3.9 Native American Traditional Values

The study area for Native American traditional values encompasses the ***area within the*** project boundary and Mount Tenabo. A regional cumulative effects analysis was conducted for Native American traditional values over an area encompassing recent hard-rock mines in north-central Nevada plus other industrial developments (e.g., large transmission lines), activities, and events (e.g., wildfires) within the Western Shoshone's traditional homeland in relative proximity to the proposed Cortez Hills Expansion Project.

3.9.1 Affected Environment

3.9.1.1 Regulatory Framework

Federal law and agency guidance require BLM to consult with Native American tribes concerning the identification of cultural values and traditional practices of Native American people that may be affected by actions on BLM-administered lands. This consultation includes the identification of places (i.e., physical locations) of traditional cultural importance to Native American tribes. Places that may be of traditional cultural importance to Native American people include, but are not limited to, locations associated with the traditional beliefs concerning tribal origins, cultural history, or the nature of the world; locations where religious practitioners go, either in the past or the present, to perform ceremonial activities based on traditional cultural rules or practice; ancestral habitation sites; trails; burial sites; and places from which plants, animals, minerals, and waters possessing healing powers or used for other subsistence purposes, may be taken. Some of these locations may be considered sacred to particular Native American individuals or tribes.

As a federal agency, BLM shares in the general federal trust responsibility articulated by the U.S. Supreme Court. Since the ***study*** area does not include any tribally-owned lands or mineral resources, or lands or minerals held in trust by the federal government, BLM satisfies its federal trust responsibility by compliance with general regulations and statutes.

Various tribes and bands of the Western Shoshone have stated that federal projects and land actions can have widespread effects to their culture and religion since they consider the landscape as sacred and as a provider. Sites and resources considered sacred or essential to the continuation of tribal traditions include, but are not limited to, prehistoric and historic village sites, pine nut gathering locations, sites of ceremony and prayer, archaeological sites, burial locations, "rock art" sites, medicinal/edible plant gathering locations, areas associated with creation stories, or any tribally designated traditional cultural property.

In 1992, the NHPA was amended to explicitly allow that "properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined to be eligible for inclusion on the NRHP." If a resource has been identified as having importance in traditional cultural practices and the continuing cultural identity of a community, it may be considered a traditional cultural property. The term "traditional cultural property" first came into use within the federal legal framework for historic preservation and cultural resource management in an attempt to categorize historic properties containing traditional cultural significance. To qualify for nomination to the NRHP, a traditional cultural property must be more than

50 years old, must be a place with definable boundaries, must retain integrity, and must meet certain eligibility criteria as outlined for cultural resources in the NHPA.

Through ongoing consultation between the BLM Battle Mountain Field Office and local Indian tribes, the Te-Moak Tribe has identified areas that they classify as a traditional cultural property in and near the ***study*** area. BLM has evaluated this traditional cultural property identified by the Te-Moak Tribe and has concluded that portions of this area are eligible for inclusion in the NRHP as PCRIs. BLM chose to use the term "properties of religious and cultural importance" or "PCRI" to denote an eligible property and to avoid confusion with the more general term of "traditional cultural property," which may or may not be eligible for the NRHP.

In addition to NRHP eligibility, some places of cultural and religious importance also must be evaluated to determine if they should be considered under other federal laws, regulations, directives, or policies. These include, but are not limited to, the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, American Indian Religious Freedom Act (AIRFA) of 1978, Archaeological Resources Protection Act (ARPA) of 1979, and Executive Order (EO) 13007 of 1996.

NAGPRA established a means for Native Americans, including Indian Tribes, to request the return of human remains and other sensitive cultural items held by federal agencies or federally assisted museums or institutions. NAGPRA also contains provisions regarding the intentional excavation and removal of, inadvertent discovery of, and illegal trafficking in Native American human remains and sensitive cultural items.

AIRFA established a federal policy of protecting and preserving the inherent right of individual Native Americans to believe, express, and exercise their traditional religions including, but not limited to, access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

ARPA requires notification of the appropriate Indian tribe before approving a cultural resource use permit for the excavation (testing and data recovery) of archaeological resources, if the responsible federal land manager determines that a location having cultural or religious importance to the tribe may be harmed or destroyed.

EO 13007 defines a sacred site as any specific, discrete, narrowly delineated location on federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion, provided that the tribe or appropriately authoritative representative has informed the federal agency of the existence of such a site.

EO 13007 requires federal agencies "to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions," to "(1) accommodate access to and ceremonial use of such sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites." To implement these requirements, federal agencies must, "where practicable and appropriate," . . . "implement

procedures, . . . to ensure reasonable notice is provided of proposed actions or land management policies that may restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites."

3.9.1.2 Native American Consultation *and Coordination*

In compliance with the NHPA, as amended, the BLM initiated ***NHPA and*** government-to-government consultation for the Cortez Hills Expansion Project EIS on November 18, 2005, by sending letters to the following tribal groups: Yomba Shoshone Tribe, Battle Mountain Band, South Fork Band, Wells Band, Elko Band, Te-Moak Tribe of the Western Shoshone, Duckwater Shoshone Tribe, Ely Shoshone Tribe, Timbisha Shoshone Tribe, Duck Valley Shoshone-Paiute Tribes of Idaho and Nevada, and Confederated Tribes of the Goshute Reservation. ***Consultation is currently ongoing.*** Letters were sent to inform the various tribal groups of the proposed undertaking and to solicit their concerns regarding the possible presence of properties of cultural, religious, and/or traditional importance to the tribes in the proposed ***study*** area. In addition, the BLM sent letters to the Western Shoshone Defense Project (WSDP), Western Shoshone Committee of Duck Valley, and Bureau of Indian Affairs (BIA) to inform them of the proposed project. **Table 3.9-1** lists the Native American groups ***participating in the consultation process and the dates on which the BLM has exchanged dialogue with these groups. Additional details of ongoing consultation with area tribes and their representatives are maintained in the BLM consultation records for this project; this information is considered confidential.***

In addition to the concerns identified through consultation, communication, and coordination activities, the Te-Moak Tribe of Western Shoshone Indians of Nevada submitted a resolution to the BLM dated February 1, 2006 (Stevens 2006). The resolution lists the following tribal concerns regarding the proposed project:

- Negative impacts on Western Shoshone cultural, spiritual, and economic livelihood
- Irreparable harm to Western Shoshone culture and spirituality
- Preservation of Western Shoshone land for future generations

The Te-Moak Tribe has expressed opposition to the proposed project in order to protect Mount Tenabo and the adjacent valleys, which have cultural and spiritual significance to Western Shoshone. According to the Te-Moak Tribe, these areas contain burial sites; spiritual areas; springs and other water resources; food and medicinal plants; and hunting, fishing, and gathering areas.

As part of the coordination and consultation efforts, the BLM invited all of the contacted tribes, bands, and groups to attend a field tour of the study area on August 15, 2006. Of these, only the Te-Moak Tribe, Battle Mountain Band, and Wells Band were able to attend the field tour given by the BLM and CGM. During the field tour, the BLM and tribal individuals discussed tribal coordination and consultation, the recent Te-Moak resolution, and the tribe's perspective on the proposed mine expansion, tribal resources in the study area, and potential impacts to these resources.

Table 3.9-1
Native American Contact List

Name of Tribe or Other Group	*Date of Contact*	*Follow-up Contact*
Yomba Shoshone Tribe	*November 21, 2005*	*December 5, 2005* *January 31, 2006* *February 3, 2006* *July 19, 2007* *July 25, 2007*
Battle Mountain Band of the Te-Moak Tribe of Western Shoshone	*November 21, 2005*	*December 5, 2005* *December 13, 2005* *December 19, 2005* *January 30, 2006* *November 20, 2007* *November 28, 2007*
South Fork Band of the Te-Moak Tribe of Western Shoshone	*November 22, 2005*	*December 5, 2005* *December 13, 2005* *December 21, 2005* *February 1, 2006*
Wells Band of the Te-Moak Tribe of Western Shoshone	*December 2, 2005*	*January 31, 2006* *August 14, 2006* *January 15, 2008* *February 27, 2008* *March 4, 2008* *March 28, 2008* *May 12, 2008* *May 19, 2008*
Elko Band of the Te-Moak Tribe of Western Shoshone	*November 21, 2005*	*December 5, 2005* *December 13, 2005* *February 1, 2006* *August 14, 2006* *November 9, 2007* *November 28, 2007* *December 17, 2007* *December 18, 2007*
Te-Moak Tribe of the Western Shoshone	*November 21, 2005*	*December 16, 2005* *January 10, 2006* *January 31, 2006* *February 1, 2006* *February 2, 2006* *April 5, 2006* *July 6, 2006* *July 21, 2006* *August 8, 2006* *August 14, 2006* *August 21, 2006* *October 4, 2006* *November 28, 2006* *December 11, 2006* *February 28, 2007* *March 1, 2007* *March 27, 2007* *April 5, 2007* *June 13, 2007* *July 16, 2007* *July 25, 2007* *July 31, 2007* *August 3, 2007* *August 6, 2007* *August 13, 2007* *September 5, 2007* *November 5, 2007* *November 6, 2007* *December 7, 2007* *December 18, 2007* *January 2, 2008* *January 10, 2008* *February 7, 2008* *February 27, 2008* *March 4, 2008* *March 5, 2008* *March 19, 2008*

Table 3.9-1 (Continued)

Name of Tribe or Other Group	Date of Contact	Follow-up Contact
Te-Moak Tribe of the Western Shoshone (Continued)		*March 28, 2008* *April 17, 2008* *April 23, 2008* *April 25, 2008* *May 8, 2008*
Duckwater Shoshone Tribe	*November 21, 2005*	*December 9, 2005* *February 1, 2006* *February 15, 2006* *March 13, 2006* *March 27, 2006* *April 3, 2006* *June 2, 2006* *July 19, 2007* *July 25, 2007*
Duck Valley Shoshone-Paiute Tribes of Idaho and Nevada	*November 21, 2005*	*December 5, 2005* *December 15, 2005* *July 19, 2007* *July 25, 2007*
Ely Shoshone Tribe	*November 21, 2005*	*January 31, 2006* *April 20, 2006* *July 19, 2007* *July 25, 2007*
Timbisha Shoshone Tribe	*November 29, 2005*	*March 14, 2006* *March 29, 2006*
Confederated Tribes of the Goshute Reservation	*November 21, 2005*	*January 26, 2006*
Western Shoshone Defense Project (WSDP)	*November 21, 2005*	*November 30, 2005* *December 5, 2005* *December 13, 2005* *January 18, 2006* *January 31, 2006* *February 1, 2006* *March 14, 2006* *April 5, 2006*
Western Shoshone Committee of Duck Valley	*November 22, 2005*	*December 9, 2005* *July 19, 2007* *February 22, 2008* *February 26, 2008* *March 4, 2008* *March 5, 2008* *April 17, 2008* *April 23, 2008* *April 25, 2008* *April 30, 2008* *June 14, 2008*
BIA	*November 21, 2005*	*--*

Source: Dixon 2008, 2007, 2006a.

On September 6, 2006, the BLM attended the Te-Moak Council meeting (H. Stevens Council) to discuss the proposed project, the need for additional ethnographic analyses, and to review the Te-Moak resolution. During the first part of the meeting, the BLM and the Council discussed the Te-Moak's request for further ethnographic analysis in the proposed project vicinity. Since there have been four ethnographic studies previously conducted in the vicinity of the project, the BLM proposed a regional cumulative effects analysis of tribal resources, which would consist of compiling and analyzing previous ethnographic studies and NEPA documents for mines and other major actions within the Carlin Trend, Ivanhoe, Crescent Valley, and Tonkin areas. The BLM indicated that such an analysis would help identify tribal issues and concerns and facilitate development of mitigation to reduce or eliminate potential impacts to tribal resources that may occur as a result of the proposed project. Following the discussion, the Council voted to support the BLM's

proposal to conduct a regional analysis of cumulative effects to tribal resources instead of additional ethnographic studies.

At the end of the Council meeting, the Te-Moak Council designated individuals to form a working group to work with BLM on Cortez Hills issues and to develop an action item list to include tribal issues, potential impacts to tribal resources, suggested measures to reduce or eliminate potential impacts***,*** proposed implementation procedures, and to identify individuals or entities with the means and authority to address the issues. ***T***he Working Group ***has developed an action item*** list***; it has been or would be implemented by CGM***.

On October 4, 2006, BLM met with the Te-Moak Council's designated members of the Cortez Hills Working Group to draft the action item list and discuss any additional issues. For those members of the Working Group who could not attend the meeting, the draft list was electronically sent to them for their review. The BLM has received input from several members of the Working Group; however, the final list will not be submitted to the Te-Moak Council, BLM, and CGM until all members have completed their review and submitted comments.

On December 11, 2006, a BLM representative met with the newly elected Te-Moak Council (D. Gonzales Council) during their regularly scheduled Te-Moak Council meeting. The BLM representative briefed the new Council on the proposed project and gave an update and summary of the work conducted with the previous Council (H. Stevens Council). The Te-Moak Council voted in favor of three topics presented to the Council by the BLM representative. The Te-Moak Council elected to: 1) support the continued ethnographic work for the Cortez Hills cumulative effects study area for tribal resources; 2) support continued work ***on the draft action item list*** by the Working Group; and 3) assign four new members to the Working Group and retain one from the previous Working Group. Discussions also have lead to a request for the Working Group to attend a field tour of the ***study*** area.

On March 15, 2007, three of the five members of the Working Group met with BLM at the BLM Elko Field Office. The proposed project was discussed again and the ***action item list*** was read and commented on by members of the Working Group and BLM. A field tour of the proposed project site was requested by the Working Group and was later scheduled for Friday, April 20, 2007. Along with input and language provided by the Working Group during the meetings noted above, members also provided input as individuals, which ***subsequently was*** included in the ***action item list***.

On April 20, 2007, BLM, CGM, and two members of the Working Group viewed Cortez's video presentation of the proposed project and attended a field tour of the ***study*** area. The ***action item list*** was reviewed and informally (verbally) commented on by CGM representatives. ***The list includes development of a plan to allow the tribes to harvest affected wood products in the study area for firewood and fence posts, expansion of the HC/CUEP Native American observer program to include the proposed Cortez Hills Expansion Project, construction of a Western Shoshone cultural center to possibly house certain artifacts or act as a community gathering place, and formal training for Western Shoshone monitors/observers in cultural resource management or artifact identification.*** CGM***'s formal (***written***)*** comments on the ***action item list have been*** reviewed by the BLM and ***the*** Working Group.

To date, the following items from the April 20, 2007, action item list have been initiated:

- ***Development of a plan for the tribes to harvest affected trees in the study area for firewood and fence posts;***

- ***A trip to and tour of the Tamastslikt Cultural Institute, which is owned and operated by the Confederated Tribes of the Umatilla in Pendleton, Oregon, to gather ideas for the development of a Western Shoshone cultural center; and***

- ***Establishment of archaeological and anthropological training for tribal members through Great Basin College's ARTIFACT Program.***

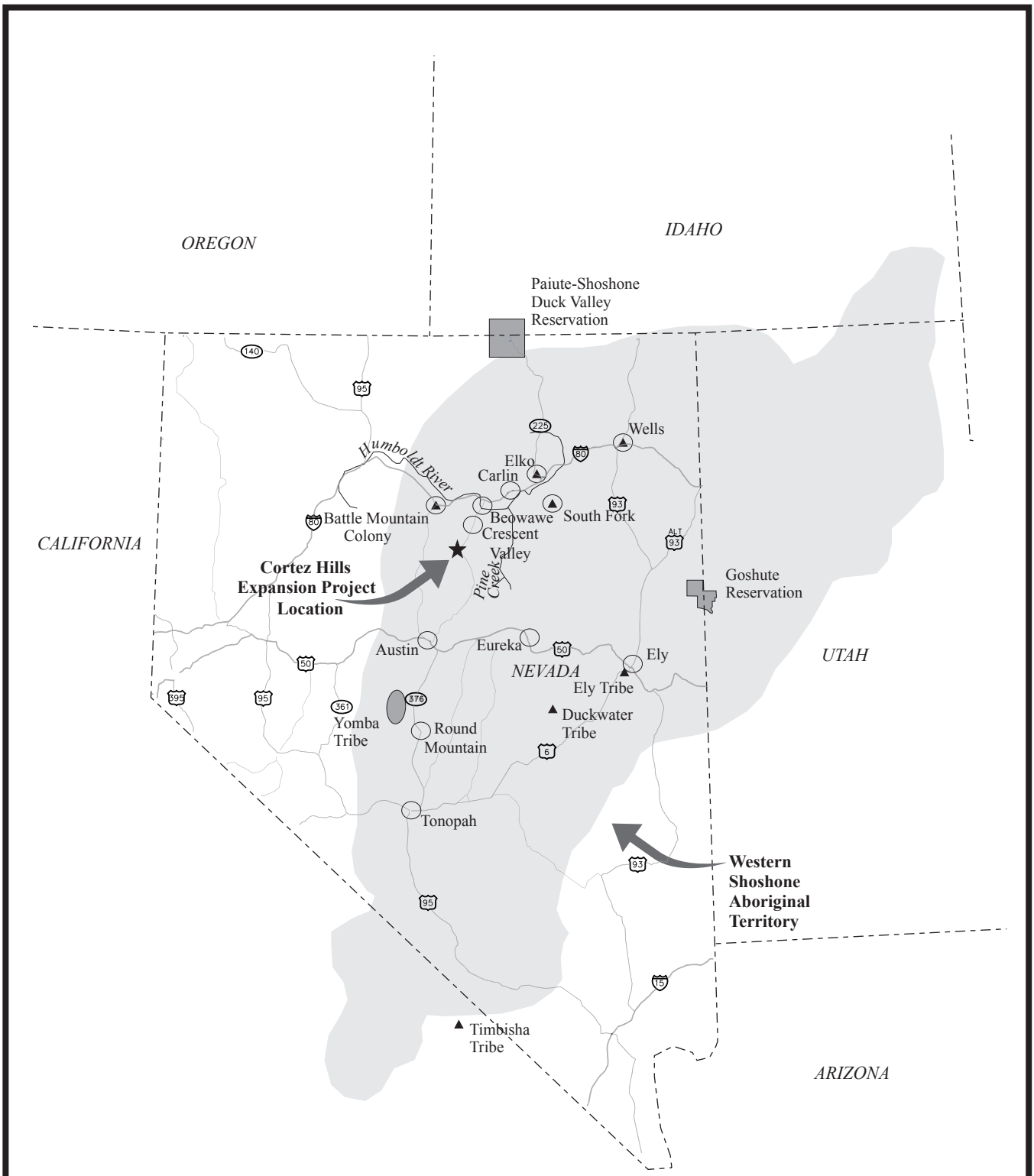
In February 2008, the Chairman of the Duck Valley Shoshone Paiute Tribes of Idaho and Nevada sent a letter to the BLM requesting consultation on the proposed project. The BLM and Working Group agreed to incorporate the Western Shoshone Committee of Duck Valley into the currently established consultation process. Subsequently, the BLM invited the Western Shoshone Committee of Duck Valley to a meeting on March 5, 2008, with the Working Group and BLM. During the meeting (which the Western Shoshone Committee of Duck Valley attended), the attendees discussed the action item list, wood harvesting plan, increased tribal participation in the ARTIFACT Program at Great Basin College, and the visit to the Tamastslikt Cultural Institute on April 25, 2008.

The BLM will continue to meet with members of the Working Group and Western Shoshone Committee of Duck Valley to further define and implement portions of the action item list. The **action item** ***list will include measures or actions that may reduce, limit, or eliminate impacts to traditional cultural sites and associated activities, if the project is approved.***

A field tour to the proposed Cortez Hills Expansion Project vicinity was held June 14, 2008, for interested members of the Western Shoshone Committee of Duck Valley. During the field tour, the members requested that Shoshone families currently residing at Duck Valley (Idaho/Nevada) be acknowledged in the EIS. It was stated that some Western Shoshone families from Duck Valley originated from, or have historic ties to, the project region including the Cortez, Beowawe, and Grass Valley areas. A list of those family names, as provided by the Western Shoshone Committee of Duck Valley, is presented in Table D-3 in Appendix D.

3.9.1.3 Ethnographic Context

The Western Shoshone are the indigenous or aboriginal people of the area including most of Northern Nevada, and specifically the ***study*** area and Cortez Canyon (**Figure 3.9-1**). The Western Shoshone refer to themselves as "Newe," which translates to "the people" (Bengston 2003). Their hunter-gatherer ancestors occupied a vast territory in autonomous, highly mobile groups associated with specific home districts, united by a common language and culture**.**



Source: Summit Envirosolutions, Inc. 2007b.

Cortez Hills
Expansion Project

Figure 3.9-1

Western Shoshone Aboriginal Territory and Contemporary Shoshone Tribal Governments

06/19/07

Bands and Territories

By the time Euro-American fur traders entered the area (ca. 1826), Western Shoshone territory encompassed approximately one-third of what would become the State of Nevada. Thomas et al. (1986) stated that:

> "Western Shoshone country extended from the arid reaches of Death Valley inhabited by the Panamit Shoshone, through the mountainous highlands of central Nevada into northwestern Utah, where it encompassed the area of the Gosiute of Tooele and Skull valleys and Deep Creek and the 'Weber Ute.' The northern boundary is rather arbitrarily taken as roughly the divide separating the Humboldt River drainage from the Snake and Salmon River area, where the Northern Shoshone lived; the people of the Duck Valley Reservation are also included."

In his discussion of the Western Shoshone, Steward (1937) notes that "Shoshoni occupied Nevada as far west as Columbus Salt Marsh, Ione Valley, Smith Creek Valley, Reese River Valley, and Battle Mountain." Although discrete Western Shoshone groups, or "bands," likely composed of related family members, tended to occupy particular areas, it is difficult to determine aboriginal boundaries or areas of habitation based on band organization (Thomas et al. 1986). Steward (1938) stated that the Western Shoshone:

> "….lacked bands and any form of land ownership. The only stable social and political unit was the family. Larger groupings for social and economic purposes were temporary and shifting. The radical departure of these people from the band patterns, however, is explainable by ecological factors not previously encountered. It has been shown that the unusually great economic importance of seeds largely restricted the economic unit to the family. Communal enterprises did not always align the same families, so that there were no large groups having political unity. It has also been shown that the peculiar occurrence of certain foods, especially seed species, entailed interlocking subsistence areas which militated against land ownership."

Historically, the Western Shoshone were organized in extended family groups identified with loosely defined home districts that were often named for a prominent food source (Clemmer 1999). Harris wrote, "The various Western Shoshonean groups were primarily known by their food supply. The economic character of the area, rather than land-owning or political groups, gave rise to these native names. For example, there were the Squirrel Eaters, Pine Nut Eaters, Antelope Eaters, Rabbit Eaters, etc." Other names were derived from geographic features or unique resources. These districts, often bordered by crests of mountains, contained settlement areas that were connected to a particular group of resources. Group names usually changed as the group moved on to other areas during seasonal rounds. After Euro-American contact, Western Shoshone "band" names tended to become more permanent.

Today, Western Shoshone live on several small reservations and colonies located throughout California, Nevada, and Utah. The nearest Western Shoshone colony is the Battle Mountain Band Colony, located approximately 30 miles to the northeast of the ***study*** area (**Figure 3.9-1**). The nearest Western Shoshone family lives approximately 9.5 miles to the northeast of the project boundary.

Governmental Organization

Seven federally recognized tribal governments are located in, or have former territory in, northern Nevada. Five of these tribes regularly communicate with BLM regarding projects within the study area or cumulative effects study area. These five tribes are the Te-Moak Tribe of Western Shoshone, the Yomba Shoshone Tribe, the Duckwater Shoshone Tribe, the Duck Valley Shoshone-Paiute Tribes of Idaho and Nevada, and the Ely Shoshone Tribe. Each of these tribes has colonies or reservations containing lands held in trust for them by the federal government. Each is organized under a tribal constitution and governed by a tribal council. The Te-Moak Tribe is the closest federally recognized tribe to the ***study*** area. The Te-Moak Tribe is composed of four bands: Battle Mountain, Elko, Wells, and South Fork. Each of the bands has its own tribal council that governs the band's reservation lands and appoints representatives to the Te-Moak tribal council.

Habitation Patterns

Traditionally, Western Shoshone families lived a very mobile lifestyle, and individual families established temporary camps throughout their areas for hunting and gathering. They would return to established winter camps each year that were in the same general area as the temporary camps.

To meet the highly mobile lifestyle of the Western Shoshone, dwellings tended to be temporary and easily constructed structures. Thomas et al. (1986) described these structures as follows:

> "The typical winter house was a conical hut, housing a family of about six. The light frame was covered with slabs of bark, sometimes surrounded with a single tier of stones to keep the supports firmly planted. Since few Western Shoshone structures involved subterranean construction, the only vestiges of such structures are often stone circles, sometimes erroneously considered tepee rings."

Most of these winter houses were dome-shaped; however, some of the Battle Mountain people constructed their lodges by bending willow branches to form a peak or cone. Other structures built by the Western Shoshone included dome-shaped sweat lodges, sun shades, windbreaks, and pine nut caches (Steward 1940).

Villages

The Tosawihi ("white knives"), whose seasonal rounds took them north to the well-known Tosawihi white opalite quarry and north to the Owyhee River to fish for salmon, were known to winter on the Humboldt River between Battle Mountain and down river as far as Iron Point (Steward 1938). Another group who wintered on the Humboldt River around Battle Mountain was known as the Tonomudza ("greasewood point"). Steward (1938) does not mention any villages in the Crescent Valley, Cortez Range, or Grass Valley area.

Other winter encampments are documented on the Humboldt River near Beowawe. For these people, as well as those who wintered as far east as Palisade, Crescent Valley was known as a seed-collecting area (Steward 1938). People from Diamond Valley to the southeast of the Cortez Range would cross the Spring Mountains to Cortez or "Tinaba" ("tina" or white rock and "pa" or water) to "gather roots and seeds, or kill woodchucks, chipmunks, or other small animals."

All of the groups living along the middle reach of the Humboldt River were known to go as far south as Austin to gather pine nuts, often returning the 80 miles or so to their winter camps on the river. Steward (1938) notes that these groups "preferred not to remain in Crescent Valley because the winters were too cold." Occasionally, they did winter at Cortez, presumably near the mining town in Cortez Canyon or to the south in Grass Valley. Grass Valley was known as a "good place to hunt rabbits in the winter." The Tosawihi, Tonomudza, and Beowawe groups often held communal rabbit drives at Battle Mountain. For antelope drives, they went to Iron Point and joined the Northern Paiute people, who had an antelope shaman. Festivals were held in the winter at both Iron Point and Battle Mountain, and occasionally in Elko. Ceremonial, traditional food collecting, and hunting ranges were not necessarily adjacent to one another. Frequent travel for periodic gatherings and celebrations, cooperative drives, fishing, pine nut harvests, intermarriage, or visits with shamans could last several months or even years, and were undertaken as a family unit or by smaller groups. The traveling patterns created an extensive social network across a broad landscape of varied topography. According to local sources, one trail linked the Tosawihi or White Knife country north of the Humboldt River to Timbisha country in Death Valley and passed through Crescent Valley and Cortez Canyon. Mount Tenabo, the piñon woodland, and Shoshone Wells were an important rest stop for travelers.

Subsistence

Traditionally, the Western Shoshone were hunter-gatherers. Their economic system consisted of a basic division of labor based on gender so that each family was a self-sufficient economic unit (Steward 1938). Women primarily were responsible for gathering plants; trapping small animals; preparing the food; and making pottery, baskets, and clothing. The men hunted large game; built the conical huts; and made flaked stone tools, digging sticks, and rabbit skin blankets. Additionally, the men helped the women hunt rodents; carry wood and water; transport seeds; and gather materials for making pots, baskets, and metates. Both men and women participated in the pine nut harvest, communal rabbit and antelope drives, and fishing.

Due to the diverse environmental and ecological variability throughout their aboriginal territory, seasonal subsistence methods varied from band to band. However, there were general subsistence patterns that were common to all Western Shoshone bands. Seasonal movement in search of favored gathering and hunting areas was conducted by small family groups from spring through fall. During the winter, several families would gather into villages in relatively warm areas near food caches (Thomas et al. 1986).

In the spring, family groups dispersed from camps located near caches of stored foods that had been exhausted over the winter, to harvest resources as they became available. Fish spawns were important to populations with access to the Humboldt River and its tributaries later in the spring and early summer. Larger groups would gather for spring and summer spawning runs. Ripening seed crops, maturing bulbs,

and berries drew populations back to foraging camps in canyons, such as those located near Mount Tenabo. These camps also were staging areas for forays into the dry valleys for seeds or meadows for roots.

Plant Resources

Of the many plants gathered in the summer, recent accounts emphasize camas bulbs, yampa roots, and the seeds of Indian rice-grass, stickleaf, and sunflowers. Yampa was noted to have been particularly abundant in Four Mile Canyon and Horse Canyon, which also is noted for piñon, mules' ear, arrowleaf balsam root, and several medicinal plants. Buckberries, which ripen in August, drew people back along the river between Beowawe and Battle Mountain. These berries and currants and service berries were collected in early fall from higher elevations. Chokecherries were collected in late fall.

The fall pine nut harvest, which was critical for winter supplies, was second only to fishing in influencing seasonal movement. Throughout the year, scouts would inform band leaders of locations where the supply of pine nuts looked the most promising. Using this information, groups would schedule their movements in order to arrive in the richest areas during the fall harvest. Those who lived beyond readily accessible piñon were invited or allowed access to these areas by leaders who organized the harvest and pine nut festival.

The Beowawe-Crescent Valley people wintered in the pediment piñon area when the pine nut yield was sufficient to get them through the winter. In poorer years, they transported what they had back to their river camps and relied on fish to get through the winter. Occasionally, they would travel north to the headwaters of the Owyhee River for the salmon run, bringing pine nuts with them to trade or use as gifts to their hosts. When the pine nut yield was particularly high, they would invite visitors to the area who then might stay over the winter near their own pine nut caches.

Although Western Shoshone groups had access to habitually visited resource areas with established camps, other less frequented areas provided alternatives for years when production was down or non-existent. Social relations and ties to families in more distant locations provided additional contingencies. Resources that were especially abundant in a given year or place provided opportunities for larger gatherings and reunions. Of particular importance in scheduling movements and length of residence was the imperative to harvest adequate stores for the winter, and the inclination to return to areas for plants that were intensively managed to sustain yields or promote desired growth characteristics.

Animal Resources

Birds. Golden eagles and bald eagles figure prominently in Western Shoshone mythology as messengers to and from the creator. Feathers were used by Indian shamans, usually as part of the healing ritual. Steward (1938) described traditional means of trapping and keeping eagles for their feathers that included climbing cliffs to capture the young or various means of luring adult birds with bait. Most accounts emphasize the special power required to climb to the aeries and that aeries usually were considered the property of the men.

Other birds, including sage grouse, mourning dove, and mockingbirds, were trapped in sagebrush country, and red-winged and yellow-headed blackbirds near wetlands (Fowler 1986; Thomas et al. 1986). Mormon crickets, cicadas, and grasshoppers were collected when abundant.

In Ruby Valley, edible water birds including several duck species, Canada goose, and great blue heron were driven out of shallow water and clubbed (Steward 1938). Beaver and muskrat also were hunted.

Rabbits. Rabbits were commonly taken in large numbers by communal drives, often associated with the fall pine nut harvest. Men, women, and children worked together in driving rabbits into long nets. Rabbits were important for their meat and fur.

Big Horn Sheep. Big horn sheep are rare in the study area; however, they were once the most important large game of Western Shoshone prehistoric populations (Thomas et al. 1986). In summer and winter, big horn sheep were hunted by various methods, including ambush from permanent blinds and chasing with dogs in the summer; migration hunting in the fall from rock walls, cairns, and blinds, particularly along canyons in precipitous terrain; and by encounters in the winter range when rams could be attracted by mimicking the sound of their fighting by thumping logs together. Big horn sheep were hunted communally, and terrain and other factors dictated the location of these hunts. Communal hunts persisted in Ruby Valley through Euro-American contact, attracting people from settlements in northern Butte and Long valleys.

Pronghorn. Pronghorn (antelope) were probably the second-ranked large game species and were hunted communally by large numbers of participants drawn to locations where antelope shamans resided (Thomas et al. 1986). This multi-day event required construction of a corral for the drive and had magical associations to the Western Shoshone. Drives only were held every 5 to 12 years to allow the populations to recover between hunts. The Humboldt River area; the north ends of Newark, Long, and Butte valleys; and the southern end of Diamond Valley were noted by Steward as good antelope areas and where antelope shamans were available (Steward 1938).

Deer. Deer habitat has expanded since Euro-American contact, benefiting from reduced numbers of big horn sheep in the mountains and antelope in the bottom lands, and with game management focused on the popularity of deer as game. Deer hunting among the Western Shoshone, occasional and opportunistic in the past, became more important in proportion to reduction of other game. Deer herds were small and most frequently were hunted with bow and arrow by lone men or by small hunting parties.

Fish. Although fishing was apparently limited (Thomas et al. 1986), the Humboldt fishery was recognized as one of the most important fisheries in the Great Basin (Fowler 1986; Steward 1938). Steward also reported fishing in Pine Creek and that “Humboldt River fish were very important because they could be taken all winter.” He states that in addition to techniques recorded for Owens Valley, such as diverting streams, stranding, confusing, shooting, spearing, using hooks, baskets and nets, the Humboldt River Western Shoshone also used harpoons and complicated dams and weirs. The diversity of their strategy suggests that fishing was well integrated into the economy. River fish would have been a more predictable staple than those from ephemeral playas, but low snowfalls periodically affected this fishery as well. ***(See Section 3.5.1.2, Fisheries, relative to fish species in the vicinity of the project.)***

Ceremonies and Religion

Few ceremony types have been documented for the Western Shoshone. The only documented traditional dance is the Circle or Round Dance. Steward (1941) states "Though varying slightly in details, in seasons held, and in extra purposes such as rainmaking or producing crop fertility, it was substantially uniform throughout the area and may be considered a distinctively Shoshonean dance." The Round Dance was included in most festivals, which were held during pine nut festivals, rabbit drives, and pronghorn hunts (Steward 1941). One of the primary places for such festivals was at Battle Mountain (Steward 1938). A few other dances were held by Western Shoshones, such as the Bear Dance, South or Exhibition Dance, Sun Dance, and Ghost or Father Dance (Steward 1941).

The North American native religions are all based on beliefs of an interdependence of human beings with other life forms and with the earth itself. This belief system has been very important in the Great Basin, where a delicate balance must be maintained between human subsistence and an unpredictable, sometimes harsh environment (Hultkrantz 1986; Clemmer 1999). Hultkrantz (1986) describes Great Basin religion as "the result of a unique fusion of ecological and traditional factors…," adjusted to the biophysical constraints on a small hunting and gathering population. Religious goals are oriented toward "the needs and patterns of subsistence and the small nomadic social units that prevailed."

Another central concept in Great Basin religion is the belief that supernatural power (Puha) has permeated the earth since the indigenous Great Basin people were created and brought to their homeland, the age "when animals were people" (Miller 1983). The acquisition and control of power is believed to be a religious duty. Harris (1963) notes specifically for Western Shoshone, the:

> "….richest religious expression for Shoshonean life is to be found in the concept of Puha – supernatural power – and its embodiment in shamanistic practice… Every person must possess Puha, the life principle… to live."

Special powers were believed to be granted in dreams or visions that came, solicited or unsolicited, to some men and women who were afterwards recognized as shamans or people of power. These powers required discipline and strength to use them, and were regarded as potentially dangerous to the user. Special powers were obtained for various specific purposes, such as to heal illness, injuries, and wounds; to aid in the hunting of large game; or to protect the people from dangerous forces in the world. Although power was most commonly used for the good of individuals or the community, it also could be used against them. Men of power were usually the ones to call and conduct communal hunts and to lead rituals.

Shamanism was discussed briefly by Steward (1938) in connection with antelope and deer hunting. He described the antelope shaman, dressed in an antelope disguise, with "special supernatural power to charm antelope," which he had seen in a vision. Steward also mentions that in a few localities "shaman would charm deer" for communal drives.

Fowler (1986) states that most communal antelope hunts were directed by "individuals with specific powers over these animals. These individuals could call the pronghorns and keep them spiritually captive until they could be killed. They visited the herds, sang to the animals, and often slept among them for several nights."

Most Great Basin Native populations participated in a variety of rituals associated with essential subsistence activities such as hunting, gathering, taking other resources, or associated with life passages such as birth and death. Together with the exercise of special powers by shamans, all rituals were directed to maintaining a balance among potentially dangerous spiritual powers that were thought to permeate the universe.

The scarcity and unpredictability of water in this semi-arid region may account for the importance of water in the Great Basin religion. According to Miller (1983) water "is the keystone of Great Basin religion because power, with its affinity for life, was strongly attracted to water." Western Shoshone have indicated that power is believed to be present in prominent peaks in the ranges that collect most of the precipitation that falls in the Great Basin, and they have expressed the belief that Mount Tenabo is such a peak.

Animals and certain plant species are believed to have power, and the supernatural spirits who control them can grant their power to individuals. Power is believed to be present in all places where people have lived and particularly around graves.

Although there may be fewer traditional Western Shoshone religious practitioners in Nevada today, Clemmer (1990) describes a persistence of traditional rituals, particularly to ensure the assistance of spiritual beings or "Little Men" in big game hunting. Clemmer (1990) describes such a ritual:

> "Hunting is done with the help of the Little Men. These Little Men cannot be seen but they are always there. This is still the way Western Shoshone hunt. The Little Men will guide you right to the animal if you pray to them. It's important not to do anything to change the land because if the land is changed, those Little Men will go away and there will be no more deer to hunt."

The traditional religions have changed over the past century, which may be attributed to the conversion of many Western Shoshone to Christianity or other religions. Traditional Great Basin religious practitioners have maintained the view of polytheists, which permits them to add new gods or spirits and different religious practices without abandoning the old (Hultkrantz 1986).

Shoshone traditional religious beliefs and practices continue today. People continue to go to special power spots to receive power in visions (Rusco and Raven 1992). Rituals are commonly conducted upon entering a hunting or gathering area, particularly in the mountains. These rituals may involve leaving a gift in a special place or saying a prayer of thanks. Prayers generally are believed to be most welcome to the spirits if spoken in the native language (Rusco 2000).

Burials

The concern for burials stems from the traditional practice of locating burials close to the place of death rather than in specific cemeteries. The counterpart of the view of Puha, the "consciousness that breathes life

into the land," is that the land, in turn, animates and nourishes the human spirit. As expressed by Western Shoshone, "if one leaves his home territory, his spirit will be lost." The spirit can travel anywhere in the universe, but it enters the body in order to eventually join and nourish mother earth when the body dies. Ties to the land are maintained and derived from ancestors who are buried there. The presence of hundreds of generations of ancestors powerfully bonds individuals to the homeland and contributes to its power.

Treatment of the body varied according to one or several of the following conditions: terrain, season, circumstances of death, and the deceased's role and personality. Bodies could be left where they had fallen or covered with rocks, buried in the ground with rocks piled on top, buried in talus slopes, placed in rock crevices or caves that could be filled with rock, or placed in a cave and sealed off with stick-and-wattle and brush. If death occurred at a house or in a camp, the body and place was abandoned and sometimes burned, particularly if the death was unusual or the person was feared.

The Western Shoshone believe that burials potentially are dangerous due to the associated power of Puha and the sacredness of these sites. Spiritual or supernatural forces associated with burials often are considered to be extremely powerful and often are avoided out of great respect and some fear. Since the majority of burial locations are unknown, part of the perceived danger is the potential for individuals to inadvertently encounter burials. People with rights to an area were most likely to know the places to avoid. If burials were re-visited, it was typically by shamans seeking power. Due to the variety of burial practices and the time span of Western Shoshone in the Great Basin, burials could be located in a variety of places.

Some people identified in advance where they wished to be buried and, if possible, relatives would accommodate their requests. These burials involved considerable preparation and included grave offerings and personal clothing. Most possessions were considered dangerous and were burned, disposed of, or interred with the deceased. A man's horse was sometimes killed and its skin used to wrap the man's body. Some ***Western Shoshone believe that*** revered ancestors were buried in crevices in the white cliffs of Mount Tenabo before this area was affected by historic mining (Rucks 2000). Such difficult to reach or high places generally were reserved for well-regarded individuals.

Prior to Euro-American contact, Western Shoshone believe that Mount Tenabo included burials of elite individuals and circumstantial burials associated with seasonal camps on the pediment. According to some contemporary Western Shoshone, the ancestral burials located at the base of the white cliffs were dismantled and pillaged by the Chinese workers who constructed dug-outs in the same location. Although burials are no longer present, the accumulated power (Puha) of these ancestors is believed to contribute to the cumulative power and religious significance of the mountain.

Euro-American Contact

The first written accounts of contact with Euro-Americans in the study area date from fur trapping expeditions in the late 1820s, and these and later explorations caused land disturbance visible by 1845. In 1849 alone, it is estimated that over 50,000 people traveled to California along the overland route through Western Shoshone country (Crum 1994). Euro-American ranchers and other settlers soon followed,

appropriating the resources they did not destroy (Crum 1994). The subsequent years of conflict and displacement led to various federal programs to "mainstream" the Western Shoshone (Crum 1994).

By 1857, it was apparent that whites were permanently settling into the area. As a result, conflicts between whites and Western Shoshone increased. The need to resolve the conflicts led federal agents to set aside an area 6 miles square in Ruby Valley in 1859. The Tosawihi leaders, Shokup, and Temoke moved their bands to the Ruby Valley reservation, hoping that raising cattle and farming would replace rapidly disappearing native resources. Meanwhile, white immigration and overland travel began encroaching into other parts of Western Shoshone territory with the establishment of the Central Route of the California Trail in 1859, also used by the Pony Express until 1861, and then by the Butterfield Overland mail company. The Western Shoshone in this region also organized retaliatory bands to fight the whites. The largest (about 300 to 400 people) and best known of the retaliatory bands were led by the Tu-tu-wa of the Reese River Valley.

Between 1854 and 1859, the U.S. government launched expeditions in an attempt to locate feasible wagon routes to California across Western Shoshone lands. To reduce conflicts between the Nevada tribes and the settlers, Garland Hunt, the Indian Agent assigned to the Nevada area, negotiated the Treaty of Ruby Valley (see Appendix D) in 1863 with some of the Western Shoshone bands (Clemmer and Stewart 1986). The Western Shoshone agreed to cease hostile actions and to allow "white men" to use routes of travel through Western Shoshone lands and establish military posts, telegraph and stage lines, railroad lines, mines, and ranches. In exchange for the "inconvenience" of these activities, the treaty provided for monetary compensation to the Western Shoshone bands for a period of 20 years.

By 1877, Tosawihi leader Captain Sam requested and obtained land in Duck Valley where a Western Shoshone reservation was created. This area was acceptable to the Tosawihi because it was within a traditional resource area. However, most groups remained deeply attached to their own particular geographic areas and did not want to move to the reservation. By 1880, only about a quarter of the Western Shoshone had moved to Duck Valley (Crum 1994).

Many Western Shoshone continued to live in traditional bands within their ancestral areas, including Diamond and Pine valleys (Steward 1938). Some traditional activities, such as bartering pine nuts and selling baskets, generated modest income and reinforced cultural identity. During the early part of the 20th century, fandangos (i.e., multi-day cultural celebrations featuring traditional foods, round dances, songs, and hand games) provided a forum for socializing, political discussion, and elections. In later years, the fandango incorporated rodeo and baseball and became associated with federal holidays such as the Fourth of July and Labor Day.

The Indian Reorganization Act of 1934 (IRA) is the centerpiece of the New Deal policies affecting Indians that reversed what has been called the cultural ethnocide of former federal policies (Clemmer and Stewart 1986). The IRA granted tribes the means to consolidate allotments and buy lands, organize councils with elected officials, and pursue economic development. Land-based tribal entities could pursue legal action to reclaim lost lands. Cultural pluralism and the revitalization of native customs, including language and religion, was another emphasis. The IRA generated three new Western Shoshone tribal organizations: the Te-Moak ***Tribe*** of Western Shoshone Indians, the Yomba Shoshone Tribe of the Yomba Reservation,

and the Duckwater Shoshone Tribe of the Duckwater Reservation. However, most of the Western Shoshone widely dispersed throughout and adjacent to the study area remain unaffiliated, primarily because participation in the Te-Moak organization was perceived as compromising the position of those pursuing recognition of the government's obligation to meet the terms of the Treaty of Ruby Valley.

Following World War II, post-war conservatism led to a new federal policy directed toward "preparing all Indians for termination of federal trust responsibility; abolishing reservations; and providing assistance to nuclear families, rather than to communities, to become integrated into the dominant society" (Clemmer and Stewart 1986). One component was the creation of the Indian Claims Commission (ICC) in 1946. In short, the purpose was to settle and extinguish claims prior to termination. Only four Western Shoshone tribal organizations considered participating in submitting a claim: Duck Valley, Elko, South Fork, and Battle Mountain. Battle Mountain later withdrew its representative.

The Indian Claims Commission determined that Western Shoshone title had been extinguished. This issue and associated compensation have been the subject of numerous lawsuits. While all courts addressing the issues have rejected Western Shoshone claims to continued ownership of these lands, some Western Shoshone still maintain that title to their ancestral lands has not been extinguished.

In the 1970s, the U.S. adopted a new policy for Indian tribes that emphasizes self-determination and treats federally-recognized tribes as sovereign over their internal affairs and reservations. BLM consults with area Indian tribes on a government-to-government basis on issues that potentially affect tribal resources.

3.9.1.4 Ethnographic Analyses

A number of ethnographic studies have been conducted in the vicinity of, and within, the ***study*** area. These studies were conducted in conjunction with mine or transmission line development activities and are briefly summarized below.

In a 1992 ethnographic study for the proposed Cortez Gold Mine Expansion Project EIS, Native American consultants identified Mount Tenabo and several additional features on or in the immediate vicinity of the mountain as culturally significant to the Western Shoshone (Quick 1995, 1992). These additional features included a cave, pine nut trees, a rock outcrop, turquoise and clay collection areas, and possible burials.

Beginning in January 2000, BLM conducted an ethnographic study for CGM's proposed HC/CUEP exploration project (Rusco 2000). At the beginning of the study, the BLM sent a letter to the following tribes and non-governmental organizations (NGOs): Te-Moak Tribe of Western Shoshone, with separate letters also sent to the Battle Mountain, Elko, South Fork, and Wells bands; Duckwater, Ely, and Yomba Shoshone tribes; Shoshone-Paiute Tribes of Duck Valley; WSDP; Shundahai Network; and Western Shoshone Historic Preservation Society. Consultants from these tribes and tribal organizations participated in one meeting and two field visits to the ***HC/CUEP*** project area. Several culturally significant places were identified or mentioned by tribal consultants during the study. These included a burial in Cherry Creek Canyon, Mount

Tenabo, the Shoshone Wells area, and piñon-juniper stands. Cherry Creek Canyon is not within the study area.

As a follow up to the HC/CUEP ethnographic study, a more focused investigation was conducted to assist the BLM in determining the eligibility of properties in the vicinity of Mount Tenabo (Rucks 2000). The BLM contacted the same tribes and NGOs as for the previous ***HC/CUEP*** study. Consultants from the Te-Moak Tribe of Western Shoshone, Ely Shoshone Tribe, and WSDP participated in a visit to ***Mount Tenabo and the immediate vicinity***. The study broadly identified important places that included springs, deep caves, high mountain places, burials, and places where important medicinal plants are found. Mount Tenabo was identified as having a number of uses including: traditional ceremonies/religious activities, hunting, gathering (food, medicine, and basketry materials). Additionally, the mountain was identified as a named landmark located at the confluence of several Shoshone trails. It was noted that the cave system on the mountain figured in creation stories. Specific culturally significant places identified by tribal consultants during this study included Mount Tenabo, Horse Canyon, Four Mile Canyon, and the Shoshone Wells Camp area. Neither Horse Canyon nor Four Mile Canyon ***are*** within the study area; however, both are within the regional cumulative effects study area.

The most recent ethnographic study in the Mount Tenabo area was conducted in 2002 and involved the previously proposed Pediment Project (now incorporated into the proposed project) (Rucks 2004). The following tribes and NGOs were contacted for this study: Te-Moak Tribe of Western Shoshone, including the Battle Mountain, Elko, South Fork, and Wells bands; Duckwater, Ely, and Yomba Shoshone tribes; Shoshone-Paiute Tribes of Duck Valley; and WSDP. Consultants from these groups participated in one meeting and two field visits to the ***study*** area. ***The Te-Moak environmental coordinator subsequently submitted a map of a proposed traditional cultural property that included Horse Canyon, the top of Mount Tenabo, Mill Canyon, Four Mile Canyon, Cortez Canyon, Shoshone Wells, and portions of Pine and Grass valleys.*** Concerns expressed by the Western Shoshone consultants during the field trips to Mount Tenabo included visual and access impacts, as well as the issues summarized below.

- Burials. Western Shoshone consultants stated that Mount Tenabo and the White Cliffs may contain burials. However, past ethnographic studies (Quick 1995, Rusco 2000) indicate that Western Shoshone consultants believe that ancestral burials located at the base of the White Cliffs were dismantled many years ago by Chinese settlers who constructed dug-outs in the same locations. Although the burials are thought to be gone, according to Western Shoshone tradition the accumulated power of these ancestors continues to contribute to the cumulative power and religious significance of the mountain. During the field trip, Western Shoshone consultants were shown two sites that Western Shoshone individuals indicated might be possible burial locations. One site (CrNV-62-8964) contained a historic can and a prehistoric lithic stone tool, groundstone scatter, and rock mound. The consensus of the tribal consultants was that this site was likely a Western Shoshone burial. The other site (CrNV-62-8916) contained two rock piles with associated historic artifacts. The consensus of the tribal consultants was that this site was perhaps a mining claim or even a burial but was likely associated with white men.

- Shoshone Wells Camp Area. The Western Shoshone identified this location as the observation point for viewing Mount Tenabo during prayer. According to Western Shoshone consultants, this location would have provided optimal camping in aboriginal times in milder weather and was accessible to a nearby spring for water. From the camp, evidence of mining exploration is ***partially*** obscured, and the White Cliffs of the mountain are in full view.

- Sites CrNV-62-8945 and CrNV-62-8955. Site CrNV-62-8945 is described as a small prehistoric lithic and ground stone scatter. It was selected for one of the site visits because the metate found in association with the charcoal midden suggested a possible roasting site. The consensus of the Western Shoshone consultants was that the site was consistent with green-cone processing and should be tested. In 2002, the site was tested. As a result of the testing, the site was recommended as eligible for the NRHP. Site CrNV-62-8955 is described as a multi-component site with both prehistoric and historic artifacts, including a metate located near a residential platform, associated hearth, and a scatter of historic artifacts. One of the tribal consultants interpreted the site as a Western Shoshone fall piñon camp.

- The Pediment. "The Pediment" referenced by the Western Shoshone relates to the piñon-juniper woodland and the location of ancestral camps ***on the western slope of Mount Tenabo***. In the past, the woodland area was ideal for winter habitation and short-term piñon camps, affording shelter from winter winds and access to firewood, construction material, the piñon itself, and other plants and small game.

- Mount Tenabo and the White Cliffs. Mount Tenabo and the White Cliffs are not the sole landscape features in the area, nor are they one of a kind. Mountain tops and rock faces are known to exist throughout the mountain ranges of northern Nevada; however, this mountain top is viewed by Western Shoshone as having more spiritual value than most others due to the mountain's association with the energy or power of deceased ancestors.

  The burials of the ancestors may be gone from Mount Tenabo, but the Western Shoshone believe the energy or "Puha" of those deceased ancestors associated with Mount Tenabo continues to add to the overall power and religious significance of the mountain, which also affects the strength or potency of medicinal plants and minerals on the mountain. The "Puha" within the mountain is still accessed by certain individuals through spiritual ceremonies (Dixon and McGonagle 2004). Such ceremonies are associated with fasting, spiritual and earth renewal, and prayer.

  Mount Tenabo once served as a "look out" point because it was located at the confluence of many Western Shoshone trails. One of the trails linked the White Knife country north of the Humboldt River to Death Valley. This traditional route passed through Crescent Valley and Cortez Canyon.

  The White Cliffs are a distinctive geologic formation and an easily recognizable landmark that is unique to Western Shoshone not only for their prominent physical features, but also because of their association with travel routes, burial sites, and spiritual ties to Mount Tenabo itself.

- Horse Canyon. To the Western Shoshone, the plants and landscape in Horse Canyon derive cultural significance as part of Mount Tenabo, and the canyon provides access to the mountain. Since Horse Canyon maintains perennial surface water in an area lacking major surface water sources, the canyon itself and the medicinal and edible plants can be considered unique from other traditional plant gathering locations (Dixon and McGonagle 2004).

Throughout the course of the studies summarized above and continuing ***to the present***, the BLM ***has consulted*** with the ***participating*** tribes regarding Mount Tenabo, as well as other identified culturally significant areas in the vicinity of Mount Tenabo. The BLM ***has*** reviewed and compiled pertinent information that ***has*** been gathered over the years. The areas identified by the tribal entities and individuals as having traditional, cultural, and spiritual importance were evaluated using the criteria set forth by the NRHP. As a result, the BLM determined that Mount Tenabo, the White Cliffs, and Horse Canyon were eligible for the NRHP as a PCRI under criteria a, b, and c (Dixon and McGonagle 2004). The analysis of Native American traditional values is focused specifically on Mount Tenabo and the White Cliffs, which are adjacent to the ***project boundary but in the study area***.

3.9.2 Environmental Consequences

The project-specific issues for the effects analysis were identified based on the information provided by the tribes during conduct of Native American consultation, communication, and coordination, and the ethnographic study prepared for the proposed project (Rucks 2004).

Ethnographic impacts would be considered significant if the Proposed Action or other alternatives would result in adverse effects to NRHP-eligible properties of cultural and religious importance to Indian tribes.

The analysis of potential impacts to Native American traditional values was prepared in accordance with NEPA. For purposes of this analysis, the effects of federal undertakings on properties of cultural significance to contemporary Native Americans are given consideration under the provisions of EO 13007, AIRFA, and recent amendments to the NHPA. As amended, the NHPA now integrates Indian tribes into the Section 106 compliance process, and also strives to make the NHPA and NEPA procedurally compatible. Furthermore, under NAGPRA, culturally-affiliated Indian tribes and the BLM jointly may develop procedures to be undertaken when Native American human remains are discovered on federal lands. The NEPA process does not require a separate analysis of impacts to religion. As a result, references in the analysis to religious beliefs or practices only convey the terminology used by tribal representatives and elders during conduct of the ethnographic study and tribal consultation and coordination conducted for the proposed project. This terminology does not reflect any BLM evaluation, conclusion, or determination that something is or is not religious, sacred, or spiritual in nature, but only conveys the information that has been gathered through tribal consultation and coordination and the ethnographic study.

3.9.2.1 Proposed Action

A PA (Appendix D) among the BLM Battle Mountain and Elko field offices, Nevada SHPO, and ***CGM*** was developed and implemented for an area that encompasses the proposed project. The PA outlines the steps to be taken to: 1) identify cultural resources; 2) evaluate them to determine if they are eligible for listing on the NRHP; 3) identify potential adverse effects; 4) develop measures to avoid, reduce, or mitigate adverse effects; and 5) address inadvertent discoveries. NRHP-eligible resources to be considered under the PA also include properties of cultural and religious importance (or PCRIs) to Indian tribes.

Impacts to Resources of Native American Concern

As previously discussed, in 2004, the top of Mount Tenabo and the White Cliffs were determined eligible for nomination to the NRHP as a PCRI under Criteria a, b, and c (Dixon and McGonagle 2004). The Tenabo/White Cliffs PCRI is within the study area but outside of the project boundary. The mapped location of the PCRI is confidential information protected under the NHPA. The PCRI was established through consultation, ethnographic work, and interviews with tribal entities, groups, and individuals in the Crescent Valley, Cortez, and Grass Valley areas. According to ***certain*** Western Shoshone, Mount Tenabo remains an important place of renewal, fasting, and prayer; an area for hunting and gathering of food and medicine resources; a source of pine nuts, fuel, and construction material; and may contain burials (Rucks 2000). As a result of the proposed project, additional visual impacts to the PCRI, as well as additional impacts related to future pine nut harvesting, access, potential burial sites, cultural sites, and spiritual and religious use of the area, could occur. These potential impacts are discussed below.

Visual Impacts. BLM is responsible for identifying and protecting scenic values on public lands under several provisions of FLPMA and NEPA. The BLM developed its Visual Resource Management (VRM) system to instill a systematic, interdisciplinary approach to what is inherently a somewhat subjective analysis. The VRM system includes an inventory process, based on a matrix of scenic quality, viewer sensitivity to visual change, and viewing distances, which leads to classification of public lands and assignment of visual management objectives. Four VRM classes were established, which serve two purposes: 1) as inventory tools portraying relative value of existing visual resources and 2) as management tools portraying visual management objectives for the respective classified lands.

The proposed project is located in the Basin and Range physiographic province as defined by Fenneman (1931). The province is characterized by alternating valleys and low, north-south trending mountain ridges common to much of Nevada. The landscape is characteristically dry. Vegetation is predominantly shrub species in the valleys with woodlands at higher elevations dominated by piñon-juniper. Sparse forbs and grasses occur as understory throughout the regional cumulative effects study area.

The Humboldt River is the primary water feature in the regional cumulative effects study area, fed by numerous creeks and streams, many of which are intermittent or ephemeral. There are many springs dispersed throughout the higher elevations of the regional cumulative effects study area, and there are hot springs and geysers in the northern Crescent Valley and Whirlwind Valley, respectively.

Potential visual impacts associated with the proposed project were determined by comparing visual contrast ratings for the proposed project facilities with the BLM's Visual Resource Management (VRM) class objectives for the ***study*** area (see Section 3.15, Visual Resources). The process involved comparing the degree of visual contrast from the proposed facilities and activities with the existing landscape character both during active mining and after reclamation has been completed. The VRM system does not specifically address visual effects to culturally significant areas.

Development of the proposed Cortez Hills Expansion Project would further impact the visual environment of the Mount Tenabo area. Some Native Americans consider the entirety of Mount Tenabo and its surroundings to be an "ethnographic landscape." The White Cliffs and the top of Mount Tenabo have been combined into one PCRI and determined eligible for inclusion in the NRHP.

The proposed project would modify the visual character of the lower third of ***the western slope of*** Mount Tenabo and the adjacent canyon and valley lands. It would not modify the upper two-thirds of the mountain, including the White Cliffs. The upper reaches of the mountain would be more visually prominent than the lower reaches from distant viewpoints; however, views from closer viewpoints, such as the Shoshone Wells vicinity, would be dominated by the proposed Cortez Hills waste rock and heap leach facilities.

The Mount Tenabo area has been the object of exploration and mining ***since 1862***. Vehicle access to the top of the mountain is by mining exploration roads. The top of the mountain was extensively explored in the 1980s and contains partially reclaimed mining exploration roads and drill sites. Historical mining occurred within the White Cliffs area beginning in the 1880s and has continued throughout the ***study*** area. An expanded discussion of current mining activities within the ***study*** area, including exploration, underground mining, and various open pits, is presented in Section 2.3, Existing Facilities.

As stated previously, to the Western Shoshone, the energy or "Puha" of deceased ancestors associated with Mount Tenabo continues to add to the overall power and religious significance of the mountain. The "Puha" within the mountain is still accessed by certain tribal individuals who visit the top of the mountain for ceremonial or personal use. It is anticipated that the spiritual and religious experience of these tribal individuals may be diminished as a result of the increased visual effects on the landscape associated with the development and expansion of mining facilities under the Proposed Action.

Impacts to Pine Nut Harvesting. Piñon trees have provided a major food source for the Western Shoshone for hundreds of years, and many social activities revolve around piñon trees and pine nut harvests. Mine expansion would disturb or remove approximately 1,612 acres of piñon-juniper woodland, which primarily consists of ***im***mature Utah juniper and singleleaf piñon trees (see Section 3.4, Vegetation). During reclamation, the replanting of singleleaf piñon seedlings may be conducted in suitable areas within the proposed ***disturbance*** area, and natural re-colonization of the disturbed areas with Utah juniper and singleleaf piñon would occur over time. However, it would take approximately 75 to 100 years for mature singleleaf piñon trees to become re-established. In addition, as discussed in Section 3.4, Vegetation, there would be a permanent loss of 817 acres of piñon-juniper woodland in association with development of the proposed Cortez Hills Pit, which partially would fill with water and would not be reclaimed, and the CR 222 reroute, which would not be reclaimed.

Potential impacts to future pine nut harvesting and the social activities associated with the harvest cannot be quantified due to the lack of information relative to piñon grove usage by tribal individuals in the ***study*** area. A small percentage of currently harvestable pine nuts would be affected by the proposed project, because the piñon groves in this area are not mature and currently provide little pine nut production (JBR 2003).

Impacts to Access. During tribal meetings and field trips to the ***study*** area, Western Shoshone consultants asked if access to Mount Tenabo would be affected during construction and operation of the proposed project. Currently, vehicle access to Mount Tenabo is via existing mining explorations roads, most of which are on the east side of the mountain.

Development of the proposed Cortez Hills Expansion Project would not alter access to Mount Tenabo from Pine Valley via Horse Canyon. Access to Mount Tenabo from Crescent Valley via Mill Canyon also would not be modified by the Proposed Action. Access to Mount Tenabo from Crescent Valley via Cortez Canyon to Grass Valley to Pine Valley to Horse Canyon would be modified by the Proposed Action. The existing public road in Cortez Canyon would be relocated to the west in Copper Canyon. Ultimately, the relocated road would rejoin the existing access route in Grass Valley near the Shoshone Wells town site. ***Access from Crescent Valley to Grass Valley, Tonkin Springs, and Horse Canyon would be maintained via the re-routed county road. Also, the access route from Carlin, via Highway 278, the JD Ranch road, and then to the Horse Canyon road would not be affected. Therefore, access to Mount Tenabo, Horse Canyon, and Shoshone Wells would continue under the Proposed Action.***

There currently exists a private Cortez road access via the Horse Canyon haul road that allows access from Crescent Valley via the haul road to Horse Canyon. In the past, access to Mount Tenabo via this route has been granted by Cortez upon request. The Proposed Action would remove portions of the Horse Canyon haul road in the vicinity of Cortez Canyon. Therefore, access via the private road would not be feasible during mining operations. After closure, access via the haul road route would be re-established.

Access to other known culturally significant sites would remain open, and access to the Horse Canyon PCRI would not be affected.

Impacts to Burials. During the cultural resources investigations conducted for the proposed project, two archaeological sites were identified as possible burials. Western Shoshone consultants reviewed the sites and determined that one site had been a Western Shoshone burial; the consultants asked that no testing, excavation, or development occur in the vicinity of the burial site. These sites and any discovered human remains, funerary objects, or items of cultural patrimony would be handled in accordance with the NHPA, NAGPRA, PA, and applicant-committed protection measures as discussed in Section 3.8, Cultural Resources.

Specifically, if project personnel discover what they believe to be human remains, funerary objects, or items of cultural patrimony during ground-disturbing activities, construction would cease within 300 feet of the discovery and the BLM Authorized Officer would be notified. Any discovered Native American human remains, funerary objects, or items of cultural patrimony found on federal land would be handled in

accordance with the NAGPRA and procedures detailed in the PA. Construction would not resume in the area of the discovery until the BLM Authorized Officer issues a notice to proceed.

If Native American human remains and associated funerary objects are discovered on private land during construction activities, construction would cease within 300 feet of the discovery, and the county coroner or sheriff would be notified of the find. Treatment of any discovered human remains and associated funerary objects found on private land would be handled in accordance with the provisions of applicable Nevada law and the PA.

BLM and CGM would conduct training of all project personnel that may come in contact with burials, and a BLM-designated archaeologist would be on site to monitor activities in the event of a discovery.

Impacts to Cultural Sites. Western Shoshone consultants expressed concerns about the potential impacts to ancestral places associated with religious and spiritual beliefs and about the impacts to or loss of historic properties and places related to Western Shoshone heritage. Under the Proposed Action, impacts to cultural sites would be mitigated as described under Protection of Cultural Resources in Section 3.8.2.1. It should be noted that mitigation could involve data recovery (i.e., archaeological excavation), which is perceived by some Western Shoshone as part of destructive process that permanently removes Western Shoshone heritage ***from the landscape***.

Impacts to the Spiritual and Religious Use of the Area. ***Based on input received, t***raveling to Mount Tenabo remains important to a few local Western Shoshone as a setting for personal healing, spiritual guidance, renewing doctoring abilities, and acquiring power by a new generation of spiritual practitioners (Rucks 2000). Much of the use is solitary due to the individualistic nature of religious practice and belief as well as the importance of personal religious experience and direct connection to the ancestors and the earth. ***The spiritual and religious experience of these tribal individuals may be diminished as a result of the increased visual effects on the landscape associated with the development and expansion of mining facilities under the Proposed Action.*** However, because Western Shoshone consultants have not disclosed the number of people who visit the mountain for spiritual or religious use and the frequency ***and specific locations*** of their visits to the area are unknown, the level of this impact cannot be quantified.

Summary

The previously described Working Group, consisting of Te-Moak designated individuals and the Western Shoshone Committee of Duck Valley, have assisted the BLM in identifying and addressing specific Native American issues or concerns within the project boundary (see Section 3.9.1.2). The Working Group and BLM have developed an action item list that may limit, reduce, or possibly eliminate impacts to tribal resources, sites, and associated activities. Although this process may limit, reduce, or eliminate impacts to traditional cultural sites and associated activities, the BLM acknowledges that certain impacts cannot be fully mitigated to the satisfaction of certain Western Shoshone. Possible mitigation measures that may lessen impacts are listed in Section 3.9.4, Mitigation and Monitoring Measures.

3.9.2.2 Grass Valley Heap Leach Alternative

Under the Grass Valley Heap Leach Alternative, potential impacts to Native American traditional values essentially would be the same as those described for the Proposed Action.

3.9.2.3 Crescent Valley Waste Rock Alternative

Potential impacts to Native American traditional values under the Crescent Valley Waste Rock Alternative would be the same as those described for the Proposed Action, with the following exception. Approximately 243 fewer acres of piñon-juniper would be removed under this alternative. Although not quantifiable, the potential impacts to future pine nut harvesting and the social activities that revolve around this event would be slightly less than under the Proposed Action.

3.9.2.4 Cortez Hills Complex Underground Mine Alternative

Under the Cortez Hills Complex Underground Mine Alternative, the proposed Cortez Hills Pit; North, South, and Canyon waste rock facilities; Grass Valley Heap Leach Facility; cross-valley conveyor and crusher; and Grass Valley borrow area and water well would not be developed. As a result, associated potential impacts to burials, NRHP-eligible sites, spiritual and religious use areas, and pine-nut harvesting, as well as potential visual impacts as seen from Mount Tenabo and the surrounding landscape, would not occur. Under this alternative, one potentially eligible NRHP-site and no known burials would require data recovery. Also, the future harvesting of pine nuts by Western Shoshone and the social activities that revolve around this resource would not be affected because no piñon trees would be disturbed or removed under this alternative. Additionally, under this alternative, it is anticipated that there would be less effect on the spiritual and religious experience associated with visiting the top of Mount Tenabo and the visual effects on the ethnographic landscape than under the Proposed Action.

3.9.2.5 Revised Cortez Hills Pit Design Alternative

Under the Revised Cortez Hills Pit Design Alternative, the eastern Cortez Hills Pit slope would be flatter and the pit bottom shallower than under the Proposed Action to reduce the potential for slope failure. As discussed in Section 3.1, under this alternative, no large-scale pit slope failures that could extend outside the project boundary and into the PCRI or impact the White Cliffs would be anticipated. All other potential impacts to Native American traditional values under this alternative essentially would be the same as those described under the Proposed Action.

3.9.2.6 No Action Alternative

Under the No Action Alternative, the proposed Cortez Hills Expansion Project would not be developed. However, both the Pipeline/South Pipeline Project and Cortez Underground Exploration Project would continue to operate under existing authorizations.

Under the No Action Alternative, impacts to historic properties, potential burials, and properties of cultural and religious importance to the tribes would be the same as those described under the No Action Alternative for cultural resources (Section 3.8.2.5). As the facilities proposed for the Cortez Hills Expansion Project would not be constructed under this alternative, the associated direct impact to approximately 1,612 acres of piñon-juniper woodland, inclusive of the permanent loss of approximately 817 acres of piñon-juniper woodland, would not occur. As a result, related impacts to future supplies of pine nuts in the ***study*** area and the ceremonial gatherings associated with the pine nut harvest would not occur.

Under the No Action Alternative, ***impacts associated with historic mining and currently authorized mining and mineral exploration would continue;*** the proposed expansion of mining facilities and associated visual effects on the landscape would not occur. As a result, ***there would be no additional mining-related changes in*** the ***current*** overall spiritual and religious experience of those tribal individuals who visit the top of the mountain. Construction and operation activities proposed for the Cortez Hills Expansion Project would not occur under the No Action Alternative; therefore, potential access ***changes*** would not occur under this alternative.

3.9.3 Cumulative Impacts

During meetings between the Te-Moak Council and the BLM, Council representatives expressed concern regarding the effects of historic and ongoing mining activities on tribal resources in the region. To address this concern, the BLM proposed a regional cumulative effects analysis of tribal resources, which would consist of compiling and analyzing previous ethnographic studies and NEPA documents for mines and other major actions within the Carlin Trend, Ivanhoe, Crescent Valley, and Tonkin areas. Therefore, the list of past and present actions and RFFAs for the Cortez Hills Expansion Project cumulative effects analyses as presented in **Table 2-16** and discussed in Section 2.6, Past, Present, and Reasonably Foreseeable Future Actions, was expanded for use in the Native American traditional values cumulative analysis to include additional mines, mining exploration projects, and other actions within a larger cumulative effects study area (**Table 3.9-2**). This larger cumulative effects study area for Native American traditional values is referred to as the "regional cumulative effects study area" (**Figure 3.9-2**).

Portions of the regional cumulative effects study area have been utilized by the Western Shoshone people for at least 1,200 years (McGuire et al. ***2007***). Since first contact with Euro-Americans, the Western Shoshone have competed for resources with trappers, explorers, migrants heading to California along the Humboldt River trail, miners, settlers, and agricultural and transportation interests. In addition, Western Shoshone culture has been impacted by military incursions and the loss of much of their aboriginal homeland. The forces of assimilation and public policy also have affected the Western Shoshone. While BLM acknowledges the effects of these impacts over time, it would be impossible to analyze cumulative impacts on this temporal scale.

The regional cumulative effects study area initially was developed based on review of results of past Section 106 consultation efforts with area Indian tribes and tribal elders. This review found that the areas of importance to those Western Shoshone people who utilize the ***study*** area generally were bounded by the

Table 3.9-2
Past, Present, and Reasonably Foreseeable Actions for the Native American Traditional Values Cumulative Analysis[1]

Action	Past and Present Approved Disturbance		RFFA Projected Disturbance (acres)	Total Approved/ Projected Disturbance (acres)	EIS or EA Available for Analysis	
	Total Approved Disturbance (acres)	Remaining Disturbance (acres)			Yes	No
Mining Projects						
Atlas Gold Bar	1,320		0	1,320	X	
Black Rock Canyon Mine	117		0	117		X
Bootstrap Project	1,505		0	1,505	X	
Buckhorn Mine	820	9	0	820	X	
Carlin Mine	1,385		0	1,385		X
Clipper Mine	400	21	0	400		X
CGM Cortez Mine	1,662[2]		0	1,662	X	
CGM Cortez Hills Refractory Ore Processing and Underground Operations - Increased Depth	0		0[3]	0		X
CGM Gold Acres	881	389	50[4]	931		X
CGM Hilltop Mine	92	71	0	92		X
CGM Horse Canyon	698	418	0	698		X
CGM Pipeline/South Pipeline Project	7,616		0[5]	7,616	X	
CGM Robertson Mine	285		0	285		X
CGM Satellite Mine Southeast of Cortez Hills (1)	0		1,500	1,500		X
CGM Satellite Mine North- Northwest of Pipeline/South Pipeline (2)	0		1,500	1,500		X
Cortez Silver Mining District[6]	92		0	92		X
Elder Creek Mine	143	In final closure	0	143	X	
Fox Mine	4		0	4		X
Gold Quarry Mine/South Operations Area Project	5,750		0	5,750	X	
Goldstrike/Betze Project	4,379			4,379	X	
Greystone Mine	242		0	242		X
Grey Eagle Project	5		0	5		X
Hot Springs Sulfur Mine	5		0	5		X
Ivanhoe Project	342		0	342	X	
Leeville Project	486		0	486	X	
May Mine	1	1	0	1		X
Meikle Mine	92		0	92	X	
Mill Canyon[6]	18		0	18		X
Mud Spring Gulch	10		0	10		X
Mule Canyon Mine	2,931		0	2,931	X	
Rain/Emigrant Project	383		0	383	X	
South Silicified Project	31	0	0	31		X
Utah Mine and Camp	6		0	6		X
Subtotal	**31,723**	**--[7]**	**3,050**	**34,773**	**--**	**--**
Exploration						
Notices BLM-Battle Mountain Field Office: 118 expired, 8 pending, and 30 authorized[8]	265		0	265+		
Plans (7) BLM-Battle Mountain Field Office[8]	306		0	306		
Notices (10) BLM-Ely Field Office[8]	50		0	50		
Carlin Exploration Project	255			255	X	
CGM Cortez Underground Project	5		0	5	X	
CGM HCCUEP/ HCCUEP Amendment #1	250		0	250	X	
CGM West Pine Valley	150		0	150		X
CGM West Side	0		200	200		X
CGM Joint Venture Area	0		600	600		X
CGM Hilltop Mine	50	16	0	50		X
CGM Pipeline/Gold Acres Area	50		0	50		X
CGM Robertson Project	12	0	0	12		X
Coral Resources Robertson Mine	22	7	0	22		X
Dean Mine	67	17	0	67		X
Fire Creek Exploration Project	50		0	50	X	
Mud Springs	0		10	10		X
Santa Fe Mill Canyon	250		0	250		X
South Roberts	0		3	3		X
Toiyabe Mine	20		0	20	X	
Tonkin Springs	21		0	21	X	

Table 3.9-2 (Continued)

Action	Past and Present Approved Disturbance		RFFA	Total Approved/	EIS or EA Available for Analysis	
	Total Approved Disturbance (acres)	Remaining Disturbance (acres)	Projected Disturbance (acres)	Projected Disturbance (acres)	Yes	No
Uhalde Lease	100	Final closure and bond release completed.	0	100		X
Subtotal	**1,923**	**--**[7]	**813**	**2,736**	**--**	**--**
Utilities/Community						
State Route 306 (100 feet wide)[9]	327		0	327		X
Gravel Roads (50 feet wide)[9]	1,370		0	1,370		X
Dirt Roads (30 feet wide)[9]	644		64	708		X
Falcon to Gonder Transmission Line	2,105	253	0	2,105	X	
Geothermal Leasing[10]	0		0	0	X	
Powerlines (60 feet wide)[9]	364		0	364		X
Towns of Crescent Valley and Beowawe[11]	900		0	900		X
Subtotal	**5,710**	**--**[7]	**64**	**5,774**	**--**	**--**
Other Development and Actions						
BLM Fuels Reduction Projects[12]	5,641		0	5,641	X	
Recreation[13]	0		0	0		X
Livestock[14]	10		4,313	4,323		X
Wildfires[15]	622,311			622,311	BLM GIS	
Wildlife	0		0	0		X
Agriculture Development[16]	9,750		0	9,750		X
CGM Additional Irrigation Pivots at Dean Ranch	0		640	640		X
Crescent Valley Water Supply	2		0	2		X
Subtotal	**637,714**	**--**[7]	**4,953**	**642,667**	**--**	**--**
Total	**677,070**	**--**[7]	**9,180**	**686,150**	**--**	**--**

[1] Acreage associated with the proposed Cortez Hills Expansion Project is accounted for under the Proposed Action. It is not repeated here to eliminate double counting.

[2] The 62 acres previously approved for exploration in the Cortez Mine Complex are included below under exploration Notices and Plans; hence, to avoid double counting, the 62 acres have been subtracted from the 1,722 acres previously identified for mining operations. The acreage also includes disturbance associated with the Horse Canyon haul road from Horse Canyon to Cortez.

[3] Assuming approval of the Cortez Hills Expansion Project, RFFAs at the project site could include the potential addition of a refractory ore process and increased depth of the proposed underground operations. No additional surface disturbance would be associated with these activities, if developed, as they would occur within areas of existing or currently proposed disturbance.

[4] RFFAs could include pit expansion and development of underground operations.

[5] RFFAs could include development of underground operations and the potential addition of a bio-leaching process. No additional surface disturbance would be associated with these activities, if developed, as they would occur within areas of existing or currently proposed disturbance.

[6] ***Historic mining- and exploration-related disturbance first began in 1862, prior to the promulgation of surface land management laws and regulations governing mining activities on public lands (e.g., FLPMA and 40 CFR 3809). Since there were no laws or regulatory programs in place at that time, there were no regulatory or administrative approvals granted. Therefore, the identified disturbance acreage does not include all historic mining-related disturbance in the area.***

[7] Insufficient data set to accurately determine.

[8] Plans and notices outside of the general Crescent Valley area have not been quantified.

[9] The acreages presented for existing roads and powerlines are for the Crescent Valley area, the only known area in the regional cumulative effects study area where road and powerline reroutes are proposed. Disturbances associated with existing roads and powerlines in the remainder of the regional cumulative effects study area have not been quantified.

[10] A programmatic EA was prepared by the BLM in 2002 to facilitate geothermal leasing and exploration in the Shoshone-Eureka Planning Area. The EA provides a framework for the processing of geothermal lease and exploration applications. Any proposed surface disturbing activity would be required to undergo a separate site-specific NEPA analysis before authorization could be granted.

[11] Surface disturbance associated with the towns of Crescent Valley and Beowawe is assumed to be 640 and 160 acres, respectively, with approximately 100 acres of private developed land peripheral to the towns.

[12] Inclusive of acreage associated with the Crescent Valley Wildland Urban Interface Fire Defense System, Tonkin Hazardous Fuels Reduction Project, and Red Hills Hazardous Fuels Reduction Project. Of the total acreage, planned prescribed burns would affect up to 2,537 acres of piñon-juniper woodland, and 800 acres of piñon-juniper would be thinned.

[13] Surface disturbance associated with recreation activities has occurred; however, the acreages have not been quantified.

[14] Surface disturbance associated with existing and proposed livestock water use is assumed to be 0.5 acre per water right. The surface disturbance associated with the livestock RFFAs is based on projected seeding activities (change in vegetation and habitat), 0.5 acre per water development activity, and 43 acres for fencing and cattle guards. Livestock-related effects outside of the Carico Lake allotment have not been quantified.

[15] Reflects acreage of vegetation affected by wildland fires from 1998 through 2006. The acreage is inclusive of approximately 27,804 acres of fire affected piñon-juniper woodland.

[16] Surface disturbance associated with agricultural development is based on the acreage under irrigation and assumes that a change in vegetation and habitat equates to surface disturbance. Acreage values were based on a February 15, 1998, special hydrographic abstract for Hydrographic Basin No. 054 from the NDWR. These values are based on permitted or authorized use of water and may not reflect actual use in a given year. Potential agricultural development outside of Crescent Valley has not been quantified.

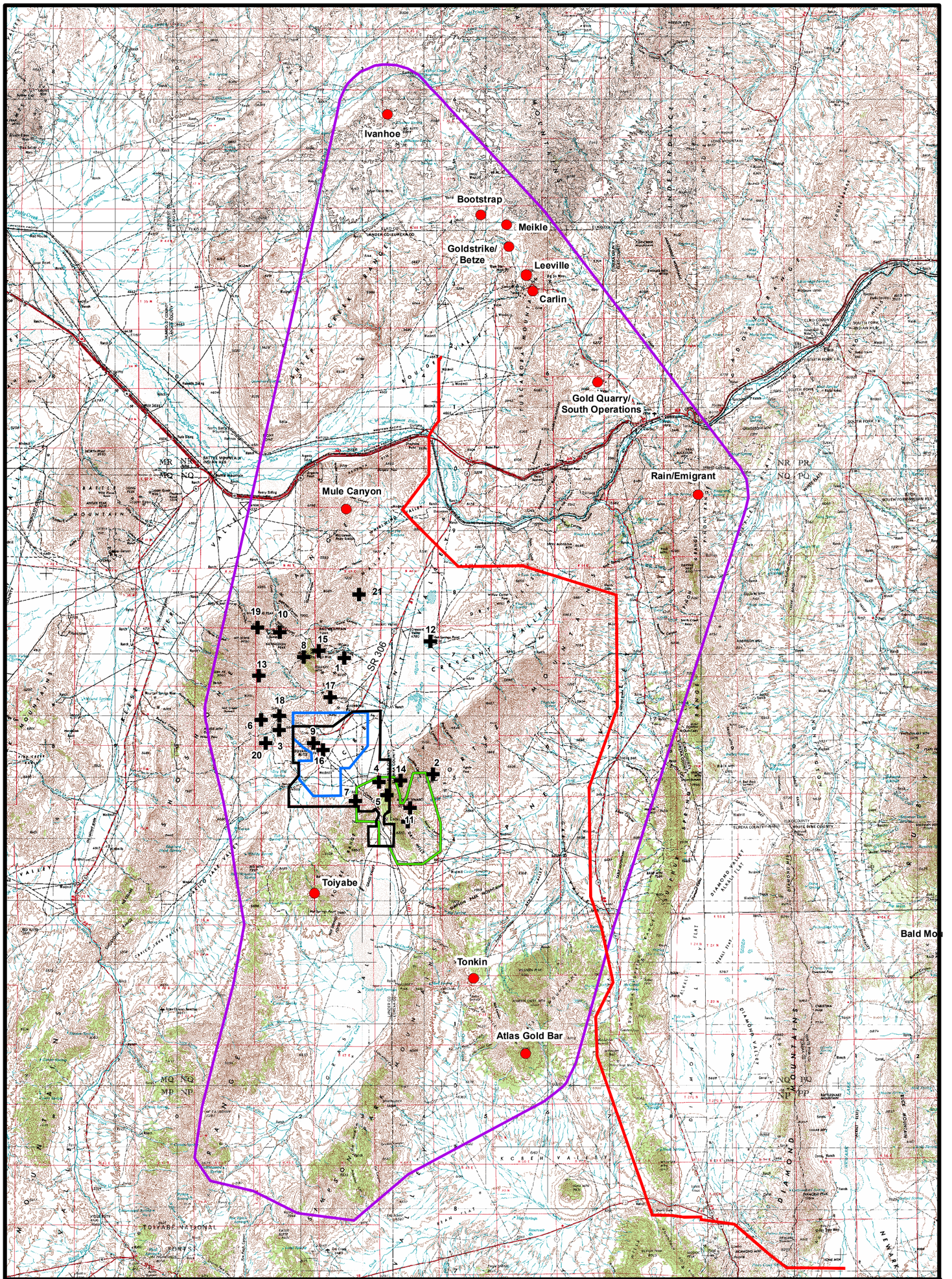
Sources: BLM 2006a,b,c, 2005a,b,c,d,e, 2004b,c,d,e, 2003a,d, 2002b,c,d,e, 2001a,c,e, 2000a,c,d, 1999b, 1996a,b,d,e,f, 1994, 1993a,b,c, 1992a, 1991b, 1989, 1988a; Inland Gold and Silver Corp 1989; Newmont Services Limited 1987.

Humboldt River Valley to the north, Pine Valley to the east, the Simpson Park Range and Carico Lake Valley to the south and southwest, and the Reese River Valley to the west. Although outside of the frequent usage range of the Western Shoshone people who utilized the ***study*** area, portions of the Sheep Creek Mountains, Boulder Valley, and Tuscarora Mountains were added to the regional cumulative effects study area in order to include other mining operations in the region that may have, or may, contribute to cumulative effects to Native American traditional values. The regional cumulative effects study area boundary was refined further in consultation with the Te-Moak Tribe.

For purposes of the cumulative impact analysis for Native American traditional values in this EIS, there is an important distinction between potential impacts to resources that are important to Native American traditional values and potential impacts to the same resources in the resource-specific sections of this EIS. Native American traditional values include a number of resources (e.g., certain species of plants or wildlife, or certain surface water resources) that have been identified as important to Native Americans. The potential for direct or indirect impacts to Native American traditional values (in the broadest sense) has been determined to be sufficient to support cumulative impact analyses of all of the resources identified in ethnographic studies (see Section 3.9.1.4, Ethnographic Analysis). For example, this section looks at the potential cumulative impacts to surface water resources that are potentially significant to Native Americans throughout the Native American traditional values regional cumulative effects study area (**Figure 3.9-2**) even though the potential direct and indirect impacts to surface water resources as a result of the Proposed Action (or other action alternatives) would be confined to a much smaller area. The question analyzed in this section is not whether there are cumulative impacts to such resources in the hydrologic sense, but whether the accumulation of mining projects and other large-scale activities within the regional cumulative effects study area would impact Native American traditional values.

As identified in the introduction to Section 3.9, the regional cumulative effects analysis was conducted for Native American traditional values over an area encompassing recent hard-rock mines in north-central Nevada plus other industrial developments (e.g., large transmission lines), activities, and events (e.g., wildfires) within the Western Shoshone's traditional homeland in relative proximity to the proposed Cortez Hills Expansion Project. The regional cumulative effects analysis includes both project-specific issues and issues identified during ethnographic studies conducted for previously permitted projects within the regional cumulative effects study area (**Figure 3.9-2**). Project-specific issues for Native American traditional values were identified based on the information provided in previous consultation, communication, and coordination from tribal governments and individuals to the BLM, and during the ethnographic study conducted by Rucks (2004) (see Section 3.9.1.4, Ethnographic Analysis). The project-specific issues identified by the Native Americans and analyzed for the proposed project include potential visual effects and potential effects to pine nut harvesting, access, burials and cultural sites, and spiritual and religious use areas. Additional issues identified during ethnographic studies for previously permitted projects within the regional cumulative effects study area include big and small game, small mammals, eagles, ***edible and medicinal plant species***, and water.

As discussed in Section 2.6, Past, Present, and Reasonably Foreseeable Future Actions, cumulative impacts are defined in the CEQ implementing regulations for NEPA as "the impact on the environment



Legend

- Project Boundary
- Past and Present Actions and RFFAs
- Additional Past and Present Actions Specific to Native American Traditional Values
- Native American Traditional Values CESA
- Pipeline/South Pipeline/Gold Acres Exploration Boundary
- HC/CUEP
- Falcon to Gonder Powerline

1) Black Rock Canyon Mine
2) Buckhorn Mine
3) Clipper Mine
4) Cortez Mine
5) Cortez Silver Mining District
6) Elder Creek Mine
7) Fox Mine
8) Grey Eagle Project
9) Gold Acres
10) Hilltop Mine
11) Horse Canyon Mine
12) Hot Springs Sulfur Mine
13) May Mine
14) Mill Canyon
15) Mud Springs Gulch
16) Pipeline/South Pipeline Project
17) Robertson Mine
18) Utah Mine and Camp
19) Dean Mine
20) Greystone Mine
21) Fire Creek Exploration

N

0 5 10 15 Miles

Source: BLM 2000a; CGM 2006b; USGS 2006.

Cortez Hills Expansion Project

Figure 3.9-2
Past and Present Actions,
RFFAs, and Native American
Traditional Values CESA

02/15/2008

which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CRF 1508.7). As specified in BLM Instruction Memo NV-90-435, impacts first must be identified for the Proposed Action before cumulative impacts with past and present actions and RFFAs can occur. Based on this guidance, cumulative impact analyses should be linked to direct or indirect impacts associated with the Proposed Action or one of the action alternatives analyzed in detail. That is, without a direct or indirect impact to a resource from the proposed project, there would be no impacts to "add to" the potential impacts of other past and present actions or RFFAs for an analysis of cumulative impacts. However, for the Native American traditional values regional cumulative effects analysis, the cumulative impacts for the identified issues were evaluated irrespective of whether or not the Proposed Action would contribute to those impacts.

As discussed above, ethnographic research, cultural resources inventories, Native American consultation efforts, oral histories, and personal communication and interviews with Western Shoshone individuals have provided documentation that establishes the importance of several identified landmarks, trails, and culturally significant places in Western Shoshone history. Archaeological data on file at the BLM Battle Mountain Field Office supports Western Shoshone historic and prehistoric use of the regional cumulative effects study area (**Figure 3.9-2**) and is consistent with the traditional/cultural use information provided by contemporary Western Shoshone. Past and present traditional, cultural, and spiritual use information, combined with oral and written histories and the archaeology of the area, support prehistoric, historic, and modern use of the area by native practitioners for hundreds if not thousands of years.

To quantify to the extent possible the cumulative effects to Native American traditional values, existing EISs and EAs, as available, for those mining projects and other actions identified in **Table 3.9-2** were obtained and reviewed for applicable information (e.g., acres of affected piñon-juniper for evaluation of potential effects on pine nut harvest). The treatment of specific issues and level of detail in these documents varied greatly, due to differences in project-specific scoping issues, document age, etc. Therefore, data collected from these documents only enabled a partial quantification of the cumulative effects and only for certain issues. For those ***past and present*** projects for which quantifiable data for a specific issue were not presented in the relevant EIS or EA, and for those ***past and present*** projects for which an existing EIS or EA was not available for use in this analysis (**Table 3.9-2**), their potential contribution to cumulative effects in the regional cumulative effects study area was evaluated qualitatively based on available information. Therefore, for some of the cumulative issues analyzed in this section, both quantitative and qualitative information was used for the evaluation.

Ethnographic Studies

In addition to the studies conducted within and adjacent to the proposed ***study*** area (see Section 3.9.1.4, Ethnographic Analysis), the following studies were conducted within the regional cumulative effects study area for Native American traditional values as part of several previously permitted projects. These studies provide additional information on tribal resources within the regional cumulative effects study area and are summarized below.

- In 1989, an ethnographic study, funded by the Truman-Orr Foundation through the Nevada State Museum, was conducted at the Tosawihi quarry (Clemmer 1990). At the time, BLM had initiated the process of permitting a possible gold mine and a dam and reservoir under two separate EAs. Thirty-seven prehistoric sites were identified in the Tosawihi Quarry area. Twenty-four of the sites were recommended or potentially eligible to the NRHP, and the quarry area was recommended eligible as a World Heritage Site. The prehistoric sites included knife caches, Tosawihi Shoshone traditional use areas, chert gathering or quarry areas, hunting locations (deer, rock chucks, rabbit, squirrel), and chert tool-making materials. According to the study, the Tosawihi white chert and artifacts are extremely unique, and the quarry is the only place of its kind in the world. At the time of the study, the Tosawihi Quarry was used for religious and non-religious purposes by Tosawihi Shoshone and some Western Shoshone.

  During the study, knowledgeable Western Shoshone and Tosawihi Shoshone descendants indicated that changing the land would cause the spirits to leave the land and the people, and that the area is the "heartland and homeland of Shoshone who still identify themselves as Tosawihi." They stated that Western Shoshone and Tosawihi Shoshone collected the sacred white chert in the area and used it for religious purposes and as a source of medicine and spiritual power. According to the study, the Tosawihi Quarry is a physical expression of Tosawihi cultural identity and is a Western Shoshone monument.

- In 1991 and 1992, an ethnographic study was prepared as background information for proposed mining activities by the Ivanhoe Gold Mining Company within the Ivanhoe Mining District (Rusco and Raven 1992). The proposed location of the mining activities was within the Tosawihi Quarry area. Tribal consultants, who were interviewed as part of the study, stated that the area was the "core part of the traditional homeland of the Tosawihi, a sub-group of the Western Shoshone." According to the tribal consultants, the area contained quarry sites, rock shelters, and camp sites. Specific sites, activities, and resources identified within the Tosawihi Quarry area were plant, mineral, and chert gathering locations as a source of medicine and paint (red and white ochre); burial locations; Puha (power) sites where the acquisition of strength takes place; water sources; caves; power areas attracted to life in general; locations where the ancestors lived or were buried; ceremony and ritual sites; and, chert used for doctoring, protection, and as a source of power.

  During the study, tribal consultants stated that any major mining developments would threaten power spots or sources, including the sacred and extremely rare white chert. Additionally, it was stated that the Tosawihi chert was an important trade item and the area a major trade route. The white chert was used as a source of tools, and as personal protection and healing. Some of the people who were interviewed noticed that there was a decline in the deer, squirrel, ground hog, sage grouse, and wild horse populations; they attributed the decline to the springs drying up as a result of mining. Plant resources and herbs also were said to be scarce and the decline attributed to cattle grazing.

  Those interviewed were concerned that any new mining activities would limit access to the area, and they asked that resources be protected. Some felt that building the mine would provide much needed

jobs to the tribal people; however, most felt that the Quarry should be designated as a historic place, fenced off, and left alone. The people interviewed did not want any sites to be disturbed or removed unless they were in danger of being destroyed. It was suggested that those artifacts that are removed should be made available to Tosawihi people or simply returned to the tribe. Additionally, any removal of artifacts should be done under the supervision of an Indian monitor and put in a place where Indian people can use them for religious and cultural purposes. Also, when archaeologists begin "data gathering," a Tosawihi descendant should be present and perhaps a tribally-owned and operated curation facility be constructed to house Tosawihi artifacts.

- In 1992, an ethnographic study was conducted by Archaeological Research Services, Inc. (ARS) to provide background information for the preparation of an EA or EIS for proposed mining by the Gold Fields Mining Company in the Mule Canyon Project area (Rusco 1992). The ***Mule Canyon Project*** area encompassed 18 square miles that included Mule Canyon, an unnamed canyon to its south, and Deer Canyon to its north. The background study included the ***Mule Canyon Project*** area and cumulative effects area, which was defined as extending from just east of Beowawe to the eastern outskirts of Battle Mountain on the west, and from the north edge of the Humboldt River south to the narrow neck of the Shoshone Range north of the town of Crescent Valley.

  The ethnographic study involved a review of ethnographic and ethnohistoric literature relevant to the Mule Canyon Project area and cumulative effects area, and interviews with tribal members. As part of the study, the following groups were contacted: Shoshone-Bannock Tribe, Shoshone-Paiute Tribes of the Duck Valley Reservation, South Fork Band, Goshute Indian Reservation, Battle Mountain Band, Elko Band, Wells Band, Western Shoshone National Council, and Western Shoshone Council of Elders. Letters were sent to these groups to request assistance in assembling the background information on the study area, determining potential effects of the proposed mining project on traditional cultural and religious practices, and developing appropriate management of resources.

  As a result of the study, two areas of historic importance to Western Shoshone people were identified. These were a rock wall and ancient winter village site near Stony Point and the Beowawe Indian Colony site. Three locations in the ***Mule Canyon Project*** area were identified by the tribes as recently having been visited by tribal individuals to hunt or collect edible or medicinal plants. Plants collected for food in these areas included wild onions, chokecherries, Indian spinach, and currants. A major trail between Beowawe and Battle Mountain also was identified and was said to contain numerous springs including the Beowawe geysers and other hot springs. Tribal members recalled three traditional place names: *Bio-wa*, from which Beowawe is derived; *Gosha* (hot water) for geysers, but also used for other hot springs; and *To-sam-boi* (white road) apparently used for the whole area including the geysers. According to the report, tribal members interviewed for the study expressed a general interest and concern for the ***Mule Canyon Project*** area; tribal consultation was recommended.

- In 1994, an archaeological baseline evaluation was conducted for the proposed Atlas Gold Expansion in Eureka County (Christensen and Kautz 1994). The purpose of the study was to provide a baseline review of information pertaining to previous cultural resource inventories within the proposed mineral exploration and development areas. Cultural sites of most importance located within or near the

proposed disturbance areas were extensive lithic scatters, Roberts Creek Shelter, multiple ground stone and projectile points, tool stone quarries, charcoal ovens, and a collapsed wickiup. Of these important sites, 17 were historic, 3 prehistoric, and 7 contained prehistoric and historic components. Most were eligible to the NRHP, and it was determined that adverse effects to these sites would occur as a result of the proposed ***Atlas Gold Expansion***. A treatment plan was proposed to reduce the adverse effects. The baseline evaluation did not indicate if Western Shoshone were consulted or assisted in developing mitigation measures, or if a treatment plan was prepared.

- In 1994, Intermountain Research reported on the excavation activities of 32 archaeological sites located along the margins of the Whirlwind Valley and lower reaches of the Northern Shoshone Range in northeastern Nevada (Intermountain Research 1994). The excavation effort was the result of Gold Fields Mining Company and Santa Fe Pacific Gold Corporation proposed mining activities. The focus was on prehistoric use of an upland location. The majority of the sites were related to seasonal hunting and gathering activities over the last 10,000 years. Sites, artifacts, and toolstone appeared to be associated with water sources, plant locations and harvesting, and game hunting and processing activities. Some white chert artifacts that were located during the excavation appear to have come from the Tosawihi Quarry area.

- In the spring of 1999, an ethnographic study was conducted for the Sierra Pacific Power Company Falcon to Gonder 325-kV Transmission Line Project (Rucks 2001). The BLM Battle Mountain Field Office contacted the following tribes and tribal organizations for the project: Te-Moak Tribe of Western Shoshone, including the Battle Mountain, Elko, South Fork, and Wells bands; Duckwater, Ely, and Yomba Shoshone tribes; Shoshone-Paiute Tribes of Duck Valley; Shoshone-Bannock Tribes; WSDP; Western Shoshone Historic Preservation Society; Las Vegas Indian Center; Citizen Alert, Native American Program; and Nevada Indian Environmental Coalition. Consultants from the Ely and Yomba Shoshone tribes, Battle Mountain and Elko bands, and the WSDP participated in a total of six meetings and one field visit. Additionally, the project ethnographer conducted interviews and field visits with three Western Shoshone individuals.

  During the interviews, it was stated that archaeological sites were located mainly on or near flat and gently sloping surfaces such as alluvial fans, fan piedmonts, fan skirts, alluvial flats, playas, ridge tops, passes, and stream terraces. Sites of noted cultural significance were geyser locations in Whirlwind Valley, Mount Tenabo, the Crescent Valley massacre site, base of Roberts Mountains (major pine nut harvesting area), and the multiple lithic resources. Traditions and cultural practices within the ***ethnographic*** study area included pine nut harvesting, edible and medicinal plant gathering, seasonal camps and travel, religious practices, and burials. Crescent Valley was noted for its abundance of seed resources. Also, within the Pine and Diamond Valleys, where the people were known as the “red top grass eaters,” there was a fishing village near Palisades. Certain festivals were said to take place by many Western Shoshone in the Pine and Diamond valleys with large crops of pine nuts being produced and gathered in the Roberts Mountains and Sulpher Springs Range. The Mineral Hill area was said to contain large quantities of Yampa root. Roots and seed plants were said to be bountiful in the Cortez and “Tinaba” areas along with Newark Valley. Along with pine nut harvesting, antelope drives were said to take place in Diamond Valley, Long Valley, and Butte Valley. Mule deer hunting took place within a

migration corridor, which was near Hamilton and Railroad valleys. "StepToe" Valley and the Ely area contained many Shoshone villages and pine nut camps.

Western Shoshone consultants suggested Beowawe Geysers, Dean Rabbit-drive, Mount Tenabo, and Hercules Gap Sun dance site as possible traditional cultural properties. Other areas of importance were Shoshone Camp at Shoshone Wells near Cortez, the Colonel Conner Massacre site, and Henderson Pass in the Roberts Mountains. Several concerns were raised during the interviews. These included cumulative degradation of the cultural and biotic landscape from continued development of public lands within Western Shoshone traditional territory; possible direct effects to individual cultural properties from construction and data recovery; increased visibility and accessibility; inadvertent discovery of human remains; and impacts to eagles and sage grouse.

- In 2001, the BLM prepared an addendum to the ethnographic report conducted for CGM's HC/CUEP (McGonagle 2001). The addendum report included documentation of the attempts to define a traditional cultural property boundary, consultation with tribal councils and knowledgeable Western Shoshone, potential impacts of the proposed ***HC/CUEP*** project, and appropriate mitigation measures. During consultation with the Western Shoshone, some tribal members indicated they did not recognize or acknowledge the mapped traditional cultural property boundary. This refusal to recognize a "boundary" was because, according to Western Shoshone, the entire traditional homelands were felt to be a Western Shoshone traditional cultural property. Some people spoke of the whole mountain area (Tenabo) as being a traditional cultural property, along with "all the canyons and waters which flow from it." The Te-Moak Environmental Director at the time submitted to the BLM a Te-Moak traditional cultural property Boundary Map.

  The tribal consultants described the Mount Tenabo area as being an important pine nut harvesting area, landmark, lookout point, burial and cave location, a native food/plant gathering area, and the site of Western Shoshone seasonal camps. The Mount Tenabo area was further described as being an "ethnographic landscape," which included not only the top of the mountain, but also the surrounding valleys. Burials were identified as sacred. It was stated that cultural/spiritual sites were being destroyed on a daily basis and that the only mitigation was complete avoidance.

Visual Impacts

The BLM VRM system does not specifically address visual effects to culturally significant areas, such as PCRIs. As a result, visual resources analyses that have been conducted for the past, present, and reasonably foreseeable actions in the regional cumulative effects study area for Native American traditional values generally have not identified visual features that are considered important by Native Americans. However, a few key visual landmarks have been identified in various ethnographic studies (Dixon 2006b).

The known landmarks in the regional cumulative effects study area that are considered important by Native Americans include the top of Mount Tenabo, the White Cliffs on the south half of Mount Tenabo's west face, and Big Butte near Tuscarora at the north tip of the regional cumulative effects study area. The Tosawihi Quarry area also is an important landmark to Western Shoshone and, mainly, Tosawihi Shoshone. Other prominent mountain tops or rock outcrops were mentioned as possible landmarks, but none were

specifically identified. These landmarks were used by Western Shoshone as visual guides for ancient travel and hunting/trade routes or trails and continue to serve as physical expressions of Western Shoshone cultural identity. Additionally, prominent features often signified locations of certain ceremonies and observances and are associated with Western Shoshone creation stories.

Very little information on specific visual impacts to Native American landmarks was identified in the available EISs or EAs for the past and present actions and RFFAs in the regional cumulative effects study area (**Table 3.9-2**). Concerns were expressed by Native Americans that mining throughout the regional cumulative effects study area has degraded the environment in a variety of ways. Visual impact concerns were expressed by the Western Shoshone consultants during field trips to Mount Tenabo as discussed in Section 3.9.1.4, Ethnographic Analysis.

The proposed project would modify the visual character of the lower third of ***the western slope of*** Mount Tenabo and the adjacent canyon and valley lands. It would not modify ***the northern or eastern parts of the mountain or*** the upper two-thirds of the mountain, including the White Cliffs. The undisturbed upper reaches of the mountain would be more visually prominent than the lower reaches from distant viewpoints; however, views from closer viewpoints, such as the Shoshone Wells vicinity, would be dominated by the proposed Cortez Hills waste rock and heap leach facilities.

Development of the proposed Cortez Hills Expansion Project incrementally would add to existing impacts to the visual environment of the Mount Tenabo area. Some Native Americans consider the entirety of Mount Tenabo and its surroundings to be an “ethnographic landscape.” The White Cliffs and the top of Mount Tenabo have been combined into one PCRI, which is considered eligible for inclusion in the NRHP (Dixon and McGonagle 2004).

Impacts to Plants with Tribal Significance

Vegetation within the regional cumulative effects study area for Native American traditional values is associated with the Central Great Basin floristic section of the Intermountain Region (Cronquist et al. 1972). The regional cumulative effects study area includes 36 vegetation types as identified by the National Gap Analysis Program completed by the USGS – Biological Resources Division (**Figure 3.9-3**). The majority of the vegetation consists of shrub-dominated types, which typically occur in basins, valley bottoms, and on mountain slopes. Shrubs commonly associated with these vegetation types include big sagebrush, Wyoming big sagebrush, mountain sagebrush, black sagebrush, low sagebrush, green rabbitbrush, greasewood, four-wing saltbush, shadscale, budsage, and winterfat. A minor understory consisting of a variety of forbs and grasses also occurs with these shrub species. Woodland vegetation types typically occur at higher elevations along mountain ranges and are dominated by coniferous trees including singleleaf piñon and Utah juniper. Mountain shrubs, including serviceberry and mountain mahogany, also may be intermixed with these conifers. These vegetation types also include a minor understory component consisting of a variety of forbs and grasses. Riparian and wetland vegetation types occur in localized areas within the regional cumulative effects study area. Riparian vegetation types occur along ephemeral and perennial creeks, whereas wetland vegetation types are associated with seeps, springs, and depressions adjacent to perennial or intermittent creeks.

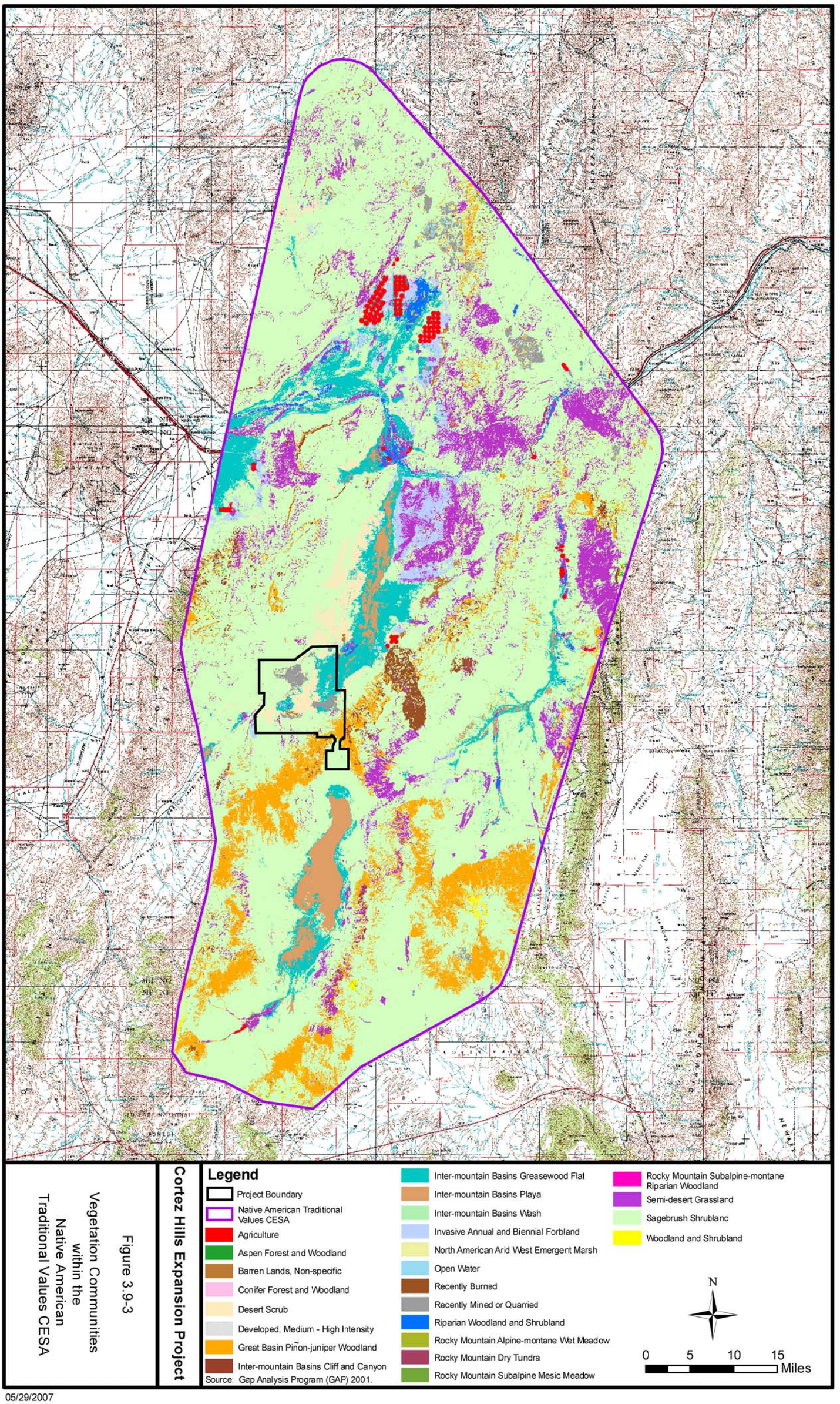


Figure 3.9-3

Vegetation Communities within the Native American Traditional Values CESA

Cortez Hills Expansion Project

05/29/2007

Edible and medicinal plants traditionally used by Native Americans are known to occur in great quantity (and quality) in specific places, such as Horse Canyon. Edible plants include, but are not limited to, wild onion, chokecherries, Yampa root, pine nuts, cattail bulbs, various berries, and grain-producing grasses. Medicinal plants include, but are not limited to, willow***, "Indian" or*** "Mormon Tea***,"*** ***and "Doza."*** Some plant species serve many purposes, such as the willow, which is used as a pain reliever and as basket-making material. Sagebrush bark was used to make garments.

Based on the available ethnographic studies discussed above and the EISs and/or EAs previously prepared for the past and present actions and RFFAs in the regional cumulative effects study area (**Table 3.9-2**), 19 traditional use plant species were identified by Native Americans as being of concern. Some areas and vegetation types within the regional cumulative effects study area support these 19 plant species. Two of these species (giant lomatium and elegant deathcamas) would not be affected by the proposed project, as giant lomatium was not found in the study area during baseline surveys (JBR 2000a; 2002a), and potentially suitable habitat for the elegant deathcamas does not occur in the study area. Therefore, the proposed project would not contribute to cumulative effects to these two plant species. These 19 plant species have been, and continue to be, useful to Native Americans in that they have provided, and continue to provide, food and have medicinal uses. A total of one tree, six shrub, nine forb, one grass, and two grass-like species have been identified as being traditionally used by Native Americans. **Table 3.9-3** lists these species, their habitat descriptions, the part or parts of the plants used and their uses, and counties within the regional cumulative effects study area where these plant species are known to occur.

Impacts to Pine Nut Harvesting. Based on review of existing EISs and EAs for other projects (**Table 3.9-2**) and 2006 GIS data for wildland fire locations within the regional cumulative effects study area (**Figure 3.9-4**), an estimated 56,210 acres of piñon-juniper woodland vegetation have been, or would be, removed as a result of development-related activities (51 percent) and wildland fires (49 percent). BLM fuels reduction projects also have affected, or would affect, piñon-juniper woodland in the regional cumulative effects study area through prescribed burns (2,537 acres) and thinning projects (800 acres). Surface disturbance associated with the proposed project would affect approximately 1,612 acres of piñon-juniper woodland, resulting in an incremental increase in cumulative impacts to these woodlands. The combined total acreage (approximately 61,159 acres) represents approximately 32 percent of the total acreage of piñon-juniper woodland vegetation within the regional cumulative effects study area. In addition, based on GIS analysis of the past and present actions in the regional cumulative effects study area for which existing NEPA documents were not available (**Table 3.9-2**), all or portions of 12 mining projects also have affected, or would affect, piñon-juniper woodlands (**Figure 3.9-3**). These mining projects have a total associated disturbance acreage of 4,067; however, the portion of this disturbance within piñon-juniper woodlands cannot be quantified as specific footprints and specific vegetation mapping for these mining projects were not available for this analysis .

Most plant resource availability, including pine nuts, depends on the climate, time of year, and amount of water. Many Western Shoshone have noted a general decline in the availability of piñon pine and, specifically, pine nut producing stands. However, not all piñon trees or stands produce significant crops of pine nuts. The percentage of harvestable pine nuts in the regional cumulative effects study area that have been, or would be, affected by projects or actions cannot be directly quantified, as the use of piñon groves

Table 3.9-3
Traditional Use Plants Within the Native American Regional Cumulative Effects Study Area

Plant Type	Common Name	Scientific Name	Habitat Description[1]	Part(s) of Plant Used/Uses[2]	Counties With Known Species Occurances[3]
Tree Species					
	Singeleaf piñon	*Pinus monophylla*	Piñon-juniper, piñon, sagebrush, and lower aspen communities at 2,500 to 7,700 feet amsl.	Pine nuts/food; pitch/medicinal uses	Elko, Lander, and Eureka
Shrub Species					
	Currants (squawberry)	*Ribes* spp.	Mountain brush, sagebrush, piñon-juniper woodland, riparian, aspen, spruce-fir, alpine, and less commonly desert shrub communities at 4,600 to 10,600 feet amsl.	Fruits/food; roots/medicinal uses	Elko, Lander, and Eureka
	Serviceberry	*Amelanchier alnifolia*	Streamsides, meadows, and mountain slopes in sagebrush, oak-serviceberry, aspen, and mixed conifer communities at 3,700 to 8,700 feet amsl.	Fruits/food and medicinal uses	Elko, Lander, and Eureka
	Chokecherry	*Prunus virginiana*	Sagebrush, piñon-juniper, Rocky Mountain juniper, oak-serviceberry, and aspen communities from 4,200 to 9,200 feet amsl.	Fruits/food; wood and roots/medicinal uses	Elko, Lander, and Eureka
	Sagebrush	*Artemisia* spp.	Sagebrush, rabbitbrush, shadscale, mountain brush, piñon-juniper, and aspen communities at 3,000 to 9,200 feet amsl.	Leaves/medicinal uses	Elko, Lander, and Eureka
	Willow	*Salix* spp.	Wetland and riparian communities at 3,000 to 9,000 feet amsl.	Roots, bark, and leaves/medicinal value; stems/materials for making structures	Elko, Lander, and Eureka
	Mormon tea	*Ephedra viridis*	Blackbrush, salt desert scrub, sagebrush, mountain brush, piñon-juniper, and rabbitbrush communities at 2,700 to 9,000 feet amsl.	Branches/medicinal uses	Elko, Lander, and Eureka

Table 3.9-3 (Continued)

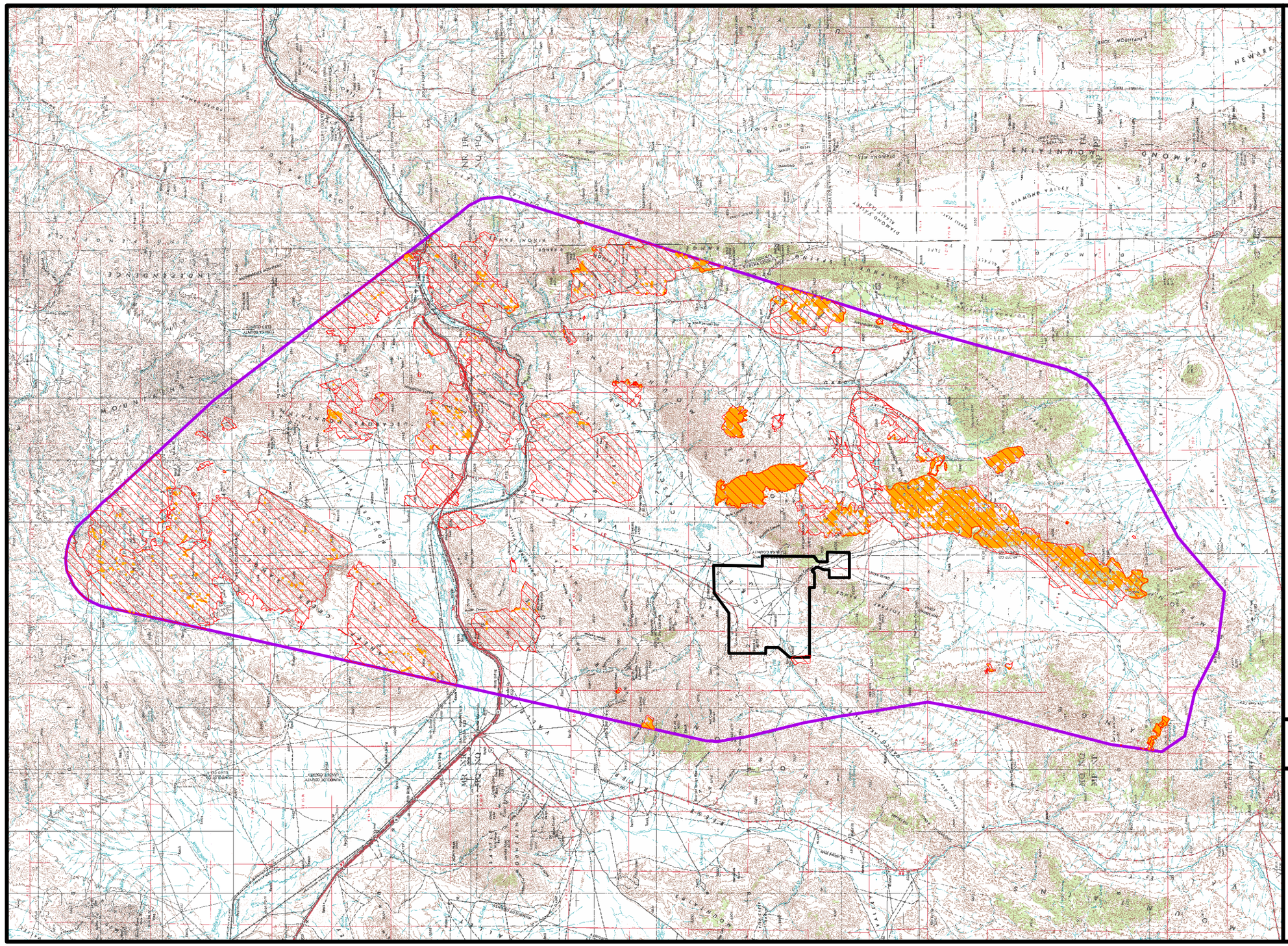
Plant Type	Common Name	Scientific Name	Habitat Description[1]	Part(s) of Plant Used/Uses[2]	Counties With Known Species Occurances[3]
Forb Species					
	Giant lomatium	*Lomatium dissectum*	Sagebrush, piñon-juniper, aspen-fir, riparian, and rarely greasewood-desert shrub communities at 3,900 to 8,000 feet amsl.	Roots/medicinal uses	Elko, Lander, and Eureka
	Elegant deathcamas	*Zigadenus elegans*	Meadows and streambanks in aspen, lodgepole pine, and spruce-fir communities and in alpine tundra at 6,500 to 10,500 feet amsl.	Bulbs/medicinal uses	Elko and Eureka
	Foothills deathcamas	*Zigadenus paniculatus*	Blackbrush, other warm desert shrub, piñon-juniper, sagebrush, oak-maple, ponderosa pine, Douglas fir, and grassland communities at 2,600 to 8,100 feet amsl.	Bulbs/medicinal uses	Elko, Lander, and Eureka
	Bolander's yampah	*Perideridia bolanderi*	Sagebrush, juniper, mountain brush, and streamside communities at 4,600 to 7,000 feet amsl.	Roots/food	Elko, Lander, and Eureka
	Stickleaf	*Mentzelia* spp.	Piñon-juniper woodland, mountain mahogany, sagebrush, Douglas fir, and aspen communities at 4,700 to 8,600 feet amsl.	Seeds/food and medicinal uses	Elko, Lander, and Eureka
	Mulesears	*Wyethia amplexicaulis*	Sagebrush, oak, piñon-juniper, aspen-fir, and forb-grass communities at 4,600 to 8,700 feet amsl.	Roots/food and medicinal uses	Elko, Lander, and Eureka
	Common sunflower	*Helianthus annuus*	Saltgrass-muhly grass, desert shrub, piñon-juniper, and mountain brush communities at 3,600 to 7,400 feet amsl.	Seeds and roots/food and medicinal uses; stems and leaves/medicinal uses	Elko, Lander, and Eureka
	Arrowleaf balsamroot	*Balsamorhiza sagittata*	Sagebrush, mountain brush, piñon-juniper, ponderosa pine, Douglas fir, aspen, and fir communities at 4,020 to 9,100 feet amsl.	Roots, stems, and leaves/medicinal uses	Elko and Lander

Table 3.9--3 (Continued)

Plant Type	Common Name	Scientific Name	Habitat Description[1]	Part(s) of Plant Used/Uses[2]	Counties With Known Species Occurances[3]
	Wild onion	*Allium pp*.	Shadscale, sagebrush, rabbitbrush, greasewood, salt desert scrub, and piñon-juniper communities at 3,200 to 7,500 feet amsl.	Bulbs and stems/food	Elko, Lander, and Eureka
Grass					
	Indian ricegrass	*Oryzopsis hymenoides*	Chiefly dry, open, often sandy sites, in greasewood, creosote bush, shadscale, sagebrush, mountain brush, piñon-juniper, and ponderosa pine communities, occasionally at margins of aspen-spruce-fir communities at 2,300 to 8,300 feet amsl.	Seeds/food	Elko, Lander, and Eureka
Grass-like Plant Species					
	Cattails	*Typha* spp.	Marshy areas at 3,600 to 6,300 feet amsl.	Bulbs/food	Elko, Lander, and Eureka
	Indian spinach	*Stanleya pinnata*	Seleniferous soils derived from shales, mudstones, and siltstones with salt desert shrub, sagebrush, piñon-juniper, and mountain brush communities at 2,700 to 6,800 feet amsl.	Leaves/food	Eureka and Lander

Sources:

[1] Welsh et al. 1993.
[2] Crow Canyon Archaeological Center 2006; University of Michigan-Dearborn 2006.
[3] U.S. Department of Agriculture-Natural Resource Conservation Service 2006.



Cortez Hills Expansion Project

Figure 3.9-4

Fire Areas
1998-2006

06/15/2007

as a valued food source by Western Shoshone depends on the availability of the resource (i.e., pine nut production) in any given year. Other natural factors that may affect piñon groves and pine nut production include beetle (e.g., Ips beetles), fungus, and mistletoe infestations as well as drought; however, the extent of these impacts on pine nut harvest in the regional cumulative effects study area cannot be quantified. As discussed in Section 3.4.1.6, Woodland Products, BLM-administered lands in the proposed Cortez Hills Expansion Project boundary are not part of a designated greenwood (i.e., live tree) cutting area. However, permitted commercial firewood or post cutting on BLM-administered lands in other locations within the regional cumulative effects study area would contribute to cumulative impacts to piñon groves. In addition, permitted pine nut harvesting on BLM-administered lands within the regional cumulative effects study area may, at times, contribute to cumulative effects on pine nut availability.

Impacts to piñon groves as an economic and social resource to Western Shoshone have occurred, and would continue to occur, as a result of mining and other development activities in the regional cumulative effects study area; however, these cumulative effects are not quantifiable due to the variability of pine nut production from year to year and the lack of information relative to specific piñon grove usage. The Western Shoshone concern about effects to piñon reflects traditional beliefs, ecological values, and subsistence. Pine nut collection, distribution, and consumption have played, and continue to play, a key role in Western Shoshone cultural identity and cohesion (McGuire et al. ***2007***). Interviews with Western Shoshone consultants have indicated that pediment piñon groves were first accessible to the Indian populations traveling south from Beowawe and are most associated with Crescent Valley and northern Grass Valley (Rucks 2004). Pine nut use intensified during the early contact period, when populations increasingly focused on piñon for subsistence and on the pine nut harvest as a pivotal ceremonial gathering. The pine nut harvest continues today and, according to contemporary Western Shoshone, reinforces their cultural identity and tribal heritage (Rucks 2004).

In the regional cumulative effects study area, mining and other activities have affected piñon trees. Use of these resources most likely would diminish as future projects in the regional cumulative effects study area are permitted and developed. The pine nut harvest and the social activity associated with the harvest also may diminish over time, with continued regional development, vegetation manipulation, fires, mining and other activities. It is difficult to quantify cumulative effects to tribal cultural and historical traditions; however, historic literature, ethnographic analysis, and interviews with contemporary Western Shoshone have indicated that effects to Western Shoshone heritage and the values placed on piñon trees have occurred over time and it is expected that these impacts would continue.

Impacts to Other Plants with Tribal Significance. Limited information was available in existing EISs and EAs for the remaining 18 plant species identified in **Table 3.9-3** that traditionally have been used by Native Americans as food or for medicinal uses. Based on the vegetation types that occur in the regional cumulative effects study area (**Figure 3.9-3**) and the known habitat associations for these plant species, some of the species may have been, or could be, affected by activities associated with the past and present actions, RFFAs, and/or fire in the regional cumulative effects study area. However, information on these species relative to specific occurrence locations, population sizes, or areal extent of populations was not provided in the existing NEPA documents. As a result, the potential impacts to these species cannot be

quantified. Most plant resource availability depends on the climate, time of year, and amount of water. Many Western Shoshone have noted a general decline in the availability of plant resources.

Impacts to Access

The regional cumulative effects study area for Native American traditional values is served by a sparse network of highways typical of rural Nevada. I-80 is the primary east-west traffic artery across northern Nevada, connecting northern Lander County with Reno to the west and Elko and Salt Lake City, Utah, to the east. I-80 is approximately 35 miles north of the proposed Cortez Hills Expansion Project. In addition, SH 278 runs south from Carlin along the east side of the regional cumulative effects study area, and SH 306 runs from I-80 south through Beowawe into Crescent Valley. There are a few improved, gravel surface, county roads in the valleys of the regional cumulative effects study area. There also is an extensive network of largely unimproved or minimally improved dirt roads crisscrossing public lands in the regional cumulative effects study area. Finally, there are often improved gravel or dirt surface roads in the vicinity of major mine sites providing access to the mines and transportation among mine facilities.

Traffic levels are generally very low on all roads except I-80 or roads serving as commuter routes to a substantial mine.

Some Western Shoshone continue to practice lifeways and lifestyles not unlike that of their ancestors, in part or in whole. The cultural resources, sites, and activities discussed above all involve access routes. Continued traditional, cultural, and spiritual use depends on maintaining access to certain locations, and access limitations can cause an adverse effect. Increased public access also can add stresses (increased traffic and human occupation) to cultural sites and activities that were relatively isolated and thus, secure.

Culturally important sites in the regional cumulative effects study area include Tosawihi Quarry, Whirlwind Valley, Mount Tenabo, Horse Canyon, and other less documented sites. Important resources include gathering locations for pine nuts, medicinal and edible plant materials, water sources, and quality hunting areas. Sites with special spiritual or cultural values for Native Americans, such as ceremonial locations and caves associated with creation stories, also often are associated with other resources.

Generally, none of the EISs or EAs for the ***past and present actions*** in the regional cumulative effects study area (**Table 3.9-2**) addressed access issues related to Native American cultural sites. However, projects typically only restrict access to the immediate project vicinity where safety or security concerns are important.

Considering the extensive network of formal and informal roads on public lands in the regional cumulative effects study area, it is likely that access has remained, and would remain, available to most of the culturally important sites and resource locations traditionally used by Native Americans, although, in some cases, access may be less direct than it originally had been. In other cases, increased access in an area also could be beneficial to traditional practitioners. For example, increased access within thick piñon pine stands, that formerly were inaccessible, may assist the elders in harvesting pine nuts with little or no stress; however, access by the general public also would be increased.

Essentially all of the ***past and present actions and RFFAs*** in the regional cumulative effects study area temporarily have resulted, or would result, in an increase in people and activity in and near project areas. It is unknown how much effect the increases have had, or would have, on Native American cultural sites and resources, or to what extent the proposed project incrementally may contribute.

Impacts to Burials and Cultural Sites

The Native Americans' concern for burials stems from the traditional practice of locating burials close to the place of death rather than in specific cemeteries. The burial customs of the Western Shoshone involved different methods of treating the deceased. These methods included cremation, sometimes by burning the deceased's home with the body inside; burial in rock slides, talus slopes, caves or rock shelters, or in areas of soft dirt; and abandonment without interment, sometimes in the deceased's house or merely covered with brush. Due to the variety of these practices and the vast expanse of Western Shoshone aboriginal territory, burials could be located almost anywhere within the regional cumulative effects study area.

Western Shoshone consultants have consistently expressed concerns for burials. The traditional Western Shoshone belief that bodies should be returned to "Mother Earth" when buried, and should remain where they were originally placed, has been noted in several ethnographic studies (Rucks 2004; Rusco 2000). Although tribal consultants interviewed for these studies have expressed deep concern about the treatment of burials and the desire that they be avoided, few were willing to divulge specific locations of these types of sites.

Currently, there are two archaeological sites within the project boundary that contain features tentatively identified as possible burials. One is the metate burial (CrNV-62-8964), and the other is a rock pile (CrNV-62-8916) identified within the study area during the cultural resources inventories (see Section 3.9.1.4, Ethnographic Analysis). As described above, the metate burial contained a historic can, and a prehistoric lithic stone tool, ground stone scatter, and rock mound. Tribal consultants believe the site may likely be a Western Shoshone burial and requested no testing, excavation, or development in the vicinity of the site. Site CrNV-62-8916 is described as two rock piles with associated historic artifacts. The consensus of tribal consultants was that this site was perhaps a mining claim or even a burial, but was likely associated with white men.

According to Rusco (2000), there was considerable confusion about a "Cherry Canyon" burial found by a local rancher in 1998. At the time, Rusco was not able to find a Cherry Spring, Creek, or Canyon on any maps of the area. The burial was reported to the deputy sheriff (at the time), who traveled to the site and found "bits of cloth, beads, and what appeared to be a young child wrapped up in cloth and burlap." Two pieces of the skull were sent to the BIA and a forensic anthropologist for identification purposes. The forensic anthropologist identified the remains as those of a "child approximately six to eight years of age." In accordance with NAGPRA, on April 20, 1998, the BLM Elko Field Office archaeologist accompanied the Eureka County Sheriff to the site and examined the remains. After examining the site, the BLM

archaeologist notified the Battle Mountain Band of the Te-Moak Tribe of Western Shoshone of the find. Subsequently, the remains were sent to the tribe for repatriation.

As a result of previous cultural resource inventories conducted throughout the regional cumulative effects study area, a large number of prehistoric and ethnohistoric sites have been documented. The sites primarily consisted of lithic debitage, tool scatters, and debitage scatters. The tool and debitage scatters contained fragments of stone implements, while debitage scatters were composed of stone waste flakes, which are a byproduct of tool making. Other site types included quarries, camps, and traditional cultural properties identified by tribal consultants. According to the Western Shoshone, cultural sites are associated with the ancestors and considered "physical proof of Shoshone existence" or physical expressions of cultural identity. Other prehistoric and ethnohistoric sites or resources include (and are not limited to) quarry sites, red and white clay sources, rock shelters, camp and village sites, lithic scatters, projectile points, and ground stone.

The impact analysis of the Proposed Action indicated no adverse impacts to cultural resources, including potential burials, based on compliance with the ***NAGPRA,*** NHPA, PA, and implementation of mitigating measures involving inventory, avoidance, or data recovery, along with collection of all important artifacts with detailed recording of their context. Therefore, under NEPA, no cumulative effects to cultural sites or burials would occur as a result of the Proposed Action. However, archaeological excavation is perceived by some Western Shoshone as part of a destructive process that permanently removes Western Shoshone heritage ***from the landscape*** (Rucks 2004). Therefore, within the context of Native American concerns, it is anticipated that cumulative effects to cultural sites and burials as a result of mining and other human activity would continue as cultural sites and burials are excavated.

Impacts to Spiritual and Religious Use Areas

Certain Western Shoshone have expressed concern about past, present, and future activities and their effects on spiritual and religious use areas within their ancestral lands (Rucks 2004). Use of these areas for ***individual*** Western Shoshone spiritual or religious renewal has decreased over time as mining and other activities have increased in the regional cumulative effects study area. In the past, much of the emphasis of Native American studies has been on the short-term effects to spiritual and religious use areas, and not on the larger, long-term impacts imposed on these areas and their resources.

Areas of cultural importance to Native Americans include, but are not limited to, locations associated with the traditional beliefs concerning tribal origins, cultural history, or the nature of the world; locations where religious practitioners go, either in the past or in the present, to perform ceremonial activities based on traditional cultural rules of practice; ethnohistoric habitation sites; trails; burial sites; and places from which plants, animals, minerals, and waters possessing healing powers or used for other subsistence purposes may be taken. Past ethnographic and ethnohistoric studies have identified several places of cultural importance to the Western Shoshone. Some of these areas have discrete boundaries while others were mentioned by tribal consultants only as general areas that contain specific property types, such as burials, camp sites, or plant-gathering areas. The following areas were identified through tribal consultation, ethnographic and ethnohistoric studies, and archival research:

- Mount Tenabo. According to Rucks (2000), "the top of the mountain remains an important place of renewal, fasting, and prayer." Western Shoshone individuals have reported that there is "a network of caves associated with creation and world renewal" located within the mountain, and that it also contains openings to these caves. However, the locations of these openings have never been revealed. Rucks (2001) mentions that "several boulders representing events in the creation of the world" were located on the north side of the mountain. In summary, Rucks (2004) states "the mountain was identified with specific stories and as a place for prayer, healing, and inspiration, as part of a network of mountain peaks and an underground waterway that concentrates and emanates 'Puha,' the animating power of the universe fundamental to all life, and visible and invisible reality." The mountain is still mentioned in prayers and ceremonies by Western Shoshone because of its cultural and religious importance.

- Four Mile Canyon. Rucks (2000) noted that Four Mile Canyon is a "contributor to a resource area because of its association with Tosawihi history and culture." Western Shoshone consultants identified Four Mile Canyon as a plant-gathering area.

- Piñon-juniper Woodland. The piñon-juniper woodland ***at the base of Mount Tenabo*** historically has been used as a pine nut harvesting area for Western Shoshone. The area has not been used for pine nut harvesting for 70 to 100 years because the historic piñon-juniper woodlands were clearcut for firewood in the late 1800s and early 1900s (JBR 2003). The current piñon-juniper stands are not mature enough to provide a consistent pine nut harvest. Western Shoshone consultants stated that the pediment contained camp sites; however, no specific locations were mentioned (Rucks 2000). During a recent ethnographic study, Western Shoshone tribal consultants identified one archaeological site as a possible Shoshone piñon camp (Rucks 2004).

- Shoshone Camp in the Shoshone Wells. In recent times, Shoshone Camp served as a camping and staging area for hunting trips and pine nut harvesting in the pediment area and has been "identified as the observation point for viewing Mount Tenabo during prayer" (Rucks 2000, 2004). Shoshone Camp was once a stop for Western Shoshone travelers on a trail that went along the western side of the Cortez Mountains, "across the pediment and through the canyon" (Rucks 2000). Since 2001, the Western Shoshone Defense Project has used a location south of Shoshone Camp for ***several*** spring gathering***s***.

- Horse Canyon. Rucks (2000) noted that this area is important because of its association with Mary Hall, a well known Western Shoshone "basket weaver, spiritual leader, co-leader of sun dances, a person of extensive traditional plant use knowledge, and ancestor to various Western Shoshone lineages originating from the Beowawe/Cortez/Crescent Valley/Pine Valley areas." Horse Canyon was, and still is, a plant-gathering area favored by the Western Shoshone. Prior to the trail fire of 1999, contemporary Western Shoshone collected pine nuts in the Horse Canyon vicinity.

- Dry Hills. In their discussion of the Ruby Valley Treaty, Patterson et al. (1969) mentions the Dry Hills in their description of the treaty boundary area. They refer to the place as Tuso-gua (where-gets-rocks-for-rollers-to-make-flour), which was located near Beowawe.

- Trails. Trails, in particular, migration trails, are considered by the Western Shoshone to be culturally significant. It is possible for trails to be of either a physical or purely spiritual nature. Physical trails are those that contain physical manifestations, such as migration trails leading from one place to another. Spiritual trails do not always maintain a physical presence on the ground. These are trails followed by mythical beings as told in origin stories. All trails are considered sacred because "all direct the flow of life" (Miller 1983). After Puha has been concentrated into a center, as during events like ceremonial dances, it is then apportioned among the participants and travels with the participants as they follow separate trails from the central, or dance, location. In addition to carrying Puha from one place to another, trails also may lead to places of spiritual importance (i.e., places that contain a large amount of Puha). The following trails are mentioned in past ethnographic studies, but the exact locations are unknown: Eastern Valley to Crescent Valley, Shoshone Mountains/Toiyabe Mountains Migration, and Simpson Park to Sheep Creek Mountains.

- Toiyabe Mountains. There are hot and cold springs in the Toiyabe Mountains that are important to the Western Shoshone. The people migrated annually to these mountains to harvest pine nuts (Bengston 2003). The mountains also were used for hunting and gathering of edible and medicinal plants.

- Rock Creek Canyon. Rock Creek Canyon is listed on the NRHP because of its sacred water sources, which are still used in Western Shoshone traditional medicine. Western Shoshone tribes from all over their aboriginal territory gathered at Rock Creek Canyon for sacred rituals (Domnick 2003).

- Tosawihi (White Knife) Quarry. Tosawihi Quarry is a large outcropping of opalized chert and is a Western Shoshone National Heritage Site. Over 219 quarry pits, rock shelters, lithic scatters, and campsites are located within approximately 1,000 acres. The White Knife Shoshone are named after this quarry because virtually all of their utensils are fabricated with the white stone found there. Anthropological research has shown that Tosawihi Quarry has been used as a toolstone quarry for 5,000 years (Domnick 2003).

Cumulative effects to Western Shoshone places of cultural importance have occurred throughout Western Shoshone history and most likely would continue with modern human development activities, including mining, in the regional cumulative effects study area. The addition of more development would affect the nature of Western Shoshone spiritual and religious use areas not only through visual intrusions, but through their presence within the landscape. Modern facilities could affect the function of these areas by interrupting the continuity of the ebb and flow of Western Shoshone power, renewal, and spirituality. Changes in the landscape, including spiritual and religious use areas, could cumulatively affect the role of the landscape within tribal sacred and historical traditions, and potentially change how the tribes use the landscape.

Impacts to Water Resources

Hot and cold springs, streams, and rivers are considered by Western Shoshone to be the "life blood of the Earth" and to be associated with certain spiritual beings and healing/cleansing ceremonies. Certain cleansing ceremonies are believed to require the use of specific springs because of their purity and cleanliness. Some Western Shoshone travel to specific springs and collect the water in 5-gallon containers. Water collected at these locations is said to be healthier than "town water" and cleanses the mind, body, and spirit, and keeps a person healthy. According to Western Shoshone, such locations occur within Ruby Valley, Louis Canyon, the Cortez Range, and various spring sources near Midas.

According to Western Shoshone beliefs, all living things depend on water, and without it, life would cease. Therefore, the drying up of springs or reduction of flow, due to exploration drilling, mine dewatering, and other mining activities, is of great concern to the Western Shoshone, who view water sources as being sacred. Some of the people who were interviewed as part of previous ethnographic studies conducted in the regional cumulative effects study area noticed there was a decline in the deer, squirrel, ground hog, sage-grouse, and wild horse populations; they attributed the decline to the springs drying up as a result of mining.

The primary uses of water in the regional cumulative effects study area for Native American traditional values are related to mining and agriculture. Other uses include local domestic and municipal water supplies. The major gold mines in the regional cumulative effects study area include open-pit and underground operations that extend below the pre-mining regional groundwater elevation. For purposes of this analysis, major mine dewatering and water management activities are defined as mining operations that have required dewatering at an average annualized rate of at least 1,000 gpm.

Within the regional cumulative effects study area, major mine dewatering activities have occurred and would continue to occur, in the Carlin Trend and southern Crescent Valley areas. The Carlin Trend mining area of Nevada is a northwest trending mineral belt that extends approximately 50 miles from the Rain/Immigrant mines in the southeast to the Ivanhoe mine in the northwest. In this area, past and currently permitted future mine dewatering activities occur at four locations (Betze Project [Post Pit] and Meikle underground mine [collectively part of Goldstrike], Leeville Mine, and South Operations Area Project [Gold Quarry Pit]) (**Figure 3.9-2**). In southern Crescent Valley, mine dewatering activities would continue in the Cortez Gold Mines Operations Area in association with the existing Pipeline/South Pipeline Project and Cortez Underground Exploration Project and would be initiated for the proposed Cortez Hills Expansion Project.

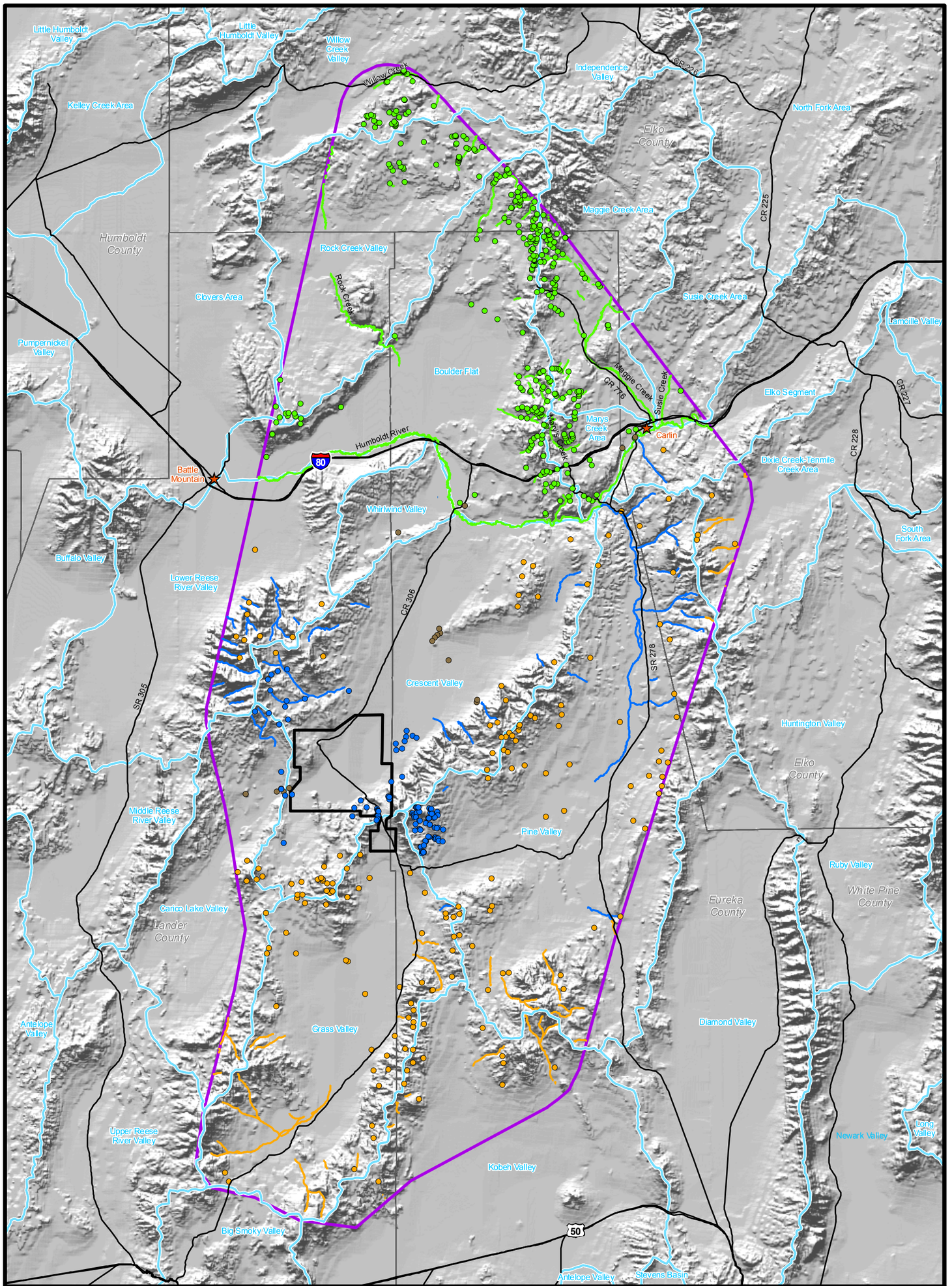
Groundwater pumping is required at these mines to lower the groundwater elevation to facilitate mining. Depending on the hydrogeologic condition, the areal extent of the cone of depression (or groundwater drawdown area) associated with mine dewatering may extend up to several miles beyond the open pit or underground workings. After dewatering ceases, pit lakes are predicted to develop in the deeper pits that extend below the pre-mining groundwater elevation. Perennial surface water sources that occur within the drawdown areas and are hydraulically connected to the regional groundwater system could be impacted by the mine-induced drawdown.

There are numerous other historic and active mines located within the regional cumulative effects study area (**Figure 3.9-2**). Based on available documentation, major mine dewatering generally was not required at these other mines (Sherve 2007). However, many of these mines used groundwater for process and operational activities, and some mines required diversions to control runoff into the pits or around process facilities. Several of these mines included one or more open pits that developed pit lakes after the cessation of mining (including Mule Canyon, Argenta, and Tonkin Springs mines). Although information relative to groundwater drawdown was not provided in the existing EISs for these mines, the limited dewatering and water management requirements suggest that in most cases the potential mine-related impacts to perennial surface water resources probably have been, or would be, localized near or within their specific project boundaries.

The regional cumulative effects study area includes portions of 14 Nevada Division of Water Resources-designated hydrographic basins (also referred to as groundwater basins) (see **Figure 3.9-5**). Of these 14 groundwater basins, 12 are part of the Humboldt River flow system, 1 is a closed basin (Grass Valley), and 1 (Kobeh Valley) is part of the Diamond Valley regional flow system.

For the purpose of this analysis, perennial waters are defined as including stream reaches, springs, and seeps that are known or suspected to exhibit continuous flow in most years (excluding periods of severe or prolonged drought). Baseflow in these perennial waters is assumed to be sustained by groundwater discharged at the surface. As the baseflow in these perennial water sources is sustained by groundwater discharge, drawdown of the groundwater table has the potential to reduce flow or impact these perennial waters.

Perennial water resources (i.e., seeps, springs, geothermal springs, and specific stream reaches) within the regional cumulative effects study area are shown in **Figure 3.9-5** and summarized in **Table 3.9-4**. Locations for these resources were based on three available information sources. North of the Humboldt River, locations were based on data presented in the *Cumulative Impact Analysis of Dewatering and Water Management Operations for the Betze Project, South Operations Area Project Amendment, and Leeville Project* (BLM 2000c). The perennial water resources identified in this document were based on a series of field inventory studies designed to map and characterize the flow, chemistry, and hydrogeologic conditions for seeps, springs, and perennial stream reaches. This prior cumulative impact assessment reflects the currently authorized mine dewatering activities in the Carlin Trend area and provides details relative to baseline conditions, analysis methodology, numerical modeling, and impact assessment. For the southern portion of Crescent Valley, locations were based on the water resources baseline characterization report for the proposed Cortez Hills Expansion Project (Geomega 2006e). These data were based on field inventories and monitoring conducted in portions of Crescent Valley and adjacent areas of the Pine Valley and Grass Valley hydrographic basins. For the remainder of the regional cumulative effects study area, locations were determined based on the USGS National Hydrography Dataset. The perennial water sources identified in the USGS dataset have not been field verified or inventoried in recent years, and supporting information (e.g., flow and water quality data, hydrogeologic characterization) typically was not readily available for most of the perennial resources identified in this dataset.



Legend

- Project Boundary
- Native American Traditional Values CESA
- Seeps and Springs (BLM)
- Seeps and Springs (Geomega)
- Geothermal Springs (BLM and Geomega)
- Springs (USGS)
- Perennial Streams (Geomega)
- Perennial Streams (USGS)
- Perennial Streams (BLM)
- Hydrographic Basin Boundaries

Source: BLM 2000c; Geomega 2006e; NDWR 2005; USGS 2007a,c.

N

0 5 10 15 Miles

Cortez Hills Expansion Project

Figure 3.9-5

Perennial Waters

06/19/2007

Table 3.9-4
Perennial Waters and Potentially Affected Perennial Waters within the Regional Cumulative Effects Study Area

Perennial Waters	Total Within Regional Cumulative Effects Study Area	Perennial Waters in Areas of Potential Effect							
		Existing Groundwater Drawdown and Mounding[1]				Predicted Groundwater Drawdown			
		Within Existing 10-foot or Greater Groundwater Drawdown Contour in Southern Crescent Valley	Within Existing 10-foot or Greater Groundwater Drawdown Contour in Carlin Trend	Total Within Existing 10-foot or Greater Groundwater Drawdown Contour in Regional CESA	Within Existing Groundwater Mounding Areas in Carlin Trend	Within Predicted Maximum 10-foot Groundwater Drawdown Contour in Southern Crescent Valley	Within Predicted Maximum 10-foot Groundwater Drawdown Contour in Carlin Trend	Total Within Predicted Maximum 10-foot Drawdown Contour in Regional CESA	Within Predicted Areas of Potential Impact in Carlin Trend
Seeps and springs[2] (number)	598	5	38	43	2	48	231	279	147
Geothermal springs (number)	15	0	0	0	0	0	0	0	0
Perennial stream segments (linear miles)	581	0.3	38	38	1	9	87	96	65

[1] The modeled groundwater drawdown and mounding in the northern portion of the regional cumulative effects study area is based on 2006 data. The modeled drawdown in southern Crescent Valley is based on 2004 data. See **Figure 3.9-6**.

[2] Each mapped seep/spring location in the northern portion of the regional cumulative effects study area (as shown in **Figure 3.9-5**) represents one to several springs/seeps. Hence, the numbers presented in this table represent the approximate number of seeps and springs for each of the categories.

Perennial Waters North of the Humboldt River. In the northern portion of the regional cumulative effects study area, the majority of the springs occur in higher elevation areas within the Tuscarora Mountains and Marys Mountain along the northeastern margin of the regional cumulative effects study area. Other springs occur as clusters in the Willow Creek and upper Antelope Creek-Squaw Creek area and east of the Tuscarora Mountains, and in the southern portion of the Sheep Creek Range (BLM 2000c).

Most of the springs in this region have flow rates of less than 3 gpm; however, a few springs have flow rates of 10 gpm or greater. No hot springs (greater than 90°F) have been identified in the northern portion of the Tuscarora Range, Boulder Flat, Rock Creek, or Willow Creek groundwater basins. Three hot springs and one warm spring occur near Carlin. This includes the Carlin Hot Spring that discharges directly into the Humboldt River. The largest spring in this region is a warm spring (approximately 68°F) located approximately 4 miles downstream from Carlin immediately north of the Humboldt River with flows greater than 500 gpm (BLM 2000c).

In most cases, perennial stream reaches in the regional cumulative effects study area occur in the headwaters (or higher elevations areas) within the drainages. As these streams enter the alluvial valleys, they commonly lose large amounts of flow through seepage into the channel bed. As a result, flows in the downstream reaches of drainages typically are ephemeral or intermittent. One exception in the northern portion of the regional cumulative effects study area is Rock Creek, the principal drainage in the northwestern portion of the regional cumulative effects study area, which has both intermittent and perennial reaches interspersed along its length. The flow in Rock Creek, and its tributary Willow Creek, are affected by irrigation diversions and releases from Willow Creek Reservoir (BLM 2000c). Maggie Creek is the principal drainage in the northeastern portion of the regional cumulative effects study area and drains the east side of the Tuscarora Mountains. Maggie Creek and its tributaries include both perennial and ephemeral reaches and gaining and losing reaches. Susie Creek drains a region located east of the regional cumulative effects study area and flows into the Humboldt River a few miles upstream from Carlin. This section of Susie Creek is characterized as a losing reach and commonly goes dry in late summer and fall. Marys Creek flows into the Humboldt River a few miles downstream from Carlin. Marys Creek has perennial flows in the headwater area and intermittent or ephemeral flows in the middle and lower reaches, with the exception of the lowermost reach, which is sustained by flows from the Carlin Hot Spring.

Humboldt River. Within the regional cumulative effects study area, the Humboldt River is perennial. There are several stream gage stations located along the river within the regional cumulative effects study area including the Carlin Gage, located immediately upstream of Carlin near the eastern boundary of the regional cumulative effects study area; the Palisade Gage, located immediately downstream from the Pine Creek confluence; and the Argenta Gage, located downstream near the western boundary of the study area. Historical records of stream flow data indicate that the flows are highly variable along this reach. Based on the monthly averages, the peak flows typically occur in June, and low flows typically occur in September. Long-term historical flow data (1946-1990) for the river indicate that prior to major mine dewatering and water management activities in the regional cumulative effects study area, the average peak flow was 1,270 cubic feet per second (cfs) at Carlin and 1,146 cfs at Argenta; the average low flow was 27 cfs at Carlin and 16 cfs at Argenta (Riverside Technology inc. 1998). Evaluation of baseflow data indicates that

from Carlin to Palisade the river gains flow, and between Palisade and Argenta the river loses flow (BLM 2000c).

Perennial Waters South of the Humboldt River. In the central portion of the regional cumulative effects study area, most of the springs are located within five areas: 1) Shoshone Mountain Range; 2) Crescent Valley; 3) Cortez Hills and Toiyabe Range; 4) east side of the Cortez Mountains (i.e., Horse Canyon area); and 5) Rocky Pass area. One additional spring occurs in the Toiyabe Range south of the Rocky Pass area. Geomega (2006e) has documented flow rates for 103 of the springs in this region.

Springs that occur in the southern portion of the regional cumulative effects study area primarily are clustered in four areas that include from east to west: 1) Carico Lake Valley; 2) Toiyabe Range that bounds the west side of Grass Valley; 3) Simpson Range that bounds the east side of Grass Valley; and 4) Roberts Mountains, a highlands area that forms the divide between Pine Valley (to the north) and Kobeh Valley (to the south).

The locations of geothermal springs in the area south of the Humboldt River are shown in **Figure 3.9-5**. Geothermal springs occur in the central portion of Crescent Valley at Hot Springs Point and near the Dewey Dann Ranch along the eastern margin of the valley. Beowawe Geysers, a major geothermal system, occurs in Whirlwind Valley. Other hot springs occur in the Rocky Pass area located to the southwest of Crescent Valley.

Perennial stream reaches in the central and southern portions of the regional cumulative effects study area were defined and mapped through field surveys (Geomega 2006e) or inferred from the USGS (2007) hydrography database. Perennial stream reaches occur in the headwater areas of the Shoshone and Cortez mountains. Other areas with identified perennial reaches occur in the highlands area at the southern end of Grass Valley, the Simpson Range, Roberts Mountains, and Piñon Range. The only major creek that exhibits perennial flow in its lower reaches is Pine Creek, which flows into the Humboldt River near Palisade.

Dewatering and Infiltration Activities for Major Mines. Dewatering and infiltration activities as currently permitted or proposed for the major mines in the regional cumulative effects study area are summarized below.

Betze Project and Meikle Mine. These mines, collectively part of the Goldstrike Mine, are located on the western flank of the Tuscarora Mountains in the Little Boulder Basin, approximately 23 miles northwest of Carlin, Nevada (**Figure 3.9-2**). The BLM prepared an EIS for the Betze Project in 1991 (BLM 1991b) and an EA for the Meikle Mine in 1993 (BLM 1993a). A Supplemental EIS was prepared for the Betze Project (BLM 2003a) to evaluate the environmental effects of ongoing water management operations.

Active mine dewatering at the site was initiated in 1990 and currently is authorized to continue through 2010. As of October 2006, dewatering had lowered the groundwater level to 3,575 feet amsl (Barrick 2007), the maximum target drawdown elevation. This represents a total drawdown at the mine of approximately 1,670 feet. Under currently authorized activities, dewatering would continue through the end of mining to maintain the groundwater elevation at 3,575 feet amsl. Excess mine water is conveyed through a pipeline to

the TS Ranch Reservoir. During the growing season, most of the excess mine water from the reservoir is used for irrigation.

South Operations Area Project. The South Operations Area Project includes three open pits: Gold Quarry, Mac, and Tusc. This mining operation is located in the Maggie Creek Basin on the eastern slope of the north-south trending Tuscarora Mountains approximately 6 miles northwest of the Town of Carlin (**Figure 3.9-2**). The BLM prepared EISs for the South Operations Area Project in 1993 (BLM 1993b) and South Operations Area Project Amendment in 2002 (BLM 2002c), both of which addressed potential impacts to water resources associated with the project's mine dewatering and water management activities.

Active dewatering for the project was initiated in 1994 and currently is projected to continue through 2011. As of October 2006, dewatering had resulted in a lowering of the groundwater level to 4,303 feet amsl (Newmont 2006). This represents a total drawdown at the mine of approximately 720 feet. The approved project dewatering and water management activities include continued groundwater pumping to ultimately lower the groundwater elevation to approximately 3,725 feet amsl. This represents a total maximum drawdown of approximately 1,375 feet. A portion of the water produced during dewatering is used for mining and processing and irrigation at Hadley Fields. Excess water is discharged to Maggie Creek and ultimately flows into the Humboldt River near Carlin.

Leeville Mine. The Leeville Mine is located within the Little Boulder Basin on the western flank of the Tuscarora Mountains approximately 20 miles northwest of Carlin (**Figure 3.9-2**). The Leeville Mine is an underground mining operation with mine workings permitted to 2,500 feet below the ground surface. An EIS was completed in 2002 (BLM 2002b) that addressed potential impacts to water resources associated with the mine's dewatering and water management activities.

Mine development and dewatering activities for Leeville were initiated in 2003, with a projected mine life of 18 years. As of September 2006, the groundwater levels in the carbonate rocks had been lowered 993 feet (Newmont 2006). The total planned drawdown required for the Leeville Mine is 1,467 feet (BLM 2002b). Excess water not consumed by the mining operation is conveyed by a water pipeline from the Leeville Mine dewatering well system to the Goldstrike water management system at the TS Ranch Reservoir.

Cortez Gold Mines Operations Area. The Pipeline/South Pipeline Project is located in southern Crescent Valley approximately 30 miles southeast of Battle Mountain (**Figure 3.9-2**). The most recent EISs for the project are the South Pipeline Project EIS (BLM 2000b) and Pipeline/South Pipeline Pit Expansion Project Supplemental EIS (BLM 2004e), both of which addressed potential impacts to water resources. Active dewatering for the Pipeline Pit was initiated in 1996 and is projected to continue through 2013 (Geomega 2007f). The final target elevation for dewatering at the Pipeline Pit is 3,400 feet amsl. This would represent a total drawdown of approximately 1,300 feet.

The Cortez Underground Exploration Project is located at the Cortez Complex in southern Crescent Valley, approximately 5 miles southeast of the Pipeline/South Pipeline Project. An EA was completed for the project in 2006 (BLM 2006a). Dewatering was initiated for the Cortez Underground Exploration Project in early 2006 and is projected to continue through 2011. The target dewatering elevation for the underground exploration

project is 4,100 feet amsl, which would represent a total maximum drawdown in the mine area of approximately 800 feet.

As described in Chapter 2.0, pending approval and receipt of required permits, open-pit and underground mining at the proposed Cortez Hills Expansion Project is projected to be initiated in 2008. Based on the existing Plan of Operations (CGM and SRK ***2008***) and the baseline hydrology studies prepared by Geomega (2006e), the active dewatering period for open-pit and underground mining at the site would be 9 years. Dewatering would be conducted in conjunction with the Cortez Underground Exploration Project, thereby extending the active dewatering period at the Cortez/Cortez Hills complexes. The target dewatering elevation would be 3,800 feet amsl (1,600 total feet of drawdown at the Cortez/Cortez Hills complexes).

Cumulative Impacts to Date (1990-2006) to Perennial Waters. A summary of the perennial waters in the regional cumulative effects study area that are located within the existing mine-related groundwater drawdown and mounding areas is presented in **Table 3.9-4**.

Carlin Trend Area. As shown in **Figure 3.9-6**, mine dewatering has resulted in the development of three cones of depression in the groundwater surface in the region surrounding the active mine dewatering areas (Goldstrike, Leeville Mine, and South Operations Area Project). The drawdown areas are based on groundwater monitoring results for the third quarter 2006 as provided in the Boulder Valley Monitoring Plan (Barrick 2007) and Maggie Creek Monitoring Plan (Newmont 2006). Each of the plans used different contour intervals to show their drawdown cone. Overall, the combined drawdown area for the Carlin Trend is elongated in a northwest-southeast direction that is approximately 30 miles long and up to 7 miles wide.

Infiltration of excess mine water from the dewatering operations has resulted in an increase in groundwater levels, or mounding, in the upper Boulder Valley and lower Maggie Creek areas (see **Figure 3.9-6**). The groundwater levels in the Boulder Valley region have risen approximately 67 feet in the rhyolite in the Sheep Creek Range and 54 feet in the alluvium in upper Boulder Valley. Several large springs emerged within Boulder Valley as a result of the mines' infiltration activities (BLM 2000c,d). Seepage from Maggie Creek Reservoir and infiltration along portions of lower Maggie Creek have resulted in an increase in groundwater levels of up to 45 feet.

Seep and spring inventories for the Goldstrike Mine have identified 277 flowing springs and 211 seeps within a 600-square-mile region surrounding the mining operations (RTi 1994). Annual monitoring is conducted at 35 representative springs located in 9 drainages. As of 2000, 3 of the monitored springs near the mine and within the 10-foot groundwater drawdown area had gone dry. The drying up of these springs was probably the result of mine dewatering activities (BLM 2000c). One additional spring included in the monitoring program has dried up since 1999 (AATA 2006), which also could be related to mine dewatering. The flow and vegetation in Brush Creek, a tributary to Rodeo Creek, have changed substantially since 1993, indicating that this drainage has been impacted by mine dewatering (BLM 2000c). No other impacts to seeps and springs or streams have been identified on the western side of the Tuscarora Mountains or Sheep Creek Range (AATA 2006; Barrick 2007).

In the fall of 1990, 74 springs were identified in the region surrounding the Leeville Mine and South Operations Area Project (BLM 2002b,c). Currently, 33 of these seeps and springs are monitored (Newmont 2007). Most of these springs have been monitored annually or biannually starting between 1990 and 1992 and continuing through 2006. Initial surveys included a spring and fall sampling event; this was later modified to only include a fall (October) sampling event. Monitoring results are provided to the BLM in annual seep and spring reports (Newmont 2007). Review of the flow data for the 33 springs for the fall surveys indicates no material change in flow rates for 28 of the 33 springs. Of the remaining 5 springs, 4 have shown a large reduction in flow or have gone dry for 1 or more years. The flow changes in these springs do not appear to correlate with precipitation patterns. The four springs with flow reductions occur outside of the mapped 10-foot drawdown contour for bedrock provided in the Maggie Creek Monitoring Plan (Newmont 2006). The flow reductions in these springs may be attributable to grazing, anthropogenic flow controls, or other factors. One spring exhibited an increase in flow since 2001 due to relocation of its monitoring point.

Southern Crescent Valley Area. The groundwater drawdown that has occurred since dewatering was initiated at the Pipeline Pit in 1996 was estimated by comparing the 1996 pre-mining groundwater elevations with the model-simulated groundwater levels at the end of 2004 (Geomega 2006e). As shown in **Figure 3.9-6**, open-pit mine- and underground exploration-related dewatering has resulted in the development of two separate drawdown areas in the southern Crescent Valley hydrographic basin. The larger of the two drawdown areas extends up to approximately 7 miles in width and is centered on the Pipeline Pit. The smaller drawdown area extends up to 3 miles in width and is centered on the Cortez underground exploration area.

Flow and field water quality parameters currently are monitored at 43 surface water sites within the region surrounding the operations (JBR 2005b, 2007c). This includes 37 sites monitored quarterly and 7 sites monitored on a semiannual basis. One of the sites is located on Indian Creek; all of the other sites are located at seeps or springs. In addition, 32 of the sites have been monitored continuously since 1996 or 1997 (JBR 2005b); 11 sites have been monitored since 2003 (JBR 2007c).

Potential impacts to date to perennial seeps, springs, and streams from dewatering activities were evaluated by reviewing the results of available surface water monitoring over the dewatering period, specifically flow measurements from the late summer and fall, when the majority of the flow is assumed to be baseflow controlled by groundwater discharge. Ten of the monitored springs with measurable flow in 1996 and 1997 exhibited a substantial reduction in flow or dried up for several years or more during the period of record (August 1996 through August 2005). It should be noted that a drought with below normal annual precipitation occurred between 1999 and 2002. Although the specific cause of the flow reductions for individual springs cannot be determined based on available data, it is possible that the flow reductions in several of these springs are related to variations in precipitation. However, some springs exhibited a flow reduction that persisted through 2003, 2004, and 2005, a period with above-average annual precipitation. Based on available information, it is unknown if the changes in flow at any of these springs has been related to mine dewatering.

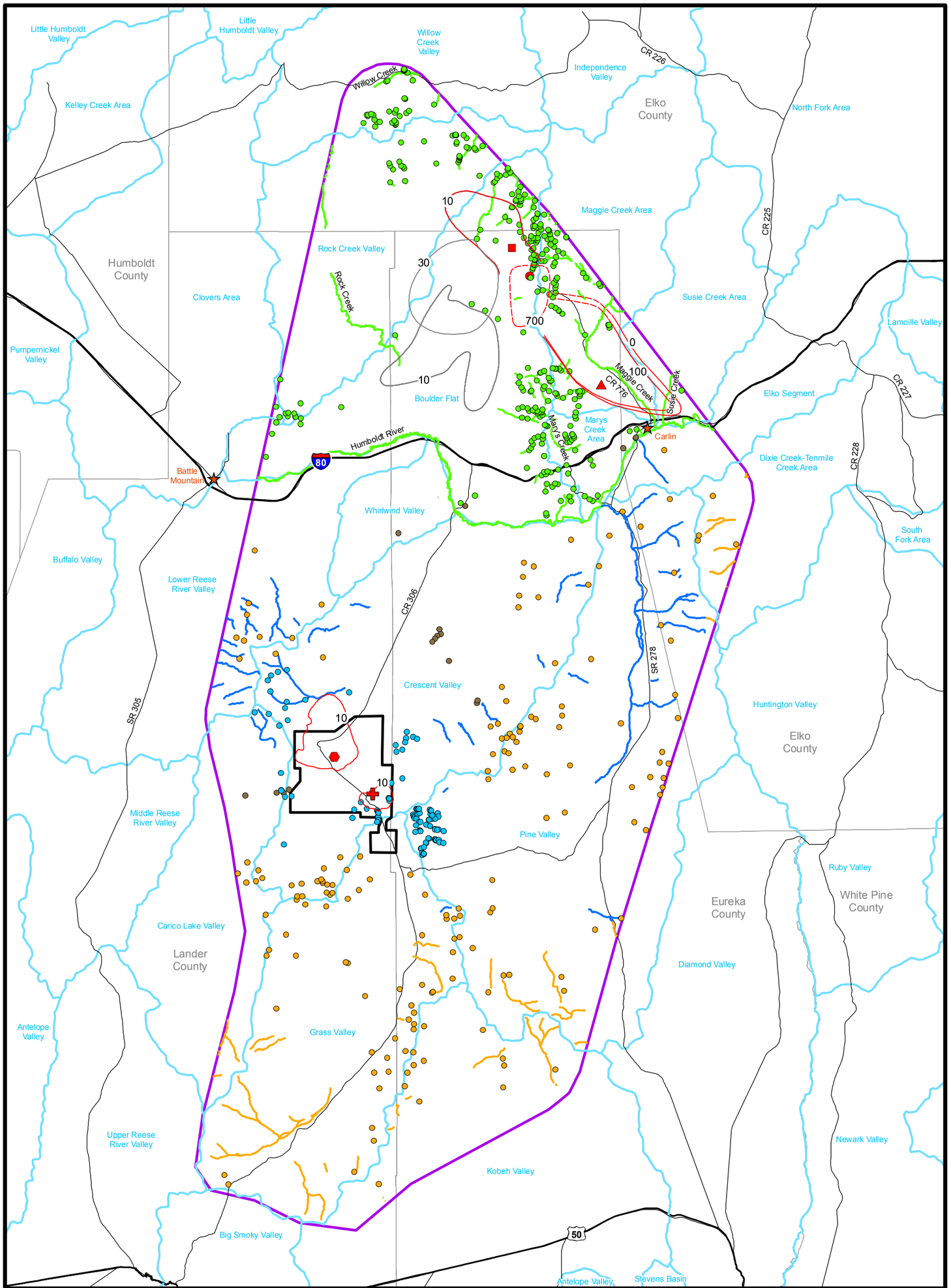


Figure 3.9-6

Perennial Waters and Current Groundwater Drawdown and Mounding

Cortez Hills Expansion Project

Legend

- Project Boundary
- Native American Traditional Values CESA
- Seeps and Springs (BLM)
- Seeps and Springs (Geomega)
- Geothermal Springs (BLM and Geomega)
- Springs (USGS)
- Perennial Streams (Geomega)
- Perennial Streams (USGS)
- Perennial Streams (BLM)
- Hydrographic Basin Boundary
- Groundwater Drawdown Contour (in feet)
- Inferred Groundwater Drawdown Contour (in feet)
- Groundwater Mounding Contour (in feet)
- Goldstrike/Betze Project
- Gold Quarry/South Operations
- Leeville Mine
- Cortez Underground Exploration Project
- Pipeline/South Pipeline Project

Note: Contours for Pipeline and Cortez based on 2004 data.
Contours for for Carlin Trend based on 2006 data;
10-foot drawdown contour for Maggie Creek not available.

N

0 5 10 15 Miles

Source: Barrick 2007; BLM 2000c; Geomega 2006e,f; NDWR 2005; Newmont 2006; USGS 2007a,c.

06/20/2007

Predicted Cumulative Impacts to Perennial Waters. The number of seeps and springs and miles of perennial stream reach located within the cumulative effects study area and within the existing and projected future drawdown areas are summarized in **Table 3.9-4**.

Carlin Trend Area. As described in the earlier cumulative impact assessment for mine water management activities in the Carlin Trend area (BLM 2000c), numerical modeling was used to estimate the maximum extent of the 10-foot groundwater drawdown contour irrespective of time resulting from the past, present, and currently authorized future dewatering activities at the major dewatering operations in the Carlin Trend. The area within this 10-foot drawdown contour represents the estimated area where the groundwater elevations could be reduced by at least 10 feet. This potential groundwater drawdown area, and the known seeps, springs, and perennial stream reaches encompassed within the drawdown area, are shown in **Figure 3.9-7**. The area within the 10-foot drawdown contour extends approximately 41 miles in a northwest-southeast direction. In comparison to the current (2006) drawdown shown in **Figure 3.9-6**, the model simulation results suggest that the areal extent of the drawdown cone would expand substantially in the future as a result of ongoing mine dewatering. In addition, in two localized areas along the northeastern boundary of the regional cumulative effects study area, the model simulation results developed for the earlier cumulative impact assessment (BLM 2000c) do not predict drawdown in areas that recent (2006) monitoring results indicate have been affected by drawdown.

Within the boundaries of the regional cumulative effects study area, there are a minimum of 231 perennial seeps and springs and approximately 87 linear miles of perennial stream reaches located within the predicted cumulative 10-foot drawdown area in the Carlin Trend. Of these, 147 seeps and springs and approximately 65 linear miles of perennial stream reaches in the Carlin Trend occur in areas predicted to have a higher likelihood of impact (BLM 2000c) (**Figure 3.9-7**). Other perennial waters located outside of the predicted areas of potential impact but within the predicted maximum 10-foot cumulative drawdown contour were determined to have a low probability of impact from mine-related groundwater drawdown (BLM 2000c).

Southern Crescent Valley Area. Numerical groundwater flow modeling by Geomega (2007f) simulated the combined effects of past, present, and reasonably foreseeable mine dewatering operations in southern Crescent Valley on the groundwater system. This cumulative analysis also incorporated impacts to the groundwater system associated with future development of pit lakes.

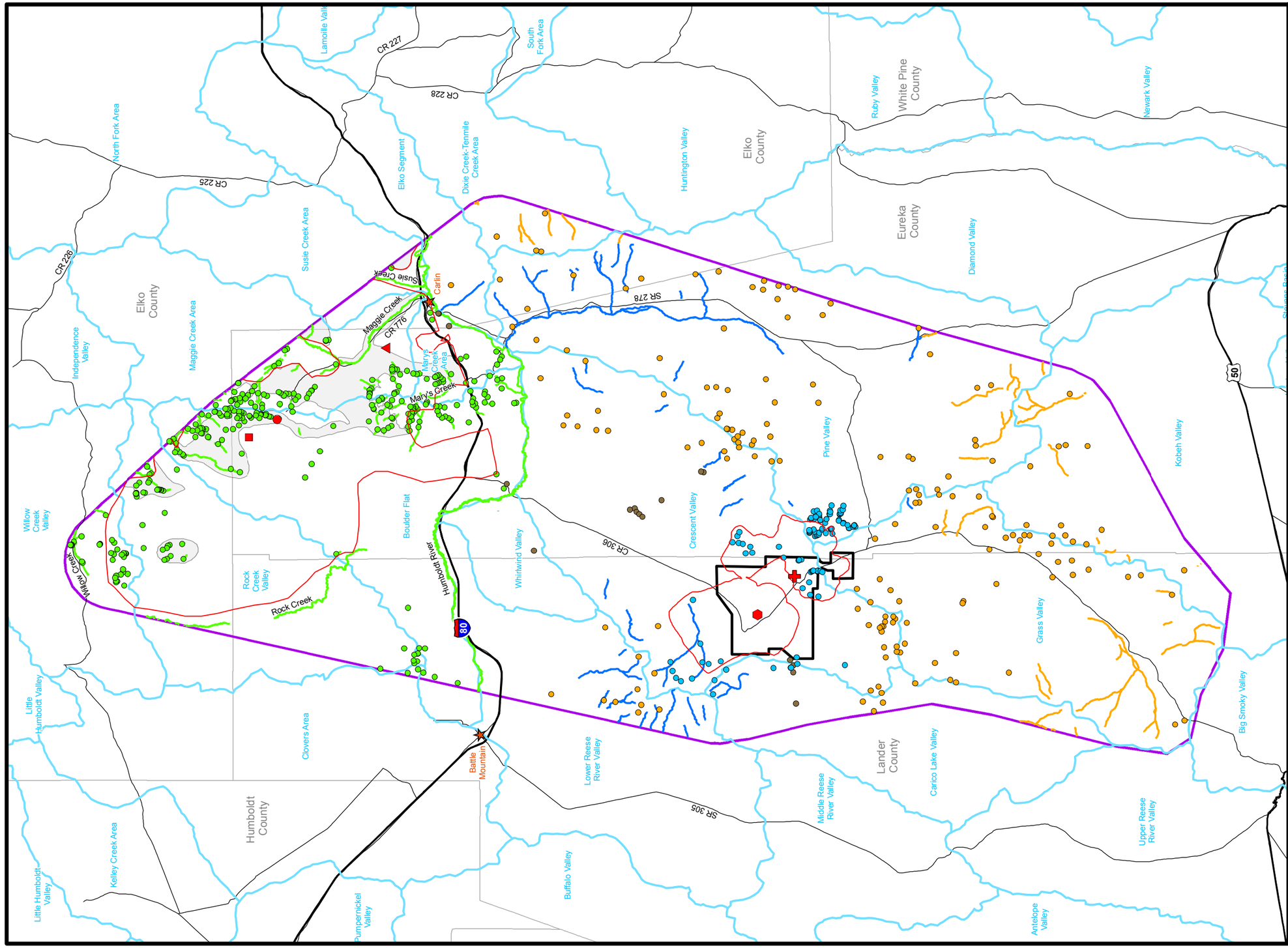
The predicted maximum extent of the cumulative 10-foot drawdown contour associated with mining operations in southern Crescent Valley is presented in **Figure 3.9-7**. The area enclosed within the predicted 10-foot drawdown contour extends approximately 18 miles in a northwest-southeast direction and encompasses portions of the Shoshone Mountains, Crescent Valley, and Cortez Mountains. Within the predicted cumulative 10-foot drawdown area, there are 53 identified perennial seeps and springs and approximately 9 linear miles of perennial stream reaches. As discussed in Section 3.2.3, 30 springs occur in areas where there would be a potential for drawdown to impact perennial flow. The northwest margin of the drawdown area is predicted to extend beneath the lower perennial stream reaches of Indian and Feris creeks in the Shoshone Mountains. In addition, the southeast portion of the cumulative drawdown area is predicted to extend beneath Mill Creek, a suspected perennial reach located in the Cortez Mountains (see

Section 3.2, Water and Geochemistry, and **Figure 3.2-2**). No other perennial stream reaches are known to occur in the predicted cumulative drawdown area.

Summary of Cumulative Impacts to Perennial Waters. Perennial springs, seeps, and stream reaches are supported by discharge from either the regional groundwater aquifer system or from more isolated or perched aquifers residing above the regional groundwater system. Only those perennial surface water sources that are hydraulically connected to the regional groundwater system potentially would be impacted by mine-induced drawdown. Therefore, impacts to individual seeps and springs and perennial stream reaches that are supported entirely by perched (or hydraulically isolated) aquifers located above the regional groundwater system are not anticipated. Conversely, perennial waters that are hydraulically connected to the regional groundwater system and within drawdown areas are likely to experience impacts.

The actual impacts to individual seeps, springs, or stream reaches would depend on the source of groundwater that sustains the perennial flow (perched aquifer versus regional groundwater system) and the actual mine-induced drawdown that occurs at the site. The interconnection (or lack of interconnection) between the perennial surface waters and deeper groundwater sources is controlled in large part by the specific hydrogeologic conditions that occur at each site. Considering the complexity of the hydrogeologic conditions in the region and the inherent uncertainty in numerical modeling predictions relative to the exact areal extent of a predicted cumulative drawdown area, it is not possible to conclusively identify specific springs and seeps that would or would not be impacted by future mine-induced groundwater drawdown.

Although it is not possible to conclusively identify specific springs and seeps that would or would not be impacted by future mine-induced drawdown or to predict the areal extent of the cumulative drawdown area resulting from the various mine activities in the cumulative effects study area, it is anticipated that cumulative effects to water sources identified within the cumulative mine-related 10-foot groundwater drawdown contour would occur. The degree to which mine-related impacts to perennial waters in the regional cumulative effects study area have affected, or would affect, Native American traditional values is not quantifiable. However, Western Shoshone religion is based on the belief that all life is interdependent. Human beings are recognized to have kin ties with other life forms and with the earth itself. This belief system is very important to the Western Shoshone in the Great Basin where a delicate balance must be maintained between human subsistence and an unpredictable, sometimes harsh environment (Rusco 2000). The scarcity and unpredictability of water in this semi-arid region may account for the importance of water in Western Shoshone religion. Water is the keystone of Western Shoshone religion because power (Puha), with its affinity for life, is strongly attracted to water (Rusco 2000). As a result, it is assumed that Western Shoshone traditional lifeways as they relate to perennial waters have been, and would continue to be, cumulatively affected by mine-related activity that has occurred, and would occur, in the regional cumulative effects study area.



Cortez Hills Expansion Project

Figure 3.9-7

Areas of Projected Cumulative Impact to Perennial Waters

06/20/2007

Big and Small Game, Sage-grouse, Small Mammals, and Eagles

Based on the available ethnographic studies discussed above, wildlife species that have been hunted by Native Americans within the regional cumulative effects study area include four big game species (i.e., elk, mule deer, pronghorn [antelope], and bighorn sheep), two small game species (i.e., sage-grouse and rabbits), as well as squirrels and "ground hogs" (i.e., yellow-bellied marmots). Eagles also were mentioned as species of concern. These species have provided food and materials for making various items (e.g., tools, clothes, shelters) that were, and continue to be, used by Native Americans.

Certain locations in the regional cumulative effects study area were identified for their exceptional hunting opportunities. The Tosawihi Quarry, Mount Tenabo, Carico Lake Valley, Cortez Mountains, Crescent Valley, and Dean Ranch Rabbit-drive and Resource Area were known for their abundance of small game (e.g., rabbits, squirrels, sage hens, various waterfowl, and "ground hogs"). Big game migration routes (big

horn sheep, mule deer, and pronghorn) also were identified as important. Ethnographic studies and archaeological reports appear to support extensive hunting within the Spruce Mountain/Butte Valley migration corridor and winter big game habitat. An abundance of hunting camp locations and artifacts may exist along migration routes and corridors.

Historically, elk occurred throughout most of the regional cumulative effects study area. Currently, elk populations are limited to small, localized herds located primarily in the northern portion of the regional cumulative effects study area (NDOW 2003).

Mule deer ranges that occur within the regional cumulative effects study area include ***intermediate***, summer, and winter ranges (**Figure 3.9-*8***). Summer range for mule deer occurs in the Tuscarora Mountains, Shoshone Range, Cortez Mountains, Roberts Mountains, ***and*** Simpson Park Mountains. ***Intermediate*** range occurs within the ***Toiyabe Range, Tuscarora Mountains, and Sheep Creek Range***. ***W***inter range for mule deer includes the Dry Hills area, ***and in the lower elevational area around the Shoshone Range, Cortez Mountains, Simpson Park Mountains, Toiyabe Range, and Roberts Mountains***. As discussed in Section 3.5, Wildlife and Fisheries Resources, a limiting factor for mule deer ***south of I-80 is the quantity and quality of summer range. North of I-80, a limiting factor for mule deer is the quantity and quality of winter range. T***he primary limiting factor is water.

Pronghorn occur in the basins, valley bottoms, and along mountain slopes within the regional cumulative effects study area including the Boulder, Reese River, Crescent, Grass, Pine, Garden, and Kobeh valleys. Ongoing reintroduction efforts by NDOW incrementally have increased population numbers within the regional cumulative effects study area (**Figure 3.9-*9***).

Bighorn sheep range within the regional cumulative effects study area ***includes the Sheep Creek Range along Antelope Creek and Rock Creek*** (**Figure 3.9-*10***).

A total of 121 sage-grouse leks have been identified within the regional cumulative effects study area, including 20 leks in Elko County, 41 leks in Lander County, and 60 leks in Eureka County. Nesting habitat

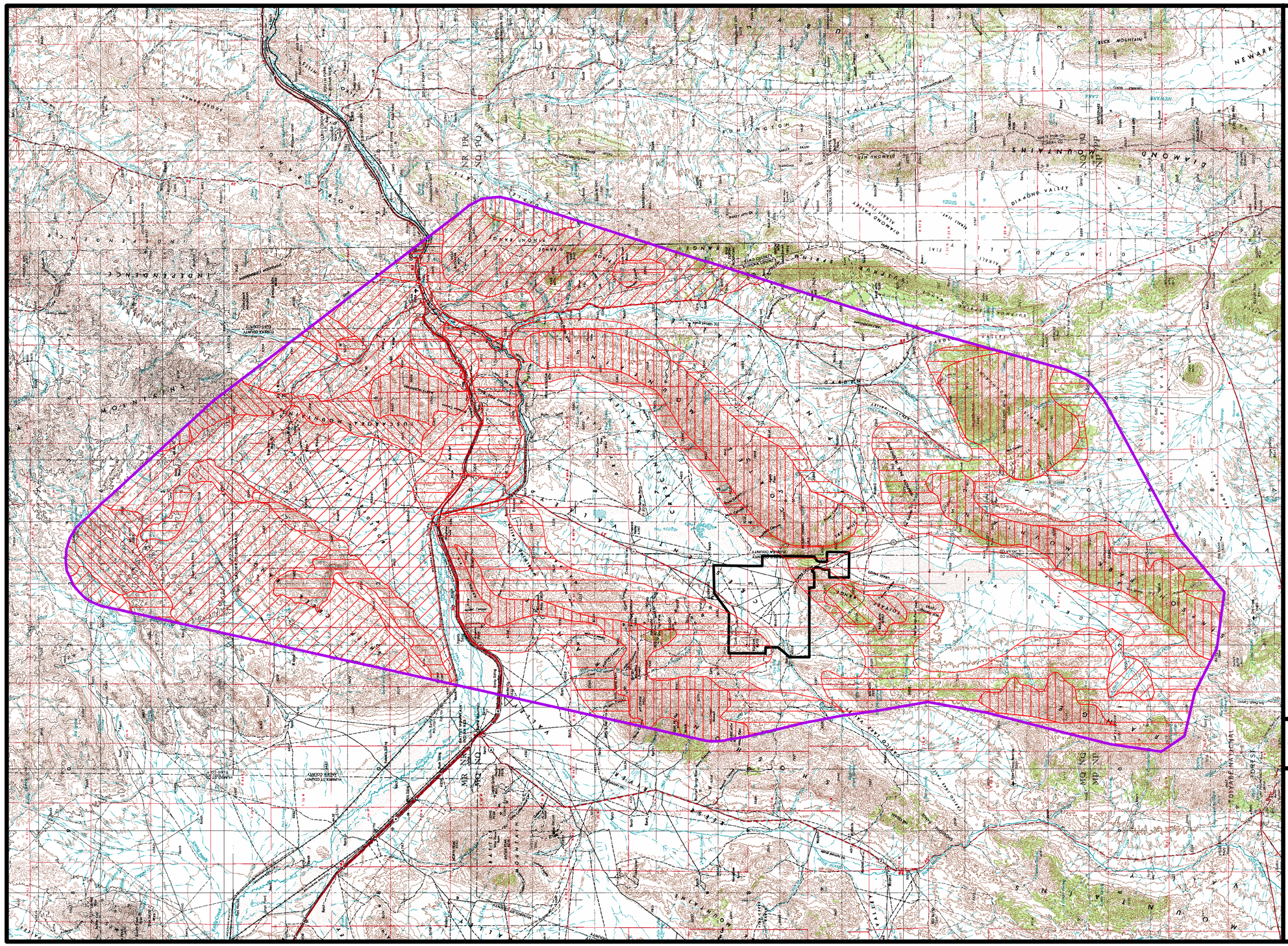
for sage-grouse is known to occur in valley bottoms and foothill areas in the regional cumulative effects study area. Summer habitat occurs within most of the regional cumulative effects study area excluding the northernmost portion of the regional cumulative effects study area, Reese and Boulder valleys, and the western portion of Crescent Valley (**Figure 3.9-*11***). Winter habitat occurs within the higher elevation areas along the Sheep Creek, Shoshone, and Toiyabe ranges and the Tuscarora, Cortez, Roberts, and Simpson Park mountains (**Figure 3.9-*11***). Sage-grouse are of particular importance to the Western Shoshone who not only hunt them as a food resource, but also mimic their courtship displays during traditional dances.

White- and black-tailed jackrabbits, Nuttal's cottontails, various ground and tree squirrels, and yellow-bellied marmots are present within a variety of habitats in the regional cumulative effects study area. White- and black-tailed jackrabbits, Nuttal's cottontails, and ground squirrels primarily occur in low to mid elevation areas that support shrub-dominated habitats. Other squirrel species occur in mid to high elevation areas that support woodland habitats. Yellow-bellied marmots occur at high elevations (i.e., alpine habitat) in rocky terrain.

Bald eagles are known to migrate through, and winter within, the regional cumulative effects study area. Golden eagles are known to nest within this area. The feathers of both bald and golden eagles are considered extremely powerful symbols of prayer, healing, and strength. Eagle feathers are used during various traditional/cultural/spiritual activities and are said to contain great amounts of healing strength or "medicine." The eagle itself is considered an extremely powerful spiritual being.

Based on the analysis in Section 3.5, Wildlife and Fisheries Resources, the proposed project would not directly or indirectly affect elk or bighorn sheep. Therefore, the proposed project would not contribute to cumulative effects for these two species. Based on the projects identified in **Table 3.9-2**, potential direct impacts to big game species (i.e., elk, mule deer, pronghorn, and bighorn sheep) from past, present, and reasonably foreseeable future mining actions, wildland fires, and other activities within the regional cumulative effects study area have contributed, or would contribute, to the incremental short- and long-term reduction of approximately 686,150 acres of big game habitat and the incremental increase of habitat fragmentation. The Proposed Action incrementally would increase habitat disturbance by 6,792 acres, resulting in a total cumulative disturbance of approximately 692,942 acres. A portion of the cumulative disturbance area has been, or would be, reclaimed, or, in the case of most areas affected by wildland fires, allowed to recover naturally. The reclaimed areas, areas associated with habitat conversion (e.g., croplands), and areas of natural recovery would be capable of supporting wildlife use; however, species composition and densities would change.

The Nevada Sage-grouse Conservation Project (NDOW et al. 2006) is a coordinated effort among government agencies and private entities to collect data and develop programs for sage-grouse conservation. A key component of this ongoing program involves monitoring sage-grouse populations and trends throughout the study area, which comprises Nevada and eastern California. For 2006, NDOW generated a minimum spring breeding population estimate range of between 103,000 and 129,000 sage-grouse within the entire conservation planning area. These estimates represent an increase of approximately 13 percent from the 2005 estimate of between 91,000 and 115,000 sage-grouse.



Legend

- Project Boundary
- Native American Traditional Values CESA
- Designated Mule Deer Intermediate Range
- Designated Mule Deer Winter Range
- Designated Mule Deer Summer Range
- Low Density Deer Habitat

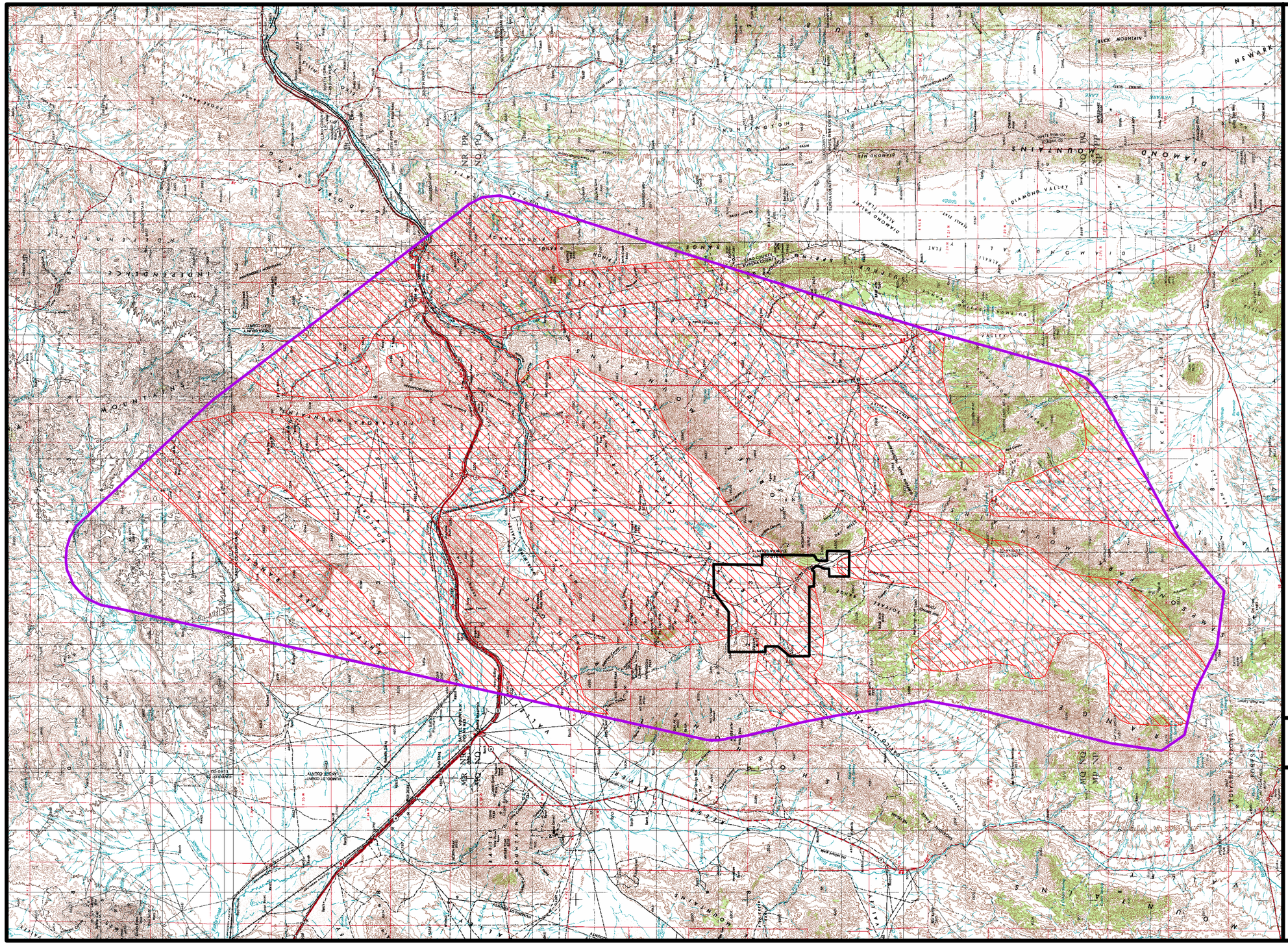
Source: NDOW 2008.

Cortez Hills Expansion Project

Figure 3.9-8

Designated Mule Deer Range within the Native American Traditional Values CESA

03/13/2008



Legend

- Project Boundary
- Native American Traditional Values CESA
- Designated Pronghorn Range

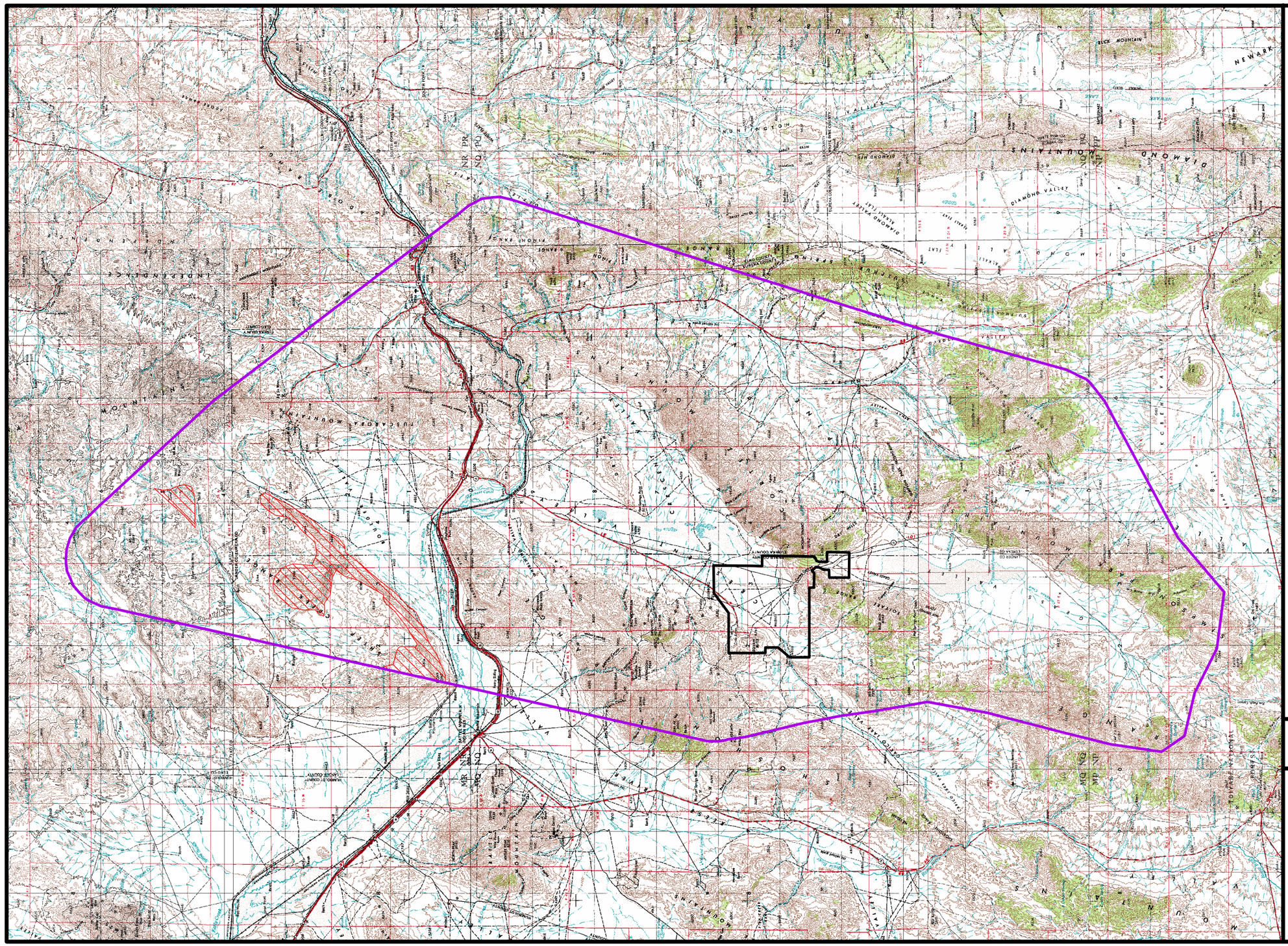
Source: NDOW 2006.

Cortez Hills Expansion Project

Figure 3.9-9

Designated Pronghorn Range within the Native American Traditional Values CESA

02/27/2008



Legend

- Project Boundary
- Native American Traditional Values CESA
- Designated Bighorn Sheep Occupied Range

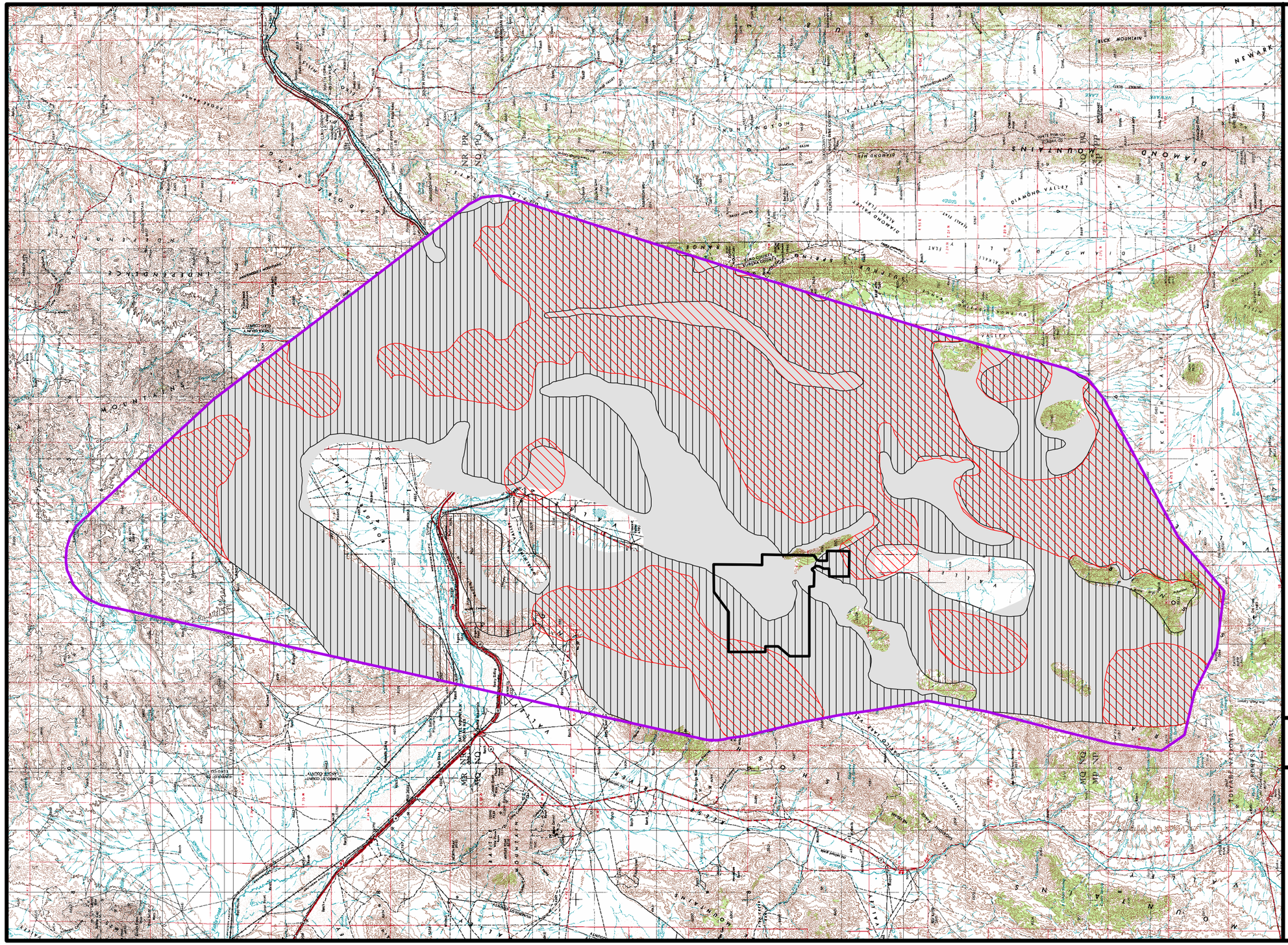
Source: NDOW 2006.

Cortez Hills Expansion Project

Figure 3.9-10

Designated Bighorn Sheep Range within the Native American Traditional Values CESA

02/25/2008


N
0
5
10
15
Miles
Legend
Project Boundary
Native American Traditional Values CESA
Designated Sage-grouse Nesting Habitat
Designated Sage-grouse Winter Habitat
Designated Sage-grouse Summer Habitat
Source: NDOW 2006.
Cortez Hills Expansion Project
Figure 3.9-11
Designated Sage-grouse Habitat within the Native American Traditional Values CESA
02/27/2008

Within the Nevada portion of the planning area, a total of 9,580 sage-grouse were counted on 448 active leks. The average number of males counted per active lek in 2006 (21.4) was lower than the previous 2 years' averages, but the average was consistent with the 5-year average of 21 males per active lek. For the population management units (PMUs) located within the regional cumulative effects study area, there were 21.3 male sage-grouse observed per active lek in 2006 in the Lander County PMUs; the 2005 average was not provided in the report. In Eureka County PMUs, there was an average of 35 males per active lek in 2006 compared with a 2005 average of 27 males per lek. In Elko County, there was an average of 11.5 males per lek, compared to an average of 26.7 males per lek in 2005. These estimates are considered for evaluating trends among years rather than as statistically valid data (NDOW et al. 2006).

Development and activities within the regional cumulative effects study area have resulted, and would continue to result, in the incremental long-term reduction of breeding, summer, and winter habitats for sage-grouse. However, based on the lack of project-specific footprints in relation to sagebrush habitat, the cumulative impact to this species as a result of surface-disturbing activities cannot be quantified.

Potential cumulative impacts to white- and black-tailed jackrabbits, Nuttal's cottontails, various ground and tree squirrels, and yellow-bellied marmots would parallel those described above for big game species.

Potential cumulative impacts to bald eagles and golden eagles have included, and would include, the short- and long-term loss of foraging habitat and long-term loss of potential breeding and roosting habitat. Based on the analysis in Section 3.5, Wildlife and Fisheries Resources, the proposed project would not affect potential breeding habitat for bald eagles. Therefore, the proposed project would not contribute to cumulative effects for breeding bald eagles.

Groundwater drawdown as a result of mining-related dewatering activities has, and would, result in the potential long-term reduction in the amount and extent of available surface water (e.g., seeps, springs, streams) and associated riparian habitats for area wildlife. These resulting effects have been, or would be, restricted to the resources within discrete areas of the regional cumulative effects study area as defined by mine-specific 10-foot groundwater drawdown contours or, where mine-specific dewatering effects overlap, within the resulting cumulative 10-foot groundwater drawdown contour.

Species identified in the ethnographic studies discussed above as being of concern to Native Americans and that likely have been, or would be, impacted by the cumulative reductions of water availability (seeps, springs, and streams) and riparian habitats include big game species, small game species, raptors, and nongame mammals. The extent of these indirect effects from groundwater level changes would depend on the species' use and relative species' sensitivity.

According to Western Shoshone, the development, including mining, in the regional cumulative effects study area has degraded areas used by Western Shoshone for hunting and gathering. Big game species, small game species, raptors, and nongame mammals are considered important in maintaining the cultural identity of Western Shoshone. Ethnographic analyses conducted for past and present development in the regional cumulative effects study area have provided information on the importance of these animals to the Western Shoshone, not only as a food source, but as a continuation of a lifeway that has existed for hundreds of

years. However, the Western Shoshone consultants involved in previous ethnographic analyses did not provide specific, quantitative data on how many animals annually have been, and currently are, hunted by Western Shoshone; how often tribal members hunted in the past compared to the present; or to what extent Western Shoshone subsistence has been, and is, supplemented by hunting.

The degree to which development-related impacts to wildlife species in the regional cumulative effects study area has affected, and would affect, Native American traditional values is not quantifiable. Nevertheless, it is assumed that Western Shoshone traditional lifeways as they relate to hunting and all living things have been, and would continue to be, cumulatively affected by development that has occurred, and would occur, in the regional cumulative effects study area.

Other Action Alternatives

Under the Grass Valley Heap Leach Alternative, cumulative impacts to Native American traditional values would be the same as those described for the Proposed Action.

Cumulative impacts to Native American traditional values under the Crescent Valley Waste Rock ***and Revised Cortez Hills Pit Design a***lternative***s*** would be the same as those described for the Proposed Action***, with the following exceptions*****. Under the Crescent Valley Waste Rock Alternative,** approximately 300 fewer acres of piñon-juniper would be removed within the regional cumulative effects study area, resulting in a slightly lower contribution to potential cumulative impacts to future pine nut harvesting. ***Under the Revised Cortez Hills Pit Design Alternative, there would be a slightly lower contribution to potential cumulative impacts to future pine nut harvesting (approximately 23 fewer acres).***

Under the Cortez Hills Complex Underground Mine Alternative, the project's contribution to potential cumulative impacts to Native American traditional values as related to burials, NRHP-eligible sites, spiritual and religious use areas, pine-nut harvesting, and effects on wildlife habitat and species would be less than under the Proposed Action as 5,002 fewer acres would be disturbed under this alternative. Potential visual impacts as seen from Mount Tenabo would be less as surface facilities at the Cortez Hills Complex would not be developed.

Summary

Within the regional cumulative effects study area, cumulative impacts have occurred within Western Shoshone aboriginal lands that have provided, and continue to provide, sustenance, as well as spiritual and religious renewal, for the indigenous people. Native Americans believe the power that emanates from the land, water, plants, and animals fuels their cultural identity and heritage. Mining-related activities, cattle grazing, construction of transmission lines, wildfires, transportation corridors, and other actions in the regional cumulative effects study area cumulatively have affected, or would affect, these resources and Western Shoshone culture, tradition, and lifeways. Some Western Shoshone believe that these impacts cannot be satisfactorily mitigated.

Direct impacts to prehistoric and ethnohistoric sites and burials as a result of activities associated with past, present, and reasonably foreseeable future actions have been, or would be, mitigated in compliance with federal and state laws. However, some Western Shoshone believe that these impacts cannot be satisfactorily mitigated. These actions have cumulatively impacted, and would continue to impact, their heritage and lifeways.

Water, plants, and animals traditionally used for nourishment, growth, power, and subsistence have been, or would be, impacted, or alternately made more accessible as a result of development-related activities, resulting in either a loss or a benefit, respectively, to Western Shoshone.

Roads, transmission lines, mines and mine-related facilities, agriculture, and infrastructure and human settlement have created cumulative visual impacts in a landscape that has been part of the Western Shoshone aboriginal lands for centuries. Some of the landmarks traditionally used by Native Americans have been, or would be, visually impacted by development-related activities. As a result, Native Americans view their original use and sacredness as having been devalued.

In summary, the Western Shoshone believe that areas once unaffected by development and encompassing the Puha and spirit of their ancestors, have been diminished. The Western Shoshone aboriginal lands in the regional cumulative effects study area, and the resources within, have been, or would be, cumulatively affected by past, present, and reasonably foreseeable development.

3.9.4 Monitoring and Mitigation Measures

The following are recommended mitigation measures that have been discussed during Native American consultation for the project and at other tribal meetings and during various project **coordinations/*communications. Refinement and implementation of the proposed mitigation measures would be determined in coordination with the Cortez Hills Working Group, Western Shoshone Committee of Duck Valley, BLM, and CGM.***

Issue: ***Decrease in the piñon groves and impacts to potential future pine nut gathering affecting the supply of pine nuts for personal use and distribution to others.***

Mitigation Measure NA1: CGM would hire a contractor to harvest affected wood products for firewood and posts and distribute the wood products to local Western Shoshone communities. Each Western Shoshone community would coordinate with CGM relative to the number of cords of firewood and posts needed. CGM would haul the wood to tribal distribution locations, and the tribes would be responsible for distributing the wood to their members. These harvested wood products would not be available for resale to the public.

Effectiveness: Few mature piñon groves are located in the proposed disturbance area, and therefore, the affected piñon groves currently provide little pine nut production. However, a piñon grove with the potential for future harvesting would be affected. There are no data on the quantity of pine nuts that **are** ***collected by local Western Shoshone from this area in any given year.***

This mitigation measure would not directly mitigate the loss of future pine nut harvests for tribal use and distribution to others. However, it is assumed that community members and the tribal elders' heating assistance program would benefit from this mitigation measure, thereby providing use of the piñon woodland resource for other purposes.

Issue*: Some Western Shoshone* **consultants** *have expressed concerns about the ability of archaeologists to identify Western Shoshone historic archaeological sites and culturally significant landmarks. They feel that many sites and landmarks lack obvious features or are too subtle to be recognized by archaeologists without the input of Western Shoshone specialists.*

Mitigation Measure NA2: ***The HC/CUEP Native American observer program would be expanded to include the proposed Cortez Hills Expansion Project. As part of the program, qualified Western Shoshone observers would be present during project-related construction activities (i.e., new surface disturbance) and during any data recovery (i.e., archaeological excavation) within the project boundary.***

Effectiveness*: This measure would enable Western Shoshone observers to assist in the identification of Western Shoshone historic archaeological sites and landmarks that have cultural significance to the tribes. The possibility of cultural material associated with Western Shoshone heritage being overlooked would be reduced.*

Issue*: Loss of Western Shoshone artifacts and heritage.*

Mitigation Measure NA3*: In addition to implementation of Mitigation Measure NA2, CGM would coordinate with the BLM in implementing appropriate mitigation to further minimize potential impacts to Western Shoshone artifacts and heritage. Mitigation would be based on the currently ongoing discussions between the BLM, Cortez Hills Working Group, and Western Shoshone Committee of Duck Valley. Potential mitigation discussed to date has included the establishment of formal training for Western Shoshone monitors/observers in cultural resource management or artifact identification.*

Effectiveness: This measure (formal training for Western Shoshone monitors/observers) would create the opportunity for Tribal involvement in project implementation and direct "on the ground" participation in management of cultural resources. Trained Western Shoshone cultural resource specialists also could assist BLM in conducting a more thorough data gathering effort. This measure would assist the tribes in establishing or strengthening their community's cultural resources management/education capabilities and create opportunities for future partnership development with various entities.

Issue*: Tribal involvement in Cortez Hills Expansion Project reclamation and closure plan development to ensure these plans address Native American plants with tribal significance, visual impacts, and other Native American issues.*

Mitigation Measure NA4*: CGM would coordinate with the BLM in incorporating Tribal recommendations, as appropriate, into the project's reclamation and closure plans. Recommendations would be based on discussions between the BLM, Cortez Hills Working Group, and the Western Shoshone Committee of Duck Valley that would be initiated prior to finalization of the reclamation plan and during development of the closure plan for the Cortez Hills Expansion Project.*

Effectiveness: ***Incorporation of recommendations, as appropriate, from the Cortez Hills Working Group and the Western Shoshone Committee of Duck Valley would help ensure the issues and concerns of these groups associated with the proposed project would be reflected in project reclamation and closure.***

3.9.5 Residual Adverse Effects

Residual impacts to Native American traditional values would result from the long-term loss of approximately 1,666 acres of piñon-juniper woodland due to project construction and the permanent loss of approximately 817 acres of piñon-juniper woodland in association with the development of the Cortez Hills Pit and county road reroute, which would not be reclaimed. These losses would result in associated residual impacts to future supplies of harvestable pine nuts. The percentage of harvestable pine nuts that would be affected and the level to which the loss of this resource would affect the tribes are unknown.

No residual adverse impacts to possible burials or properties of cultural and religious importance are anticipated, because all known burials and NRHP-eligible sites and any previously unknown burials and NRHP-eligible sites that may be discovered during ground-disturbing activities in the project boundary would be mitigated in accordance with NHPA, NAGPRA and the PA. However, some forms of mitigation, such as data recovery, are perceived by some Western Shoshone as part of a destructive process that permanently removes Western Shoshone heritage ***from the landscape***. With implementation of Mitigation Measure NA2, Western Shoshone archaeological sites and landmarks that may be located during ground-disturbing activities would be identified by Native American observers. Native American observers also would be present during data recovery conducted at any ***ethnohistoric*** sites for which avoidance is not feasible.

Residual adverse visual effects would result from the long-term disturbance associated with project facility construction and operation and permanent changes in landform and color contrasts associated with the Cortez Hills Pit (see Section 3.13.5). Over time, the visual effects gradually would diminish as natural vegetation patterns develop following reclamation of project facilities. However, the unreclaimed pit walls would result in an increase in visual effects when viewed from Mount Tenabo, which, in turn, could affect the spiritual and religious ***use by*** those tribal individuals who visit Mount Tenabo for prayer, healing, and inspiration.

Although limitations on access to Mount Tenabo may occur due to safety issues related to a working mine, public access to Mount Tenabo via Horse Canyon road would not be restricted. Therefore, residual adverse effects to access are not expected to occur as a result of the Proposed Action.