

EXECUTIVE SUMMARY

INTRODUCTION

In May 2001 the President adopted a National Energy Policy to respond to our Nation's increasing energy needs. This policy recognizes the importance of how the Federal government can affect the supply and use of energy. In response to the policy, the Bureau of Land Management (BLM) developed an implementation strategy titled: *BLM Implementation of the National Energy Policy*. This plan identified a number of tasks that would streamline energy development on public lands. BLM, Nevada has received numerous applications to lease public lands for geothermal resources. A large number of these lease applications are located within the administrative boundary of the BLM Winnemucca Field Office (WFO).

To expedite processing of these pending lease applications, and meet the intent of the National Energy Policy, the BLM WFO has prepared this geothermal Programmatic Environmental Assessment (PEA) to satisfy requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA, and to update the Winnemucca District Regional Geothermal EA for land within the assessment area.

The proposed action is located in a defined assessment area within the lands managed by the BLM WFO and a portion of the Carson City Field Office (CCFO)(see Figure 2-1). The assessment area is comprised of three categories of leasable lands: Potentially Valuable Areas (PVAs), Known Geothermal Resource Areas (KGRAs)(competitive leases), and pending lease application sites (noncompetitive leases) (for pending lease applications, see [Appendix H](#)).

Lands not included for leasing consideration under the proposed action are any lands outside of the boundaries of the PVAs and KGRAs. These lands include Wilderness Areas, Wilderness Study Areas, Areas of Critical Environmental Concern, or National Conservation Areas. Also excluded are tribal lands, wildlife refuges, and private land with titles that include geothermal mineral rights.

DESCRIPTION OF THE PROPOSED ACTION

The Nevada BLM is considering leasing geothermal resources on certain public lands within the WFO administrative boundary and on all public lands, excluding wilderness study areas, in the Dixie Valley KGRA. Leasing in these areas is consistent with the WFO Paradise-Denio and Sonoma-Gerlach Management Framework Plans (MFPs) and the CCFO Consolidated Resource Management Plan (CRMP). Leasing considered under this EA does not include any WFO public land outside the boundaries of the 13 PVAs or KGRAs shown in Figure 2-1.

The proposed action is to consider leasing all or some of the geothermal resources within PVAs, KGRAs, and pending lease sites within the assessment area boundary. All pending and future geothermal resource leases within the assessment area would be subject to stipulations, mitigation measures, or performance standards developed from this analysis. Future lease

applications would require a cultural resources inventory, and wildlife and sensitive and threatened/endangered species surveys within the WFO administrative boundary prior to leasing. Existing leases or other valid existing geothermal rights within the assessment area would not be subject to the stipulations, mitigation measures, or performance standards developed in this analysis; however, they would be subject to the above should they be dropped and leased again.

DESCRIPTION OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, all or some of the future leases for geothermal resources would be analyzed using the currently approved geothermal environmental assessment, *Winnemucca District Regional Geothermal/Oil and Gas Leasing Environmental Assessment (EA-NV-020-2-38), N-11821, June 1982* and policy guidelines titled: *Stipulations for Oil and Gas and Geothermal Leases, Winnemucca Office Instruction Memorandum No. 84-160 (3/84)*. The No Action Alternative would be consistent with existing land use plans for the BLM WFO and CCFO. Processing leases under the No Action Alternative would require a supplemental NEPA analysis.

ISSUES

The BLM initiated a 30-day public scoping period from May 15, 2002 to June 14, 2002. In addition, two public scoping meetings were held; one on May 29, 2002 in Winnemucca, Nevada and the other on May 30, 2002 in Lovelock, Nevada. Issues identified through public scoping and internal BLM staff review include the following;

Lands and Realty. Leasing creates a valid existing right, which could affect other future land-use authorizations.

Recreation. Soaking and swimming in natural hot spring pools is a popular recreation activity. Concerns of hot spring users include destruction or degradation of the hot springs. Those involved in this activity do not want to be restricted or denied access to hot spring areas. Some believe that hot springs are spiritual places with healing powers.

Visual Resources. Visual resources could be adversely impacted during the exploration and/or development phases. Construction of roads, wells, ponds, power plants, warehouses, pipelines, and ancillary facilities could cause visual intrusions that adversely affect the setting of historic emigrant trails and other sensitive visual resource areas.

Wildlife. Loss of habitat from the “reasonably foreseeable development scenario” could adversely impact sage grouse, big horn sheep, mule deer, and antelope populations.

Sensitive Species. Hot Spring surface features include pools, mineral deposits, outflows, and other unique habitat features. Loss of habitat from the “reasonably foreseeable development scenario” could adversely impact sensitive plant and wildlife species.

Wild Horses and Burros. Loss of habitat and traditional water sources from the “reasonably foreseeable development scenario” could adversely impact wild horse and burro populations.

Cultural Resources. The exploration and/or development phases could destroy cultural resources or National Register-eligible sites. Construction of facilities and removal of vegetation could damage or expose previously hidden cultural resources.

Native American. Native American Religious concerns include loss or destruction of hot springs, which have spiritual importance or are areas of traditional uses such as healing.

EVALUATION FACTORS

- Air Quality
- Soils
- Hydrology and Water Quality
- Vegetation
- Noxious Weeds
- Land and Realty
- Recreation
- Visual Resources
- Wildlife, Migratory Birds, and Fisheries
- Threatened, Endangered, and Special Statue Species
- Wild Horse and Burro
- Geology and Minerals
- National Conservation Area, Wilderness, Wilderness Study Areas
- Range Resources
- Cultural Resources
- Native American Consultation
- Hazardous Materials/Waste and Solid Waste
- Socio-Economic
- Environmental Justice
- Paleontology

CONCLUSIONS

The process of leasing geothermal resources does not directly cause impacts to the human environment; however, future geothermal resources development could result in surface disturbance to some of the lands post-leasing. The “reasonably foreseeable development scenario” discloses potential impacts that could result once the lands are leased. The BLM would require a site-specific environmental analysis at the exploration and development stages to comply with NEPA.

Four separate and sequential phases of geothermal development could occur. The probable sequence and degree of environmental impact would be contingent upon the success or failure of each preceding phase. The four phases are: exploration, development, production, and close-out. Using this scenario as a guideline, the following is a comparison of the Proposed Action and No Action Alternative:

**TABLE ES-1
SUMMARY OF ALTERNATIVES**

Proposed Action	No Action Alternative
Air Quality	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” any impact would be minor in nature and localized to a small area. Under this alternative the mitigation measures and stipulations for future leases would be established using an updated Programmatic EA and therefore, more stringent protection measures.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Soils	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” geothermal exploration and development activities can be expected to cause disturbance to the landscape and soils. This could include clearing and grading access roads and trails, well sites, pipelines, power lines, and other infrastructure associated with exploration and production. Reclamation would be required following exploration and production activities.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Hydrology and Water Quality	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” environmental impacts cannot be determined for individual leases or for exploration, development, or production activities. Existing data describing surface water systems, groundwater reservoirs, geothermal reservoirs, the interrelationships of these systems, or specific exploration, development, and production activities are inadequate to determine specific effects of these activities on the region, PVAs, KGRAs, or pending leases. This updated PEA would permit inclusion of updated stipulations, mitigation measures, and/or performance standards specific to each lease, and could help</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>

Proposed Action	No Action Alternative
<p>to ensure the long-term health of the area’s hydrologic system and water quality.</p>	
Vegetation	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” there could be impacts to vegetation resources in the short term due to operational activity and construction. Long-term impacts to vegetation resources could occur due to upgrading of roads and the change in type of vegetation in areas that are reclaimed. Changes in vegetation due to construction could result in the introduction of weedy annual species and pioneering shrub species that would persist with continued disturbance and lack of maintenance. Weed control during operation and for at least five years after closure would mitigate this impact.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Noxious Weeds	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” each project would be evaluated on a case-by-case basis. Native vegetation in localized areas where facilities and utility corridors would be built or constructed could be damaged or destroyed by crushing, exposing roots, soil compaction, and blading for construction. The construction would open areas for weed invasion. The loss of native vegetation could result in the introduction of non-native, undesirable vegetation. During the exploration and development phases, noxious weeds could spread. The degree to which noxious weeds spread would be directly correlated to human activities and weed control efforts in the area. Although natural elements, such as wind and wildlife, would contribute to weed proliferation under this alternative, range animals (livestock and horses) and activities involving OHVs would contribute to most of the increased weed populations.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Lands and Realty	
<p>Direct Impacts – Leasing creates a valid existing right, which could affect other future land-use authorizations.</p>	<p>Direct Impacts – Leasing creates a valid existing right, which could affect other future land-use authorizations.</p>

Proposed Action	No Action Alternative
<p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” impacts could occur to existing utility rights-of-way and roads if all or some areas are opened for geothermal exploration and leasing. Existing rights-of-way could need to be relocated to accommodate development of the resources. Granting of new rights-of-way for non-geothermal development would need to take into consideration existing geothermal leases. No other impacts to land use or realty are expected to occur.</p>	<p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Recreation	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” impacts to recreation activities in the assessment area are likely to be minimal. After completion of the construction phase geothermal development is not expected to diminish any of the mentioned recreation activities. Any development near Trego Hot Springs could adversely affect recreation experiences for thousands of visitors each year.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Visual Resources	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” indirect impacts would probably not meet the criteria of VRM Class II areas. The impacts in Class III areas would probably range from severe to light, depending on the amount of development and the proximity to high-use areas. Indirect impacts in Class IV areas could be relatively minor. Potential adverse impacts to visual resources from long-term developments and facilities, such as power lines and communication sites, would be characterized in a site-specific EA and mitigated on a case-by-case basis to minimize impacts to visual resources. Mitigation measures would beneficially impact all landscapes and serve to protect the expansive scenic vistas. Depending upon the type of development lease approved, those developments that would abut the National Conservation Area, wilderness, and wilderness study areas could have an impact on the visual resources of those protected areas.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>

Proposed Action	No Action Alternative
Wildlife, Migratory Birds, and Fisheries	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” there are no significant environmental impacts concerning wildlife, migrating birds, or fisheries. Using an updated EA as the guideline for new leases would more adequately provide the level of protection required to ensure that these biological resources are protected under current Federal and State statutes.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Threatened, Endangered, and Special Status Species	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” there are no significant environmental impacts concerning threatened, endangered, and special status species. Using an updated EA and stipulations as the guideline for new leases would more adequately provide the level of protection required to ensure that these species are protected under current Federal and State statutes.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Wild Horses and Burros	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” there are no problematic environmental impacts concerning wild horses and burros under the Proposed Action. Using an updated EA as the guideline for new leases would more adequately provide the level of protection required to ensure that these biological resources are protected under current Federal and State statutes.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Geology and Minerals	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” impacts to geology, mineral, and geothermal resources, expected</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated</p>

Proposed Action	No Action Alternative
<p>from leasing would be minimal. Updated stipulations and mitigation measures would be developed, after additional NEPA analysis has been completed, for each lease application.</p>	<p>mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
National Conservation Area, Wilderness, and Wilderness Study Areas	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” there would be no impacts to the NCA under the Proposed Action Alternative. One PVA borders the NCA, but due to the distance of the proposed lease the impacts would not be significant. Site-specific EAs would be required before any action is undertaken when leases are granted under this plan. There could be potential impacts to the Wilderness Areas—two PVAs border the Black Rock Desert Wilderness Area and two lease applications are pending. PVA 3 borders the wilderness and is adjacent to two pending applications in the northwest of the wilderness. PVA 4 is to the southeast of the wilderness and surrounds McFarlin’s Bathhouse Spring. Development could impact the wilderness characteristics set forth in the Wilderness Act. Additional EAs should be conducted investigating the proposed development before permits are granted. There would be no impacts to the WSAs. There is the possibility of cumulative impacts, which would be discussed at the end of the section.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Range Resources	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” the impacts to Range Resources would be addressed in site-specific EAs tiering off this programmatic EA. As such, environmental and range concerns would be addressed on a more intimate level taking into consideration the placement of equipment and roads that would create the least disturbance. Mitigation measures would be addressed in individual EAs as is appropriate to each lease granted.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Cultural Resources	
<p>Direct Impacts – There would be no direct impacts as a result of the proposed action.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p>

Proposed Action	No Action Alternative
<p>Indirect Impacts – Most impacts to cultural resources under the “reasonably foreseeable development scenario” would be prevented through the Section 106 process of the National Historic Preservation Act and no surface occupancy stipulations for National Register listed and National Register eligible sites.</p>	<p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Native American Consultation	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” it is not always possible to mitigate the impacts to Traditional Cultural Properties. Geothermal development in the New York Canyon KGRA, PVA 12, and the North and south leases in PVA 12 have the potential to impact Traditional Cultural Properties (TCPs) in the Stillwater Range. The setting of these TCPs could also be impacted. If the flow or temperature of hot springs is affected by geothermal drilling or development, hot springs which are considered sacred by Native Americans could be impacted.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Hazardous Materials/Waste and Solid Waste	
<p>Direct Impacts – There are no direct impacts from issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – When considering the “reasonably foreseeable development scenario,” impacts would be insignificant if the substances described in section 3.17.2 are properly handled, stored, and disposed. Proper management of these substances according to Federal and State regulations would ensure that no contamination of soil, groundwater, or surface water would occur with any adverse effects on wildlife, worker health and safety, or surrounding communities. Proper management (in accordance with Federal (RCRA, SARA, SWDA, OSHA, EPCRA, etc.) and State regulations) of these substances would ensure no contamination of soil, groundwater, and surface water, which could also have an impact on wildlife, worker health and safety, and the surrounding community. Under this alternative an updated EA would permit inclusion of updated stipulations, mitigation measures, and/or performance standards specific to each lease that would ensure the long-term health of the area’s environmental quality.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>

Proposed Action	No Action Alternative
Socio-Economics and Environmental Justice	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Future geothermal exploration, development, production, and close-out activities in the “reasonable foreseeable development scenario” could be seen to provide moderately beneficial impacts to the county economies in the terms of jobs, income, and tax revenues. No adverse impacts are identified.</p>	<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>
Environmental Justice	
No direct or indirect impacts	No direct or indirect impacts
Paleontology	
<p>Direct Impacts – There are no direct impacts to issuing leases for future geothermal exploration, development, and production activities.</p> <p>Indirect Impacts – The indirect impacts are represented in the “reasonably foreseeable development scenario” are outlined in Section 3.20</p>	<p>Direct Impacts – There would be no direct impacts to paleontological or paleoenvironmental resources.</p> <p>Indirect Impacts – Indirect impacts from the No Action Alternative would be similar to those described in the Proposed Action; however, updated mitigation measures and stipulations would not apply using the 1982 Geothermal EA.</p>