and request further actions, if necessary, to mitigate environmental impacts and radioactive material contamination.

Under License Condition 12.1, PRI is also required to maintain documentation of all spills of source or 11e.(2) byproduct materials (including uranium recovery related solutions) and of process chemicals until license termination. This documentation includes: the date and volume of the spill; the total activity of each radionuclide released; results of radiological surveys and soil samples; the corrective actions performed; and a map showing the spill location and the affected areas. This information will be used in conjunction with pre- and post-operational radiological surveys in evaluating final site decommissioning activities. Any soils with contamination levels requiring disposal in a licensed facility would be removed, packaged (if needed), and shipped to an approved facility for disposal.

5.3 Air Quality Impacts

5.3.1 Construction-Related

Construction activities related to SR-2 would include: preparation and construction of the proposed satellite building and support road. Air quality would be impacted by the release of

diesel emissions from construction equipment and from fugitive dust from construction activities and vehicle traffic. Diesel emissions would be minor and of short duration, and would be readily dispersed in the atmosphere. Non-radiological particulates (i.e., fugitive dust) generated from construction activity, as well as vehicle traffic on unpaved roads would be localized and of short duration (SR-2 building construction is expected to be completed within 12 months of approval). Background soil quality data for Smith Ranch does not indicate elevated levels of radionuclides; consequently, radiological dose from inhalation of fugitive dust should be minimal. Consequently, because of the relatively low and temporary surface disturbance necessary to construct an ISL satellite facility, additional atmospheric pollution (i.e., above background) in the form of particulates is anticipated to be minimal.

Following completion of ISL activities, localized areas affected by the operation would be reclaimed, cached topsoil reapplied, and reseeded. PRI has committed additionally to reseeding disturbed surface areas to minimize erosion from wind and water. Vegetation normally would be reestablished within two years of disturbance (PRI 2004a). The SR-2 building site and access roads would be re-contoured, covered with topsoil, and reseeded to minimize long-term impacts to air quality.

Noise impacts would primarily be related to construction activities and operational truck traffic related to resin transfer from the SR-2 building to the SR-HUP CPP. These impacts would be minimal and restricted to the initial phase of the project (construction) and during daily resin transfer (truck traffic).

5.3.2 Operations-Related

Dissolved radon gas, generated by its dissolution from processing solutions, may escape to the atmosphere and potentially adversely impact air quality in the wellfields and immediate vicinity of processing buildings. Radon can be vented to the atmosphere from the wellfields at each wellhead or from the process equipment in the proposed satellite facility. PRI would use pressurized downflow IX columns, and therefore radon releases would occur only when individual IX columns are disconnected from the circuit and opened to remove the resin for elution. The radiological impacts of operations are discussed in section 5.8 of this EA.

Uranium recovered at SR-2 would be processed at the Smith Ranch CPP. The main non-radiologic gaseous effluents that would be released from the operation of processing equipment in the CPP include gases such as CO_2 and hydrogen chloride. At the CPP, these gases are vented directly to the atmosphere where they are readily dispersed.

5.4 Water Impacts

5.4.1 Impact to Surface Water and Ephemeral Drainage

As discussed in Section 4.6.1 of this EA, within SR-2, surface precipitation and snowmelt collect in small basins at topographic low points. Surface runoff is limited, and surface flow is ephemeral as a result.

When designing and constructing new roads, PRI will consider weather, elevation contours, land rights, cultural resources, and drainages. When constructing new roads, PRI will make efforts to cross ephemeral drainages or channels at right angles to enhance erosion protection

measures. However, as it may not always be feasible or warranted to construct roads or crossings at right angles or along elevation contours, PRI will consider and implement erosion measures appropriate for the situation (PRI 2004a).

In steep grade areas, in addition to the previously noted erosion protection measures, the disturbed areas would be re-seeded as soon as possible after construction is completed. PRI will begin seeding, weather permitting, at the appropriate time for optimum growth, whether the next spring or fall planting.

5.4.2 Ground Water Impacts

Potential impacts to the ground water would be the infiltration of lixiviant into the subsurface due to surface releases from the SR-2 facility. As discussed in Section 5.2, PRI and the previous site operator, RAMC, have reported 79 unintended releases of ISL-related solutions to the ground surface, of which four were associated with wastewater disposal activities at satellite buildings or the Smith Ranch CPP. Subsurface impacts from spills in SR-2 will be limited as PRI will take immediate actions to stop the leak and to contain and recover as much as possible of the spilled fluid. The water table at SR-HUP is typically more than 100 feet below the land surface throughout most of the area. Much of the alluvium overlying the water table at SR-HUP is comprised of claystones and shales. Infiltration of surface-released lixiviant through such low permeable material is unlikely.

5.5 Impacts to Ecological Systems

Impacts to Ecological Systems related to ISL operations at the Smith Ranch site, including construction of plant facilities and access roads, were previously evaluated in *Environmental Assessment for the Renewal of Source Materials License SUA-1548* (NRC 2001, Section 6.7). Impacts to soils and vegetation from PRI's proposed SR-2 satellite would result primarily from the construction of the planned satellite building and access roads. These impacts would be confined for the most part to the building site and would involve the clearing of top soils for the laying of foundations for the satellite and associated structures and ground clearing and surface preparation for the roads. Final reclamation and re-seeding of the satellite facility site would occur after the cessation of ISL operations in the area. Alteration of an approximately 1.5 acre area is not considered to constitute a significant adverse impact.

Soils and vegetation also would be affected by spills of injection and production fluids during operations. As discussed in Section 5.2 of this EA, since June 1997, 78 spills have occurred within the SR-HUP permit area. Impacts from spills in SR-2 would be limited in area as PRI would take immediate actions to stop the leak and to contain and recover as much as possible of the spilled fluid. PRI's spill documentation, as required under its NRC license, would be used during decommissioning of the affected area to identify contaminated soils requiring offsite disposal at a licensed facility. As part of PRI's decommissioning activities, affected areas would be re-seeded using a WDEQ-approved seed mixture.

5.6 Impacts to Wildlife

Wildlife impacts related to ISL operations at the Smith Ranch Site, including the area containing SR-2, were previously evaluated in *Environmental Assessment for the Renewal of Source Materials License SUA-1548* (NRC 2001, Section 6.9). The NRC (2001) analysis included

construction and operational impacts to herbivores (e.g., sage grouse and morning doves), small mammals (e.g., mice, ground squirrels), carnivores (e.g., raptors and coyotes), and larger mobile mammal (e.g., antelope) populations. Wildlife losses were not expected to result in any long-term decrease in any wildlife populations since the number lost due to construction and operation of ISL activities at Smith Ranch (including SR-2) is expected to be a very small percentage of the total population. Further, wildlife populations are expected to rebound as the disturbed areas are reclaimed. As with the ecological systems discussed above, alteration of an approximately 1.5 acre area is not considered to constitute a significant adverse impact.

No federally-listed endangered or threatened species or critical species habitat are found within the SR-2 area (U.S. Fish and Wildlife 2006). Given the small area (approximately 1.5 acres) and short duration of the project (about nine years), no effect on endangered or threatened species or critical habitat is expected from the proposed construction and operation of SR-2.

PRI conducts an annual raptor survey, in accordance with WDEQ-LQD requirements, to identify any new nests, to assess whether known nests are being used, and to protect against unforeseen conditions, such as the construction of a new nest in an area where ISL operations may take place (PRI 2004a). The survey covers all areas of planned activity for the life of the project and a one-mile area around the activity. In the event that it would be necessary for PRI to disturb a raptor nest, PRI would obtain a permit for a mitigation plan from the U.S. Fish and Wildlife Service.

5.7 Transportation Impacts

Operation of SR-2 would involve the transportation of uranium-charged resin beads from the satellite facility to the Smith Ranch CPP, and the transportation of the stripped resin beads back to the satellite facility. Expected truck traffic between SR-2 and the Smith Ranch CPP would initially be about one truck a day, with a decrease in traffic as the well fields are mined out. Initially, this would amount to a 40 percent increase in Ross Road traffic; however, the total amount of traffic along Ross Road would still be small. Only a small segment of Ross Road (about one mile) would be utilized by the SR-2 truck traffic, and the increase related to SR-2 would be temporary (approximately nine years).

It is not expected that the additional traffic would result in an increased accident rate for the stretch of Ross Road between the SR-2 access road and the Smith Ranch CPP. However, in the case of an accident involving a shipment of uranium-loaded resin, the environmental impacts would be expected to be small. Overturning of a tanker truck carrying the loaded resin could result in the release of some resin and residual water. The resin beads, which would be deposited on the ground a short distance from the truck, would retain the uranium, absent a strong brine to strip the resin. PRI would collect the resin and any contaminated soils and dispose of them appropriately (*e.g.*, in a licensed facility). All disturbed areas would then be reclaimed in accordance with the applicable NRC and State regulations. Airborne release of uranium would not occur since the uranium would remain fixed to the beads.

5.8 Radiological Impacts

The primary source of radiological impact to the environment from site operations is gaseous radon-222, which is released from the satellite facility and from the wellfields. PRI used MILDOS-AREA, a dispersion model approved by the NRC, to estimate the dose commitments

received by individuals and the general population (i.e. receptors) from the operation of SR-HUP including SR-2 (PRI 2007a, 2007b, and 2007c). The MILDOS-AREA model required PRI to obtain site specific data for input into the model, as well as make some assumptions about the input data. The validity of the input data is the critical aspect in obtaining a reasonably conservative estimate of the dose commitments to the public. NRC staff evaluated the input data and has determined that PRI used conservative default input data when appropriate. For the site specific data required, NRC staff has determined that the site specific inputs to the model are representative of the actual site conditions with significant conservatism to ensure that the values are protective of the environment and the public.

PRI used a worst case scenario methodology when evaluating its site and assembling its model. In its estimation, the worst case scenario would be 16 SR-HUP mine units all operational at the same time. This would result in the maximum probable release from the site at any time throughout its current operational schedule. PRI also identified the nearest receptors (off-site), as well as arbitrary receptors placed at the site boundaries to evaluate site boundary conditions. The model was run for this worst case scenario year to determine the peak dose to members of the public with the assumption that, assuming normal operations, all subsequent years must be less than the peak calculated dose based on a continuous reduction of activities over the remaining operational time at the mill. NRC staff evaluated this methodology and agrees that it is conservative and will yield dose estimates that can reliably predict the maximum estimated dose to members of the public throughout the operation of the mill.

The model output estimates a total population dose of 305.6 person-rem/yr and a general dose to the population of less than 1 mrem/yr. The two nearest residents, Sunquest Ranch and the Vollman Ranch, are estimated to receive a peak maximum yearly dose of 17.5 and 13.2 mrem/yr respectively for the worst case scenario. However, it is very unlikely that these peak doses would be reached due to the modeling methodology and input data conservatism. Additionally, the airborne sampling program at PRI has been used and would continue to be used to verify the off site dose to the nearest resident and the general population. NRC staff evaluated the model results and has determined that estimated dose to the nearest resident and members of the public meet the requirements of 10 CFR 20.1301 (i.e., 100 mrem/yr).

5.9 Waste Disposal Impacts

Under NRC regulations (10 CFR Part 40, Appendix A, Criterion 2), to avoid the proliferation of waste disposal sites, byproduct material from uranium ISL operations must be disposed at existing uranium mill tailings disposal sites, unless such offsite disposal is shown to be impracticable or the benefits of onsite disposal clearly outweigh those of reducing the number of waste disposal sites. PRI is required under license condition 9.6 of SUA-1548 to dispose of 11e.(2) byproduct materials (i.e., wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content) generated by project operations at a licensed byproduct waste disposal site. Currently, PRI disposes of its radioactively-contaminated wastes at Pathfinder Mine Corp.'s Shirley Basin uranium mill site in eastern Wyoming.

To ensure that it retains control of all contaminated wastes while such wastes are onsite, PRI is required by license condition 10.1.7 of SUA-1548 to maintain an area within the restricted area boundary for the storage of contaminated materials prior to their disposal. PRI has specially designated and placarded containers at the SR-HUP central processing plant and at each of the

satellite facilities for the storage of such materials. These containers are set off from containers for non-contaminated materials, and a re-attachable tarp is used as a cover to prevent the inadvertent dispersal of the stored wastes.

PRI also is required by license condition 10.1.7 to dispose of all contaminated wastes at a licensed radioactive waste disposal site. For non-waste materials, PRI would survey all equipment, buildings, and other items for radioactive contamination, prior to their release from the site for unrestricted use (PRI 2004a). Finally, transportation of all material to the byproduct disposal facility would be handled in accordance with U.S. Department of Transportation and NRC regulations (49 CFR 173.389 and 10 CFR Part 71, respectively).

5.10 Cultural Resource Impacts

Class III Cultural Resource Inventories conducted within SR-2 identified seven sites deemed eligible for inclusion to the NRHP. None of these seven sites are intersected by the SR-2 access road or proposed SR-2 facility. Consequently, construction of the satellite building or access road would not have an adverse impact on any of the inventoried cultural sites. This finding was confirmed by Mr. Christopher Arthur, Archaeologist, Bureau of Land Management's (BLM), Casper, Wyoming field office, who conducted a site visit and an examination of the proposed SR-2 building location and access road on August 17, 2007. Mr. Arthur concluded that "No Further Action" was required with respect to the SR-2 building location and access road.

5.11 Cumulative Impacts

The cumulative radiological impacts (i.e., gaseous radon-222) from the entire SR-HUP operation were evaluated by PRI using the MILDOS-AREA, dispersion code (PRI 2007a, 2007b, and 2007c). As discussed in Section 5.8, NRC staff has evaluated the model results and has determined that the cumulative radiological dose to the nearest resident and members of the public meet the requirements of 10 CFR 20.1301.

Other potential cumulative impacts associated with the SR-2 facility concern the subsurface disposal of satellite generated liquid effluents (e.g., well-field production bleed and restoration water). PRI currently has three operating deep disposal wells at SR-HUP under Wyoming Department of Environmental Quality (WDEQ) Underground Injection Control (UIC) Program. Class I Injection wells WDW #1 and WDW #2 are located at Smith Ranch and are associated with operations at the CPP and ISL Satellite SR-1, respectively. Class I Injection well Morton 1-20 is located at Highland, between Satellites #1 and #2. PRI has a UIC Class I Injection well permit for a second Highland deep disposal well (Vollman 33-27), which has not as yet been constructed (PRI 2004).

PRI has applied for a Class I Injection well for the subsurface disposal of liquid effluent from SR-2 (Petrotek 2007). The well would be located within close proximity of the SR-2 building. The injection zone for SR-2 deep disposal well is between 4,750 to 7,000 feet below ground surface, with a mid-point depth of 5,875 feet. Subsurface liquid effluent disposal at SR-2 is not expected to affect local stock and domestic ground water use. Stock wells located within three miles of SR-2 are completed in stratigraphic horizons that are several thousand feet above and hydraulically isolated from the zone planned for liquid effluent disposal (see Table 1). Domestic wells are also completed in stratigraphic horizons that are several thousand feet above and

hydraulically isolated from the zone planned for liquid effluent disposal. No domestic wells are located within three miles of the proposed SR-2 deep disposal well location.

Potential cumulative impacts related to conventional uranium mining and milling is the vicinity of SR-HUP are unlikely. In the southern Powder River Basin, where the SR-HUP facility is located, uranium was historically mined via conventional methods (e.g., open pits and subsurface mine shafts) during the 1970s and 1980s. At SR-HUP, construction of the Bill Smith mine shaft was initiated in September 1972, and completed in early 1977. However, due to porous sands and heaving shale zones in the Fort Union formation, conventional subsurface mining was terminated in June 1978 (Paydirt 1999). Open pit uranium mining occurred from 1970 to 1984 at the Exxon Highland facility, which is adjacent to the eastern edge of the SR-HUP permit area (approximately 15 miles northeast of SR-2). Although the potential for future conventional mining exists, two factors make conventional mining in the vicinity of the SR-HUP unlikely: ISL operations are approximately two to three times more cost effective than open pit mining/conventional milling operations, and virtually all the South Powder River Basin uranium ore deposits are amenable to ISL development.

5.12 Environmental Monitoring

PRI would conduct a radiological monitoring program in accordance with the requirements of its application and NRC source materials license. An outline of PRI's environmental monitoring program is discussed in Section 5 of its amendment application (PRI 2004a). PRI's monitoring program includes surface water, soils and sediments, direct radiation, radon, and ground water at multiple sites. PRI is required under license conditions 11.6 and 12.2 of SUA-1548 to monitor the various environs and to provide in an annual report to the NRC a copy of one of the semiannual effluent and environmental monitoring reports required under 10 CFR 40.65.

As discussed in sections 4.6 and 5.6 of this EA, PRI also conducts annual raptor surveys with the primary intent of protecting against unforeseen conditions, such as the construction of a new nest in an area where operations may take place.

6.0 AGENCIES AND PERSONS CONSULTED

6.1 Wyoming State Historic Preservation Office (WSHPO)

By letter dated June 14, 2007, the NRC staff requested information from the WSHPO regarding cultural and historic properties that may be affected by the proposed SR-2 (NRC 2007b). Further correspondence documenting Section 106 consultations was sent to WSHPO on December 4, 2007 (NRC 2007g). By return letter dated December 12, 2007, the WSHPO provided its concurrence that no historic properties would be adversely affected by the proposed action (WSHPO 2007).

6.2 State of Wyoming, Department of Environmental Quality (WDEQ)

The WDEQ administers and implements the State rules and regulations for ISL related activities. PRI possesses a current WDEQ mining permit for its commercial operations. By letter dated September 13, 2007, the NRC staff provided a draft copy of the SR-2 EA to the WDEQ for its review and comment. By correspondence dated November 29, 2007, the WDEQ indicated it had no comments on the EA (WDEQ 2007).

6.3 National Historical Preservation Act Section 106 Consultation

By letters dated July 20, 2007, per 36 CFR 800.3 (f), the NRC staff initiated a Section 106 of the National Historical Preservation Act (NHPA) consultation with numerous Native American cultural and tribal/business representatives located in Oklahoma, Wyoming, North Dakota, South Dakota, Montana, and New Mexico (NRC 2007c). The consultation requested information regarding historical sites or cultural resources within the southwest portion of SR-HUP (i.e., SR-2 and Mine Units 9, 10, 11 and 12), including any specific knowledge of any sites that are believed to have traditional religious and cultural significance.

The NRC has received responses from two Native American tribes: Cheyenne River Sioux Tribe (dated August 20, 2007) and Standing Rock Sioux Tribe (dated September 6, 2007). Following telephone calls to both parties, NRC staff forwarded supplemental information to the Cheyenne River Sioux Tribe (dated September 21, 2007) and Standing Rock Sioux Tribe (dated October 3, 2007) indicating that the proposed action would not impact Class III Cultural Resource inventoried sites deemed eligible for inclusion to the NRHP. The supplemental information also included planned mitigation measures (i.e., buffer zones) to protect sensitive cultural resource sites. NRC staff has conducted multiple follow-up calls to both parties. No further comments have been received.

6.4 U.S. Fish and Wildlife Service, Mountain-Prairie Region

By letter dated August 29, 2005, the NRC staff requested information regarding endangered or threatened species or critical habitat in the Reynolds Ranch area (located north and directly adjacent to SR-HUP) from the U.S. Fish and Wildlife Service, Mountain-Prairie Region (NRC 2005). By return letter dated September 28, 2005, the U.S. Fish and Wildlife Service provided a list of endangered and threatened species, as well as comments on migratory birds and wetlands and associated riparian areas (U.S. Fish and Wildlife Service 2005). In its letter, the U.S. Fish and Wildlife Service identified the black-footed ferret as an endangered species and the bald eagle and Ute ladies-tresses (*Spiranthes diluvialis*) as threatened species that may be present in the project area.

By letter dated June 26, 2007 (NRC 2007e), with follow-up correspondence on September 19, 2007 (NRC 2007f), NRC staff requested information regarding endangered or threatened species or critical habitat in the SR-2 area. No response was received. In absence of a response, NRC staff identified a U.S. Fish and Wildlife Service, Mountain-Prairie Region web site which listed, by county, endangered and threatened species in Wyoming (U.S. Fish and Wildlife Service 2006). No federally-listed endangered or threatened species or critical species habitat are found within the SR-2 area.

6.5 U.S. Bureau of Land Management (BLM)

By electronic correspondence dated August 2, 2007, the NRC staff initiated consultation with the Bureau of Land Management's (BLM's), Casper, Wyoming field office concerning inventoried cultural sites that had been designated eligible for the NRHP in the vicinity of the proposed SR-2 expansion (NRC 2007d). Mr. Arthur conducted a site visit and an examination of the proposed SR-2 building location and access road on August 17, 2007. Mr. Arthur concluded that "No Further Action" was required with respect to the SR-2 building location and

access road. By return correspondence dated October 15, 2007 (BLM 2007), BLM confirmed that the location of the proposed the SR-2 building and support road did not impact any known cultural or transient findings. BLM's findings were also transmitted to the WSHPO via e-mail on October 16, 2007.

7.0 CONCLUSIONS

The NRC staff have prepared this EA in support of PRI's proposed action to construct and operate SR-2. On the basis of this EA, NRC has concluded that there are no significant environmental impacts and the licensing action does not warrant the preparation of an Environmental Impact Statement. Accordingly, it has been determined that a Finding of No Significant Impact is appropriate and will be published in the *Federal Register*.

8.0 SOURCES USED

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Nuclear Regulatory Commission (2006) *Environmental Assessment for the Reynolds Ranch Amendment to Source Materials License SUA-1548* November [Adams Accession No. ML062690386]

Nuclear Regulatory Commission (2007a) *Review of Southwest Area Hydrologic Test Smith Ranch – Highland Uranium Project Source Materials License SUA-1548. March 27* [Adams Accession No. ML070860069]

Nuclear Regulatory Commission (2007b) Letter from Paul Michalak to Claudia Nissley, Wyoming State Historic Preservation Office June 14 [ADAMS Accession No. ML071590140]

Nuclear Regulatory Commission (2007c) Letter from Paul Michalak to Multiple Addressees initiating National Historical Preservation Act Section 106 Consultation. July 20 [ADAMS Accession No. ML071940240]

Nuclear Regulatory Commission (2007d) Electronic correspondence from Paul Michalak to Christopher Arthur, U.S. Bureau of Land Management, August 2 [ADAMS Accession No. ML072290121]

Nuclear Regulatory Commission (2007e) Letter from Paul Michalak to Brian Kelly, U.S. Fish and Wildlife Service. June 26 [ADAMS Accession No. ML071770268]

Nuclear Regulatory Commission (2007f) E-mail from Paul Michalak to Brian Kelly, U.S. Fish and Wildlife Service. September 19 [ADAMS Accession No. ML073390036]

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