

September 8, 2008

MEMORANDUM TO: Docket File 040-08502

FROM: Ron C. Linton, Project Manager **/RA/**
Uranium Recovery Licensing Branch
Decommissioning and Uranium Recovery Licensing Directorate
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Office of Federal and State Materials and Environmental
Management Programs

THROUGH: Bill vonTill, Chief **/RA/**
Uranium Recovery and Licensing Branch
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental
Management Programs

SUBJECT: ENVIRONMENTAL ASSESSMENT REGARDING THE LICENSE
AMENDMENT REQUEST TO RETURN TO OPERATING STATUS
FROM DECOMMISSIONING STATUS, COGEMA MINING, INC.
IRIGARAY AND CHRISTENSEN RANCH PROJECTS WYOMING

COGEMA Mining, Incorporated (COGEMA) submitted a license amendment request dated April 3, 2007, (COGEMA, 2007) to return its Irigaray and Christensen Ranch *in-situ* uranium recovery facilities to operating status from decommissioning and restoration status. In its request, COGEMA indicated that it did not believe an additional environmental review was required and that the amendment request qualified for a categorical exclusion under 10 CFR 51.22(c)(11). However, in accordance with 10 CFR 51.21, the Nuclear Regulatory Commission (NRC) staff determined that an environmental assessment (EA) was required to document its review of COGEMA's request. NRC staff initiated a review of the amendment request and forwarded a request for additional information (RAI) on several topics to COGEMA on March 4, 2008. COGEMA's responses to the RAI's were provided in a letter dated March 28, 2008. On March 17, 2008, a Notice of License Amendment request and an opportunity for hearing were published in the *Federal Register*. No hearing requests were received.

The draft EA was sent to the Wyoming Department of Environmental Quality and the Bureau of Land Management on May 23, 2008, with a request for comments. Both agencies responded with comments that have been incorporated into the EA. The EA prepared by the staff is provided as an enclosure to this memorandum to be placed in the licensee's docket file.

License No. SUA-1341

Enclosure: Environmental Assessment Regarding the License
Amendment Request to Return to Operating Status from
Decommissioning Status

The draft EA was sent to the Wyoming Department of Environmental Quality and the Bureau of Land Management on May 23, 2008, with a request for comments. Both agencies responded with comments that have been incorporated into the EA. The EA prepared by the staff is provided as an enclosure to this memorandum to be placed in the licensee's docket file.

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**ENVIRONMENTAL ASSESSMENT REGARDING THE LICENSE
AMENDMENT REQUEST TO RETURN TO OPERATING STATUS FROM
DECOMMISSIONING STATUS**

**COGEMA MINING, INC.
IRIGARAY AND CHRISTENSEN RANCH PROJECTS
WYOMING**

September 2008

DOCKET NO. 040-08502

**U.S. Nuclear Regulatory Commission
Office of Federal and State Materials and Environmental
Management Programs**

1.0 Introduction

1.1 License Amendment Request

COGEMA Mining, Incorporated (COGEMA) submitted a license amendment request to the Nuclear Regulatory Commission (NRC) dated April 3, 2007, to return its Irigaray and Christensen Ranch in-situ uranium recovery facilities to operating status from decommissioning and restoration status, respectively (COGEMA, 2007). In its request, COGEMA indicated that it did not believe an additional environmental review was required and that the amendment request qualified for a categorical exclusion under 10 CFR 51.22(c)(11). However, in accordance with 10 CFR 51.21, the NRC staff determined that an environmental assessment (EA) was required to document its review of COGEMA's request.

The NRC staff initiated a review of the amendment request and forwarded a request for additional information (RAI) on several topics to COGEMA on March 4, 2008 (NRC, 2008a). On March 17, 2008, a Notice of License Amendment Request and an Opportunity for Hearing was published in the *Federal Register* (*Federal Register*, 2008). No hearing requests were received. COGEMA's response to the RAI was provided in a letter dated March 28, 2008 (COGEMA, 2008b). A copy the predecisional draft EA was sent to the Bureau of Land Management (BLM) and the Wyoming Department of Environmental Quality (WDEQ) for comments on May 23, 2008. Both responded with comments that have been incorporated into the EA.

The current license that allows for decommissioning and restoration does not contain an expiration date. The license expiration date was changed in Amendment 4 from "June 30, 2008" to "until terminated" when the license was amended from operational status to decommissioning and restoration status. The previous license expiration date of June 30, 2008, was based on the 10-year operational status license renewal completed in 1998 (NRC, 1998). This EA is tiered off of the 1998 license renewal EA (NRC, 1998) and the 2001 decommissioning EA (NRC, 2001) and bounds the environmental impacts discussed herein.

1.2 Regulatory History

The Irigaray Project was licensed for commercial operation in August 1978, under ownership of Westinghouse Electric Corporation. In 1982, operations ceased at the Irigaray plant and well fields, and the facility was placed on standby status pending improvements in the uranium market. In 1987, Malapai Resources Company purchased the Irigaray site and resumed operations. In 1988, Malapai was granted an amendment to Irigaray license SUA-1341 to include the Christensen Ranch satellite ion exchange plant and associated mine units. In February 1990, operations ceased again, and in September of 1990, Malapai was sold to Electricite de France, a French nuclear utility. In April 1993, COGEMA acquired ownership of the Irigaray and Christensen Ranch projects.

COGEMA obtained a possession-only license in March 2001 that removed its authorization to use lixiviant to extract uranium from the underground ore body, and the facility has been in decommissioning and restoration status since that time. In its April 3, 2007 letter, COGEMA requested a return to operational status with essentially the same license conditions that existed in its last operational license before it obtained a possession-only license for restoration and decommissioning. COGEMA is currently limited by license condition to a maximum recovery of 50,000 pounds of yellowcake per year only from restoration fluid (ground water pumped and treated to restore the aquifer). Descriptions of the uranium extraction and recovery processes, and waste management are presented in the 1998 EA (NRC, 1998) and are not repeated here.

The impacts from the facility operation and general decommissioning were addressed in the 1998 EA and Finding of No Significant Impact (FONSI) for the license renewal and bound most of the impacts expected from this request for a return to operational status (NRC, 1998). The information in this EA is based primarily on information contained in the 1997 license renewal application (COGEMA, 1997), the June 1998 EA for the license renewal (NRC, 1998), the December 2001 EA for the Decommissioning Plan (NRC, 2001), and correspondence from COGEMA related to this request for a return to operational status.

1.3 Site Description

Although under one license, the Irigaray and Christensen Ranch uranium projects are two distinct sites located within the southern portion of the Powder River Basin, a structural and topographic basin in eastern Wyoming and southern Montana. The Christensen Ranch site lies at the base of the Pumpkin Buttes to the northwest and the Irigaray project is located approximately five miles to the northwest of the Christensen site boundary.

The Irigaray Ranch site located in southeast Johnson County, approximately 10 miles northeast of Sussex, Wyoming, 43 miles southeast of Buffalo, Wyoming, and 90 miles NNE of Casper, Wyoming. The Irigaray NRC permit area includes approximately 1000 acres, however, only a small fraction of this land has been disturbed by previous and current uranium recovery activities. The various research and development phases at the Irigaray facility occupied approximately 10 acres. Previous commercial well field operations have been limited to approximately 40 acres. Well field operations at the Irigaray site ended in 1994 and all well fields were restored in 2003. The well fields are currently undergoing decommissioning which involves removal and plugging of wells, piping, and associated structures. The licensed central processing facility is located at the Irigaray site and will be used to process yellowcake if the site returns to operational status. Very little land disturbance is expected to take place at the Irigaray site.

The Christensen Ranch project area is located along the Campbell-Johnson County boundary, about 30 miles north-northeast of the town of Midwest, Wyoming, and 50 miles southwest of Gillette, Wyoming. The total surface area expected to be disturbed by existing and future operations is 930 acres which is approximately seven percent of the 14,000 acres within the permit area. Land disturbance may consist of well field installation of piping, header houses, production and injection wells as well as well field decommissioning and restoration. The last operating well field at Christensen Ranch was shut down on June 23, 2000, and the well fields have been undergoing restoration since 2000. COGEMA submitted a well field restoration report dated March 5, 2008, to the NRC for restoration approval for mine units 2 through 6

(COGEMA, 2008c). If this amendment is approved, uranium extraction activities will continue in those previously licensed well fields that have not had uranium extracted. The Christensen site contains a satellite ion-exchange uranium recovery facility.

Both of the properties are characterized by rolling uplands which are bisected by sharp deep-cut drainages. Most of the drainages on the sites flow to Willow Creek, an ephemeral tributary to the Powder River, which crosses both properties from southeast to northwest. Elevations are generally high and range from 4300 feet to 5200 feet. The Irigaray plant site is located about 13 road miles from the Christensen Ranch satellite plant location.

2.0 Proposed Action

The proposed action is to return the Irigaray central processing facility and several well fields at the Christensen Ranch facility to operational status so that uranium recovery can continue. COGEMA has requested that the license conditions that were removed in 2001, in its last fully operational license, be added to its current possession-only license SUA-1341, with a few minor changes in wording, for example, to delete unnecessary conditions related to ponds that have been fully restored at the Irigaray site.

If COGEMA's request to return to operating status is approved, well fields that were licensed at the Christensen Ranch site during the last license renewal, but did not undergo uranium extraction during that time, will become operational. Barren lixiviant will be injected into the underground ore body to dissolve uranium into solution and the uranium-laden (pregnant) lixiviant will be pumped back to the surface and transferred to the Christensen Ranch satellite processing facility. Uranium will be removed from the pregnant lixiviant by ion exchange resins. These uranium loaded resins would then be trucked to the Irigaray central processing facility for elution and final processing into dried yellowcake powder. Two evaporation ponds that had their liners and byproduct material removed for disposal may be refurbished with a return to operations. Small ancillary buildings needed to support a return to operations may also be constructed near the central processing facility at Irigaray and the satellite processing facility at Christensen Ranch.

3.0 Need for the Proposed Action

COGEMA has requested to restart uranium recovery operations at its Irigaray and Christensen Ranch facilities. Global demand for yellowcake uranium has increased and correspondingly the price of the uranium yellowcake commodity has increased. COGEMA's return to operational status would allow COGEMA to produce yellowcake uranium to assist in supplying the global demand for uranium. To return to operational status, an EA and technical evaluation report (TER) are required to support the issuance of the license amendment.

4.0 Review Scope

This EA has been prepared to document the assessment of the proposed licensing action in accordance with 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions. Part 51 implements the NRC environmental protection program under the National Environmental Policy Act (NEPA) of 1969, as amended. In accordance with 10 CFR Part 51, an EA serves to: (i) briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS), or a finding of no significant impact (FONSI); (ii) facilitate creation of an EIS when one is necessary; and (iii) aid the NRC compliance with NEPA when an EIS is not necessary.

In conducting this assessment, the staff considered the following:

- Environmental information submitted to the NRC by the licensee related to this amendment request and past licensing actions;
- Restoration and environmental information submitted by the licensee for previous and current work at the Irigaray and Christensen Ranch sites;
- Information derived from NRC regulations, regulatory guides, and the staff's review; and
- Observations during inspections.

The NRC staff is also preparing a TER to document the technical review of the license amendment request. If approved, COGEMA's license SUA-1341 will be amended to allow a return to operating conditions based on COGEMA's request and the technical and environmental findings. Prior to a return to operations, an inspection is required by the NRC and any deficiencies documented will need to be addressed prior to a restart of operations.

5.0 Environmental Impacts of the Proposed Action

5.1 Land Use

The Irigaray facility site has historically been used for livestock grazing and only a small fraction of this land has been disturbed by uranium *in-situ* leach (ISL) activities. The nearest residence is 4 miles (6.4 km) away. Research, development, and commercial phases of uranium recovery occupied approximately 40 acres (16 hectares) (NRC, 2001). All well fields at the Irigaray facility have been restored and are in the process of undergoing surface decommissioning (COGEMA, 2008d). The central processing facility is located at the Irigaray site and will remain there if the amendment is approved. COGEMA has indicated minor refurbishment of the facility and a few small ancillary buildings or trailers may be constructed for operations.

The primary use of land within the Christensen Ranch project area is livestock and wildlife grazing. The site is 13 road miles (21 km) and 7 air miles (11 km) from the Irigaray processing plant. The nearest residence is 3 miles (4.8 km) away. Well field operations have disturbed approximately 233 acres (94.3 hectares) (NRC, 2001). Mine units 2 through 6 have been restored and a restoration report has been submitted to the NRC for review (COGEMA, 2008c).

The secondary use of land surrounding both Irigaray and Christensen Ranch facilities continues to be petroleum production from wells dispersed throughout the region. Seventeen producing oil wells were located near the site in 1998 (NRC, 1998). The closest oil well to the Christensen Ranch project is located approximately one-third mile (0.6 km) west of the Christensen Ranch plant. The closest oil well to the Irigaray site is located approximately one-half mile (0.8 km) east of the MU 9 well field. COGEMA is not aware of any new oil wells that have been drilled in close proximity to either project during 2007 (COGEMA, 2008d).

Since the last license renewal in 1998, additional interest has developed in the immediate area of the Christensen Ranch project in the development of coal bed methane (CBM) gas. Several CBM wells were drilled within a half-mile (0.8 km) of Christensen Ranch mine units 5 and 6 during 2002. Presently, these wells are capped and awaiting additional evaluation and pipeline installation before development continues. No CBM wells were drilled in close proximity to either project during 2007 (COGEMA, 2008d).

With a return to operational status, only the central processing plant will be utilized at Irigaray. Additional construction at Irigaray will be limited to small ancillary buildings or trailers to accommodate additional workers. COGEMA will continue to plug and abandon wells at the Irigaray well fields where groundwater restoration is complete and return the land to its previous ranch use. Mine units 7 through 12 at Christensen Ranch would undergo uranium processing operations, if the return to operations is approved. The effect of operations on these mine units will involve land disturbance for well field construction that was identified and evaluated during the last license renewal process in 1998 (NRC, 1998). Anticipated land use impacts will not change due to this relicensing action, since COGEMA has not requested any major changes to its previous operating license conditions. Land use impacts due to a return to operational status will be low at the Irigaray and Christensen Ranch sites.

Once uranium recovery, surface reclamation, and groundwater restoration are completed, all areas affected by ISL operation will be reclaimed, recontoured, and returned to their original use as livestock and wildlife grazing lands.

5.2 Transportation

The change from decommissioning to operational status will likely increase the number of personal vehicles traveling to and from the site from five vehicles to approximately eight vehicles. COGEMA would use one truck round trip per day for hauling resin between Irigaray and Christensen Ranch, and approximately eight additional truck and small vehicle material deliveries per week to the site during operations. No new roads are planned by COGEMA, and additional CBM traffic will likely be limited to existing roads. A summary of changes in transportation is summarized by COGEMA in its response to RAI's (COGEMA, 2008b).

Transportation of source and byproduct material will be managed in accordance with U.S. Department of Transportation (DOT) (49 CFR 173.389) and NRC (10 CFR Part 71) regulations. The environmental impact of an accident involving a truck carrying source and byproduct material would include the salvage of soil impacted by the spill and the subsequent restoration of the topsoil and vegetation. Potential impacts from transportation accidents were evaluated in the 1998 EA and are not expected to change (NRC, 1998).

The change from decommissioning to operational status will return the site to similar transportation levels that existed when the facilities were operational, as described by COGEMA in its previous license renewal application (COGEMA, 1997). The effects of transportation at similar levels were evaluated and approved in the previous COGEMA license renewal (NRC, 1998) and found to be acceptable. Transportation impacts are expected to be low due to a return to operational status from decommissioning status.

5.3 Geology and Soils

ISL operations have little impact on geological resources with the exception that uranium in the geologic formation is removed by dissolution of the lixiviant solution and pumped to the surface for further processing. Geologic impacts are expected to be low.

A return to operations will result in the construction of new well fields for ISL operations. The installation of new wells, pipelines, and well field header houses will cause disturbances to soil in the immediate vicinity of the well field. Topsoil removed during well field construction is stockpiled for reuse. Once the well field is constructed, the site is reseeded, which limits the potential of soil erosion and runoff. Additionally, once the well field is depleted of uranium and restored, well field infrastructure will be removed and the site revegetated with a mix of native plants. Any soils that are radiologically impacted and are above NRC reclamation standards for unrestricted release will be removed from the site and transferred to a licensed disposal facility. These impacts have been evaluated in the previous EA and are expected to be low.

5.4 Water Resources

The activities that could potentially impact surface water in the permit areas include decommissioning of the well fields, pipelines, process lines, access roads, and soil. These activities could increase siltation in the ephemeral waterways on the site for a short period of time; therefore, the licensee indicated that silt fences will be used, as necessary. Well fields at Irigaray Ranch that have been, or are in the process, of being decommissioned will not contribute significant siltation. Well field development at Christensen Ranch may contribute to some surface particulate runoff, but this will be minimized since each mine unit is developed separately over several years. Due to the limited size and scope of soil disturbance for each mine unit, the impact to surface water quality is expected to be low.

The process plants are equipped with a spillage containment system. The curbed plant foundation and pumpable sumps ensure that leaks and spills within the plant should not leave the plant area. Monitoring and inspections of evaporation ponds ensure that they are not overfilled and that leaks, eroded areas, liner damage, or other potential problems are detected. No transport mechanisms exist that are likely to bring process solutions into contact with surface water. Willow Creek and its tributaries, the only surface water in the immediate permit areas, are ephemeral and not likely to be affected by a return to operations. Since the dry soils in the region have a high specific retention capacity, any accidental spills are rapidly absorbed and usually do not enter the drainages.

Thirteen lined evaporation ponds are located within the permit areas: 11 within the Irigaray permit boundary, and two at the Christensen Ranch site. The 11 Irigaray ponds include five lined evaporation ponds, two lined restoration ponds, and four lined evaporation ponds at the 517 R&D site. A few of the evaporation ponds at the Irigaray site will likely need to be relined prior to start up of operations as liners and byproduct material have been removed for disposal. All lined evaporation ponds are designed with leak detection systems that are checked weekly. They are operated in a manner such that, should a leak occur, the contents in any one pond can be safely transferred to nearby ponds. Additionally, enough freeboard is required in each pond to prevent the overtopping of waves caused by high winds.

Excursion monitoring wells to monitor for the movement of lixiviant, source and byproduct material surround the well fields where the ore body is located and are also located in aquifers above the well field. The monitoring wells act to ensure groundwater surrounding the well field is not impacted, or impacts are minimized and corrected, and that underground sources of drinking water are not impacted. These wells are monitored every two weeks during operations. Additionally, all injection wells are required to be tested for mechanical integrity every five years to ensure they will not leak lixiviant, source and byproduct material. Those that fail are taken out of service or repaired. During operations, lixiviant, source and byproduct material fluid is removed from the mine unit well field at a slightly greater rate than what is injected. This acts to draw groundwater from outside the well field into the well field, which reduces the chances of excursions. If an excursion occurs at one of the monitoring wells, action is taken to correct the excursion.

CBM is produced in the Powder River Basin and in the area near the site. There is the potential for additional CBM development in the future. Targeted coal seams for CBM development are approximately 800 to 1000 feet (245 to 300 m) below uranium bearing sands. COGEMA has reviewed data from four ore sand wells in the Christensen Ranch project area over the last ten years. The data shows that the water levels have recovered approximately 100 feet (30 m) from the lowest levels during the previous ten years of operations. The increase in water levels in response to the end of uranium recovery operations does not show signs of additional effects on the ore sand from the CBM production in this area (COGEMA, 2008e). Had CBM influenced the wells, there would likely be additional drawdown shown, or very little well recovery. There are multiple aquitards located between the uranium bearing sands and the CBM targeted coal seam. This limits the connectivity between the units and the effects of drawdown on the uranium bearing sands from CBM operations.

Groundwater restoration is required after mining is complete. COGEMA is required to return groundwater in the mine unit to baseline conditions. If this cannot be achieved using best practicable technology, the groundwater is required to be returned to its pre-operational class of use. Impacts to water resources have been evaluated in the previous EA and are not expected to be different due to a return to operational status. Impacts to water resources are expected to be low.

5.5 Ecology

Information from the U.S. Fish and Wildlife Service (FWS) has identified several threatened and endangered or candidate species in Johnson and Campbell Counties that might be near the project area. No threatened or endangered plant species were identified at the Irigaray or Christensen Ranch sites by COGEMA in a Threatened and Endangered Species Report dated March 2008 (COGEMA, 2008a).

The threatened plant, Ute-Ladies Tresses, should not be encountered because the physical characteristics in the general project area have limited potential to support this plant. This plant is found in seasonally moist soils and wetland meadows below 7000 feet (FWS, 2008). The Blowout Penstemon is expected to be found around sand blowouts or sand dunes and this habitat is not known to exist at the site.

For the animal species listed, the endangered Black-footed Ferret is unlikely to be present because of the small population of prairie dogs on the site. Additionally, the FWS issued a block clearance from conducting surveys for black-footed ferrets in black-tailed prairie dog colonies throughout Wyoming in 2004 (COGEMA, 2008a). COGEMA reports the threatened Canada Lynx has never been documented in Campbell or Johnson Counties and no suitable habitat for this species is present in the project area (COGEMA, 2008a). However, the BLM has indicated that there have been historic sightings in the Big Horn Mountains of Johnson County, but that no populations exist there today. The Big Horn Mountains are approximately 50 miles from the project area. The Canada Lynx is generally found in Montane forests (FWS, 2008). There is no suitable habitat in the project area for the Canada Lynx. The Bald Eagle has recently been delisted as a threatened or endangered species. However, it still remains a species of concern in Wyoming (COGEMA, 2008a). Historically, bald eagle roosts have existed near the Irigaray and Christensen Ranch site. Bald eagle sightings have been recorded during targeted roost surveys conducted in the COGEMA project area over the last four years (COGEMA, 2008a).

COGEMA conducted an annual wildlife monitoring study to evaluate potential impacts from activities on wildlife in the area until 2000 (NRC, 2001). The study included: a wintering big game aerial survey, sage grouse strutting ground census, nesting raptor surveys, and searches for new nests. Impacts on wildlife attributed to the ISL operations and decommissioning during historic activities at the site have been limited to small areas of habitat loss at the processing locations and during disturbances for well field installation and removal. If operations restart, some additional impacts to local vegetation may occur due to installation of new well fields. However, COGEMA has committed to reseeding areas with natural native species of plants. Habitat loss due to the processing facilities will be restored at the end of operations, when the site will be reclaimed. These effects to vegetation should be low and limited to a relatively short duration during well field installation and decommissioning.

The NRC has determined that the proposed action will not affect listed species or critical habitat. No further consultation is required under Section 7 of the Endangered Species Act. Overall, effects on ecology due to a restart of operations are expected to be low.

5.6 Air Quality

Fugitive dust from access road traffic is the main source of non-radiological particulate emissions during operations. Efforts to reduce fugitive dust are made by applying water to the access roads. Additional road traffic may be experienced during restart of operations due to commercial traffic deliveries and for additional workers that will be needed to operate the facility.

Uranium fines released during drying and packaging of yellowcake are limited by a stack scrubber and filtration system, and routine monitoring is conducted for airborne uranium particulates. Control of such particulates to well within required limits was achieved during past production. Radioactive particulates within the buildings, the dryer facility, and the perimeter of the site will be monitored and controlled within the required radiological limits. COGEMA has requested a return to the operational status as was previously approved and a finding of no significant impact to site air quality is expected. Air quality impacts due to a return to operational status are expected to be low.

5.7 Noise

Noise levels are expected to increase commensurate with the level of activity of operating ISL facilities. The nearest residence to the Irigaray Ranch is four miles away and the nearest residence to the Christensen Ranch is three miles away. Both sites are remotely located. Noise will be similar to that which existed at the facility during past operations and animal species were observed to be generally tolerant of routine, operational noise (COGEMA, 2008a). Noise impacts due to a restart of operations will likely be low.

5.8 Historic and Cultural Resources

The 1998 EA summarized the archeological clearances and inquiries concerning cultural resources for the sites (NRC, 1998). However, COGEMA is required by License Condition 9.9 to administer a cultural resource inventory before engaging in any developmental activity not previously assessed by the NRC. Also, to ensure that no unapproved disturbance of cultural resources occurs, any work resulting in the discovery of cultural artifacts shall cease until artifacts are evaluated and resumption of work is approved.

COGEMA has indicated there has been no change in historical or archeological resource status since the 1998 license renewal. Site 48CA533, which was specifically referenced in condition 9.9 of the license, has been surrounded for a number of years by an exclusion fence to assure no activity/disturbance within the bounds of that site. Future site development plans in the general area will not affect that site. Since only areas that have been previously evaluated will be disturbed by a resumption of operations, no additional studies are considered necessary and impacts are expected to be low.

The NRC contacted the Wyoming State Historic Preservation Office (WSHPO) for concurrence on a determination of no effects to historic and cultural resources at the site. The Wyoming SHPO concurred with a finding that no historic properties will be affected by the project as planned (WSHPO, 2008a). Additionally, the NRC consulted 11 tribes requesting input on COGEMA's request to return to operating status (NRC, 2008b). The Northern Cheyenne Tribe has responded to the request for information that there are no properties of religious and cultural significance to the Tribe in the proposed construction area.

5.9 Visual/Scenic Resources

No expansion of the main processing facilities will occur at either Irigaray or Christensen Ranch due to a restart of operations, with the exception of a modular dormitory building at Christensen Ranch and a single wide mobile home at Irigaray Ranch. Both will be constructed to house employees during working hours. The construction of new well fields that are visible from the North Pumpkin Butte will be temporary and may have moderate impacts in the short term, but once the well fields are reclaimed and restored, the view should not be impacted. Impacts during construction of the well fields will primarily be from land disturbance during installation of the well field and during well field reclamation. Header houses are relatively small, isolated structures (approximately 400 square feet (37 m²) and 12 to 15 feet tall (3.6 m to 4.7 m) and the well head covers are generally low to the ground and less than 2 feet wide (0.6 m) by 3 feet tall (0.9 m). Generally, the short-term impacts to visual and scenic resources from the well field will be moderate and the long-term impacts are expected to be low.

The BLM has determined that oil, gas, and mineral extraction activities are an adverse effect to the setting of the Buttes (BLM, 2008) and requiring Native American consultation for projects within two miles of the Buttes. Since some of the mine units are within two miles of the Buttes, the NRC has initiated consultation with 11 tribes. The Northern Cheyenne Tribe has responded to the request for information that there are no properties of religious and cultural significance to the Tribe in the proposed construction area.

Additionally, COGEMA mining is aware of the traditional cultural property (TCP) designation and is aware that the BLM may have additional guidance on visual mitigative measures that may be taken to reduce visual impacts (personal communication R. Linton to T. Hardgrove).

5.10 Socioeconomic

An increase in the number of employees will occur if the site returns to operational status. Currently 12 employees work at the site, and approximately 40 employees will be employed in operational status (COGEMA, 2008b). The small number of additional employees is expected to have a low impact on the socioeconomic fabric of the local community. Overall socioeconomic impacts expected to be low.

5.11 Public and Occupational Health

The change from decommissioning status to operational status will likely cause a small increase in the amount of radiological effluents released from the plant and well fields. Effluent releases expected during operations were modeled and analyzed during the last license renewal. The MILDOS-AREA dose assessment model was used to estimate exposures at 48 receptor locations both onsite and at the nearest residences with the yellowcake dryer operating at its maximum licensed capacity and the Irigaray and Christensen Ranch operating at maximum flow rates. This is equivalent to a worst case scenario. The exposures were found to be within regulatory limits (NRC, 1998). The radiological impacts are expected to be low for the return to operational status.

5.12 Waste Management

Additional volumes of wastes will be generated from the proposed return to operational status. The volume of waste will be commensurate with the amounts that were generated when the facility was last operational and found to be acceptable. COGEMA is required by License Condition 9.7 to dispose of 11e.(2) byproduct materials at a licensed site, identify the disposal area, and maintain an approved waste disposal agreement onsite at all times. COGEMA currently has a waste disposal agreement with the Pathfinder Shirley Basin 11e.(2) byproduct material disposal facility. Additionally, excess process bleed water is disposed of in U.S. Environmental Protection Agency class I deep disposal wells that are permitted by the WDEQ. The waste management impacts are expected to be low for the return to operational status.

6.0 ALTERNATIVES

The action under consideration is the approval of a return to operations under Material License SUA-1341, the Irigaray and Christensen Ranch ISL Projects, as requested by COGEMA Mining, Inc. The alternatives available to NRC are to:

- (1) Approve the request to return to operational status with such conditions as are considered necessary or appropriate to protect the public health and safety and the environment, or
- (2) Deny the license amendment request. Denial of the request would require COGEMA to continue with final site decommissioning and restoration at the site. If this alternative is chosen, the environmental impacts considered and identified in the EA for decommissioning and FONSI will remain valid (NRC, 2001).

The selection of either alternative is based on a consideration of a number of factors related to protection of public health, safety, and the environment.

7.0 CONSULTATIONS

In preparing this EA, the NRC staff has consulted with representatives of the Wyoming SHPO, the BLM (Buffalo, Wyoming office), 11 tribal authorities and the FWS as documented below.

The Wyoming SHPO was consulted regarding a determination of effects on cultural and historic Resources. The Wyoming SHPO has concurred with a finding that no historic properties will be affected by the project as planned (WSHPO, 2008a). During subsequent conversations, the SHPO suggested that Indian Tribes be consulted that have expressed interest in the Pumpkin Butte area (WSHPO, 2008b).

The BLM Buffalo field office was contacted for a list of tribes that may have interest in activities surrounding the Pumpkin Buttes. The BLM provided a list of tribes that have expressed interest in the Pumpkin Buttes to NRC (BLM, 2008a).

Section 106 tribal consultation letters were sent February 27, 2008 to 11 tribes identified by the BLM as having interest in the Pumpkin Butte area soliciting their input on COGEMA's proposal to change from decommissioning status to operating status (NRC ADAMS accession package number ML080560419). The NRC received a response from Conrad Fisher, Director of the Northern Cheyenne Tribe (NCT) that indicated that there are no properties of religious and cultural significance to the NCT in the proposed construction area (NCT, 2008).

The US FWS was consulted to obtain a list of endangered and threatened species for Johnson and Campbell Counties, Wyoming. An endangered and threatened species list for Counties in Wyoming dated February 2008 was obtained from the FWS web site at <http://www.fws.gov/mountain-prairie/endspp/countylists/wyoming.pdf>.

A copy of the predecisional draft EA was sent to the WDEQ, Land Quality Division for comments on May 23, 2008 (NRC, 2008c). Glenn Mooney, WDEQ Project Manager, responded with two comments, as discussed below (WDEQ, 2008).

WDEQ comment No. 1: COGEMA has removed the sludge and liners from all but two of their evaporation ponds at Irigaray. That is, only two of their ponds are currently operational (RB and B). All of the Christensen Ranch ponds are operational, as far as I know.

NRC response: If these ponds are needed for continued operations for evaporative capacity, these ponds will need to be relined prior to use. The majority of COGEMA's disposal effluent and process bleed is now disposed of in deep disposal wells, therefore these ponds may or may not be needed for operations.

WDEQ comment: I have not actually seen anything in writing about EPA's reluctance (at least from EPA) to issue or renew Class I disposal wells injecting into the Lance Fm. However, Energy Metals/Uranium One's proposal to our Water Quality Division last week to issue a Class 5 disposal permit for water disposal (into the Lance) strongly suggests that is the case.

NRC response: COGEMA will be responsible for obtaining or maintaining all necessary permits or licenses, such as their Class I disposal permit, from other federal, state, or local agencies prior to restart of operations and for continued operations.

A copy of the predecisional draft EA was sent to the BLM Buffalo Field Office for comment on May 23, 2008 (NRC, 2008d). BLM responded that they did not have significant concerns with the EA, but did provide 10 recommendations, as discussed below, to strengthen the document (BLM, 2008b). Where applicable, BLM comments have been incorporated into the final EA.

BLM comment 001: The EA is concise with many of the impact analyses directing the reader towards previous analyses, which is acceptable, but a reviewer cannot review properly without the earlier documents.

NRC response: Most of the documents referenced in this EA have been replicated in NRC's Agencywide Document and Management System (ADAMS) and are available electronically. Some documents prior to 2000 and prior to ADAMS are available from the NRC Public Document Room upon request.

BLM comment 002: There are historic lynx observations within Johnson County – Big Horn Mountains. However, lynx habitat is mesic coniferous forest which are not present anywhere near the project area. Closest habitat approximately 50 miles west in Big Horn Mountains, no lynx population is present in the Big Horns today.

NRC response: The EA has been updated to reflect this information.

BLM comment 003: A bald eagle nest is present north of the Irigary Rd where it crosses the Powder River. Eagles have used the nest for the last 4 or 5 years. I think you should identify the nest. I don't know how much of the mine traffic goes that direction (towards Buffalo) and don't think the eagles will be negatively affected by the anticipated level of mine traffic.

NRC response: COGEMA has indicated that eagles have been present off and on at various locations around Irigaray and Christensen Ranch over the last 20 years. A survey conducted by contractors to COGEMA has identified bald eagle observations from the winters of 2004 through 2008 and known eagle roosts based on BLM records (COGEMA, 2008a). Mine traffic has been present over the past 20 years, but has been somewhat less over the last 6 years. Eagle activity apparently has not been negatively affected by traffic during previous operational activities or during restoration and decommissioning activities at the site. NRC staff agrees with BLM staff that the increase in traffic due to a return to operational status will not likely negatively affect Eagle activity at the site.

BLM comment 004: Are there any conclusions that can be included from the annual surveys – sage grouse breeding ground trend, trends in numbers of big-game and raptor nests, etc? A little more information to support that impacts have indeed been low.

NRC response: The annual surveys were not reviewed. A general twenty year history of the Eagle populations at the site has been discussed by COGEMA in relation to their review of threatened, endangered and candidate species (COGEMA, 2008a). Past environmental reviews have reached the conclusion that no impacts to wildlife have been attributed to ISL operations (NRC, 1998, 2001), and NRC staff doesn't anticipate that a return to operations will result in appreciable impacts to wildlife in the area.

BLM comment 005: Some wildlife species are tolerant of noise and others are not, perhaps list a few of the species the Cogema report said were generally tolerant. Are any sage-grouse strutting grounds within two-miles of either facility – particularly to the east? Sage grouse may potentially be listed under the Endangered Species Act and noise has been reported to potentially be a negative impact to their breeding behavior.

NRC response: Since Sage Grouse has not been identified by the FWS as an endangered, threatened, or candidate species, COGEMA's latest Threatened and Endangered Species Report did not discuss potential Sage Grouse habitat or strutting grounds. However, NRC staff has reviewed Sage-Grouse Habitat Management Guidelines dated July 24, 2007 and the Northeast Wyoming Sage-Grouse Conservation Plan dated August 15, 2006. NRC staff is aware that Sage-Grouse habitat has become a concern throughout Wyoming. Consequently, NRC staff will request that if evidence of Sage Grouse or its strutting grounds is found at the site, COGEMA will consult with the FWS or the BLM for possible mitigative measure that may be taken to avoid negative impacts. The NRC staff will request that condition 9.13 of the previous operational license relating to Mountain Plover habitat be replaced with a similar condition relating to Sage Grouse. Mountain Plover is no longer listed as a threatened, endangered, or candidate species in either Johnson or Campbell Counties, Wyoming.

BLM comment 006: How long until the well fields are projected to be reclaimed and restored? duration of impacts?

NRC response: Well fields are generally developed just prior to use and reclaimed after groundwater restoration efforts have been evaluated and approved. This process can take 2 years or more, depending on the success of restoration. NRC has recently reiterated to its *in-situ* leach licensees that decommissioning shall begin in a timely manner consistent with 10 CFR 40.42. Generally, decommissioning should be completed within 24 months. However, the licensee may request an alternate schedule if this cannot be met. NRC may approve extensions if the 24 month schedule cannot be met provided decommissioning/restoration will be completed as soon as practical, and that the health and safety of workers and the public will be protected (NRC 2008e).

BLM comment 007: Give more information on your effort to contact the tribes to demonstrate you've made a reasonable effort. Was a letter sent, and if so when? Were phone calls made, and if so how many attempts made?

NRC response: NRC sent letters to each of the eleven tribes identified by the BLM as interested in the Pumpkin Buttes. One tribe responded with no interest in the project.

BLM comment 008: Existing conditions have changed in the immediate area of this mining operation, specifically pertaining to the Pumpkin Buttes as a TCP and a cultural resource, since the 1998 concurrence letter from SHPO. In 2006 all of the Buttes were recorded as site number 48CA268 and are determined to be eligible under NRHP criteria A, B, and D. The setting of the Buttes has also been determined to be a contributing aspect of integrity for the property. Therefore, any visual impacts to that setting would be an adverse effect to historic properties (36 CFR Part 800.5 –Protection of Historic Properties – Assessment of adverse effects). That is why the BLM does site-specific consultation for projects within two miles of the Buttes and not just a scoping level consultation letter.

NRC response: The NRC staff became aware of the TCP designation during review of another *in-situ* leach project in the area of the Pumpkin Buttes. Contact was made with the BLM and the SHPO specifically to address interest in this issue. Nine site-specific consultation letters were sent to eleven tribes requesting comments on the request to return to operational status (three tribes were contacted in one letter as they were listed with one contact person). A *Federal Register* Notice and opportunity for hearing on COGEMA's amendment request was also published. Additionally, COGEMA mining is aware of the TCP designation and is aware that the BLM may have additional guidance on visual mitigate measures that may be taken to reduce visual impacts (personal communication R. Linton to T. Hardgrove).

BLM comment 009: SHPO records indicate that avoidance was required for 48JO1548 as well as 48CA533 in the 1998 concurrence letter. I didn't see any mention of 48JO1548 in this document.

NRC response: NRC requested clarification for COGEMA on the 48JO1548 site. COGEMA discussed the 48JO1548 with BLM. BLM and COGEMA determined that the 48JO1548 site is in T45NR76W Section 33, which is outside the current mine plan proposal (COGEMA, 2008f). The 48JO1548 site is not likely to be negatively impacted.

BLM comment 010: Editing question: It says "Nine Section 106 tribal consultation letters were sent to eleven tribes..."

NRC response: See NRC response to BLM comment 008.

8.0 CONCLUSIONS

The staff is recommending the following license condition change to the last operational license based on this environmental review:

License condition 9.13

Remove: If evidence of the migratory bird and potentially endangered species, Mountain Plover, or its nesting sites is found at the Irigaray or Christensen sites, the licensee shall consult with the Fish and Wildlife Service before proceeding with development or ground disturbing activity in that area.

Replace: Sage Grouse leks at the Irigaray and Christensen Ranch sites shall be monitored on an annual basis. The licensee shall consult with the Fish and Wildlife Service or the BLM for mitigative measures to reduce potential impacts.

Pursuant to 10 CFR Part 51, The NRC staff has prepared this EA and determined that a FONSI can be made regarding the proposed action to issue a license amendment allowing COGEMA to return to operational status. The FONSI will be published in the *Federal Register* prior to issuance of the license amendment.

The bases for the FONSI are:

- Environmental impacts of the proposed action are expected to be low for all resource areas evaluated, with the exception of possible moderate short-term visual impacts to the Pumpkin Buttes.

- Radiological releases from operational activities will be monitored and inspected on a regular basis to detect any unexpected problems and are not expected to exceed regulatory limits;
- The disturbed areas and ore bodies where uranium has been recovered will be restored to pre-operational (background) conditions to the extent reasonably possible. Land disturbance will be approximately 180 acres and will be monitored and inspected to limit environmental impacts.

On the basis of this EA, NRC has concluded that the proposed action does not warrant the preparation of an EIS. The FONSI is further supported by the previous environmental reviews (NRC, 1978, 1987, 1988, 1998, 2001) for granting the initial and the renewed commercial license at the Irigaray and the Christensen Ranch sites.

9.0 REFERENCES

BLM, 2008a. E-mail Re: Request for assistance: Native American Consultation Pumpkin Buttes (NRC ADAMS accession number ML0806003104).

BLM, 2008b. Letter from C. Hanson to R. Linton, Response to May 23, 2008 NRC letter requesting comment, July 17.

COGEMA, 2008a. Irigaray and Christensen Ranch Threatened and Endangered Species Report, March, (ADAMS accession number ML081080327).

COGEMA, 2008b. Response to Request for Additional Information, March 28, (ADAMS accession number ML0809802220).

COGEMA, 2008c. Wellfield Restoration Report, Christensen Ranch Project, Wyoming, March 5. (ADAMS accession number ML081060155).

COGEMA, 2008d. 2007 Annual Effluent and Monitoring Report, January 1 through December 31, 2007, NRC Source Material License No. SUA-1341, February (ADAMS accession number ML0807301240).

COGEMA, 2008e. COGEMA Mining, Inc., Irigaray and Christensen Ranch Projects, Licensing Renewal Application, May 30, (ADAMS accession number ML081850689).

COGEMA, 2008f. E-mail correspondence T. Hardgrove to R. Linton, July 24.

COGEMA, 2007, Amendment Request to Revert to Operating Status, April 3, (ADAMS accession number ML071020274).

COGEMA. 2001. Decommissioning Plan for Irigaray and Christensen Ranch Projects, December 19, 2000, June 15, June 18 and August 31, 2001. (ADAMS accession numbers ML0037812380, ML0117006550, ML0117100350, and ML0124901123).

COGEMA, 1997. License Renewal Application, January 5, 1996 and September 3, 1997 (PDR accession numbers 9601180201 951231 and 9709090002 970903).

Federal Register, 2008. Notice Of License Amendment Request to Revert to Operating Status from Restoration and Decommissioning Status and Opportunity for Hearing, March 17. (ADAMS accession number ML0807700051).

Northern Cheyenne Tribe, 2008. Native American Consultation Response Form via fax, April 28. (ADAMS accession number ML0815603020).

NRC, 2008a. Request for Additional Information, Amendment Request to Revert to Operating Status, March 4. (ADAMS accession number ML0801402051).

NRC, 2008b. Section 106 Consultation for COGEMA Mining, Inc., February, (ADAMS accession package number ML080560419).

NRC, 2008c. Letter from R. Linton to T. Bills, Request for Comment: Draft Environmental Assessment for Cogema Mining Inc., Request to Change from Decommissioning and Restoration Status to Operating Status, May 23, (ADAMS accession number ML081360399).

NRC, 2008d. Letter from R. Linton to G. Mooney, Request for Comment: Draft Environmental Assessment for Cogema Mining Inc., Request to Change from Decommissioning and Restoration Status to Operating Status, May 23, (ADAMS accession number ML081360427).

NRC, 2008e. Letter from K. McConnell to G. Lauret, Compliance with 10 CFR 40.42's Timely Decommissioning Requirements, July 7, (ADAMS accession number ML0814905893).

NRC, 2001. Environmental Assessment Regarding the Surface Decommissioning Plan for Cogema Mining, Incorporated, In Situ Leach Facilities in Wyoming, December 11 (ADAMS accession number ML 0134603971).

NRC 1998. Renewal of Source Material License SUA 1341, NRC Docket No. 40-8502. June 30. (ADAMS accession package number ML081060061).

NRC, 1988. Environmental Assessment for Malapai Resources, Co., Christensen Ranch in situ leach satellite operation in consideration of major amendment to License SUA-1341, May 4 (PDR accession number 8806070043).

NRC, 1987. Environmental Assessment for Westinghouse Electric Co., Irigaray Site, February 3 (PDR accession number 8702170507).

NRC, 1978. Final Environmental Statement Related to Operation of Irigaray Uranium Solution Mining Project, NUREG-0481, September.

WDEQ, 2008. E-mail from G. Mooney to R. Linton, July 8, (ADAMS accession package number ML082130319).

WSHPO, 2008a. Re: Request for Concurrence: Cogema Mining, Inc., Request for Restart of Operations, (ADAMS accession number ML0805601510).

WSHPO, 2008b. E-mail from Wyoming SHPO, February 21, ADAMS accession number ML0805900492.