



SUPPLEMENT TO

CARSON CITY FIELD OFFICE

GEOHERMAL LEASING

ENVIRONMENTAL

ASSESSMENT

(EA-NV-030-06-025)

**United States
Department of
Agriculture**

Aurora Area

Bridgeport Ranger District

Humboldt-Toiyabe National Forest

May 2, 2011

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(EA-NV-030-06025)

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INTRODUCTION AND BACKGROUND

History of the Analysis

A Geothermal Leasing Environmental Assessment (EA-NV-030-06-025) addressing 61 non-competitive leases totaling 109,884 acres over was prepared by the Bureau of Land Management (BLM) Carson City Field Office (CCFO) and published in July, 2006. The BLM engaged the Forest Service (USFS) in the process by requesting their concurrence for nominations on NFS land. Nineteen (19) of the 61 noncompetitive lease applications (covering 56 land sections and totaling approximately 33,000 acres) are located on NFS land within the Bridgeport Ranger District (BRD). The EA evaluated the impacts on the natural and human environment that could result from the CCFO of the BLM issuing leases for geothermal resources. The analysis included BLM Public Lands and NFS lands on the BRD of the Humboldt-Toiyabe National Forest (HTNF).

On April 17, 2007, the Forest Supervisor signed a Decision Notice and Finding of No Significant Impact (DN/FONSI) making 22 sections of NFS land available for leasing, including 14 sections within the North Aurora, South Aurora lease areas (Figure 1 and Table 1). The decision specifically excluded 34 sections of land within the North Aurora (6 sections), South Aurora (27 sections) and Wilson Canyon (1 section) lease areas because of their potentially high risk of significant impact. Biological and cultural resource data available at the time was insufficient to support a “finding of no significant impact” determination.

The BLM subsequently issued leases on the 14 Aurora sections to Vulcan Power Company¹ (Vulcan) in July 2007 (Table 2 and Figure 2).

In January 2008, the BLM requested Forest Service concurrence to lease the previously excluded 33 sections in the North and South Aurora areas. In addition, the noncompetitive lease applicant (Vulcan) for these sections continued to express interest in them. The FS responded to the BLM that further NEPA analysis and additional data collection was necessary to make a consent determination.

In May 2009, the Forest Service contracted with Tetra Tech Incorporated (Tetra Tech) to provide biological and cultural resource data covering the 33 Aurora sections. Tetra Tech conducted a literature search from Forest Service files, Nevada State Historic Preservation Office (SHPO) files, state and federal wildlife agencies, university and public sources and geophysical exploration surveys. Tetra Tech submitted their final reports in August 2009. Based upon a preliminary review of the Tetra Tech data, the Forest has determined that the additional information gathered is relevant to the impact analysis on 22 of the 33 Aurora sections (See Table 2 and Figure 2).

Scope of the Supplement

The Forest Service NEPA Handbook (FSH) allows for supplementation or revision of an EA “if the interdisciplinary review of new information or changed circumstances

¹ Vulcan Power has been acquired by Gradient Resources who is now the project proponent.

indicates that changes in the EA are needed to address environmental concerns that have a bearing on the action or its impacts” (FSH 1909.15, Section 18.4).

The Forest has chosen to prepare a Supplemental EA to incorporate newly compiled information specific to 22 sections in the North and South Aurora lease areas.

While the analysis of biological and cultural impacts in the BLM EA will be supplemented, all other impact aspects of the EA will remain unchanged. An introductory paragraph at the beginning of each chapter in this Supplement will summarize the changes to the EA, and the specific, more detailed narrative change will follow.

CHAPTER 1: INTRODUCTION/PURPOSE AND NEED

All of the Chapter 1 information presented in the original EA remains valid and unchanged.

The following section is added to the EA:

1.8 Decision Framework

The Forest Supervisor of the Humboldt-Toiyabe National Forest, as the Responsible Official, will decide the following:

- Whether or not to consent to lease all or some of the 22 sections being evaluated, and
- What stipulations would be applied to the sections consented to lease.

1.9 Public Involvement

Public involvement for this Supplemental EA includes a public mailing and a 30-day notice and comment period, as required by 36 CFR 215 Notice, Comment, and Appeal Procedures for National Forest System Projects and Activities. Comments received will be analyzed and considered by the Responsible Official, consistent with 40 CFR 1503.4.

1.10 Tribal Involvement

Additional tribal consultation was carried out for this EA Supplement in late 2010 and early 2011 to ensure Native Americans were fully aware of Forest Service recommendations and the impact to tribal concerns. Letters were sent to the tribes listed in Chapter 5.3. Presentations and consultation were carried out with the tribal councils of the Yerington Paiute Tribe, the Bridgeport Indian Colony and the Walker River Paiute Tribe. All these tribes have stated their support of the proposed action, contingent upon the proposed modified stipulations. The tribes are aware that leasing itself has no impact and that further geothermal proposals would require on-the-ground surveys that would provide specific information on resource and tribal concerns.

CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

All of the Chapter 2 information presented in the original EA remains valid and unchanged, except for the following additions and changes:

The Forest Service proposes to make available for geothermal lease approximately 11,390 acres (22 sections or parts thereof) of National Forest System land on the Bridgeport Ranger District in the North Aurora and South Aurora lease areas (Table 2 and Figure 2). Upon consent being communicated by the Forest Supervisor to the BLM, that agency may issue leases.

This EA Supplement is applicable to only 22 NFS land sections identified in Table 2-1 and Figures 2-5 and 2-6 of the original EA for the North and South Aurora Lease Areas. Applicable areas selected from EA Table 2-1 consist of the following in Table A:

Table A – Sections Proposed for Leasing

Township and Range	Section	Acres**
<u>North Aurora Lease Area</u>		
6N 27E	5	640
	6	640
7N 27E	30	320
<u>South Aurora Lease Area</u>		
5N 27E	12	600
	13	640
	14	520
5N 28E	5	320
	6	520
	7	560
	8	600
	11	600
	15	640
	16	560
	19	425
	20	480
	21	640
	22	640
	29	600
	30	480
6N 28E	13	320
	14	4
	24	640
Total NFS Lease Area**		11,389

**Acreage figures are only for the NFS lands within that section

A new map (Figure 2: North and South Aurora Geothermal Leasing Analysis) has been added to highlight the sections proposed for analysis in this Supplement and clarify the status of all other EA sections.

The final paragraph of EA Section 2.1 is changed as follows:

The Forest Service Proposed Action for 22 sections in the North and South Aurora Lease Areas, as described above, modifies Appendix C2 US Forest Service Lease Stipulations. The modified Stipulations for those 22 sections are attached in Attachment C.

2.2 No Action Alternative

The EA would remain unchanged. Under the EA Supplement “No Action Alternative”, none of the 22 NFS land sections identified above would be proposed for lease availability.

CHAPTER 3: AFFECTED ENVIRONMENT

All of the Chapter 3 information presented in the original EA remains valid and unchanged, except for the following additions and changes:

The affected environment to be described in this Supplement is limited to 22 NFS land sections (as identified above) in the North Aurora and South Aurora Lease Areas addressed in the original EA. Environmental Risk Levels are summarized in Table 3.

The descriptions documented for all other proposed NFS land sections analyzed in the original EA remain valid.

Changes to Chapter 3 include the following:

3.1 Air Quality

No additional information has been obtained or further analysis conducted on this resource. The low risk ratings identified in the 2007 Decision Notice/FONSI continue to be applied to each NFS section under review.

3.2 Land Use

No additional information has been obtained on this resource. The 2007 risk ratings from the Decision Notice/FONSI were reviewed and updated based upon the current understanding of the 22 sections within the lease areas. Overall, the potential risk to other land uses would be low to medium depending on the location, intensity, and timing of geothermal activities.

3.3 Soils, Geology, and Minerals

No additional information has been obtained for the supplemental analysis. The 2007 risk ratings from the Decision Notice/FONSI were reviewed and updated based upon the current understanding of the 22 sections within the lease areas. Overall, the potential risk to soils, geology, and minerals would be low to medium depending on the location, intensity, and timing of geothermal activities.

3.4 Water Resources

No additional information has been obtained or further analysis conducted on this resource. The low risk ratings identified in the 2007 Decision Notice/FONSI continue to be applied to each NFS section under review.

3.5 Vegetation and Invasive Plant Species

No additional information has been obtained or further analysis conducted on this resource. The low risk ratings identified in 2007 Decision Notice/FONSI continue to be applied to each NFS section under review.

3.6 Fish and Wildlife

The 2009 biological report prepared by Tetra Tech titled "*A Data Inventory for Potential Geothermal Leasing at North Aurora and South Aurora Study Areas*" was prepared to provide updated biological information on the wildlife, fish, and plant species in the North and South Aurora lease areas. This report is incorporated by reference.

A supplemental analysis was prepared to review the effects to Management Indicator Species and Migratory Birds from making the 22 sections available for leasing. Overall, the potential risk to wildlife would be low to medium depending on the location, intensity, and timing of geothermal activities.

3.7 Special Status Species

A Draft Supplemental Biological Evaluation/Biological Assessment has been prepared for the proposed action. Key summaries of this report are presented below.

3.7.1. Federally Listed Endangered and Threatened Species

Lahontan Cutthroat Trout - No impacts would occur from leasing as there are no ground disturbing activities associated with leasing. Therefore it is determined that there will be **no effects** to the species from leasing. The RFD has no direct impacts, because there are no site specific actions proposed. However, the RFD represents a potential scenario, which if implemented could have impacts. Any potential impacts will be limited by existing stipulations and site specific project design features and mitigations that will be developed if a specific area is proposed for a project. Environmental analysis

would be required for any ground disturbing proposals. Because Bodie and Rough Creeks are not occupied at this time and because current stipulations to leasing and future project design features should prevent impacts such as sedimentation and water table alteration, it is determined that there will be **no effects** to the species from the RFD. Overall, the potential risk to LCT would be low to medium depending on the location, intensity, and timing of geothermal activities.

3.7.2 USDA Forest Service Sensitive species

Sage Grouse - Leasing itself has no impacts as there are no ground disturbing activities associated with leasing. The RFD has no direct impacts, because there are no site specific actions proposed. However, the RFD represents a potential scenario, which if implemented could have impacts. Any potential impacts will be limited by stipulations (Attachment C) and site specific project design features and mitigations that will be developed if a specific area is proposed for a project. Environmental analysis would be required for any ground disturbing proposals. Because of the stipulations to leasing that limit impacts to species, and the ability to limit impacts with site specific project design features and mitigations, it is determined if the RFD is implemented, the project **may impact individuals or their habitat, but will not likely contribute to a trend towards Federal listing or cause loss of viability to the population or species**. Overall, the potential risk to sage grouse would be low to medium depending on the location, intensity, and timing of geothermal activities.

All Other Sensitive Plant and Wildlife Species - Leasing itself has no impacts as there are no ground disturbing activities associated with leasing. The RFD has no direct impacts, because there are no site specific actions proposed. However, the RFD represents a potential scenario, which if implemented could have impacts. Any potential impacts will be limited by stipulations (Attachment C) and site specific project design features and mitigations that will be developed if a specific area is proposed for a project. Environmental analysis would be required for any ground disturbing proposals. Because of the stipulations to leasing that limit impacts to species, and the ability to limit impacts with site specific project design features and mitigations, it is determined if the RFD is implemented, the project **may impact individuals or their habitat, but will not likely contribute to a trend towards Federal listing or cause loss of viability to the population or species**. Overall, the potential risk to “All Other Sensitive Species” would be low to medium depending on the location, intensity, and timing of geothermal activities.

3.8 Cultural, Native American and Paleontological Resources

The Aurora area is rich in historic and prehistoric resources, although little of the area has been surveyed. Existing cultural resource information provided archeologists broad knowledge in determining where risks were low to moderate. The stipulation listed for archeological resources would ensure that future resource-revealing surveys would protect that resource.

Overall, the risk to cultural resources within each of the 22 sections is low to moderate depending on the location, intensity, and timing of geothermal activities (Table 3).

Sites in Township 5 N., Range 27 E.

Section 12, Township 5 N., Range 27 E.

There are no previously documented archaeological sites in this section. Being in the vicinity of Aurora and within a pinyon-juniper woodland, it is likely that there are numerous wood cutting camps and areas associated with the charcoal and firewood industries at Aurora and Bodie. Based upon what is known in nearby sections, the likelihood of there being extensive archaeological sites is problematic. As so little archaeological survey has been accomplished in any of the surrounding sections it cannot be ascertained as to the archaeological site density in the area. There is not adequate information to provide any evidence that this section should be removed from leasing. It is probable that the risk to cultural resources from the leasing of this section would be moderate.

Section 13, Township 5 N., Range 27 E.

Very, very minimal archaeological inventory has been conducted in section 13. The only recorded site in this section, Ty-2728 was recommended as not eligible for listing to the NRHP. It is known that the stage route between Aurora and Bodie, California, follows Aurora Canyon through the middle of this section, and that a number of historic stamp mills, brick manufacturing sites, and other sites are probably found in Aurora Canyon. The few archaeological surveys in this section did not identify any archaeological sites. There is no information about other types of sites in section 13. As so little archaeological survey has been accomplished in any of the surrounding sections it cannot be ascertained as to the archaeological site density in the area. There is not adequate information to provide any evidence that this section should be removed from leasing. It is probable that the risk of affecting cultural resources by the leasing of this section would be moderate.

Section 14, Township 5 N., Range 27 E.

There are no previously documented archaeological sites in this section. The topographic maps identifies the Del Monte historic site within the section and the site is along the historic road or trail from Bodie to Aurora. Based upon what is known in nearby sections, it is likely that there would be historic sites associated with Bodie as well as with Aurora in the section. As so little archaeological survey has been accomplished in any of the surrounding sections it cannot be ascertained as to the archaeological site density in the area. There is not adequate information to provide any evidence that this section should be removed from leasing, but it is probable that the risk of affecting cultural resources by the leasing of this section would be moderate.

Sites in Township 5 N., Range 28 E.

Section 5, Township 5 N., Range 28 E.

There are no previously documented archaeological sites in this section, and no archaeological surveys have been conducted. As this section is heavily timbered in pinyon pine and juniper it is likely that there exists a number of small pinyon collecting camps. A number of sites containing house rings, pinyon caches, as well as woodcutting sites are documented a few miles to the north of this section, but it is unknown whether the Aurora Crater lying at the center of this section was conducive or detrimental to archaeological site locations. There is not adequate information to provide any evidence that this section should be removed from leasing. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 6, Township 5 N., Range 28 E.

Site Ty-4005, the Carson to Aurora Road, lies on the extreme western edge of this section. There are no other previously documented archaeological sites in this section and no inventories have been conducted. As this section is heavily timbered in pinyon pine and juniper it is likely that there are a number of small pinyon collecting camps. A number of sites containing house rings, pinyon caches, as well as woodcutting sites are documented a few miles to the north of this section, but it is unknown whether the section was conducive or detrimental to archaeological site locations. There is not adequate information to provide any evidence that this section should be removed from leasing. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 7, Township 5 N., Range 28 E.

This majority of this sections lies on the Aurora Crater volcanic flow which has proven largely impenetrable and few projects have been undertaken in the area. Therefore few sites have been documented in the section, and those recorded are all on the south and west side of the section below the lava flow. Being within close proximity to the Esmeralda Mining District (Aurora) it can be expected that a number of logging/woodcutting camps will be found on the flow. The site expectations would be that significant sites would be found, but that there would not be so many as to preclude exploration, and there is no evidence that this section should be removed from leasing. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 8, Township 5 N., Range 28 E.

The majority of this section lies on the Aurora Crater lava flow. Being largely impenetrable, there have been few inventories on this flow. The majority of the sites identified above are found at the edge, or to the south of the lava flow. Small woodcutting camps as well as Native American pinyon gathering sites are expected in this section on the lava flow. At the south end of the section modern mining has created large mine tailings, etc. The site expectations would be that significant sites would be found, but that there would not be so many as to preclude exploration, and there is no

evidence that this section should be removed from leasing. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 11, Township 5 N., Range 28 E.

Given the large number of National Register eligible sites identified in this section, and based upon such a small amount of archaeological inventory being conducted, it is likely that this section will be problematic in exploration and development. The section lies immediately south of the previously leased sections which were leased because there was no archaeological information at the time of leasing. Since then archaeological surveys to the immediate north of this section has shown that a sizeable number of National Register eligible sites is expected. These sites are likely to be Native American sites with house rings, and large lithic scatters. It is not unlikely for there to be lithic quarrying areas, and the possibility exists for petroglyph sites also. Based upon this information, the sites appear to not be large, as in sections further to the north, and it is probable that exploration could be accomplished through avoidance of archaeological sites. There should not be so many sites as to preclude exploration, and there is not strong evidence present, based upon previous knowledge that this section should be removed from leasing. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 15, Township 5 N., Range 28 E.

There are no previously documented archaeological sites in this section. Based upon what is known in nearby sections, the likelihood of there being extensive archaeological sites is expected to be low. The area is at a fairly high elevation, ranging from about 7,500 feet to over 8,400 feet. Additionally, the vegetation in this section is largely sagebrush and not expected to contain pinyon gathering camps. There is some likelihood that obsidian quarrying sites may occur, being in the vicinity of Mt. Hicks, although the primary area known for obsidian is to the east and north of Hicks. The site expectations would be that significant sites would be found, but there would not be so many as to preclude exploration, and there is no evidence that this section should be removed from leasing. It is likely that the risk to cultural resources from the leasing of this section would be low.

Section 16, Township 5 N., Range 28 E.

A few very large sites are identified in the extreme northwest corner of this section. This is consistent with the sections to the north and west of section 16. Archaeological surveys are nonexistent in the southern 2/3^{rds} of this section, but the likelihood of high archaeological site densities in the majority of this section is expected to be low. This is based upon the absence of pinyon-juniper woodland to the south as well as very steep slopes and high elevations. From the northern end of the section, where archaeological sites are found at elevations of ca. 7,200 feet, the section rises to an elevation of 8,400 feet at the south end of the section. The potential is extremely high that significant archaeological sites would be encountered at the extreme northwest portion of the section, and that sites would be small and infrequent to the south. There should not be so many as to preclude exploration, and there is not strong evidence present, based upon

previous knowledge that this section should be removed from leasing. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 19, Township 5 N., Range 28 E.

Virtually no archaeological inventories have been conducted in this section. Only the extreme southern edge of the Aurora NRHP site lies within this section. The sites identified above all are documented in surrounding sections and overlap into section 19. The elevations, between 7,600 and 8,400 feet, and steep slopes, probably preclude a high probability for abundant and large Native American sites, except those associated with the historic Aurora mining. The unrecorded Aurora to Mono Lake stage and freight road, and innumerable mines, adits, mine dumps, etc, attest that this section includes a sizeable portion of the Esmeralda Mining District sites. These sites are evident on GLO land survey maps. Many of these sites appear to lie on patented land, probably attesting to the reason so little archaeological inventory has been undertaken and so few sites recorded. While it may be problematic to avoid historic mining sites in exploration and possible development, there is not strong evidence to indicate that this section cannot be leased without affecting significant historic properties. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 20, Township 5 N., Range 28 E.

Archaeological surveys have only been conducted in the northern portion of this section. Sites identified have all been small. Steep slopes and high elevations throughout much of this section would suggest that Native American sites should be smaller and fewer than in other areas in the proposed leases. A GLO Plat, as well as the topographic maps, shows that a number of sites associated with the Esmeralda Mining District, including mines, and toll/wagon roads, will be present. These are largely in the western half of the section. While some of these sites will probably be determined significant and eligible for the NRHP, there is inadequate information to preclude this section from geothermal leasing. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 21, Township 5 N., Range 28 E.

There are no previously documented archaeological sites in this section and no archaeological surveys have been conducted. With elevations ranging from 7,800 feet to over 8,700 feet at Aurora Peak in the center of this section, the likelihood of there being large, NRHP eligible sites is probably low. The majority of sites would probably lie in the extreme southwest corner of the section where elevations are around 7,800 feet and the terrain is relatively level. Archaeological site densities should be very low in this section. There is no information to suggest that geothermal leasing should be precluded from this section based upon archaeological/historic sites. It is likely that the risk to cultural resources from the leasing of this section would be low.

Section 22, Township 5 N., Range 28 E.

Minimal archaeological inventory has been conducted in section 22. One small archaeological site has been identified. Because elevations range from about 8,200 to 8,500 feet it is likely that Native American sites are small, seasonally used sites. The

absence of pinyon-juniper woodland in this section limits use of much of the section to hunting types of sites. Archaeological site densities should be very low in this section. There is no information to suggest that geothermal leasing should be precluded from this section based upon archaeological/historic sites. It is likely that the risk to cultural resources from the leasing of this section would be low.

Section 29, Township 5 N., Range 28 E.

There are no previously documented archaeological sites in this section, and almost no archaeological survey has been conducted. Based upon what is known in nearby sections, the likelihood of there being extensive archaeological sites is probably low because the section contains minimal or no pinyon-juniper woodland. Archaeological site densities should be very low in this section and there is no information to suggest that geothermal leasing should be precluded from this section based upon archaeological/historic sites. It is likely that the risk to cultural resources from the leasing of this section would be low.

Section 30, Township 5 N., Range 28 E.

This section has had very minimal archaeological survey and few sites have been recorded. In the northern portion of the section there are adits and prospects that are associated with the Esmeralda Mining District. These sites are few, and small. Due to elevations in the section ranging from 8,000 to 9,300 feet, and steep slopes, archaeological sites are expected to be few and quite small and there is no information to suggest that geothermal leasing should be precluded from this section based upon archaeological/historic sites. It is likely that the risk to cultural resources from the leasing of this section would be low.

Section 31, Township 5 N., Range 28 E.

There are no previously documented archaeological sites in this section and no archaeological inventories. Based upon what is known in nearby sections, the likelihood of there being extensive archaeological sites is probably low. With steep slopes and elevations ranging from 8,000 to 9,300 feet, only small, seasonal Native American sites would likely be found and there is no evidence of historic sites on GLO and USGS maps. There is no information to suggest that geothermal leasing should be precluded from this section based upon archaeological/historic sites. It is likely that the risk to cultural resources from the leasing of this section would be low.

Section 32, Township 5 N., Range 28 E.

There are no previously documented archaeological sites in this section and no archaeological survey has been conducted. Based upon what is known in nearby sections, the likelihood of there being extensive archaeological sites is difficult to ascertain. Section 33 to the east has a very large prehistoric archaeological site recorded and the section is somewhat similar and elevation to section 32, except that section 32 is a slightly higher elevation. Section 32 ranges in elevation from 7,900 feet to about 8,500 feet. Archaeological sites are expected to be few and quite small and there is no information to suggest that geothermal leasing should be precluded from this section

based upon archaeological/historic sites. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Township 6 N., Range 27 E.

Section 4, Township 6 N., Range 27 E.

There are no previously documented archaeological sites in this section. There is very little archaeological information known in nearby sections making it difficult to characterize this section and those surrounding. The presence of Rough Creek in the section, as well as relatively low elevations between 5,800 and 6,000 feet, would suggest that low elevations and permanent, or nearly permanent water in the section would lend itself to Native American archaeological sites. The absence of archaeological sites within section 4 and surrounding make it impossible to characterize this section as one that would preclude leasing based upon archaeological potential for affecting significant archaeological sites. It is likely that the risk to cultural resources from the leasing of this section would be low.

Section 5, Township 6 N., Range 27 E.

The only archaeological inventories, and know archaeological site is the historic stage road between Carson and Aurora. The Lucky Boy Road is the same as the Carson to Aurora Road. This site, as documented has lost its integrity in the project area as it largely is subsumed beneath the County Road. The absence of archaeological sites within section 4 and surrounding make it impossible to characterize this section as one that would preclude leasing based upon archaeological potential for affecting significant archaeological sites. It is likely that the risk to cultural resources from the leasing of this section would be low to moderate.

Section 6, Township 6 N., Range 27 E.

The only archaeological inventories, and know archaeological sites are the historic stage road between Carson and Aurora and two very small Native American archaeological sites identified along the road. The Lucky Boy Road is the same as the Carson to Aurora Road. This site, as documented has lost its integrity in the project area as it largely is subsumed beneath the County Road. The absence of large archaeological sites within section 6 and surrounding make it impossible to characterize this section as one that would preclude leasing based upon archaeological potential for affecting significant archaeological sites. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 8, Township 6 N., Range 27 E.

The only archaeological inventories, and know archaeological sites are the historic stage road between Carson and Aurora and one very small, ineligible, Native American archaeological sites identified along the road. The Lucky Boy Road is the same as the Carson to Aurora Road. This site, as documented has lost its integrity in the project area as it largely is subsumed beneath the County Road. The absence of large archaeological sites within section 8 and surrounding make it impossible to characterize this section as one that would preclude leasing based upon archaeological potential for affecting

significant archaeological sites. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 9, Township 6 N., Ranger 27 E.

The only archaeological inventories, and know archaeological sites are the historic stage road between Carson and Aurora and two Native American archaeological sites identified along the road. The Lucky Boy Road is the same as the Carson to Aurora Road. This site, as documented has lost its integrity in the project area as it largely is subsumed beneath the County Road. The absence of large archaeological sites within section 9 and surrounding make it impossible to characterize this section as one that would preclude leasing based upon archaeological potential for affecting significant archaeological sites. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Township 6 N., Range 28 E

Section 13, Township 6 N., Range 28 E.

Section 13 borders areas extensively inventoried for the Borealis Mine in the late 1970's and early 1980's. That area was defined as a potential National Register District, which was never fully documented and defined. Some archaeological surveys have been conducted in the section and surrounding areas, particularly on BLM land north of the Lucky Boy Pass Road. These surveys did not exhibit an abundance of archaeological sites. In section 12 to the east of section 13, a number of small archaeological sites have been previously recorded. This record suggests that geothermal activities could be carried out while avoiding potential sites. Archaeological sites within section 13 and surrounding make it impossible to characterize this section as one that would preclude leasing based upon archaeological potential for affecting significant archaeological sites. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 14, Township 6 N., Range 28 E.

A small number of archaeological sites have been documented in section 14. A seismic line running diagonally across the section for nearly $\frac{3}{4}$ miles identified only 3 small, ineligible sites. This documentation suggests it is impossible to characterize this section as one that would preclude leasing based upon archaeological potential for affecting significant archaeological sites. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Section 24, Township 6 N., Range 28 E.

A number of archaeological sites, eligible for the NRHP or unevaluated, have been identified in this section, but the majority of the section lies within a large lava flow which has had no archaeological investigations. The archaeological sites that have been identified within this section are generally smaller than sites identified in nearby sections. The lack of inventory and site information in this section makes it impossible to characterize this section as one that would preclude leasing based upon archaeological

potential for affecting significant archaeological sites. It is likely that the risk to cultural resources from the leasing of this section would be moderate.

Native American Resources

Based upon input from local tribal governments it is understood that the North and South Aurora lease areas contain sites and areas of tribal importance. Initially the tribes voiced strong concern over the leasing of these two lease areas. Discussions over the past two years between the Forest Service and tribal governments have led to a better understanding of the tribal concerns by the Forest Service. Conversely, tribal governments have been briefed on the leasing process and the stipulations that would be applied to protect tribal resources and other resources of value to the tribes (Attachment C). With the cultural resources and tribal protection stipulations, tribal concerns have been addressed, and the potential risk to resources of tribal value would be low to moderate depending on the location, intensity, and timing of geothermal activities.

Paleontological Resources

No additional information has been obtained or further analysis conducted on this resource. The low and moderate risk ratings identified in the 2007 Decision Notice/FONSI continue to be applied to each section under review.

3.9 Livestock Grazing

No additional information has been obtained for the supplemental analysis. The 2007 risk ratings from the Decision Notice/FONSI were reviewed and updated based upon the current understanding of the 22 sections within the lease areas. Overall, the potential risk to livestock grazing would be low depending on the location, intensity, and timing of geothermal activities.

3.10 Wild Horses and Burros

No additional information has been obtained for the supplemental analysis. The 2007 risk ratings from the Decision Notice/FONSI were reviewed and updated based upon the current understanding of the 22 sections within the lease areas. Overall, the potential risk to wild horses and burros would be low depending on the location, intensity, and timing of geothermal activities.

3.11 Visual Resources

No additional information has been obtained or further analysis conducted on this resource. The 2007 risk ratings from the Decision Notice/FONSI were reviewed and updated based upon the current understanding of the 22 sections within the lease areas. Overall, the potential risk to visual resources would be moderate depending on the location, intensity, and timing of geothermal activities.

3.12 Recreation and Special Designations

No additional information has been obtained or further analysis conducted on this resource. The 2007 risk ratings from the Decision Notice/FONSI were reviewed and updated based upon the current understanding of the 22 sections within the lease areas. Overall, the potential risk to recreation and special designations would be moderate depending on the location, intensity, and timing of geothermal activities.

3.13 Socioeconomics and Environmental Justice

No additional information obtained or further analysis conducted. The low risk rating identified in the 2007 Decision Notice/FONSI continues to be applied to each of the 22 sections under analysis.

3.14 Inventoried Roadless Areas

This new section provides information on the four Inventoried Roadless Areas that are within the project area and provides a summary of potential impacts to those four IRAs. The Inventoried Roadless Area Specialist Report (USDA Forest Service 2011) is located in the project file. The Aurora Crater and Mt. Hicks IRAs fall partially within the South Aurora lease area. The Rough Creek, Chinese (sic) and Pine Grove South IRAs lie partially within the North Aurora lease area. See Table B below.

Table B—Inventoried Roadless Areas Addressed in this EA

IRA	Total Acres in IRA	NFS Lease area acres in IRA	Sections Wholly or Partially in the IRA.
Aurora Crater	5,688	1,775	T. 5 N., R. 28 E., Sec. 5, 6, 7, 8
Mt. Hicks	15,695	1,107	T. 5 N., R. 28 E., Sec. 11, 15, 22
Pine Grove South	88,942	109	T. 7 N., R. 27 E., Sec. 30
Rough Creek	8,475	759	T. 7 N., R. 27 E., Sec. 30 T. 6 N., R. 27 N., Sec. 5 & 6
Chinese Camp	19,545	675	T. 6 N., R. 27 N., Sec. 5 & 6

There would be no direct impacts to any of the IRAs due to leasing of these sections.

In order to protect roadless area characteristics, the BLM would issue any potential leases with a non-discretionary roadless area stipulation on lands lying within NFS IRA's. Specifically, no new road construction/reconstruction or timber harvesting may occur within leased lands in IRA's managed by the Forest Service. If future legislation or regulations change the roadless area designation, the restriction would be revised, along with any appropriate environmental review.

Since a road network is an important component of exploration, power plant and well field development, it is expected that, with this roadless stipulation issued as part of the lease, no development would occur in the IRAs. Development could occur in the leased sections that are not in the IRAs, or in portions of sections outside the IRAs. This development would likely have some indirect effects to the roadless characteristics of the IRAs. Overall it is expected that there would be a moderate risk of potentially significant impacts on roadless area characteristics.

3.15 Cumulative Effects discussion

Cumulative impacts will be the same as those discussed in the 2006 EA.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

All of the Chapter 4 information presented in the original EA remains valid and unchanged, except for the following additions and changes:

The description of environmental consequences in this Supplement is limited to the impacts of leasing (including the modified lease stipulations, Attachment C) specific to the 22 NFS land sections (as identified in Tables 2 and 3) in the North Aurora and South Aurora Lease Areas addressed in the original EA.

The analysis documented for all other proposed lease sections analyzed in the original EA remains valid.

CHAPTER 5: CONSULTATION AND COORDINATION

All of the Chapter 5 information presented in the original EA remains valid and unchanged, except for the following additions and changes:

This Supplemental EA has been distributed to individuals and entities who the Forest Service believed would have an interest in the project. In addition, copies have been sent to federal agencies, federally recognized tribes, state and local governments. The mailing list is available and is on file in the project record.

5.1 List of Preparers

Name	Responsibility and Office	
Keith Whaley	Zone Geologist	Bridgeport Ranger District
Susan Elliott	Forest Geologist	Humboldt-Toiyabe National Forest
Douglas Clarke	NEPA Coordinator	Mountain City Ranger District
Kathy Lucich	NEPA Coordinator	Humboldt-Toiyabe National Forest
Fred Frampton	Forest Archeologist	Humboldt-Toiyabe National Forest

Name	Responsibility and Office	
Michael Crawley	District Ranger	Bridgeport Ranger District
Sherri Lisius	Wildlife Biologist	Bridgeport Ranger District
Rixey Jenkins	Range Management Specialist	Bridgeport Ranger District

5.2 Government Coordination

Nevada State Clearinghouse
 Bureau of Land Management – Carson City Field Office
 Nevada Division of Minerals
 Nevada Department of Wildlife
 Lyon County, Nevada
 Mineral County, Nevada

5.3 Tribal Coordination and Consultation

Benton Paiute Tribe
 Bishop Indian Colony
 Bridgeport Indian Colony
 Walker River Paiute Tribe
 Washoe Tribe of California and Nevada
 Yerington Paiute Tribal Council

CHAPTER 6: REFERENCES:

- Bureau of Land Management, 2006, Carson City Field Office Geothermal Leasing Environmental Assessment, Report # EA-NV-030-06-025.
- Humboldt-Toiyabe National Forest, Bridgeport Ranger District, 2007, Decision Notice and Finding of No Significant Impact, Geothermal Leasing.
- Humboldt-Toiyabe National Forest, Bridgeport Ranger District, 2007, Geothermal Leasing Project File.
- Lisius, Sherri and Jenkins, Rixey, 2010, Addendum to the Biological Evaluation for Geothermal Lease Applications (in project file).
- Tetra Tech, Inc., 2009, A Data Inventory for Potential Geothermal Leasing Interests in the North and South Aurora Study Areas, Report # 100-SFO-T22569.

CHAPTER 7: ACRONYMS

BLM Bureau of Land Management

BRD	Bridgeport Ranger District
CCFO	Carson City Field Office
CFR	Code of Federal Regulations
DN/FONSI	Decision Notice / Finding of No Significant Impact
DOC	Document (File extension denoting MS Word application)
EA	Environmental Assessment
FSH	Forest Service Handbook
GLO	General Land Office
HTNF	Humboldt-Toiyabe National Forest
IRA	Inventoried Roadless Area
LCT	Lahontan Cutthroat Trout
NEPA	National Environmental Policy Act
NFS	National Forest System
NRHP	National Register of Historic Places
PDF	Portable Document Format (File extension for Adobe word processing application)
RFD	Reasonable Foreseeable Development
RTF applications)	Rich Text Format (File extension for MS word processing applications)
SHPO	State Historic Preservation Office
TXT	Text (Word processing file extension with little formatting)
USGS	United States Geological Survey
USFS	United States Forest Service