DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS–R8–ES–2008–0014; 92210–1117–0000–B4]

RIN 1018–AV05

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Sierra Nevada Bighorn Sheep (Ovis canadensis sierrae) and Taxonomic Revision

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are designating critical habitat for the Sierra Nevada bighorn sheep (*Ovis canadensis sierrae*) under the Endangered Species Act of 1973, as amended (Act). In total, approximately 417,577 acres (ac) (168,992 hectares (ha)) fall within the boundaries of the critical habitat designation. The critical habitat is located in Tuolumne, Mono, Fresno, Inyo, and Tulare Counties, California. We also are finalizing the revision of taxonomy of the listed entity from a distinct population segment (DPS) of California bighorn sheep (*Ovis canadensis californiana*) to subspecies, *Ovis canadensis sierrae*, based on recent published information.

DATES: This rule becomes effective on September 4, 2008.

ADDRESSES: The final rule, economic analysis, and maps are available at *http://www.regulations.gov* and at *http://www.fws.gov/nevada*. Supporting documentation we used in the preparation of this final rule is available for public inspection, by appointment, during normal business hours, at the Nevada Fish and Wildlife Office, 1340 Financial Boulevard, Suite 234, Reno, NV 89523; telephone 775–861–6300; facsimile 775–861–6301.

FOR FURTHER INFORMATION CONTACT: Robert D. Williams, U.S. Fish and Wildlife Service, Nevada Fish and Wildlife Office (see **ADDRESSES** section). If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Background

It is our intent to discuss only those topics directly relevant to the designation of critical habitat in this rule. For more information on the Sierra Nevada bighorn sheep, refer to the final listing rule published in the **Federal Register** on January 3, 2000 (65 FR 20) and the proposed critical habitat rule published in the **Federal Register** on July 25, 2007 (72 FR 40955).

The bighorn sheep (*Ovis canadensis*) is a large mammal in the family Bovidae described by Shaw in 1804 (Shackleton 1985, p. 1). Cowan (1940, pp. 519–569) recognized several subspecies based on geography and skull measurements. Recent genetic (Ramey 1993, pp. 62–86; 1995, p. 432–434; Boyce *et al.* 1996, pp. 423–426, 429; Gutierrez-Espeleta *et al.* 1998, pp. 7–9, 11) and morphological data (Wehausen and Ramey 1993, pp. 4–8; 2000, pp. 148–153), and review and reanalysis of Cowan's data (Ramey 1993, p. 83), do not support Cowan's original subspecies differentiations.

Ramey (1993, pp. 71–72; 1995, p. 432) found, based on mitochondrial DNA (mtDNA), bighorn sheep from the Sierra Nevada to be more allied with sheep occupying the adjacent desert area than those to the north. Ramey (1993, pp. 67–68; 1995, pp. 433, 435) also found Sierra Nevada bighorn sheep to be a distinctive group in the desert region extending east to Utah and New Mexico and south to northern Mexico. Ramey (1993 p. 54) used mtDNA as a genetic marker to help understand the evolutionary history of North American mountain sheep. From the 116 individuals included in the surveys, 16 different mtDNA haplotypes were identified in North America and four in Asia (Ramey 1993, p. 62). Two major mtDNA lineages of mountain sheep were indicated in North America (Ramey 1993, p. 63). Within the northern Alaska and western North America clade, three mtDNA lineages were identified (Ramey 1993, p. 72). One lineage included bighorn sheep in the desert ranges of the southwestern United States and Mexico and the Sierra Nevada (Ramey 1993, p. 72), where the Sierra Nevada population was found to be more closely related to the desert-dwelling sheep than those from the Cascade Ranges or Rocky Mountains (Ramey 1993, p. 72). Within the desert-dwelling sheep populations, Sierra Nevada bighorn sheep differed (Ramey 1993, p. 73). Ramey (1995 p. 429) used mtDNA as a genetic marker to help understand the evolutionary history of North American mountain sheep in the southwest United States. Ten mtDNA haplotypes were identified in the southwest, with a common one being found in most populations (Ramey 1995, pp. 431–432). The distribution of mtDNA variants in the southwest did not support the recognition of *O. c. cremnobates, O. c. mexicana*, and *O. c. nelsoni* as distinct and separate subspecies, but the mtDNA analysis did show a unique fixed haplotype for *O. c. californiana* from the Sierra Nevada (Ramey 1995, p. 433). Based on this finding, bighorn sheep from the Sierra Nevada could be distinguished from populations of other subspecies of bighorn sheep (Ramey 1995, p. 433). Results indicated that significant differences in mtDNA haplotype frequencies can be found among populations that are adjacent to one another and separated by short distances (Ramey 1995, p. 435). A few rare haplotypes were limited in distribution and found in only single populations. One of these populations included the Sierra Nevada (Ramey 1995, p. 433).

Wehausen and Ramey (2000, pp. 148–153) used univariate and multivariate statistical methods to examine the geographic variation in horn and skull characters of 694 bighorn sheep (*Ovis canadensis*) from the Great Basin to British Columbia and Alberta. California bighorn sheep (*O. c. californiana*) from Washington and British Columbia were not distinguishable from Rocky Mountain bighorn sheep (*O. c. canadensis*); however, they did differ from Sierra Nevada bighorn sheep populations considered to be *O. c. californiana*. Extirpated populations from northeastern California, Oregon, and southwestern Idaho shared a horn-related character with Nelson bighorn sheep (*O. c. nelsoni*) from the Great Basin; this shared character was different from Rocky Mountain bighorn sheep. Individuals from the Sierra Nevada were distinguishable from bighorn sheep from the Great Basin. These results agree with geographic patterns identified with the mtDNA studies of Ramey (1993, 1995) (Wehausen and Ramey 2000, p. 156). Wehausen and Ramey (2000, pp. 153–157) synonymized the extinct Audubon subspecies, *O. c. auduboni*, from east of the Rocky Mountains in eastern Montana and Wyoming, North Dakota, South Dakota, and western Nebraska with *O. c. canadensis*. They also assigned extinct and extant native populations of *O. c. californiana* from Washington and British Columbia to *O. c. canadensis* and the extinct native populations of *O. c. californiana* from northeastern California, northern Nevada, southwestern Idaho, and Oregon to *O. c. nelsoni* of the Great Basin desert form. Based on genetic and morphometric data, Wehausen and Ramey (2000, p. 156) concluded that bighorn sheep in the Sierra Nevada should be recognized as a separate subspecies of *O. canadensis*, but they

did not recommend a change in nomenclature at that time.

In a recent investigation of the taxonomy of Sierra Nevada bighorn sheep, Wehausen *et al.* (2005) reexamined the history of bighorn sheep nomenclature. Grinnell (1912, p. 144) recognized bighorn sheep from the Sierra Nevada of California as a distinct subspecies, *Ovis cervina* (= *canadensis*) *sierrae*, designating a 5-year-old ram as the type specimen. Cowan (1940, p. 556) did not recognize the subspecies O. c. sierrae as valid, but included animals from the Sierra Nevada as *O. c. californiana*. Wehausen and Ramey (2000, pp. 153–157) reassigned specimens from north of the central Sierra Nevada to *O. c. nelsoni* and *O. c. canadensis*. They kept the name *O. c. californiana* for bighorn sheep in central and southern Sierra Nevada (Wehausen and Ramey 2000, p. 156), raising the question of the correct subspecific name for animals inhabiting this area. Based on this investigation of the taxonomy of Sierra Nevada bighorn sheep and by the Principle of Typification (International Commission on Zoological Nomenclature 1999), cited in Wehausen *et al.* (2005, p. 217), Wehausen *et al.* (2005 p. 217) concluded, based on Grinnell's original type specimen, that the correct nomenclature for native sheep in the central and southern Sierra Nevada of California is *Ovis canadensis sierrae* (Grinnell). Therefore, with the publication of this final rule designating critical habitat for the Sierra Nevada bighorn sheep, we formally revise its taxonomy from DPS of California bighorn sheep (*Ovis canadensis californiana*) to subspecies *Ovis canadensis sierrae*.

Sierra Nevada bighorn sheep inhabit portions of the Sierra Nevada located along the eastern boundary of California in Tuolumne, Mono, Fresno, Inyo, and Tulare Counties. Habitat occurs from the eastern base of the range as low as 4,790 feet (ft) (1,460 meters (m)) to peaks above 14,100 ft (4,300 m) (Wehausen 1980, pp. 3, 82).

Based on recent modeling efforts, discussed further in the Criteria Used To Identify Critical Habitat section, Sierra Nevada bighorn sheep habitat, as well as areas necessary to provide connectivity between winter and summer ranges, occur as low as 4,000 ft (1,219 m) in the southern portion of its range (Johnson *et al.* 2005). Sierra Nevada bighorn sheep inhabit open areas where the land is rocky, sparsely vegetated, and characterized by steep slopes and canyons (Wehausen 1980, p. 81; Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, p. 5). Wehausen (1980, pp. 18–25) provides a detailed description of Sierra Nevada bighorn sheep habitat throughout its range. They prefer open ground to better detect predators and allow enough time to reach steep, rocky terrain (escape habitat) (Wehausen 1980, p. 81). Forests and thick brush are usually avoided if possible (65 FR 21; January 3, 2000). Most of the sheep live at higher elevations (10,000–14,000 ft (3,050–4,270 m)) in subalpine and alpine areas during the summer (65 FR 21; January 3, 2000). During winter, these sheep occupy high-elevation, windswept ridges and tend to prefer south-facing slopes where snow melts more readily (Jones 1950, pp. 44–45; McCullough and Schneegas 1966, p. 71; Wehausen 1980, pp. 86–87) or migrate to lower elevations (4,800 ft (1,460 m)) in sagebrush-steppe areas to avoid deep snow and to find forage.

Sierra Nevada bighorn sheep are gregarious, with group size and composition depending on gender and season. Spatial segregation by gender occurs outside of the mating season. Bighorn sheep ewes generally remain with the same band in which they were born (Cowan and Geist 1971, pp. 80–81). Males older than 2 years of age remain apart from females and younger males for most of the year (Jones 1950, p. 50; Cowan and Geist 1971, p. 65; Wehausen 1980, p. 109). During the late fall and winter, the groups come together and concentrate in suitable winter habitat.

Breeding takes place in late fall, generally November and December (Jones 1950, pp. 63–64; Cowan and Geist 1971, p. 64; Wishart 1978, p. 165). Lambing occurs between late April and early July (Wehausen 1996, p. 475) on safe, precipitous, rocky slopes (Wehausen 1980, p. 95); most lambs in the Sierra Nevada are born in May and June (Wehausen 1980, p. 94; 1996, p. 475). Ewes and lambs often occupy steep terrain that provides a diversity of exposures and slopes for escape cover (65 FR 21; January 3, 2000). The lifespan for both Sierra Nevada bighorn sheep males and females has been observed as 8 to 12 years (Wehausen 1980, p. 76; Stephenson 2008, p. 1).

Bighorn sheep are primarily diurnal (Jones 1950, pp. 54–57). They are primarily grazers; however, they may browse woody vegetation at times. Plants consumed include various grasses, browse, and forbs, depending on season and location (Wehausen 1980, pp. 80–93). Naturally occurring and mineral licks provide necessary minerals for bone and muscle growth.

While distribution of bighorn sheep is naturally fragmented on the landscape, the maintenance of migration corridors (space) is important to allow genetic exchange between Sierra Nevada bighorn sheep herds. The population ecology of bighorn sheep has been described as a metapopulation with geographically distinct herds interacting in a network (Schwartz *et al.* 1986, p. 184; Bleich *et al.* 1990, pp. 384–388). The movements of rams between herds can counteract the effects of inbreeding that can develop with small, isolated populations (Schwartz *et al.* 1986, pp. 182–185).

Previous Federal Actions

On April 20, 1999, we published an emergency rule listing the Sierra Nevada DPS of the California bighorn sheep as endangered (64 FR 19300), providing emergency protection to the DPS until such time that we could complete the normal listing process. We also published a proposed rule to list the DPS as endangered on the same date (64 FR 19333). On January 3, 2000, we published a final rule listing the Sierra Nevada bighorn sheep as endangered (65 FR 20). The emergency rule stated that the designation of critical habitat was not determinable due to lack of information sufficient to perform the required analysis of impacts of the designation. In the final listing rule, we stated our revised determination that there is sufficient information to perform the required impact analysis and that the designation of critical habitat is prudent.

During the process of designating critical habitat for the Sierra Nevada bighorn sheep, we noticed that the final listing rule published in 2000 (65 FR 20) inadvertently listed this entity as a DPS rather than as a subspecies. While the listing rule addressed the DPS question, we failed to include the DPS language in the table found in the regulatory section of the rule. However, as stated above, based on the work of Wehausen and Ramey (2000, p. 156) and Wehausen *et al.* (2005, p. 217), the Sierra Nevada bighorn sheep is recognized as a subspecies, and the correct nomenclature is *Ovis canadensis sierrae*. Therefore, we are formally providing a taxonomic revision herein to amend the final listing rule to subspecies *Ovis canadensis sierrae*.

On July 30, 2003, we made available the Service's Draft Recovery Plan for the Sierra Nevada Bighorn Sheep (*Ovis canadensis californiana*) (68 FR 44808). On October 9, 2003, we reopened the comment period for the draft Recovery Plan (68 FR 58355). On February 13, 2008, we published a Notice of Availability for the final recovery plan (73 FR 8345).

On December 8, 2005, the Center for Biological Diversity filed a complaint based on the Service's failure to designate critical habitat for this subspecies within the time mandated under the Act (*Center for Biological Diversity* v. *U.S. Fish and Wildlife Service, et al.* Case No. 2:05–CB–02492–DFL–KJM). On June 6, 2006, the Service entered into a settlement agreement with the Center for Biological Diversity to submit a proposed critical habitat designation for this subspecies for publication in the **Federal Register** by July 17, 2007, and to submit a final determination on the proposed critical habitat designation for publication by July 17, 2008.

Our proposed critical habitat rule and taxonomic revision for the Sierra Nevada bighorn sheep was published in the **Federal Register** on July 25, 2007 (72 FR 40956). A notice of availability of the draft economic analysis (DEA) of the proposed critical habitat designation was published in the **Federal Register** on February 5, 2008 (73 FR 6684). This final rule satisfies the June 6, 2006, settlement agreement with respect to Sierra Nevada bighorn sheep.

For more information on previous Federal actions concerning Sierra Nevada bighorn sheep, refer to the final listing rule published in the **Federal Register** on January 3, 2000 (65 FR 20).

Summary of Comments and Recommendations

We requested written comments from the public on the proposed designation of critical habitat for the Sierra Nevada bighorn sheep published on July 25, 2007 (72 FR 40956). The 60-day comment period for the proposed rule closed on September 24, 2007. A request for a comment period extension was received from a private organization on August 20, 2007, and on October 9, 2007, the comment period was reopened until November 23, 2007 (72 FR 57276). A 30-day comment period was opened on the DEA and the proposed rule on February 5, 2008, and closed on March 6, 2008 (73 FR 6684). Comments and new information received in response to the proposed rule and the DEA were incorporated in the final rule as appropriate and summarized below.

During the comment periods for the proposed rule, we received a total of 28,181 (28,153 in support, 12 opposed, and 16 neutral) comments from Federal, State, and local governments, non-governmental organizations and private individuals. We received two requests for public hearings. The Inyo County Board of Supervisors made a request for a public hearing on August 7, 2007, as did two private individuals on August 29, 2007. A public hearing was held in Bishop, California, on October 25, 2007 (72 FR 57276). We received 12 oral testimonies from 12 individuals. Of these commenters, three who provided oral comments also submitted duplicative written comments. A request was made for a public workshop by the Mono County Board of Supervisors on September 5, 2007. We held two public meetings in Bridgeport and Bishop, California, on October 24 and 25, 2007, respectively (72 FR 57276).

Peer Review

In accordance with our policy published July 1, 1994 (59 FR 34270), we solicited expert opinions from three knowledgeable individuals with scientific expertise that included familiarity with the species and conservation biology principles. We received responses from two peer reviewers. In general, the peer reviewers concurred with our methods and conclusions and provided suggestions to improve the final critical habitat rule.

We reviewed all comments received from the peer reviewers and the public for substantive issues and new information regarding critical habitat for the Sierra Nevada bighorn sheep, addressed them in the following summary, and incorporated them into the final rule as appropriate.

Peer Reviewer Comments

(1) *Comment:* Both peer reviewers raised concern that the proposed designation did not adequately protect Sierra Nevada bighorn sheep from the possible introduction of disease from domestic sheep and goats. One suggested that the ''absence of risk of disease transmission'' should be explicitly included as a primary constituent element (PCE) as pneumonia caused by contact with domestic sheep or goats can be an overriding factor affecting habitat suitability.

Our Response: Conservation of the Sierra Nevada bighorn sheep depends on addressing both habitat and non-habitat related threats. In terms of the consultation process under section 7(a)(2) of the Act, the Service is required to analyze both the threats to the individuals within a population and the threats to the PCEs of its designated critical habitat. Under the Special Management Considerations or Protection section, we have indicated that management of domestic livestock grazing practices that result in overgrazing or forage competition between these domestic species and Sierra Nevada bighorn sheep can be a threat. The concern for overgrazing or competition is a habitat-related threat associated with the PCEs (i.e., PCE 2). The potential for contact and the possible transmission of disease to bighorn sheep exists when domestic sheep or goats are present in critical habitat. Management of the threat of disease transmission between domestic sheep and goats and Sierra Nevada bighorn sheep is needed to conserve this species; however, this threat is not strictly a habitat-related threat. The potential effects of disease transmission will be addressed through section 7 consultation with Federal agencies under the jeopardy standard and through the section 9 prohibitions of the Act to the extent applicable. There would be no benefit gained from a critical habitat designation with respect to the effects of disease on individual Sierra Nevada bighorn sheep because the regulatory effects of critical habitat designations apply to adverse modification or destruction of habitat, not to effects that result in the mortality of individual Sierra Nevada bighorn sheep. Because the disease threat faced by the species is not habitat-based, there would be no practical benefit to including it as a PCE.

(2) *Comment:* One peer reviewer suggested that buffer zones be established around designated critical habitat for management of domestic sheep and goats because activities that could pose a risk of disease transmission do not need to occur directly within critical habitat to affect that habitat.

Our Response: The units designated as critical habitat for the Sierra Nevada bighorn sheep contain the features essential for the conservation of this subspecies. It is not our practice to establish buffers around an area designated as critical habitat. As indicated under the Special Management Considerations or Protection section, domestic sheep and goat grazing may require management modifications to protect Sierra Nevada bighorn sheep in critical habitat in certain units. Any buffer distance recommended or suggested in a Federally proposed action involving domestic sheep or goat grazing adjacent to a designated critical habitat unit to reduce the potential threat of disease transmission to Sierra Nevada bighorn sheep would be taken into consideration during the jeopardy analysis of the consultation process under section 7 of the Act.

(3) *Comment:* One peer reviewer raised concern for an elevated risk of disease transmission with domestic sheep grazing on U.S. Forest Service

(USFS) lands as Sierra Nevada bighorn sheep wander between units.

Our Response: We are aware of the potential risk of disease transmission due to contact between domestic sheep (and goats) and Sierra Nevada bighorn sheep. If a disease outbreak were to occur in a Sierra Nevada bighorn sheep population, it could be passed to other populations (units) because of, most likely, ram forays. This risk will increase if Sierra Nevada bighorn sheep numbers increase as expected due to continuing recovery actions. While we believe that this is an issue of management concern, we do not believe that this critical habitat designation necessarily affects the issue in any significant way. Please also see our response to comment (1).

(4) *Comment:* Both peer reviewers raised concern that the proposed critical habitat designation did not provide biologically based corridors or linkage zones for movements among Sierra Nevada bighorn sheep subpopulations. They were unclear how genetic exchange or colonization would be allowed with unconnected units of critical habitat.

Our Response: Connectivity, within a critical habitat unit, is a PCE for the Sierra Nevada bighorn sheep (i.e., PCE 1). The current critical habitat configuration provides for long-term connectivity between groups within a particular unit. We recognize the importance of migration between critical habitat units, as discussed under Metapopulaton Structure in the Space for Individual and Population Growth and for Normal Behavior section. However, due to the current isolation of occupied herd units and extremely limited knowledge of various migration paths that Sierra Nevada bighorn sheep, especially rams, may have taken historically between units, we did not develop criteria that would capture migration corridors between units.

(5) *Comment:* One peer reviewer was concerned about the fine-scale mapping resulting in ''finger-like'' habitats for Units 1, 2, 3, 4, and 9. The concern was related to possible difficulties in managing such areas. The reviewer suggested the boundaries be redrawn to reduce sinuosity, possibly along watershed and or drainage boundaries.

Our Response: The critical habitat units have been developed to be consistent with the herd units that the Sierra Nevada bighorn recovery plan identifies as essential for recovery of the subspecies. Those herd units were originally developed using expert opinion and information on current and historical bighorn sheep locations in the Sierra Nevada. Those units were later refined using a habitat selection model developed by University of California Davis and the California Department of Fish and Game (CDFG) (Johnson *et al.* 2005). Based on our analysis of the biological needs of the subspecies, we believe that the herd units developed for the recovery plan capture those areas that contain the physical and biological features arranged in the appropriate quantity and spatial arrangement for the conservation of the subspecies.

It is important to remember that these critical habitat units are not being established as Sierra Nevada bighorn sheep preserves or management zones. These are regulatory designations of areas that contain the features essential to the conservation of the subspecies. Critical habitat would serve its regulatory role when analyzing a particular Federal action in the consultation process under section 7(a)(2) of the Act to determine if that action would adversely modify or destroy critical habitat by impacting the essential features within that unit to such a degree that the unit no longer serves its function for conservation.

It is possible that a Federal action immediately adjacent to these units (e.g., between ''fingers'') could indirectly adversely modify critical habitat within the units. In such a situation, the action would be analyzed through the consultation process under section 7(a)(2) of the Act against the adverse modification standard. However, because our analysis has not identified essential features in these locations, unit boundary modification and designation of critical habitat therein would not be appropriate.

(6) *Comment:* One peer reviewer commented that the indicated 9 to 11 year lifespan for bighorn sheep seemed short.

Our Response: We have modified the Background section of the final rule to more accurately reflect the observed lifespan for male and female bighorn sheep in the Sierra Nevada.

Comments From State Agencies

(7) *Comment:* California Department of Fish and Game (CDFG) suggested a PCE that identifies a ''disease-free zone'' because of the risk to Sierra Nevada bighorn sheep in proximity to domestic sheep.

Our Response: Please see our response to Comment 1.

(8) *Comment:* CDFG recommended establishment of a buffer that excludes domestic sheep to ensure the integrity of the critical habitat for Sierra Nevada bighorn sheep and provide additional protections.

Our Response: Please see our response to Comment 2.

(9) *Comment:* CDFG recommended more emphasis be placed on the use of fire to maintain critical habitat because fire is an integral part of the landscape.

Our Response: The Special Management Considerations or Protection section identifies activities of Federal agencies or those with a federal nexus that may impact Sierra Nevada bighorn sheep and their habitat. The section is not meant to promote or discourage any particular activity. We indicated that it may be necessary in some of the critical habitat units to reduce forest cover to make habitat more suitable for Sierra Nevada bighorn sheep. Prescribed fire can be used as a tool to do this. Johnson *et al.* (2005, p. 34) indicate Sierra Nevada bighorn sheep could gain additional habitat with a reduction in forest cover. In addition, the final recovery plan (Appendix H, Genetic Management of Sierra Nevada Bighorn Sheep) provides a specific recommendation to use fire in addition to other methods to enhance habitat within herd units (Service 2007, p. 174). This would improve unit carrying capacity, as well as connectivity with adjacent herd units, providing better opportunities for genetic exchange between herds.

(10) *Comment:* California Department of Food & Agriculture (CDFA) commented that there is ''still incomplete agreement in the scientific community'' about disease transmission from domestic sheep to bighorn sheep, in general, such as how often it occurs and its role in disease epizootics in bighorn sheep. The CDFA agrees that a reasonable approach is to keep the two species separated. How such separation occurs and what measures are used to prevent possible contact are important to both the survival of Sierra Nevada bighorn sheep and the domestic sheep industry in Inyo and Mono Counties, California. The CDFA commented that further scientific findings will improve understanding of the true nature of respiratory disease in bighorn sheep, in general, and that interested parties should cooperate on common interests. They also noted that at the 111th Annual Meeting of the United States Animal Health Association (USAHA) in October 2007, a joint resolution passed recommending additional research and formation of a subcommittee. The College of Agriculture, Biotechnology and Natural Resources at the University of Nevada Reno (UNR) similarly mentions the USAHA resolution.

Our Response: We are aware that disagreement continues regarding the potential for disease transmission to

occur between domestic livestock, especially sheep and goats, and bighorn sheep, in general, under range conditions. We have reviewed Resolution No. 15 that reads, ''The United States Animal Health Association (USAHA) urges the United States Secretary of Agriculture and the United States Secretary of the Interior to seek resources through the President's budget to fund research to better elucidate the epidemiology and pathogenesis of bighorn/domestic sheep disease interactions so informed and effective management decisions can be made.'' We, along with others, continue to seek answers to questions related to this disease transmission issue. We support continuing research efforts to address uncertainties and to assist in the decision-making process.

(11) *Comment:* The CDFA recommends consideration of the Western Association of Fish and Wildlife Agencies' (WAFWA) document, ''Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat'', dated June 21, 2007, and the University of California—Davis' ''Quantifying the Risk of Disease Transmission from Domestic Sheep to Bighorn Sheep in the Sierra Nevada'' in future determinations of effectively preventing the possibility of disease transmission between domestic sheep and Sierra Nevada bighorn sheep, in addition to working with livestock industry representatives.

Our Response: We are aware of these documents and consider information contained within them during section 7 consultations, as appropriate. Other documents also support the effective separation of domestic sheep from bighorn sheep, in general, as a management tool to reduce the risk of contact and possible disease transmission (Wyoming State-wide Bighorn/Domestic Sheep Working Group 2004, pp. 7, 11; U.S. Forest Service 2006, pp. 18–19). Also, an expert science panel (U.S. Geological Survey and Bureau of Reclamation 2006) was convened in 2006 to discuss a risk analysis of disease transmission between domestic and bighorn sheep on the Payette National Forest in Idaho. The panel focused on science-based concerns raised by the risk analysis document, specifically the disease/mortality category, and developed six statements. References to concerns about domestic sheep also apply to domestic goats. Three of these key statements follow: ''(1a) Scientific observation and field studies demonstrate that ''contact'' between domestic sheep and bighorn sheep is possible under range conditions. This contact increases risk of subsequent bighorn sheep mortality and reduced recruitment, primarily due to respiratory disease; (1b) The complete range of mechanisms/causal agents that lead to epizootic disease events cannot be conclusively proven at this point; and (1c) Given the previous two statements, it is prudent to undertake management to prevent contact between these species'' (U.S. Geological Survey and Bureau of Reclamation 2006, p. 1). One panelist dissented and preferred ''can increase risk'' in statement 1a because it did not imply that any contact will result in disease transmission (U.S. Geological Survey and Bureau of Reclamation 2006, p. 1).

(12) *Comment:* The California Department of Transportation (CalTrans) states that roads are inconsistently addressed and that it is inappropriate to include state highway right-of-ways (ROWs) and facilities within critical habitat. It is recommended by CalTrans that State Route (SR) 120 in Unit 1 and SR 158 in Unit 2 be excluded from critical habitat.

Our Response: When determining critical habitat boundaries for Sierra Nevada bighorn sheep, we made every effort to avoid including developed areas such as lands covered by buildings, paved areas, and other structures that lack PCEs for the Sierra Nevada bighorn sheep. The scale of the maps prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed areas. Any such features and the land under them inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the final rule and are not designated as critical habitat. Therefore, Federal actions limited to these areas would not trigger section 7 consultation, unless they may affect the species or PCEs in adjacent critical habitat.

We have determined, however, that the unpaved road right-of-ways of SR 120 from Unit 1 and SR 158 from Unit 2 do contain the features essential to the conservation of the Sierra Nevada bighorn sheep, and therefore meet the definition of critical habitat. CalTrans did not provide, nor are we aware of any additional information of the benefits of excluding ROWs based on ongoing or planned management of these ROWs, or how any on-going or planned management of the ROWs would benefit the conservation of the Sierra Nevada bighorn sheep or the sheep itself.

The Secretary may exclude an area from critical habitat under section 4(b)(2) of the Act after taking into consideration the economic impact, the impact on national security, and any other relevant impact if he determines that the benefits of such exclusion outweigh the benefits of designating such area as critical habitat, unless he determines that the exclusion would result in the extinction of the species concerned.

Because we are not aware of any information describing the benefits of excluding ROWs based on ongoing or planned management of these ROWs, or how any existing or planned management provides the same or better level of protection from adverse modification or destruction than that provided through a consultation under section 7 of the Act, we have determined that exclusion of these lands from the final designation of critical habitat pursuant to section 4(b)(2) of the Act is not appropriate at this time.

(13) *Comment:* CalTrans states that no bighorn sheep collisions with vehicles are listed in their accident database. This is contrary to a statement made in our proposed rule that a bighorn sheep collision with a vehicle had occurred in the past.

Our Response: A CDFG employee was made aware of the collision we referenced in the proposed rule (72 FR 40956) through a third party. The employee contacted the motorist to obtain information about the November 2003 collision. The Sierra Nevada bighorn sheep ram was monitored after the collision by CDFG, and it subsequently died in January 2004. No formal report was made by CDFG to CalTrans (Stephenson 2008, p. 1).

(14) *Comment:* CalTrans indicates references to SR 190 should be corrected as SR 190 does not occur in or adjacent to critical habitat.

Our Response: We erroneously indicated SR 190 occurred in or adjacent to Unit 10 in the Proposed Critical Habitat Designation and the Special Management Considerations or Protection sections. The road should have been indicated as Forest Route 16S02. This has been corrected in both sections.

(15) *Comment:* CalTrans states that, although an alignment has not been selected for the proposed Olancha/Cartago U.S. 395 project, an alternative might occur on the west side of Los Angeles aqueduct.

Our Response: We appreciate this information. If the location for this new road construction occurs within designated critical habitat or may impact the Sierra Nevada bighorn sheep or its designated critical habitat, consultation under section 7 of the Act will occur as appropriate.

(16) *Comment:* The Nevada Department of Agriculture (NDOA) stated that the disease transmission risk assessment model by Clifford *et al.* (2007) is ''questionable'' as a tool for management and is a problem when serving as the basis of a critical habitat designation. The College of Agriculture, Biotechnology and Natural Resources at the University of Nevada Reno (UNR) similarly recommends that the disease risk assessment by Clifford *et al.* (2007) should not be used as the basis for designating Sierra Nevada bighorn sheep critical habitat.

Our Response: We agree. Critical habitat as defined in section 3 of the Act is; the specific areas within the geographical area occupied by a species at the time it is listed in accordance with the Act, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. Designation of critical habitat is not based on a single management issue and, in this case, the concern for transmission of diseases from the grazing of domestic sheep or goats in proximity to Sierra Nevada bighorn sheep did not serve as the foundation for this critical habitat designation. Domestic sheep grazing is a management issue that is properly addressed through the consultation process under section 7(a)(2) of the Act.

(17) *Comment:* The NDOA recommended that the critical habitat designation be suspended until the scientific basis has been established for disease transmission between domestic sheep and Sierra Nevada bighorn sheep.

Our Response: We are designating critical habitat for Sierra Nevada bighorn sheep in accordance with the deadlines established by a court-approved settlement agreement. We agreed to submit to the **Federal Register** a final determination of critical habitat for Sierra Nevada bighorn sheep by July 17, 2008. We based our designation of critical habitat on the best scientific and commercial data available as required by Section 4 of the Act. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. We used published scientific literature and the expertise of Recovery Team members (including scientists from a variety of federal and state agencies, and other publics). We also solicited peer review from individuals familiar with bighorn sheep, in general, and related issues. We solicited new biological data, invited public participation during multiple comment periods, conducted a public hearing, and held informational meetings on the proposed rule. We have considered peer review, agency, and public comments received during the preparation of this final rule. Accordingly, we have used the best scientific and commercial information available in this designation. Designation of critical habitat is not based on a single management issue and, in this case, the concern for transmission of diseases from the grazing of domestic sheep or goats in proximity to Sierra Nevada bighorn sheep did not serve as the foundation for this critical habitat designation.

(18) *Comment:* The NDOA stated that uncertainties in general about bighorn sheep epizootics exist per the USAHA meeting in October 2007.

Our Response: Please see our response to Comment 10.

(19) *Comment:* The NDOA stated that the occurrence of bighorn sheep disease and die-offs can be associated with bighorn sheep reaching peak numbers (Monello *et al.* 2001). Stagnant bighorn sheep population numbers have occurred in association with predation by wolves and mountain lions. These factors affect bighorn sheep populations ''permanently,'' not just ''temporarily'' like domestic sheep grazing.

Our Response: Bighorn sheep mortalities can be attributed to various factors as discussed below in the ''Mortality Factors'' section of this rule. These mortality factors may or may not affect bighorn sheep populations ''permanently,'' depending on numerous variables. Die-offs from diseases possibly transmitted from domestic sheep can have long-lasting effects by influencing subsequent population recruitment. Lambs born to surviving ewes can experience low survival rates for 3 to 5 years after the initial outbreak (Foreyt 1990, p. 100; Coggins and Matthews 1992; Ward *et al.* 1992; Foreyt 1995; Hunter 1995a, as cited in Schommer and Woolever 2001, p. 3). We have added a short discussion in the Physical and Biological Features section related to these long-lasting impacts of pneumonia in bighorn sheep populations.

(20) *Comment:* The NDOA and UNR stated that climate and geographical factors play a role in the recovery of a species and that the ''northern recovery unit'' is neither suitable nor essential habitat in terms of winter range for the Sierra Nevada bighorn sheep due to its higher elevation and greater snow depths than more southern units.

Our Response: As indicated in the Criteria Used to Identify Critical Habitat section, we used the following criteria to select areas occupied by the Sierra Nevada bighorn sheep at the time of listing for inclusion in critical habitat:

(a) Those areas occupied by the Sierra Nevada bighorn sheep at the time of listing (1999–2000) as indicated in the final listing rule (65 FR 20; January 3, 2000). In the final listing rule, we identified five subpopulations of Sierra Nevada bighorn sheep that existed: (1) Lee Vining Canyon (Mount Warren and Mount Gibbs Herd Units), (2) Wheeler Crest (Wheeler Ridge Herd Unit), (3) Mount Baxter (Sawmill Canyon and Mount Baxter Herd Units), (4) Mount Williamson (Mount Williamson Herd Unit), and (5) Mount Langley (Mount Langley Herd Unit) in Mono and Inyo counties, California (Wehausen 1999, pp. 1–7; 2000, pp. 1–6);

(b) Areas that are representative of the distribution of the Sierra Nevada bighorn sheep throughout the geographical range occupied at the time of listing with the goal of maintaining the subspecies' range of habitat and genetic variability; and

(c) Areas that allow for the continued existence of viable subpopulations under varying environmental conditions and that can serve as locations for source populations. The locations of all five subpopulations identified in the original listing rule continue to remain occupied today.

We have determined that the areas occupied at the time of listing continue to be occupied, contain features essential to the conservation of the subspecies (possess one or more PCEs such that the area supports one or more of the Sierra Nevada bighorn sheep's life processes) that may require special management, and provide sufficient habitat to protect these populations. Units 1 (Mount Warren) and 2 (Mount Gibbs) of the northern recovery unit meet these criteria.

More specifically, essential habitat is available for Sierra Nevada bighorn sheep in Units 1 (Mount Warren) and 2 (Mount Gibbs). This is not only based on historical data indicating their presence as far north as Sonora Pass (Grinnell and Storer 1924, as cited in Service 2007, p. 14), but also on the fact that these units also currently support

Sierra Nevada bighorn sheep herds. Mount Warren has a population of approximately 26 individuals, and Mount Gibbs has a population of approximately 8 individuals (Wehausen and Stephenson 2006, p. 7). The Mount Gibbs herd spends almost the entire year at elevations above 11,000 ft (3,353 m). In 2007, all ewes gave birth, and their lambs are known to have survived through at least September. This herd continues to survive and reproduce, expanding in numbers, although this alpine environment is no doubt harsher than lower-elevation areas. It is expected this herd will outgrow its carrying capacity of the alpine winter ranges and begin using lower-elevation winter ranges in the future (California Department of Fish and Game 2007, p. 2). Surveys (ground and aerial observations) of the Mount Warren herd conducted during the period from 2003 to 2007 indicate individuals are using this unit during every month of the year (California Department of Fish and Game files—monthly reports, Service files). In addition, a Resource Selection Probability Functions model was developed for summer and winter habitat and indicates an estimated 20.2 square kilometers (sq km) (7.8 square miles (sq mi)) and 9.4 sq km (3.6 sq mi), respectively, are available for Sierra Nevada bighorn sheep in the Mount Gibbs and Mount Warren units (Johnson *et al.* 2005, p. 31). As discussed under the Primary Constituent Elements for Sierra Nevada Bighorn Sheep section of this rule, not all life history functions require all the PCEs, therefore, not all areas designated as critical habitat contain all of the PCEs. Units are designated based on sufficient PCEs being present to support one or more of the subspecies' life history requirements. This applies to both the occupied and unoccupied units designated.

(21) *Comment:* The NDOA and UNR noted that a memorandum to the Director of the Service from the U.S. Department of the Interior's Assistant Secretary for Fish and Wildlife and Parks, dated April 28, 2004, stated that critical habitat adds little additional conservation benefit to a listed species and designations must not be based on speculation or determinations that lack supporting data. Therefore, the designation of critical habitat is of ''dubious value'' as identified by your own agency.

Our Response: Section 4(A)(3) of the Act requires that the Service identify those lands on which are found the physical or biological features essential to the conservation of the species that may require special management considerations or protection, and those areas outside the geographical area occupied by the species at the time of listing that are essential to the conservation of the species. In identifying those lands, the Service must consider the recovery needs of the species, such that, on the basis of the best scientific and commercial data available at the time of designation, the habitat that is identified, if managed, could provide for the survival and recovery of the species.

The identification of those areas that are essential for the conservation of the species and that can, if managed, provide for the recovery of a species is beneficial. The process of proposing and finalizing a critical habitat rule provides the Service with the opportunity to determine the physical and biological features essential to the conservation of the species within the geographical area occupied by the species at the time of listing, as well as to determine other areas essential for the conservation of the species. The designation process includes peer review and public comment on the identified physical and biological features and essential areas. This process is valuable to land owners and managers in developing conservation management plans for identified areas, as well as any other occupied habitat or suitable habitat that may not have been included in the Service's determination of essential habitat.

The consultation provisions under section 7(a) of the Act constitute the regulatory benefits of critical habitat. As discussed above, Federal agencies must consult with us on discretionary actions that may affect critical habitat and must avoid the destruction or adverse modification of critical habitat. Federal agencies must also consult with us on discretionary actions that may affect a listed species and refrain from undertaking actions that are likely to jeopardize the continued existence of such species. The analysis of effects to critical habitat is a separate and different analysis from that of the effects to the species. Therefore, the difference in outcomes of these two analyses represents the regulatory benefit of critical habitat. For some species, and in some locations, the outcome of these analyses will be similar, because effects on habitat will often result in effects on the species. However, the regulatory standard is different: The jeopardy analysis looks at the action's impact on survival and recovery of the species, while the adverse modification analysis looks at the action's effects on the designated habitat's contribution to the species' conservation. This may, in many instances, lead to different results and different regulatory requirements. Thus, critical habitat designations may provide greater regulatory benefits to the recovery of a species than would listing alone.

Another benefit of including lands in critical habitat is that designation of critical habitat serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. In general, critical habitat designation always has educational benefits; however, in some cases, they may be redundant with other educational effects.

(22) *Comment:* The NDOA states that listing of Sierra Nevada bighorn sheep as an endangered species, subspecies, or even distinct metapopulation lacks scientific merit.

Our Response: Please refer to our final rule listing the Sierra Nevada bighorn sheep published on January 3, 2000 (65 FR 20), which outlines our rationale for listing.

(23) *Comment:* The UNR stated designating critical habitat for Sierra Nevada bighorn sheep will lead to grazing allotment closures.

Our Response: The designation of critical habitat for Sierra Nevada bighorn sheep does not automatically lead to closing allotments. For those areas on Federal lands, consultation under section 7 of the Act may be required to examine the effects of grazing on critical habitat. Specific actions by the managing Federal agency could include the elimination of, or restrictions on, livestock grazing in areas that overlap with critical habitat. Please also see our responses to Comments 24, 40, 41, and 42.

(24) *Comment:* UNR states that short-term, high intensity grazing by domestic sheep helps maintain forage production and fuel load accumulation. The regrowth of vegetation is more palatable and nutritious for Sierra Nevada bighorn sheep during the growing season as well as during winter. The removal of domestic sheep will lead to poorer forage production and an accumulation of fuels.

Our Response: Regardless of any effects of grazing on fuel loads and forage quantity and quality, domestic sheep in some locations may pose a disease risk to Sierra Nevada bighorn sheep. The Service will recommend the removal of domestic sheep from allotments where contact with Sierra Nevada bighorn sheep cannot be prevented through section 7 of the Act. The Service has proposed actions in the recovery plan for Sierra Nevada bighorn sheep to maintain and enhance the

integrity of habitat through the careful use of fire and other habitat manipulations that do not involve domestic sheep grazing. These actions would include maintenance and enhancement of habitat in areas where domestic sheep may be removed to prevent contact with Sierra Nevada bighorn sheep.

Comments From Other Federal Agencies

(25) *Comment:* Yosemite National Park raised a concern about any reduction in the proposed critical habitat and protection of the Sierra Nevada bighorn sheep in the ''northern recovery units'' which would constitute the ''Yosemite herd.'' Sierra Nevada bighorn sheep in the northern areas are the ones most likely to reoccupy habitat in Yosemite, filling an ecological void and offering park visitors the opportunity to observe these animals.

Our Response: We have not reduced the area of designated critical habitat for the two units (Mount Warren and Mount Gibbs) that occur within the northern recovery unit because they meet our criteria for identifying critical habitat. These units contain the features essential to the conservation of the Sierra Nevada bighorn sheep and require special management. We also did not identify any areas within these units where the benefits of exclusion outweighed the benefits of inclusion. Please also see our response to Comment 20.

(26) *Comment:* Yosemite National Park supports the proposed critical habitat designation and taxonomic revision but recommends expanding critical habitat to cover all areas currently occupied by Sierra Nevada bighorn sheep, accommodate further range expansion, and provide buffers between domestic sheep and Sierra Nevada bighorn sheep to prevent disease transmission.

Our Response: As indicated in our response to Comment 2, it is not our practice to establish buffers around an area designated as critical habitat. A buffer distance indicated in a Federally proposed action involving domestic sheep or goat grazing near designated critical habitat would be considered during the consultation process under section 7 of the Act. As indicated in our response to Comment 36, critical habitat should not include the entire area that can be occupied by the species. We based our designation on the Recovery Team's delineation of essential habitat and as indicated in our final approved recovery plan (Service 2007, p. 41). For a more thorough discussion of these topics, please see our responses to Comments 2 and 36.

(27) *Comment:* Sequoia and Kings Canyon National Parks indicated their commitment to preserving and restoring natural ecosystems. They view Sierra Nevada bighorn sheep as an essential component that has been lost from much of its historical range within the Parks. By policy and law there is a commitment to working with the Service and other agencies to help restore the Sierra Nevada bighorn sheep to their former range and abundance. Sequoia and Kings Canyon National Parks fully support the proposed critical habitat designation.

Our Response: We appreciate the support and look forward to continuing to work with the National Park Service and others to conserve the Sierra Nevada bighorn sheep.

(28) *Comment:* The USFS suggested that designating critical habitat does not provide any additional benefit to a species and that it unnecessarily adds to USFS workload and may lead to re-initiation of section 7 consultation for critical habitat where a consultation has already been completed.

Our Response: Designating critical habitat identifies those areas that contain the features that are essential to the conservation of a particular species, thus signaling to Federal agencies to consider the species' conservation in the design and implementation of their management actions. The designation provides guidance on why these areas need special management considerations or protection and indicates activities that are likely to adversely modify or destroy critical habitat. The designation of critical habitat assists the recovery process by providing information on how actions might impact the species' habitat. Including USFS lands as critical habitat is significant because this will assist in maintaining the Service's role in reviewing potential future impacts to areas that are important for the conservation of Sierra Nevada bighorn sheep populations. Lands administered by the USFS contain a substantial portion of habitat that is essential for the conservation of Sierra Nevada bighorn sheep. Designation of critical habitat may also provide protection for unoccupied habitat that may not otherwise undergo the section 7 consultation process due to species' absence. Considering whether proposed future projects will result in the destruction or adverse modification of critical habitat in addition to the jeopardy analysis will require some additional analysis during the section 7 consultation process.

(29) *Comment:* The USFS indicated the 2001 Record of Decision for the Ansel Adams, John Muir, and Dinky Lakes Wilderness Plans considered various impacts on Sierra Nevada bighorn sheep and their habitats.

Our Response: We appreciate this information and have reviewed this document. Only one item was found directly related to management of the Sierra Nevada bighorn sheep. This addressed the closure of Sierra Nevada bighorn sheep habitat to dogs. As indicated in the Special Management Considerations or Protection section, dogs (with their associated recreation activities) are a potential threat to Sierra Nevada bighorn sheep critical habitat. At issue are the effects of Wilderness Plans, associated Forest Land and Resource Management Plans, and ongoing activities on USFS lands on federally listed species, including the Sierra Nevada bighorn sheep. The goal of these plans is to describe a strategic direction for the management of the wilderness areas over a long period of time (15–20 years). The plans do not make any decisions regarding USFS site-specific project proposals for implementing the land management plans nor do they require managers to implement any specific conservation activities.

(30) *Comment:* The USFS stated that management direction was established to restrict dogs in Sierra Nevada bighorn sheep habitat located in the Mt. Baxter and Mt. Williamson California Bighorn Sheep Zoological Areas on the Inyo National Forest.

Our Response: Please see our response to Comment 29. These statements also apply to FS Order No. 04–81–3 which established these zoological areas in 1981.

(31) *Comment:* The USFS commented that the proposed critical habitat designation does not establish migration corridors between the units though migration is identified as important. While paths that rams may take between units or groups may be unpredictable, the final designation would be strengthened if it were to identify dispersal and movement corridors that are integral to the habitat elements.

Our Response: Please see our response to Comment 4.

(32) *Comment:* The USFS requests clarification on why disease transmission from domestic livestock grazing is included as a stochastic event.

Our Response: This has been corrected. We have removed those references specifically identifying the risk of disease transmission from domestic livestock from (3) of the Criteria Used To Identify Critical

Habitat section. The remaining reference addresses various diseases of North American wild sheep.

(33) *Comment:* The USFS suggested that the proposal is not as clear as it should be regarding the effects of disease transmission on Sierra Nevada bighorn sheep populations. Incorporating disease-associated risks into a PCE would strengthen the proposal.

Our Response: We have added some additional information in the biological background of the Primary Constituent Elements section of this rule. Please also see our response to Comment 1.

(34) *Comment:* The USFS stated that while it is important to decrease the degree of habitat fragmentation in the Sierra Nevada, the designation of critical habitat does not actually do that.

Our Response: Designation of critical habitat offers protection from various impacts which may be proposed on the landscape. We believe designating critical habitat in 12 units ranging from 22,037 ac (8,918 ha) to 80,966 ac (32,766 ha) does reduce potential habitat fragmentation. Providing protections for currently unoccupied areas that decrease the distances between occupied areas also assists in reducing habitat fragmentation. The protection of these unoccupied habitats will allow for future establishment of herds in these habitats through translocation or natural colonization, which will help to increase gene flow between populations. The ability to establish and maintain regular gene flow between populations of Sierra Nevada bighorn sheep is essential to their recovery. Reducing habitat fragmentation through protection of these currently unoccupied habitats under a critical habitat designation is essential to the subspecies' conservation.

(35) *Comment:* The USFS recommended that the section discussing wildfire be clarified to resolve apparent contradictions identifying which management actions and stochastic events are considered potentially beneficial or detrimental to critical habitat.

Our Response: Fires can have beneficial, as well as detrimental, effects depending on the situation including location, severity, and extent. As indicated in the Special Management Considerations or Protection section, management actions such as the suppression of wildfires over the past decades has allowed for encroachment of forested habitat into Sierra Nevada bighorn sheep habitat. This has been detrimental to the Sierra Nevada bighorn sheep by increasing habitat for predator concealment. Management actions such as prescribed fires are carried out in a planned, controlled manner in a specific area and can be beneficial to Sierra Nevada bighorn sheep by reducing selected forested habitat that can conceal predators. Stochastic events such as wildfires can be beneficial or detrimental. For example, in July 2007, lightning sparked fires in Sierra Nevada bighorn sheep habitat in the Mount Baxter herd unit. The Seven Oaks Fire burned the majority of the low elevation winter range [<8,000 ft (2438 m)] (California Department of Fish and Game 2007, p. 5). The fire may benefit Sierrra Nevada bighorn sheep by opening up forested areas. The fire also scorched the above ground vegetation. With appropriate moisture levels gained over the winter, sufficient forage may become available. The CDFG personnel intend to evaluate the effects of this fire on forage availability and quality and habitat selection by Sierra Nevada bighorn sheep in this area (California Department of Fish and Game 2007, p. 6).

(36) *Comment:* The USFS mentioned that the Mount Warren unit may not extend northward enough to encompass currently occupied habitat as a few Sierra Nevada bighorn sheep have occurred in the northern areas.

Our Response: According to 16 U.S.C. 1532(5)(C), ''critical habitat should not include the entire geographic area that can be occupied by the threatened or endangered species'' absent a finding of exceptional circumstances by the Secretary of the Interior. We based our critical habitat designation on the Recovery Team's delineation of essential habitat and as indicated in our final approved recovery plan (Service 2007, p. 41). The Recovery Team did not include all areas that have documented historical and current use by Sierra Nevada bighorn sheep, but only those areas regarded as essential for the recovery of the Sierra Nevada bighorn sheep. We used the Recovery Plan to assist in the preparation of the proposed and final critical habitat designations. Integration of these processes strengthens the scientific basis and minimizes the potential discrepancies between the two. Please refer to the final recovery plan for a more detailed discussion of the recovery strategy. The basis for the critical habitat delineation is described in the Criteria Used to Identify Critical Habitat section of this rule. We did not include the areas to the north of Mount Warren or the Bubbs Creek area as critical habitat as these areas did not meet our criteria for inclusion as critical habitat for Sierra Nevada bighorn sheep. Not including these areas within the critical habitat designation does not preclude the continued occupancy or expansion of Sierra Nevada bighorn sheep into these areas. We believe the units designated as critical habitat contain sufficient PCEs to support the behaviors we have determined are essential for the conservation of the subspecies and population criteria as identified in the final recovery plan. Therefore, we have not included these additional areas as critical habitat in the final rule.

(37) *Comment:* The USFS stated there appear to be some biological contradictions among units that were included and those that were ''excluded'' in the critical habitat designation. For example, the Bubbs Creek Herd Unit is currently occupied yet is excluded; and the Mount Warren area does not provide access to low elevation winter range yet is included.

Our Response: No areas were excluded from the final critical habitat designation. We did not designate four herd units that were mentioned in the Sierra Nevada bighorn sheep final recovery plan as they were not considered essential in the plan. Please refer to the Criteria Used to Identify Critical Habitat section for our detailed rationale for not designating these areas. Please also refer to our responses to Comments 36 and 50.

(38) *Comment:* The USFS suggested that the ramifications of global climate change be considered in the proposal.

Our Response: As indicated in the final recovery plan (Service 2007, p. 41), two northern herd units, Mount Warren and Mount Gibbs, are included as essential to the conservation of the Sierra Nevada bighorn sheep, in part, to protect this subspecies and its habitat across a range of latitudes. Climate change may induce ecological changes in the essential herd units in the south. Populations in the northern latitudes can help guard the rangewide population against loss of populations in areas that occur further south.

General Comments

Comments Related to Designation and Sierra Nevada Bighorn Sheep Biology and Management

(39) *Comment:* A few commenters stated concern for the areas of overlap between proposed critical habitat and Federal domestic sheep grazing allotments. The commenter requested that these areas of overlap (six areas with an estimated 1,000 ac (405 ha) be excluded from the critical habitat designation. If these areas are not excluded, the commenter requested specific justification and evaluation of

the habitat including what contribution these areas make to Sierra Nevada bighorn sheep and why their elimination would be detrimental to recovery efforts.

Our Response: We have determined that there are seven areas of overlap between designated critical habitat and Federal domestic sheep grazing allotments [Bureau of Land Management (BLM) or USFS], not six as the commenter stated. These allotments include: (1) Dunderberg; (2) Copper Mountain; (3) Bloody Canyon; (4) McGee; (5) Sherwin; (6) Round Mountain; and (7) Rock Creek-Hilton Unit. The overlap areas total approximately 2,209 ac (894 ha). At the time critical habitat was proposed, all of these allotments were considered vacant, inactive, or unalloted with the exception of the Rock Creek-Hilton Unit. The Rock Creek-Hilton Unit is the only active domestic sheep grazing allotment that overlaps with designated critical habitat. This overlap is 0.9 ac (0.4 ha).

In our proposed rule and this final rule, we included domestic livestock grazing as a threat to the essential features that may need special management considerations or protection within designated critical habitat units. Consultation under the Act by Federal agencies may be necessary if proposed actions may adversely affect the Sierra Nevada bighorn sheep or its critical habitat. We have determined that all seven overlap areas are essential to the Sierra Nevada bighorn sheep because they contain the features essential to the conservation of the subspecies and meet the definition of critical habitat. Please see the Criteria Used To Identify Critical Habitat section for more information. One of our objectives is to provide consistency between critical habitat designation and the essential habitat indicated in the final recovery plan (Service 2007, p. 41).

The Secretary may exclude an area from critical habitat under section 4(b)(2) of the Act after taking into consideration the economic impact, the impact on national security, and any other relevant impacts if he determines that the benefits of such exclusion outweigh the benefits of designating such area as critical habitat, unless he determines that the exclusion would result in the extinction of the species concerned.

We have previously consulted with the USFS on grazing issues in Units 1, 2, and 4 and have determined that those activities were either not likely to adversely affect the Sierra Nevada bighorn sheep or were not likely to jeopardize the continued existence of the subspecies. Since critical habitat has not been previously proposed or designated for this subspecies, it is anticipated that Federal agencies will initiate section 7 consultation as appropriate, for any activities that may affect Sierra Nevada bighorn sheep or its critical habitat. These consultations would include an analysis of destruction or adverse modification of critical habitat as well as a jeopardy analysis. Considering whether proposed future projects will result in the destruction or adverse modification of critical habitat in addition to the jeopardy analysis will require some additional analysis during the section 7 consultation process. We do not believe that the additional analysis to determine whether an action will result in the destruction or adverse modification of critical habitat constitutes a substantial burden.

According to the final EA, post-designation baseline costs for grazing are estimated at $12.5 million (undiscounted) over the next 20 years, $9.6 million applying a 3 percent discount rate, or $7.1 million applying a 7 percent discount rate. Post-designation incremental costs for grazing consultations are estimated to be $97,600 (undiscounted) over the next 20 years, $74,800 applying a 3 percent discount rate, or $55,300 using a 7 percent discount rate.

These impacts are primarily due to the predicted yearly formal section 7 consultations between the Service and the USFS on allotments in proximity to critical habitat in Unit 1. There are no forecasted post-designation incremental impacts for the other critical habitat units. Thus, costs are not considered to be disproportionate. We will continue to work with the USFS, BLM, and permittees to address concerns related to the Sierra Nevada bighorn sheep during the section 7 consultation process as appropriate.

Units 1, 2, and 4 all contain the features essential to the conservation of the Sierra Nevada bighorn sheep. The benefits of including these units in critical habitat include access to areas for foraging (summer and winter), mating, lambing, bedding, predator avoidance, seasonal elevational movements, and mineral licks.

We have considered the request by the commenters to exclude the areas listed above and the relevant impacts of designation. Based on this record, we have chosen not to exclude these areas.

(40) *Comment:* Domestic sheep producers have been working with Federal agencies informally to prevent contact between domestic sheep and Sierra Nevada bighorn sheep. These practices should be formalized by the grazing permit process.

Our Response: Federal agencies that issue grazing permits that may affect federally listed species consult with the Service as required under section 7 of the Act, as appropriate, even in the absence of critical habitat. The purpose of the section 7 consultation process is to analyze the effects of an action (e.g., the issuance of a grazing permit) to determine if the action will jeopardize the continued existence of the listed species, to provide reasonable and prudent measures to avoid and minimize the impact of incidental take, and, if necessary, to provide reasonable and prudent alternatives to avoid jeopardy. With the designation of critical habitat, Federal agencies will also determine whether the proposed action will adversely modify or destroy critical habitat under this process. The Service has, and will continue to, work with Federal agencies and grazing permittees to address concerns related to the Sierra Nevada bighorn sheep during the section 7 consultation process, as appropriate. Outside of the section 7 consultation process, the Service has the ability to provide comments to other Federal agencies during National Environmental Policy Act (NEPA) review.

(41) *Comment:* Some commenters urged the continued authorization of domestic sheep grazing on lands designated as critical habitat. Others did not support domestic sheep grazing within these areas.

Our Response: The designation of critical habitat does not automatically eliminate or place restrictions on domestic sheep grazing or other land use activities in areas that overlap with critical habitat. For those areas on Federal lands, consultation under section 7 of the Act may be appropriate. Please also see our response to Comments 23 and 39.

(42) *Comment:* A concern was raised that elimination of cattle grazing at higher elevations may occur due to the designation of critical habitat.

Our Response: There are several Federal cattle grazing allotments (USFS and BLM administered lands) that overlap with critical habitat designation in both occupied and unoccupied units. The designation of critical habitat does not automatically eliminate or place restrictions on cattle grazing or other land use activities in areas that overlap with critical habitat. To date, we have not conducted section 7 consultations with other Federal agencies related to impacts of cattle grazing to Sierra Nevada bighorn sheep. However, if the Federal agencies determine that

issuance of grazing permits may affect Sierra Nevada bighorn sheep or its critical habitat, they will request consultation under section 7 of the Act.

(43) *Comment:* One commenter recommended that managed cattle grazing be ''protected,'' or retained, within critical habitat as a recovery tool.

Our Response: There are currently several Federal cattle grazing allotments located within designated critical habitat. We do not know the amount of private lands where cattle grazing may also occur within critical habitat, but the total amount is not more than 1,005 ac (407 ha). Cattle grazing on Federal allotments within critical habitat should be reviewed under section 7 of the Act if it may affect Sierra Nevada bighorn sheep or its critical habitat. In addition, the suggestion that Federal domestic sheep grazing allotments could be converted to cattle grazing allotments to reduce the potential impacts of disease transmission from domestic sheep to Sierra Nevada bighorn sheep has been raised. Allotment conversion would require Federal agency involvement, as well as willingness and ability on the part of the permittee. This suggestion has been included in the final recovery plan for the Sierra Nevada bighorn sheep (Service 2007, pp. 64 and 70).

(44) *Comment:* Habitat protection and disease issues are different and should be treated separately.

Our Response: These issues are treated differently as indicated by the definition of critical habitat stated in this rule under the Critical Habitat section and the activities addressed under the Special Management Considerations or Protection section.

(45) *Comment:* Why is 417,000 ac (168,757.6 ha) needed for 400 Sierra Nevada bighorn sheep?

Our Response: The critical habitat designation of 417,577 ac (168,992 ha) is not only for the estimated 400 Sierra Nevada bighorn sheep's current population. The area of critical habitat is also for the additional animals that are needed for the recovery of the species and to provide sufficient area for their life history requirements. According to the final recovery plan, there should be an estimated minimum total of 305 females at least 1 year of age throughout the four recovery units at the time of delisting (Service 2007, p. 47). Based upon a natural adult sex ratio of about 70 males:100 females, the minimum total population (both sexes) is estimated to be 520 adults at delisting. Since this number is based on a minimum requirement for each recovery unit, the total population is likely to be higher. This number would be higher still with young of the year also included in the total (Service 2007, p. 44).

(46) *Comment:* Why is it necessary to have critical habitat if section 7 is already being used?

Our Response: Under section 7(a)(2) of the act, Federal agencies must consult with the Service to ensure that their actions do not jeopardize the continued existence of listed species. By designating critical habitat, section 7 of the Act also protects the recovery needs of the species by requiring Federal agencies to ensure that their actions will not result in the destruction or adverse modification of designated critical habitat. For additional information, please also refer to our response to Comment 28.

(47) *Comment:* Several comments were received related to recreational activities and what the designation of critical habitat signifies now and in the future. Some commenters recommended that snowmobiles and off-road vehicles be prohibited in critical habitat and existing routes be closed. Others thought it was appropriate to ''exclude'' dogs or require them to be on leashes at all times. Others recommended that no new off-road vehicle trails be built in critical habitat. Others expressed support for our ''exclusion'' of particular recreational areas from the designation. Others requested no restrictions on backcountry use. Others wondered if public use would continue as it does currently. Others recommended that any restrictions apply to both guided and non-guided public alike. A few commenters suggested that the rule be changed to state that most, if not all, types of recreation were non-threatening to Sierra Nevada bighorn sheep, especially when bighorn sheep are not overtly threatened and have access to escape terrain. Some suggested continued monitoring of both Sierra Nevada bighorn sheep and the effects of people's interaction with them as recreation is an important component of the economy.

Our Response: Proposed and final rules designating critical habitat do not automatically eliminate or place restrictions on any recreational activities or opportunities within critical habitat. This rule did not ''exclude'' any particular recreational area from the critical habitat designation; these areas were not included because they did not meet our criteria for designating critical habitat for Sierra Nevada bighorn sheep. For more information on the criteria used to delineate critical habitat please see the Criteria Used to Identify Critical Habitat section in this rule. The designation of critical habitat is not a management plan, nor does it put in effect or restrict management activities. The Special Management Considerations or Protection section of this final rule lists actions that may impact the PCEs for Sierra Nevada bighorn sheep and serves as a guide to Federal agencies that may conduct or permit actions within designated critical habitat. The USFS and National Park Service may have restrictions (e.g., quotas, seasonal closures, dog prohibitions or leash requirements) already in place in some areas to address resource concerns, as well as to reduce impacts to wildlife, including Sierra Nevada bighorn sheep. Due to areas of rugged terrain and inaccessibility, as well as wilderness designations, some recreational activities (e.g., snowmobiling, off-road vehicle use) are not possible within portions of the designated critical habitat. Other activities, such as rock and ice climbing and peak bagging, are specific to these rugged areas. We encourage the public to enjoy the Sierra Nevada while treating it with respect. With proper management, recreational activities can or may be compatible with Sierra Nevada bighorn sheep conservation and recovery. It is the responsibility of the Federal agencies to review the various kinds of recreational activities currently allowed, where they are allowed, and the seasonal use of these areas among other things, to determine if these activities may result in the destruction or adverse modification of critical habitat. Federal agencies will review all proposed actions in accordance with section 7(a)(2) of the act in light of possible increases of sheep-human interaction due to both increasing Sierra Nevada bighorn sheep and human populations, and subsequent habitat use changes. We will continue to work with Federal agencies and those who need Federal permits through the section 7 consultation process to address recreational activities that may affect Sierra Nevada bighorn sheep habitat. We have added some additional information related to bighorn sheep and human interactions in the Special Management Considerations or Protection section in this rule. As previously stated, we will continue to recommend that studies be implemented to clarify any potential impacts of different recreational activities on Sierra Nevada bighorn sheep and their habitat to assist with decision-making processes.

(48) *Comment:* While several commenters expressed support for the critical habitat designation as proposed,

a majority of commenters expressed a desire that additional lands be included. Some offered a general statement to expand the critical habitat designation while others provided more specific statements of additional areas to be included. These recommendations were to include: (1) All historical and currently occupied areas; (2) areas north of Mount Warren; (3) all occupied and unoccupied habitat essential for survival and recovery; (4) all areas identified as of recovery value in the recovery plan; and (5) the Bubbs Creek area.

Our Response: Please see our response to Comment 36.

(49) *Comment:* Many ranchers have lost faith in the Service's ability to implement Sierra Nevada bighorn sheep recovery and re-introduction efforts while protecting ranching operations. For example, ''a rancher lost his Bloody Canyon USFS Allotment, although previously promised that Sierra Nevada bighorn sheep recovery would not require any changes in the use of [the Bloody Canyon] allotment.''

Our Response: The ''promise'' referred to in the comment above relates to two letters, one written by the CDFG dated August 27, 1984, and addressed to the Inyo National Forest, and the other written by the Forest Service dated December 20, 1989, and addressed to the permittee. It is important to note that these letters were written by other agencies prior to the Federal listing of the Sierra Nevada bighorn sheep in 2000, and prior to the Service's involvement with this subspecies. Since the listing of the subspecies and development of the recovery plan, substantial new information has been gathered regarding areas used by Sierra Nevada bighorn sheep. The Service has and will continue to coordinate with individual ranchers, the State of California, and other Federal agencies to promote the recovery of Sierra Nevada bighorn sheep while balancing the needs of affected permittees and conservation of the subspecies through the section 7 consultation process. Also, please refer to our response to Comment 40.

(50) *Comment:* The areas of Twin Lakes, Green Creek, Coyote Ridge, and Bubbs Creek should not be ''excluded'' from critical habitat designation.

Our Response: These four areas were not ''excluded'' from the critical habitat designation. These four areas were not included within our critical habitat designation because they were not determined to be essential for the conservation of the Sierra Nevada bighorn sheep. Please see the Criteria Used to Identify Critical Habitat section for our rationale.

(51) *Comment:* Some commenters agreed that the four existing plans [Sierra Nevada Bighorn Sheep Recovery and Conservation Plan (Sierra Nevada Bighorn Sheep Interagency Advisory Group 1984); the Bighorn Sheep Management Plan (National Park Service 1986); the Inyo National Forest Resource & Management Plan (U.S. Forest Service 1988); and A Conservation Strategy for Sierra Nevada Bighorn Sheep (Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997)] should not result in the exclusions of lands covered by these plans from critical habitat designation. One commenter thought we should exclude these lands because the plans already exist and there are recovery projects in place.

Our Response: We have indicated our rationale for not excluding areas covered by these four plans as indicated in the Application of section 4(b)(2) of the Act section of this final rule. These plans are general in nature and reflect our knowledge at that time. All plans were prepared prior to the listing of the subspecies. Specific recovery projects and actions are a result of the draft and final recovery plans, not these four documents.

(52) *Comment:* Does the designation of critical habitat allow for management of mountain lions?

Our Response: The designation of critical habitat will not affect the management of mountain lions as their control is not a habitat-based threat. The encroachment of vegetation that provides cover for predators of the Sierra Nevada bighorn sheep is a habitat-based threat, and actions to manage the vegetation encroachment may require special management considerations or protection as discussed in this rule. We, along with CDFG, recognize the role that mountain lions have played in the status of the Sierra Nevada bighorn sheep. Beginning in 2000, CDFG began placing radio collars on mountain lions near Sierra Nevada bighorn sheep ranges and monitoring them to assist in the removal of selected individuals to benefit Sierra Nevada bighorn sheep. Mountain lions are a necessary and important part of the Sierra Nevada ecosystem; Sierra Nevada bighorn sheep have evolved with this predator on the landscape. As the numbers of Sierra Nevada bighorn sheep increase with recovery, the need for mountain lion control specifically for the benefit of Sierra Nevada bighorn sheep should be reduced and eventually eliminated.

(53) *Comment:* One commenter questioned whether land use managers would be allowed to use prescribed burning and logging within critical habitat.

Our Response: Prescribed burning and logging would be considered habitat-based activities that could affect the PCEs. Federally proposed actions would be analyzed during the section 7 consultation process as appropriate. As indicated in the rule, prescribed burning can benefit Sierra Nevada bighorn sheep by increasing visibility of the landscape. These activities may be able to proceed as determined during the section 7 consultation process.

(54) *Comment:* Sierra Nevada bighorn sheep deaths due to tranquilization and horns being ripped off during research activities are a management problem.

Our Response: Since 2001, when CDFG's Sierra Nevada Bighorn Sheep Recovery Program was established, there have been 44 deaths (2 rams, 2 ewes) among the approximately 150 captures conducted to date (2.7 percent) (Stephenson 2008, p. 1). Sierra Nevada bighorn sheep are not tranquilized. One ewe is known to have broken a horn sheath (not horn) during capture activities. Documentation of injuries or deaths occurring during capture activities must be provided to the Service under CDFG's section 10(a)(1)(A) recovery permit issued under the Act. The reporting documentation must describe in detail the circumstances that led to the injury or mortality and include a description of the changes in activity protocols that will be implemented to reduce the likelihood of such an injury or mortality from occurring again. All incidents are reviewed by the Service and capture procedures are changed, if necessary, to reduce subsequent injuries or deaths. The recovery permit allows for a determined level of incidental take to occur on an annual basis that will not jeopardize the continued existence of the species. In addition, the importance and recovery value of information obtained during these activities and subsequent monitoring of Sierra Nevada bighorn sheep is utilized in our population management and rangewide recovery management decisions. Although we acknowledge that certain levels of take may occur when conducting authorized activities for Sierra Nevada bighorn sheep, we make every effort to minimize take to the maximum extent practicable.

(55) *Comment:* The Special Management Considerations and Protection section provides no assurances that existing development

activities, livestock grazing, mining, recreation, etc. can continue.

Our Response: The Special Management Considerations or Protection section of this rule identifies the types of activities that could impact the PCEs in the designated critical habitat units. It is not meant to provide assurances but to identify areas of concern for Federal agencies to determine if a proposed action may affect Sierra Nevada bighorn sheep habitat and should be addressed under the section 7 consultation process. Please also refer to our response to Comment 28.

(56) *Comment:* Explicit management recommendations for off-road vehicles and domestic sheep grazing should be included in the final rule.

Our Response: In the Special Management Considerations or Protection section, we indicate various management activities that may affect designated critical habitat. We purposefully do not provide explicit management recommendations for the various activities so that the action agency and the Service can determine appropriate measures on a case-by-case basis during the section 7 consultation process.

(57) *Comment:* The purchase of private lands should be a priority to reduce the concern of disease transmission from domestic to Sierra Nevada bighorn sheep.

Our Response: There is little private land (1,005 ac (407 ha)) within the units designated as critical habitat. We do not know the extent of private acreage, if any, that provides domestic sheep or goat grazing. The purchase of private lands for the purposes of critical habitat is not within the scope of this final rule; however, purchase of private lands from willing sellers would be an option for recovery purposes and could, in some areas, reduce the potential of disease transmission from domestic to Sierra Nevada bighorn sheep.

(58) *Comment:* One commenter stated there is little definitive information or predictive ability regarding avalanches in almost all areas recommended as critical habitat. The rule should reflect real and practical activities not speculative ones such as avalanche control.

Our Response: We agree that it is difficult to predict and manage avalanche danger in many areas of the Sierra Nevada, and we are not proposing a comprehensive plan for control of avalanches to protect Sierra Nevada bighorn sheep. However, opportunistic management of avalanche danger in some locations may be possible (e.g., SR 120 corridor). Mortality of Sierra Nevada bighorn sheep from avalanches is a real and documented threat that can result in losses of large numbers of individuals. We are working to buffer the subspecies against these stochastic losses by establishing additional populations that spread the risk across a larger area. We are also working to improve winter range habitat, to reduce winter range predation, and to increase population sizes. The goal of these activities is to increase use of winter range by Sierra Nevada bighorn sheep, so that they are not at high elevation locations during the season of highest avalanche danger. However, we do not rule out the possibility of recommending avalanche control in areas where we believe it might be effective in protecting some populations that are not utilizing winter range.

(59) *Comment:* Sheep crossing signs should be installed in the Tioga Pass and June Lake Loop areas for the safety of motorists as well as the Sierra Nevada bighorn sheep.

Our Response: Sign placement is outside the scope of this rule. However, the Service is supportive of continuing efforts to increase public awareness of Sierra Nevada bighorn sheep.

(60) *Comment:* The critical habitat overlaps existing wilderness designations creating another layer of bureaucracy.

Our Response: Some of the critical habitat units do overlap portions of wilderness; however, these two designations do not achieve the same goals. The Wilderness Act of 1964 created a National Wilderness Preservation System. Federal lands designated by Congress as ''wilderness areas'' are to be ''administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use as wilderness, and as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness.'' A wilderness designation prohibits commercial enterprises; permanent roads (with some exceptions); use of motorized vehicles, equipment, and boats; aircraft landing; temporary roads; and structures or installations (with some exceptions). It does not prohibit activities such as some mining and associated activities, water resource and development and their associated support facilities, grazing, and recreational activities. The Wilderness Act also did not affect the ''jurisdiction or responsibilities of the several States with respect to wildlife and fish in the national forests.'' The stated purpose of the ESA, as amended, is, in part, '' * * * to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species.'' Some activities that are permissible under the Wilderness Act may affect the conservation of the Sierra Nevada bighorn sheep as indicated in our Special Management Considerations or Protection section. Therefore, the designation of critical habitat provides protections to the Sierra Nevada bighorn sheep that a wilderness designation does not.

(61) *Comment:* Manage ''all suitable historic range'' for Sierra Nevada bighorn sheep as events such as fire may create landscape changes that may encourage use in areas of historic range not currently suitable.

Our Response: Please see our response to Comment 36.

Comments Related to Criteria and Methods

(62) *Comment:* Critical habitat should not be reduced to avoid potential difficulties with conflicting uses such as domestic sheep grazing in the northern units.

Our Response: We have not reduced the amount of designated critical habitat in this final rule compared to the proposed rule due to potential conflicts with domestic sheep grazing. Please review the Criteria Used to Identify Critical Habitat section, as well as our response to Comment 39. The two herd units in the northern area, Twin Lakes and Green Creek, were not included in the critical habitat designation because they did not meet our criteria and are not considered essential to the conservation of the Sierra Nevada bighorn sheep. There is scientific uncertainty regarding whether these two herd units can support viable herds. There is a lack of historical evidence indicating numbers and uncertainty about connectivity between summer and winter ranges. Potential conflict with domestic sheep grazing was not a factor for not including these two areas in the designation.

(63) *Comment:* A concern was raised regarding the use of a road in proximity of critical habitat boundaries.

Our Response: Existing roads and the lands under them are not considered critical habitat. Please also refer to our response to Comment 12.

Comments Related to Taxonomy

(64) *Comment:* The taxonomic revision should not be included in a rule on critical habitat.

Our Response: While this rule is primarily to designate critical habitat for the Sierra Nevada bighorn sheep, the Service legally and appropriately determined to use this rulemaking process to address and correct related issues. The final listing rule published on January 3, 2000 (65 FR 20), inadvertently listed this entity as a DPS rather than as a subspecies. We sought to use our limited resources most efficiently by proposing the taxonomic revision to the Sierra Nevada bighorn sheep with our proposed critical habitat designation. We are revising the scientific name for the Sierra Nevada bighorn sheep from *Ovis canadensis californiana* to *Ovis canadensis sierrae* based on the current understanding of this subspecies' taxonomy.

(65) *Comment:* The taxonomic issue was not adequately addressed in the proposed rule.

Our Response: We have provided a more thorough discussion of the genetic and morphometric studies supporting the distinctness of Sierra Nevada bighorn sheep as compared with other bighorn sheep populations in the Background section of this final rule.

(66) *Comment:* One commenter stated that the taxonomic question of whether the Sierra Nevada bighorn sheep is a unique subspecies should be answered before proceeding with the critical habitat designation.

Our Response: The Sierra Nevada bighorn sheep, at listing, was thought to be part of a larger California bighorn sheep subspecies, *Ovis canadensis californiana*. However, based on the best scientific information available, genetic and morphologic research now indicates it should be classified as a separate subspecies, *O. c. sierrae*. Please see additional information provided in the Background section of this rule. We are aware of an unpublished preliminary analysis performed by the NDOA suggesting that Sierra Nevada bighorn sheep may be part of a continuous population of Nevada desert bighorn sheep. This analysis is based on microsatellite markers of samples collected from approximately 100 desert bighorn sheep from Nevada and California and one Sierra Nevada bighorn sheep from California. These results are preliminary and limited due to the single sample for Sierra Nevada bighorn sheep. This analysis has not been presented as a technical paper or published in a peer reviewed scientific publication. We cannot consider this as substantial new information at this time. Until further research is conducted either supporting or rejecting the suggestion that Sierra Nevada bighorn sheep is a part of a continuous population of Nevada desert bighorn sheep, we will use the best scientific information currently available indicating that Sierra Nevada bighorn sheep should be classified as a separate subspecies, *O. c. sierrae*.

(67) *Comment:* The animals found north of Mammoth Lakes should be declared Nelson bighorn or Nelson/Sierra Nevada bighorn sheep hybrids.

Our Response: The commenter did not provide any data to support this statement, nor do we have any data to support this statement. Please refer to our response to Comment 66.

(68) *Comment:* Sierra Nevada bighorn sheep genetic material should be released to a third party so additional analyses can be conducted to determine whether this is a distinct subspecies.

Our Response: To conduct research on a listed species, such as involving genetic material (considered a body part), a section 10(a)(1)(A) of the Act permit application must be submitted to the Service. The permitting process is described in 50 CFR 17.22, Permits for scientific purposes, enhancement of propagation or survival, or for incidental taking. Currently, only one entity has applied for and been issued a permit under section 10(a)(1)(A) of the Act for research activities involving Sierra Nevada bighorn sheep; this permit covers several individuals and institutions specifically listed in the permit.

Comments Related to Legal and Procedural Issues

(69) *Comment:* There is public frustration that a lawsuit is instigating designation of critical habitat at this time.

Our Response: The Act requires designation of critical habitat at the time of listing unless not prudent or undeterminable. We are complying with a court approved settlement agreement to designate critical habitat for Sierra Nevada bighorn sheep. As indicated by the settlement agreement, we are required to submit to the **Federal Register** a final determination of critical habitat designation by July 17, 2008. Please see our Previous Federal Actions section of the rule for further details.

(70) *Comment:* A commenter was concerned that the final critical habitat designation could be expanded in the future.

Our Response: Section 4(a)(3)(B) of the Act provides that critical habitat designations may, from time-to-time, be revised. A revision can propose an expansion or contraction of the boundaries. Any such revision would again be published in the **Federal Register** as a proposed rule with an opportunity for public comment before any such revision is made final.

(71) *Comment:* Why was the designation for critical habitat for the Sierra Nevada bighorn sheep not completed sooner?

Our Response: Please refer to the Previous Federal Actions section of this final rule for additional information on this topic.

(72) *Comment:* The Service must designate sufficient critical habitat to support the ''conservation'' and ''recovery'' of the Sierra Nevada bighorn sheep, not just survival.

Our Response: The process of designating critical habitat as described in the Act requires that the Service identify those lands on which are found the physical or biological features essential to the conservation of the species that may require special management considerations or protection, and the areas outside the current range of the species that are essential for its conservation. In identifying those lands, the Service must consider the recovery, as well as the survival, needs of the species. Once critical habitat has been designated, Federal agencies must consult with the Service under section 7(a)(2) of the Act to ensure that their actions will not destroy or adversely modify designated critical habitat or jeopardize the continued existence of the species. As noted in the Ninth Circuit's *Gifford Pinchot* decision, the jeopardy and adverse modification standards are distinct. Through the section 7(a)(2) consultation process, critical habitat designations provide recovery benefits to species by ensuring that Federal actions will not result in the destruction or adverse modification of designated critical habitat.

This final designation of critical habitat identifies units that are identical to those herd units that the recovery plan for the Sierra Nevada bighorn sheep identifies as necessary for recovery. Therefore, we believe we fully considered the recovery and survival needs of the Sierra Nevada bighorn sheep in this designation of critical habitat.

(73) *Comment:* The four herd units not included in the critical habitat likely qualify as a significant portion of the range for Sierra Nevada bighorn sheep. If Sierra Nevada bighorn sheep are recovered in the critical habitat, the subspecies would still be considered threatened or endangered in a significant portion of its range due to the four units not being included. The designation ignores recommendations of scientists that indicate that the Northern Recovery Unit is needed for recovery

and does not meet the recovery plan's objectives for reintroducing animals to vacant herd units or for increasing the number of herds by increasing geographic distribution and numbers.

Our Response: The determination of a significant portion of a species range is not relevant to the designation of critical habitat. Rather, it applies in the context of listing or delisting a particular species; therefore, we do not consider what constitutes a significant portion of a species range in this final designation of critical habitat.

The recovery plan identifies four specific measurable criteria for delisting. Delisting Criterion B2 indicates that Sierra Nevada bighorn sheep must occupy 12 herd units. The recovery plan specifies 12 essential herd units that would likely contribute to recovery by receiving Sierra Nevada bighorn sheep through translocation or natural migration. The plan also identifies four non-essential herd units as locations that Sierra Nevada bighorn sheep could occupy based on historical Sierra Nevada bighorn sheep locations and habitat characteristics. However, the recovery plan did not identify these four herd units as essential to recovery because of uncertainty over whether viable populations could persist in these locations long-term. Three of the four non-essential herd units are currently unoccupied.

Because the critical habitat units and essential herd units have the same boundaries, we can achieve population size and distribution recovery goals for this species if we can establish and maintain populations within them. These critical habitat units are consistent with the recovery plan's goal of establishing new herds in currently unoccupied suitable habitat. Five of the critical habitat units are currently unoccupied, but we have designated them as critical habitat because these areas are essential to the establishment of herds that are necessary for recovery of the species.

Therefore, the recommendation for retaining the Northern Recovery Unit has been addressed through identification of the Mount Gibbs and Mount Warren essential herd units in the recovery plan and designation of critical habitat encompassing these two units.

(74) *Comment:* The rule should be suspended until the ''required determinations'' have been made.

Our Response: As stated in the proposed rule, we indicated we would wait on the draft economic analysis to respond to various determinations. On February 5, 2008 (73 FR 6684), we published the notice of availability of our draft economic analysis, which also included our amended required determinations based on the draft economic analysis. This final rule contains our final required determinations which are based on the final economic analysis of this critical habitat designation. Please see the Required Determinations section for more information.

(75) *Comment:* The Service did not have resumes for the peer reviewers.

Our Response: The Service solicits opinions of independent peer reviewers to ensure that our designations are based on ''scientifically sound data, assumptions, and analyses.'' Our longstanding practice does not require resumes to be submitted by peer reviewers.

(76) *Comment:* A commenter noted that one of the solicited peer reviewers was included in the literature citations for the proposed rule and questioned whether the peer reviewer had input during preparation of the proposed critical habitat.

Our Response: The citation is for a document published by the peer reviewer in 2002. The peer reviewer did not have input during the preparation of the proposed critical habitat designation. Like the public, it is appropriate for a peer reviewer to provide input for a final critical habitat designation through comments on the proposed designation.

(77) *Comment:* An Environmental Impact Statement (EIS) should be required for any proposed project which may affect critical habitat.

Our Response: Requiring an EIS is beyond the scope of a critical habitat designation. The Federal action agency will be responsible for the appropriate level of NEPA compliance with respect to any future proposed project. The level of such compliance would be determined by the action agency at that time.

(78) *Comment:* A few comments were received related to the two public meetings and one hearing held on the proposed critical habitat designation. While some people expressed appreciation of the Service's time and the opportunity to review maps, obtain hand out materials, and ask questions of Service employees one-on-one, others wanted a formal presentation with an opportunity to ask questions in a group setting. One commenter objected that public speaking time at the hearing was limited when few people had signed up to speak.

Our Response: Although we have complied with the appropriate legal requirement, we appreciate this feedback and will continue to seek opportunities to share information on Sierra Nevada bighorn sheep with the public.

(79) *Comment:* Critical habitat boundary maps should have been overlaid on a topographic map.

Our Response: Maps published in the **Federal Register** must be printed in a simplified format. In addition, due to the remote locations of the units, the number of landmarks available to assist with location descriptions is limited. The boundary descriptions in the Regulation Promulgation section of the final rule indicate the specific critical habitat unit boundaries.

(80) *Comment:* One commenter stated that the Service was moving too quickly and without having documents peer reviewed before citing them in the proposed critical habitat rule and DEA. The study by Clifford *et al.* (2007) was used as an example.

Our Response: As indicated in the Critical Habitat section of this rule, we are legally required to use the best scientific and commercial data available when designating critical habitat. Under our Policy on Information Standards Under the Endangered Species Act and the Information Quality Act, we are able to use information available to us as publications in peer-reviewed scientific journals, agency documents, reports, etc. Many of these documents are not peer reviewed. Our use of Clifford *et al.* (2007) is not the basis for our designation of critical habitat for this subspecies; rather, we used it to provide information related to assessing the risk of and potential for a respiratory outbreak in Sierra Nevada bighorn sheep due to contact with domestic sheep. Addressing the presence of domestic sheep and grazing activities within critical habitat relates to the Special Management Considerations or Protection section. Please see our response to Comment 17.

Comments Related to Economic Issues

(81) *Comment:* It was requested that the Pine Creek Mine be excluded from the critical habitat designation for economic, national security, and safety issues.

Our Response: When determining critical habitat boundaries for Sierra Nevada bighorn sheep, we made every effort to avoid including developed areas such as lands covered by buildings, paved areas, and other structures that lack PCEs for the Sierra Nevada bighorn sheep. The scale of the maps prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed areas. Any such features and the land under them

inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the final rule and are not designated as critical habitat. Therefore, Federal actions limited to these areas would not trigger section 7 consultation, unless they may affect the species or PCEs in adjacent critical habitat.

We consider activities such as new road construction, maintenance activities, road widening, and mining and construction of associated facilities as potentially impacting additional lands not within the footprint of existing facilities. These activities may affect the features that may need special management considerations or protection within designated critical habitat units. Federal agencies consult under section 7 of the Act to ensure that their proposed actions do not jeopardize the continued existence of the Sierra Nevada bighorn sheep or result in the destruction or adverse modification of its critical habitat. We have determined that undeveloped areas of the Pine Creek Mine are essential to the Sierra Nevada bighorn sheep as they contain the features essential to the conservation of the subspecies and meet the definition of critical habitat. Please see the Criteria Used To Identify Critical Habitat section for more information. One of our objectives is to provide consistency between critical habitat designation and the essential habitat indicated in the final recovery plan (Service 2007, p. 41).

The Secretary may exclude an area from critical habitat under section 4(b)(2) of the Act after taking into consideration the economic impact, the impact on national security, and any other relevant impact if he determines that the benefits of such exclusion outweigh the benefits of designating such area as critical habitat, unless he determines that the exclusion would result in the extinction of the species concerned.

We have considered this request by the commenter. We appreciate the commenter's willingness to continue to work with California Department of Game and Fish and the Service and provide access and use of mine roads, the helipad, and parking lots to assist with Sierra Nevada bighorn sheep monitoring activities. We are aware of the revegetation of tailings piles during the mine's idle years which have subsequently been used by Sierra Nevada bighorn sheep during winter months. We have previously consulted with the USFS on mining associated activities related to this mine and determined that those activities were not likely to adversely affect the Sierra Nevada bighorn sheep. Since critical habitat has not been previously proposed or designated for this species, it is anticipated that the USFS will initiate section 7 consultation as appropriate for any new activities proposed by the mine operators for which action agency authorization is required. These new activities may include construction or modification of escapeways and other safety facilities and surface stations and reworking of existing tailings piles. We will continue to work with the USFS and the permittee to address concerns related to the Sierra Nevada bighorn sheep during the section 7 consultation process as appropriate.

According to the final EA, post-designation baseline (due to listing) undiscounted costs for habitat management of which Pine Creek Mine is a portion is estimated at $14.8 million over the next 20 years (including $267,000 for impacts due to mining consultations). Post-designation incremental undiscounted costs (due to the designation of critical habitat) for mining consultations are estimated to be $14,640 over the next 20 years. These impacts are due to the predicted section 7 consultations by the USFS to address mining activities. Thus, costs are not considered to be disproportionate and we are not excluding these lands based on economic impacts.

The commenter also requested lands be excluded based on national security concerns. The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108–136) amended section 4(a)(3)(B) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) to state that the Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resource management plan (INRMP) prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. The land in question is not Department of Defense land and does not have an INRMP. While the commenter provided information on use and application of tungsten in military applications, we do not believe that the designation of critical habitat will preclude the continued operation of the Pine Creek Mine. Additionally, a designation of critical habitat is not likely to preclude further development or exploration at the mine. Any future consultations under section 7 of the Act will include an analysis of adverse modification of critical habitat as well as a jeopardy analysis. We will continue to work with the USFS and permittee to address concerns related to the Sierra Nevada bighorn sheep during the section 7 consultation process as appropriate. Therefore, we are not excluding these lands based on national security concerns.

In conclusion, based on the record before us, we are not excluding those USFS lands on which the Pine Creek Mine occurs that meet the definition of critical habitat for Sierra Nevada bighorn sheep.

(82) *Comment:* The economic analysis should be conducted in a timely manner.

Our Response: Pursuant to 50 CFR 424.19, we are not required to conduct an economic analysis at the time critical habitat is proposed. It would be ideal to provide the draft economic analysis with the proposal. However, due to the short time frame to complete the proposal, we were unable to do so. We published the proposed critical habitat designation on July 25, 2007 (72 FR 40956), invited public comment, and held one hearing and two informational meetings. We reopened the public comment period on the draft economic analysis and the proposed critical habitat designation for 30 days beginning on February 5, 2008 (73 FR 6684). We believe we provided adequate time for the public to provide comment on the proposed rule as well as the economic analysis consistent with the court-approved deadline for this determination. Comments received during the two open comment periods and during the public hearing and informational meetings were reviewed and incorporated into our decision making process as appropriate.

(83) *Comment:* The economic analysis for the critical habitat designation should show the cumulative impacts since listing the species.

Our Response: In the economic analysis, costs were developed as pre-designation baseline, post-designation baseline, and post-designation incremental impacts. The pre-designation baseline and the post-designation baseline indicate the costs of the impacts of listing of the Sierra Nevada bighorn sheep. The post-designation incremental impacts are differentiated from the baseline as they are specifically related to the critical habitat designation. Thus, the economic analysis does provide a cumulative analysis of the economic impacts of actions taken to protect the Sierra Nevada bighorn sheep since its listing. Please refer to the final economic analysis for details.

Comments Related to the Draft Economic Analysis

Policy Issues

(84) *Comment:* One commenter states that the DEA does not state that while nearly half of the estimated economic impacts from proposed critical habitat are from the Mount Warren and Mount Gibbs habitat units, the northern herd units contain less than five percent of the total Sierra Nevada bighorn sheep herd population. The comment also states that incurring these impacts would be a futile, huge waste of money and that the DEA should draw the same conclusion.

Our Response: As described in the framework of the economic analysis (Chapter 1), the purpose of the analysis is to estimate the economic impacts of Sierra Nevada bighorn sheep conservation measures as comprehensively as possible with publicly available data. A judgment concerning effectiveness or efficiency of the conservation measures that may be required by critical habitat designation is beyond the scope of the economic analysis.

(85) *Comment:* One commenter is concerned that the DEA does not calculate the costs of regulatory takings.

Our Response: In accordance with E.O. 12630 (''Government Actions and Interference with Constitutionally Protected Private Property Rights''), we have analyzed the potential takings implications of designating critical habitat for the Sierra Nevada bighorn sheep in a takings implications assessment. Critical habitat designation does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. The takings implications assessment concludes that this designation of critical habitat for the Sierra Nevada bighorn sheep does not pose significant takings implications.

(86) *Comment:* A commenter stated that there was not enough time provided in the comment period. Instead of designating critical habitat, the Service should set up a pilot program in order to get insight from the ranchers and biologists together. Information from the pilot program could then be used for designating critical habitat.

Our Response: On October 9, 2007 (72 FR 57276), we extended the time period for public comment on the proposed critical habitat designation to gather additional information. A second comment period was opened for comments on the DEA and the proposed rule on February 5, 2008 (73 FR 6684). In our proposed rule we asked for ways that we could improve or modify our approach to designating critical habitat. This could include ways to provide greater public participation or ways to better accommodate public concerns and comments. We appreciate the idea about establishing a pilot program for public participation. We welcome details from the commenter on the specifics of how that could be implemented.

(87) *Comment:* A few commenters stated that the DEA does not quantify any benefits. These benefits could be consumptive, non-consumptive or scenic.

Our Response: In the context of a critical habitat designation, the primary purpose of the rulemaking (i.e., the direct benefit) is to designate areas that contain the physical and biological features that are essential to the conservation of listed species. The designation of critical habitat may result in two distinct categories of benefits to society: (1) Use; and (2) nonuse benefits. Use benefits are simply the social benefits that accrue from the physical use of a resource. Visiting critical habitat to see endangered species in their natural habitat would be a primary example. Non-use benefits, in contrast, represent welfare gains from the knowledge that a particular listed species' natural habitat is being specially managed for the survival and recovery of that species. Both use and non-use benefits may occur unaccompanied by any market transactions.

A primary reason for conducting this economic analysis is to provide information regarding the economic impacts associated with a proposed critical habitat designation. Section 4(b)(2) of the Act requires the Secretary to designate critical habitat based on the best scientific data available after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. Economic impacts can be both positive and negative and, by definition, are observable through market transactions.

Under Executive Order 12866 (E.O. 12866), Office of Management and Budget (OMB) directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions. OMB's Circular A–4 distinguishes two types of economic benefits: Direct benefits and ancillary benefits. Ancillary benefits are defined as favorable impacts of a rulemaking that are typically unrelated, or secondary, to the statutory purpose of the rulemaking. In the context of critical habitat, the primary purpose of the rulemaking (i.e., the direct benefit) is to assist in the conservation of the species. The published economics literature has documented that social welfare benefits can result from the conservation of endangered and threatened species. In its guidance for implementing E.O. 12866, OMB acknowledges that it may not be feasible to monetize, or even quantify, the benefits of environmental regulations due to either an absence of defensible, relevant studies or a lack of resources on the implementing agency's part to conduct new research. Rather than rely on economic measures, the Service believes that the direct benefits of the proposed rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.

Critical habitat designation may also generate ancillary benefits. Critical habitat aids in the conservation of species specifically by protecting the primary constituent elements on which the species depends. Critical habitat designation can result in maintenance of particular environmental conditions that may generate other social benefits aside from the preservation of the species. Management actions undertaken to conserve a species or habitat may have coincident, positive social welfare implications, such as increased recreational opportunities in a region. While they are not the primary purpose of critical habitat, these ancillary benefits may result in gains in employment, output, or income that may offset the direct, negative impacts to a region's economy resulting from actions to conserve a species or its habitat.

It is often difficult to evaluate the ancillary benefits of critical habitat designation. To the extent that the ancillary benefits of the rulemaking may be captured by the market through an identifiable shift in resource allocation, they are factored into the overall economic impact assessment in the EA. Where data are available, the analysis attempts to capture the net economic impact (i.e., the increased regulatory burden less any discernable offsetting market gains) of species conservation efforts imposed on regulated entities and the regional economy.

General Methodology

(88) *Comment:* A commenter states that it is not feasible to do an economic analysis without preparing environmental impact statements because the inability of the DEA to

predict future restrictions makes the report too vague.

Our Response: The best predictions possible concerning conservation efforts and their impacts have been provided, based on multiple interviews with key stakeholders and review of the publicly available data. Legally, an EIS is not required for this purpose.

(89) *Comment:* One commenter states that the DEA does not estimate the true cost of not allowing grazing on a Federal grazing allotment and deliberately understates the value of an AUM. The commenter asserts that provided documentation proves that this is true.

Our Response: Additional detail has been added to the DEA to address the concerns raised in this comment. Section 2.1.4 has been substantially extended; the section now provides a more detailed explanation of how valuing public grazing AUMs at the market rate is the most appropriate economic methodology and is the method that is most commonly used as well. A more recent value of grazing value (the 2007 market rate of $16.50) is provided; the economic estimates have been updated to include this new information. Section 2.1.4 also discusses other AUM valuation methodologies (cited in the provided information referenced in the comment) and shows how these methodologies do not measure the resource value (which the market rate does), how estimates based on these methodologies are highly dependent on the specific sample that is used to create them, and how different assumptions and different studies can produce substantially different estimates of AUM values for ranches in the same general vicinity. Exhibit 2–3 shows that the value of an AUM from these studies, using the same methodology, generates values from $2.41 to $84 per AUM. Section 2.6 has been added to address the limitations of the valuation methods in Chapter 2. A technical appendix (Appendix D) has also been added to the DEA to provide greater detail on how the grazing impacts were calculated, and to explain why some information in the documentation referenced in the comment was not used in the writing of Chapter 2.

(90) *Comment:* A commenter states that if formerly available Federal allotments are not able to be grazed, then the rancher will have to sell the band of sheep and will not be able to ranch anymore. The commenter asserts that the grazing restrictions may drive the rancher out of business. The commenter asserts that provided documentation proves that this is true.

Our Response: Additions to Section 2.1.4 address this concern. The last four paragraphs of Section 2.1.4 explain how one of the research papers listed in the provided documentation provides information that finds that reductions of up to 30 percent in Federal grazing AUMs can be sustained by Northern Nevada ranches without affecting ranch profitability. The ranch experiencing Federal grazing AUM reductions, as discussed in Section 2.1.4, has a maximum estimated reduction of 11 percent.

(91) *Comment:* Several comments state that the DEA does not present an analysis of how the grazing restrictions will affect the larger economy. One of these comments states that documentation provided for the analysis shows what these impacts would be. This comment states that the DEA does not properly account for the expenditures of the rancher that grazes in areas proximate to the Sierra Nevada bighorn sheep and that the analysis does not address the impact of how smaller herd sizes would affect the economies of Mono and Inyo Counties. One comment specifically asks where IMPLAN has been used in the analysis.

Our Response: To address the concerns raised by these comments, a regional analysis of the impacts of Sierra Nevada bighorn sheep related reductions in Federal grazing is provided in Section 2.5. This analysis uses IMPLAN, a widely used methodological tool (called an ''Input-Output'' model) used for regional economic analysis to perform the analysis for Mono and Inyo Counties. The results indicate that the $261,000 yearly loss of grazing value in Mono County results in additional losses of $70,696 per year in that county. The $14,000 grazing value reductions in Inyo County results in an additional yearly $4,445 of indirect and induced impacts to be lost. Section 2.5 also explains how the results of the regional analysis represent a change in the distribution of economic activity but do not measure the net effect on that activity (adjustments are made to behavior following the grazing restrictions that regional analysis can not measure). The section explains that while the IMPLAN results are valid for a distributional analysis, they are not measures of economic welfare change and, therefore, are inappropriate to include with the welfare analysis measures that are the main subject of the DEA. This issue is also discussed in Section 1.2.2.

(92) *Comment:* One commenter states that the DEA does not forecast the impacts of grazing restrictions far enough into the future.

Our Response: Section 1.3.5 of the analysis explains that the standard for the analysis is to forecast land uses that are reasonably foreseeable, which is within a 20-year span. This forecasting period is applied equally to all parts of the report.

(93) *Comment:* One commenter states that not all impacts that were listed in supplied documents are included in the DEA.

Our Response: Appendix D has been added to clarify what information was used in the grazing chapter estimation and how the information was used. Section D–1 provides information about how conservation effort impact information in the provided documentation was used and how calculations were made. Section D–2 discusses information from the provided documentation that was not used because it was either unuseable (as detailed in Exhibit D–2) or because the DEA already estimates the impacts provided in the documentation.

(94) *Comment:* One commenter states that the DEA should quantify the benefits to users of the watershed, consumers of water from the watershed, and the costs that Federal Agencies incur in managing the grazing if grazing is discontinued in the Forest Service allotments.

Our Response: The economic impacts discussed in Section 2.3 are those impacts that would be due to a continuation of the policies that are currently in place; no estimation of benefits for additional closures is warranted.

(95) *Comment:* A commenter stated that the opportunity cost of forage values are incorrectly measured. The commenter stated that the public grazing price ($1.35 per AUM) should be used to measure the lost opportunity cost of grazing on allotments instead of the private market price. The comment then states that the DEA should have used the Nevada private market grazing price.

Our Response: Section 2.1.4 has been expanded to address this concern. More details on the use and rationale for market rate valuation are provided, as well as citations concerning the use of the methodology by other Federal agencies. The estimates for grazing have been updated with the 2007 average grazing value in California from the National Agricultural Statistics Service. Since the grazing allotments are in California, and not Nevada, it is more appropriate to use the California AUM price.

(96) *Comment:* Several comments expressed concern that the DEA did not provide more information or estimates about future potential restrictions on recreation activities that may result from critical habitat designation. These comments stressed the importance of recreation activities to the local economies.

Our Response: Section 4.1 explains how no public agency (Federal or State) that is involved with the management of Sierra Nevada bighorn sheep habitat can predict any potential restriction on recreational activities at this time. Section 4.1.1 has been added to address the importance of recreation and tourism to the counties where proposed critical habitat is located. Exhibit 4–1 has been added to provide specific information about the number and size of recreation and tourist businesses and the percentage of employment in these industries. Section 4.5 has been added to address the uncertainty that is part of the analysis because no predictions about restrictions can be made at this time.

(97) *Comment:* One commenter stated that only one packer was contacted and asked about the impacts of permitting on pack operations. The comment asks for more details on who was contacted and questions whether a representative sample of each area was questioned. The comment states that there is only one pack outfitter in Virginia Lakes.

Our Response: To respond to the concerns raised in this comment, an additional source was contacted. This source confirmed that no direct impacts of Sierra Nevada bighorn sheep conservation on pack outfit permitting could be estimated. This source also provided information on the revenues of pack outfit operations in Inyo and Mono counties, which have been included in Section 4.1.1.

(98) *Comment:* One commenter stated that the estimated impacts in Chapter 4 (recreation) do not specify a caveat that the estimates of total forecast impacts could be wrong by orders of magnitude if some currently unanticipated restriction is put in place.

Our Response: The DEA cannot provide economic impact estimates for events that cannot be predicted. However, to respond to the concerns of the commenter, Section 4.1.1 was added to include recreation related employment and revenue statistics for the potentially affected counties. The chapter now provides information that shows the importance of recreation to the local economy. Section 4.5 has also been added to address how the uncertainty about future conservation measures is a limitation to the analysis.

(99) *Comment:* One commenter states that the Avocet Tungsten Mine has clearance to resume mining operations this year and plans to do so. The comment reiterates the value of the ore and its strategic importance.

Our Response: This comment contains new information. In response to the comment, Service Field Office personnel were contacted and potential conservation measures were forecast. Section 3.1.3 now includes a discussion of these measures, estimates of the costs of their implementation, and estimates of the costs for predicted consultations.

(100) *Comment:* Several commenters asked for more details on the grazing portion of the economic analysis, and how it was performed. More information on the streams of costs and benefits was requested.

Our Response: Appendix D has been added to address these concerns. This appendix describes the data sources and explains the calculations in great detail.

(101) *Comment:* One commenter asked for the basis of the discount rates used.

Our Response: The discount rates used are those suggested by the Office of Management and Budget Circular A–4 which provides guidance on performing economic regulatory analysis. This information is now included in Appendix D.

(102) *Comment:* One commenter stated that ''actions that eliminate ranchers as residents of these rangelands'' would increase risks because illegal activity would spread and grow in the forest if the sheep ranchers were not there.

Our Response: There are no publicly available models or data to show that an economic loss may result in increased illegal activity in that area. If there are minimal impacts on ranch profitability, as suggested in the conclusion to Section 2.1.4, such results are less likely.

(103) *Comment:* One commenter stated that Mono County is concerned that a grazing allotment lease they have may be affected.

Our Response: The DEA includes information on all of the grazing restrictions that can be predicted at this time. No Mono County leases are known to be considered for restrictions at this time. These allotments occur on County lands. They would not be affected by the critical habitat designation unless a Federal nexus applies, such as where a landowner requests Federal agency funding or authorization of an action. Please see the Critical Habitat section of this rule.

(104) *Comment:* One commenter asked how many AUMs are restricted in the grazing chapter.

Our Response: This information is provided in Exhibit 2–2. Appendix D has been added to explain how the AUM forage values foregone were calculated.

(105) *Comment:* One commenter stated that the incremental impacts of potential yearly consultation on grazing for Humboldt-Toiyabe (HT) National Forest allotments over-estimate the true impacts because there are likely to be fewer consultations, and HT may decide to close grazing on those allotments regardless.

Our Response: As discussed in Section 2.1.3, there have been yearly section 7 consultations for grazing in HT each year from 2004 to 2007. These yearly consultations are not expected to stop. Contact with the HT officials indicates that yearly consultation is the most probable outcome, rather than allotment closure (see footnote 31). The basis for allocating a portion of the section 7 consultation costs as incremental impacts is described in Section 1.3.2 and illustrated in Exhibit 1–2.

(106) *Comment:* One commenter stated that the research costs and litigation costs incurred by the sheep grazers should not be included in the analysis.

Our Response: The legal and research costs discussed in Section 2.1.3 are indirect costs associated with the species listing. Quantification of indirect impacts is discussed in section 1.3.2. Appendix D has been added to provide information about which conservation related expenditures for grazing were used in the analysis and which were not.

(107) *Comment:* A commenter stated that there is no basis for the ''administrative costs for complying with regulations'' provided.

Our Response: This information was based on reported activity levels by the affected sheep raiser. This sheep raiser reported the effort level and wage, and reported a total that did not correspond to the effort level and wage. The estimate is provided in Exhibit 2–1, and the explanation in Note #2 provides details about how this estimate was calculated. Appendix D has been added to provide information about which conservation related expenditures for grazing were used in the analysis and which were not.

(108) *Comment:* One commenter stated that there is no reference or explanation given for stress induced weight loss among lambs.

Our Response: Section 2.1.3 discusses this problem, but does not specify how it is calculated or what the source is. Appendix D has been added to provide information about which conservation related expenditures for grazing were used in the analysis and how they were used.

(109) *Comment:* One commenter asked that all computer software used that is more extensive than simple Net Present Value calculations be provided.

Our Response: The economic analysis also uses ArcGIS, and IMPLAN, which are both commercially available software packages.

Summary of Changes From Proposed Rule

In preparing the final critical habitat designation for Sierra Nevada bighorn sheep, we reviewed and considered comments from peer reviewers and the public on the proposed designation published on July 25, 2007 (72 FR 40956), and the draft economic analysis published on February 5, 2008 (73 FR 6684). This final rule differs from the proposed rule in that we made changes in the following sections of the proposed rule: Background, Previous Federal Actions, Primary Constituent Elements, Special Management Considerations or Protection, Criteria Used to Identify Critical Habitat, Critical Habitat Designation, and Regulation Promulgation. These changes included corrections, new information, or clarifications. Changes included clarifying Sierra Nevada bighorn sheep biology; adding information on bighorn sheep taxonomy; updating information about the latest Federal actions related to Sierra Nevada bighorn sheep; updating reference to the Service's final recovery plan and its information; clarifying the Primary Constituent Elements for Sierra Nevada bighorn sheep; adding information related to the effects of disease transmission to bighorn sheep; including cattle in livestock grazing issues; adding information on recreational activities and possible habituation by bighorn sheep; deleting unsuitable references related to disease issues; correcting a landmark used in unit descriptions; clarifying language used with PCEs and special management considerations or protection; and changing the indicated historic range from U.S.A. (western conterminous States), Canada, (south-west), Mexico (north) to U.S.A. (CA)—Sierra Nevada due to the change from its range as a DPS of the subspecies *Ovis canadensis californiana* to its range as its own subspecies *Ovis canadensis sierrae*.

Critical Habitat

Critical habitat is defined in section 3 of the Act as:

(i) The specific areas within the geographical area occupied by a species at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species and

(b) Which may require special management considerations or protection; and

(ii) Specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point at which the measures provided under the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, transplantation, and in the extraordinary case where population pressures within a given ecosystem cannot otherwise be relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the prohibition against Federal agencies carrying out, funding, or authorizing the destruction or adverse modification of critical habitat. Section 7(a)(2) of the Act requires consultation on Federal actions that may affect critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by private landowners. Where a landowner requests federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) would apply.

For inclusion in a critical habitat designation, the habitat within the geographical area occupied by the species at the time of listing must contain the physical or biological features that are essential to the conservation of the species, and be included only if those features may require special management considerations or protection. Critical habitat designations identify, to the extent known using the best scientific data available, habitat areas that provide essential life cycle needs of the species (i.e., areas on which are found those physical and biological features laid out in the appropriate quantity and spatial arrangement for the conservation of the species). Under the Act, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed as critical habitat only when we determine that those areas are essential for the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific and commercial data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, or other unpublished materials and expert opinion or personal knowledge.

Habitat is often dynamic, and species may move from one area to another over time. Furthermore, we recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not promote the recovery of the species.

Areas that support populations, but are outside the critical habitat designations, will continue to be subject

to conservation actions. They are also subject to the regulatory protections afforded by the section 7(a)(2) jeopardy standard, as determined on the basis of the best available scientific information at the time of the federal agency action. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if information available at the time of these planning efforts calls for a different outcome.

Primary Constituent Elements

In accordance with section 3(5)(A)(i) of the Act and the regulations at 50 CFR 424.12, in determining which areas occupied by the species at the time of listing to designate as critical habitat, we consider the physical or biological features essential to the conservation of the species that may require special management considerations or protection. We consider the physical or biological features to be the PCEs laid out in the appropriate quantity and spatial arrangement for the conservation of the species. The PCEs include, but are not limited to:

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, and rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

We derive the specific PCEs required for Sierra Nevada bighorn sheep from its biological needs.

Space for Individual and Population Growth and for Normal Behavior

In general, Sierra Nevada bighorn sheep inhabit open areas where the land is rocky, sparsely vegetated, and characterized by steep slopes and canyons (Wehausen 1980, p. 81; Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, p. 5). In the Sierra Nevada, these bighorn sheep occur within a wide range of elevations, from alpine peaks in excess of 14,100 ft (4,300 m) to the base of the eastern escarpment as low as 4,790 ft (1,460 m) (Wehausen 1980, pp. 3 and 82). Recent modeling efforts (Johnson *et al.* 2005) have clarified and supported our knowledge that Sierra Nevada bighorn sheep habitat occurs as low as 4,000 ft (1,219 m) in the southern portion of its range. Within this elevational range, a variety of vegetation communities exists, including: (1) Great Basin sagebrush-bitterbrush-bunchgrass scrub; (2) pinyon-juniper woodland and mountain mahogany scrub; (3) mid-elevation and subalpine forests, woodlands, and meadows; and (4) alpine meadows and other alpine habitats varying from cliffs to plateaus (Service 2007, p. 3). Sierra Nevada bighorn sheep prefer Great Basin scrub and alpine communities due to their visual openness. Because of the aridity of the eastern slope of the Sierra Nevada, many of the mid-elevation vegetation communities have some locations near precipitous rocks with sparse plant cover that allow use by bighorn sheep (Wehausen 1980, pp. 18–25, 80–100). The extreme visual openness and the steep, rocky nature of alpine environments in the Sierra Nevada provide large expanses of habitat broken by canyons containing forests and willow stands. These areas of forests and willow stands are unlikely to be used by bighorn sheep. In contrast, low elevation winter habitat has been limited to small areas where topographic and visual features are suitable (Riegelhuth 1965, pp. 34–38; McCullough and Schneegas 1966, pp. 71–72, 74–75; Wehausen 1979, pp. 36–53; 1980, pp. 81–88). Large expanses lacking precipitous escape terrain can represent substantial barriers to movement (Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, p. 5).

Male and female bighorn sheep commonly live in separate groups during much of the year, and often occupy different habitats (Geist and Petocz 1977, pp. 1,802–1,803; Bleich *et al.* 1997, pp. 7–14, 22–34, 36–42; Wehausen 1980, p. 109). In the Sierra Nevada, both sexes may share common winter ranges, but they become more segregated as spring nears (Wehausen 1980, pp. 112–113). During winter, bighorn sheep occupy high, windswept ridges if forage is available or move to lower elevation sagebrush-steppe habitat (as low as 4,790 ft (1,460 m)) to escape deep winter snows and find nutritious forage. In winter, they show a preference for south-facing slopes where snow melts more readily (Jones 1950, pp. 44–45; McCullough and Schneegas 1966, p. 71; Wehausen 1980, pp. 86–87). During summer, the two sexes utilize different habitats, with females restricted largely to alpine environments along the crest and males often at somewhat lower elevations in subalpine habitats (Wehausen 1980, pp. 112–113). Males again join females during the breeding season in late fall. Both males and females will inhabit open slopes where the area is rough, rocky, sparsely vegetated, and characterized by steep slopes and canyons (Wehausen 1980, p. 81; Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, p. 5).

An indication of winter and summer range size for male and female Sierra Nevada bighorn sheep was provided by Wehausen (1980) and Chow (1992). Wehausen (1980, p. 84) determined winter and summer range sizes for the Baxter and Williamson herds. He estimated that total winter range was 4.1 sq mi (10.65 sq km) and 5.1 sq mi (13.32 sq km), respectively. Summer range for ewes, lambs, and yearlings was estimated at 20.3 sq mi (52.63 sq km) and 5.9 sq mi (15.41 sq km), respectively. Fall range was estimated at 17.3 sq mi (44.81 sq km) and 5.1 sq mi (13.12 sq km), respectively. Chow (1992, p. 37) estimated home range size for the Lee Vining herd (winter/spring and summer/fall for rams and ewes) using the minimum convex polygon method (i.e., completely enclose all data points by connecting the outer locations in such a way as to create a convex polygon) from 1986 to 1989. During this period, ewes covered an area of 1.6 to 7.0 sq mi (4.2 to 18.1 sq km) during winter/spring, and rams covered an area of 4.6 to 10.8 sq mi (11.9 to 28.0 sq km). During this same period, ewes covered 3.7 to 8.6 sq mi (9.5 to 22.4 sq km) during summer/fall while rams covered 5.7 to 13.7 sq mi (14.7 to 35.4 sq km). The mean minimum convex polygon home range was 12.1 sq mi (31.4 sq km) for ewes and 32.8 sq mi (84.9 sq km) for rams from Mount Warren/Mount Gibbs, Wheeler, Sawmill, and Baxter herds (Sierra Nevada Bighorn Sheep Recovery Program 2004, pp. 9, 17).

Bighorn sheep have developed philopatric behaviors (reluctance to disperse from their home range) such that they are slow to colonize unoccupied habitat (Geist 1971, pp. 98–99; Cowan and Geist 1971, p. 81). This is likely an adaptation to the naturally fragmented habitats that bighorn sheep occupy. Both male and female Sierra Nevada bighorn sheep demonstrate seasonal philopatry (Sierra Nevada Bighorn Sheep Recovery Program 2004, p. 7). While both males and females show a tendency to use the same ranges year after year, males show exceptions

and demonstrate long-distance movements (Sierra Nevada Bighorn Sheep Recovery Program 2004, p. 7). Annual home range diameter provides an indication of the extreme distances bighorn sheep can travel. Maximum diameters for home ranges for female Sierra Nevada bighorn sheep from the Mount Warren/Mount Gibbs, Wheeler, and Baxter herds ranged from 3.95 to 10.41 mi (6.35 to 16.75 km); males from the Mount Warren/Mount Gibbs, Wheeler, and Sawmill herds ranged from 5.5 to 36.9 mi (8.9 to 59.4 km) (Sierra Nevada Bighorn Sheep Recovery Program 2004, pp. 9, 17).

Bighorn sheep exhibit a variety of behavioral adaptations to avoid predation. Bighorn sheep are primarily diurnal (Jones 1950, pp. 54–57; Krausman *et al.* 1985, pp. 24–26). Coupled with their strong reliance on keen eyesight to detect predators, diurnal behavior minimizes predation risks. Due to their keen eyesight and agility on rocky slopes, bighorn sheep, in general, select open habitats that allow predator detection at distances great enough to allow time to reach steep, rocky terrain (escape habitat) (Wehausen 1980, p. 81). This precipitous, rocky terrain is generally near foraging and resting areas. Bedding areas are needed for resting or sleeping purposes. During the day, bedding areas are generally wherever the individual is feeding. Bedding areas are made in the open but not necessarily in a place with a view of the surrounding area; during the night, bedding areas are generally among or near rugged, chuted cliffs (Jones 1950, p. 49). Bighorn sheep may venture a short distance away from rocky escape terrain to feed; the distance they venture from safer habitat varies and is apparently influenced by visual openness, wind, gender, season, and abundance of predators (Service 2007, p. 5).

Sites for Breeding, Reproduction, and Rearing of Offspring

In the Sierra Nevada, ewes and rams come together in late fall or early winter (November and December) (Jones 1950, pp. 63–64; Cowan and Geist 1971, p. 64; Wishart 1978, p. 165) to breed, usually at high elevations. Bighorn sheep generally give birth to single young (Wishart 1978, p. 165). Most bighorn sheep births in the Sierra Nevada occur in May and June (Wehausen 1980, p. 94; 1996, p. 475). Lambing habitat is in areas of precipitous rocks away from trees (Wehausen 1980, p. 95), providing safe areas from predators. Ewes with newborn lambs are solitary for a short period of time before joining nursery groups.

Mortality Factors

Bighorn sheep die from a variety of causes including predation, disease, and accidents. Various predators, including wolves (*Canis lupus*), mountain lions (*Felis concolor*), coyotes (*Canis latrans*), bobcats (*Lynx rufus*), and golden eagles (*Aquila chrysaetos*) kill wild sheep in North America (Cowan and Geist 1971, p. 75; Bleich 1999, p. 283). Jones (1950, pp. 67–68) listed golden eagles, mountain lions, coyotes, wolverines (*Gulo luscus*), bobcats, and ravens (*Corvus corax*) as likely predators of Sierra Nevada bighorn sheep, but thought none of these predators caused anything except small losses on the population under normal circumstances. He thought predation overall was light except during abnormally unfavorable winters. In recent years in the Sierra Nevada, mountain lions have been the primary predator of bighorn sheep, accounting for 96 percent of losses attributed to predation (Service 2007, p. 9). Of 147 bighorn sheep deaths recorded in the Sierra Nevada from 1975 to 2000, a minimum of 54.5 percent could be attributed to predation (Service 2007, p. 9).

Numerous diseases of bighorn sheep have been documented (Bunch *et al.* 1999, pp. 209–237). Bighorn sheep show a high susceptibility to pneumonia, usually caused by bacteria of the genus *Pasteurella* (some species now called *Mannheimia*) (Post 1971, pp. 98–101). Pneumonia caused by *Pasturella* alone, or with other pathogens, is an important disease threat for bighorn sheep (Bunch *et al.* 1999, p. 210). Lungworms of the genus *Protostrongylus* can be important contributors to pneumonia and mortality in bighorn sheep in the Rocky Mountains (Forrester 1971, p. 158; Woodard *et al.* 1974, pp. 773–774). Bighorn in the Sierra Nevada carry *Protostrongylus* lungworms, but parasite loads have been too low to be considered a management concern (Wehausen 1980, p. 191).

Although die-offs of bighorn sheep due to disease have occurred unrelated to domestic sheep (Miller *et al.* 1991, pp. 534–540), a substantial amount of circumstantial evidence is available that indicates that contact with domestic sheep is associated with respiratory disease outbreaks resulting in significant morbidity and mortality in wild bighorn sheep (Martin *et al.* 1996, pp. 72, 74). The history of bighorn sheep in the United States provides numerous examples of major die-offs following believed contact with domestic sheep (Foreyt and Jessup 1982, pp. 163–164, 166; Singer *et al.* 2001, p. 1,352; Coggins 2002, pp. 166–170), and these pneumonia epizootics can extirpate entire populations (Martin *et al.* 1996, pp. 72, 75). Experimental evidence indicates that bighorn sheep can suffer mortality from pneumonia after being in contact with domestic sheep (Foreyt 1989, p. 342; Callan, *et al.* 1991, pp. 1,054–1,055). Diseases transferred through contact with domestic sheep are suspected to have played a major role in the disappearance of certain bighorn sheep herds in the Sierra Nevada beginning about 1870 (Wehausen 1988b, p. 100).

The outcome of contact between the two species likely depends on the exposure history and immunity status of both species. The onset of pneumonia in affected bighorn sheep may be delayed by days or weeks after the initial contact with domestic sheep, and the problem may not be detected for months after infection in isolated bighorn sheep herds. Those individuals that survive, especially wandering rams, can transmit pathogens to nearby populations. Lambs born to surviving ewes can experience low survival rates for 3 to 5 years after the initial outbreak (Foreyt 1990, p. 100; Coggins and Matthews 1992, Ward *et al.* 1992, Foreyt 1995, Hunter 1995a cited in Schommer and Woolever 2001, p. 3). It is not possible to predict which contacts with domestic sheep might result in disease transmission to bighorn sheep, nor which bighorn sheep individuals could be susceptible. Contact can occur due to stray domestic sheep entering bighorn sheep habitat, or bighorn sheep coming into contact with domestic sheep.

Many early die-offs of bighorn sheep, including some in the Sierra Nevada, were attributed to scabies contracted from domestic sheep (Jones 1950, p. 69; Buechner 1960, p. 111). In 1987, Clark *et al.* (1988, p. 13) found scabies in three desert bighorn sheep in California east of the Sierra Nevada. In a large sampling of 50 populations of bighorn sheep in California between 1980 and 1990, 25 populations were designated as scabies-positive because at least one seropositive animal occurred at the low or high cutoff values, though no clinical evidence of scabies was noted (Mazat *et al.* 1992, pp. 543–545).

Other infectious diseases may be of concern for bighorn sheep in selected instances. Domestic goats are occasionally used as pack animals in the back country or for brush control. This use could cause concern if it occurs in or near bighorn sheep habitat. For example, a recent outbreak of infectious keratoconjunctivitis (inflammation of the eye) linked to domestic goats resulted in blindness and several deaths

(exacerbated by the blindness) in bighorn sheep in Arizona, demonstrating the risk of disease outbreak in bighorn sheep from interactions with domestic goats (Heffelfinger 2004, cited in Sierra Nevada Bighorn Sheep Recovery Program 2004, p. 2).

Sierra Nevada bighorn sheep remaining at high elevations year-round likely contributed to population losses over winter (Wehausen 1996, pp. 474–477). Those losses included losses in snow avalanches (Service 2007, p. 10). A survey of the Wheeler Ridge herd during the heavy winter of 1995 found 12 sheep had died in a single snow avalanche (Torres *et al.* 1996, p. 28).

Metapopulation Structure

Within mountain ranges like the Sierra Nevada, bighorn sheep habitat is patchy and the population structure is one of natural fragmentation (Bleich *et al.* 1990, p. 384). This fragmentation has led to the application of a broad landscape approach to their population ecology which groups geographically distinct herds into metapopulations, or networks of interacting herds (Schwartz *et al.* 1986, pp. 182–183; Bleich *et al.* 1990, p. 386). This approach considers long-term viability not of individual herds but rather of entire metapopulations; thus, both genetic and demographic factors are considered. Decreasing population sizes, over time, can lead to decreasing levels of heterozygosity (presence of different forms of a gene at a particular location on a chromosome) that may have negative demographic effects through inbreeding depression (Lande 1988, p. 1,456) and loss of adaptability. A small amount of genetic exchange among herds by movements of males can counteract inbreeding and associated increases in homozygosity (presence of identical forms of a gene at a particular location on a chromosome) that might otherwise develop within small, isolated populations (Schwartz *et al.* 1986, p. 185). Males have a much greater tendency than females to explore new ranges. This tendency is likely attributed to males searching for females with which to breed. If geographic distances between female groups within metapopulations are not great, gene migration by males occurs readily. In the absence of such a metapopulation structure, populations will be isolated. Because the distribution of bighorn sheep in the Sierra Nevada is naturally fragmented, maintenance of migration corridors is important to allow for genetic exchange between herd units. In the Sierra Nevada this exchange may be more difficult because the metapopulations occur mostly in a linear geographic distribution pattern; thus, fewer populations may have provided sources of colonists (Service 2007, p. 34).

Substructuring also can occur within what are often thought of as single herds of bighorn sheep (Festa-Bianchet 1986, pp. 327–330; Andrew *et al.* 1997, pp. 74–75; Rubin *et al.* 1998, pp. 543–548). Such substructuring is defined by separate home range patterns. Although demonstrated more with females, it can occur in both sexes. For example, what was once considered the Mount Baxter herd is now recognized as two herds, Mount Baxter and Sawmill Canyon.

Another important long-term process in metapopulation dynamics is the balance between rates of natural extinction and colonization among populations. Colonization rates must exceed extinction rates for a metapopulation to persist (Hanski and Gilpin 1991, pp. 8–9). This balance has not occurred for Sierra Nevada bighorn sheep since about 1850 due to the high rate of local extinctions resulting in an increasingly fragmented distribution. In addition to fragmentation from past extinctions, remaining herds are small, isolated groups of bighorn sheep. Because of their small population size, these small groups are more vulnerable to extirpation due to random, naturally occurring events, disease, or predation (Shaffer 1987, pp. 71–73; Meffe and Carroll 1994, pp. 190–197; Service 2007, p. 7).

Food and Nutritional Requirements

Bighorn sheep are ungulates that consume a wide variety of plant species. Due to a large rumen and reticulum relative to body size, they have flexibility in the plants they consume which include graminoids (grasses, sedges, and rushes) in different phenological stages (Hanley 1982, p. 148). Bighorn sheep consume a wide variety of plant species. While they prefer grasses, sedges, and forbs, different browse species become important food during the fall and winter (Wishart 1978, p. 167).

Bighorn sheep exhibit seasonal changes in habitat use due to seasonal changes in resource availability, habitat and resource requirements. Sierra Nevada bighorn sheep rarely utilize surface water; instead, these bighorn sheep generally obtain moisture from their forage or the occasional consumption of snow. Altitudinal migration by Sierra Nevada bighorn sheep allows them to maximize nutrient intake during the year (Wehausen and Hansen 1988, pp. 256–257, 265–267; Wehausen 1996, pp. 476–477), as the relationship between elevation and temperature (Major 1977, pp. 44–45) influences plant growth (Wehausen 1980, p. 86–91, 133–135). In general, temperatures decrease with increasing altitude (Major 1977, p. 44). In the Sierra Nevada, every 56 ft (17 m) of elevation gain causes a 1 day delay in the onset of plant growth (Wehausen and Hansen 1988, p. 257). Bighorn sheep are able to take advantage of early spring growth (usually cold-season grasses) and then later change their diet to include warm-season plants that may have higher nutrient concentrations than grasses (Wehausen and Hansen 1988, p. 257). Sierra Nevada bighorn sheep use low-elevation ranges extensively in winter and early spring, alpine ranges in summer and fall, and some intermediate ranges during transition periods (Wehausen 1980, pp. 80–100).

In the following section plant nomenclature has been updated to conform to treatments in Hickman (1993). Common names generally conform to those given in Hickman (1993) or Abrams *et al.* (1923–1960). Cited scientific names are retained in brackets for ease of reference. The following plant species were found to be important winter/spring forage for Sierra Nevada bighorn sheep: *Achnatherum speciosum* [*Stipa speciosa*] (desert needlegrass), *Eriogonum fasciculatum* (California buckwheat), *Artemisia tridentata* (sagebrush), *Ephedra viridis* (green ephedra), *Keckiella breviflora* (gaping keckiella), *Purshia glandulosa* (Mojave antelope bush), *P. tridentata* (northern antelope bush), and *Ceanothus cordulatus* (mountain whitethorn) (Wehausen 1980, p. 87). McCullough and Schneegas (1966, p. 72) and Riegelhuth (1965, p. 38) provide similar lists of plant species observed consumed by Sierra Nevada bighorn sheep during winter or summer (Table 1). Wehausen (1980, pp. 124–126) provides a list of plants consumed by both sexes in summer (Table 1).

TABLE 1—PLANT SPECIES OBSERVED CONSUMED BY SIERRA NEVADA BIGHORN SHEEP DURING SUMMER AND FALL MONTHS

[McCullough and Schneegas 1966, p. 72; Riegelhuth 1965, p. 38; Wehausen 1980, p. 124–126]

Sex	Season	Scientific name	Common name
Ewes and Lambs	Summer and fall	*Polemonium eximium*	Sky pilot.
		Hulsea algida	Alpine hulsea.
		Carex helleri	Heller's sedge.
		C. rossii	Ross' sedge.
		C. leporinella	Sierra hare sedge.
		Elymus elymoides ssp. *elymoides [Sitanion hystrix]*	Bottlebrush squirreltail.
		Phacelia hastata [frigida]	Timberline phacelia.
		Silene sargentii	Sargent's campion.
		Aquilegia pubescens	Coville's columbine.
		Ivesia pygmaea	Dwarf ivesia.
		Juncus parryi	Parry's rush.
		Achnatherum [Stipa] pinetorum	Pine needlegrass.
		Lupinus formosus	Summer lupine.
Rams	Summer and fall	*Juncus parryi*	Parry's rush.
		Carex filifolia var. *erostrata [exserta] C. rossii*	Ross' sedge.
		C. aurea	Golden-fruited sedge.
		Luzula comosa	Hairy wood rush.
		Poa cusickii ssp. *epilis [epilis]*	Mountain bluegrass.
		Elymus elymoides ssp. *elymoides [Sitanion hystrix]*	Bottlebrush squirreltail.
		Danthonia intermedia	Mountain oatgrass.
		Achnatherum lemmonii [Stipa columbiana]	Lemmon's stipa.
		Eriogonum lateens	Onion-flowered eriogonum.
		Trifolium monanthum	Carpet clover.
Both sexes	Summer	*Holodiscus microphyllus*	Small-leaved cream bush.
		Jamesia Americana	Cliff bush.
		Ribes montigenum	Alpine prickly currant.
		Potentilla fruticosa	Shrubby cinquefoil.

In addition to forage needs, mineral licks are specific sites where bighorn sheep have access to important minerals to meet nutritional needs. These licks contain minerals such as sodium, calcium, iron, and phosphorus. Sites are generally found in granite outcroppings in the Sierra Nevada. Some known areas occur in the vicinity of Gilcrest Peak and Tioga Road (Chow 1992, p. 52), Baxter Pass (Jones 1950, p. 63; Hicks and Elder 1979, p. 911; Wehausen 1980, p. 151), and Mayfield Canyon (Stephenson 2007, p. 1).

Historical and Geographic Distribution of the Species

Historically, the range of the Sierra Nevada bighorn sheep included the eastern slope of the Sierra Nevada, and for at least one subpopulation, a portion of the western slope, from Sonora Pass in Mono County to Walker Pass in Kern County, a total distance of approximately 215 mi (346 km) (Jones 1950, pp. 33–35; Wehausen 1979, p. 1). The extant range of the Sierra Nevada bighorn sheep begins in the Lee Vining area in Mono County and extends south to the Mount Langley area in Inyo County. This is a linear distance of approximately 110 mi (177 km).

All currently occupied units that are designated were occupied at the time of listing and contain the physical and biological features essential to the conservation of the subspecies and may require special management considerations or protection. The areas designated as critical habitat that are currently unoccupied were also not occupied at the time of listing; however, these areas are representative of the historical and geographical distribution of the Sierra Nevada bighorn sheep and were all historically occupied (Ober 1914, p. 125; Ober 1931, p. 32; Jones 1950, pp. 35, 38–40; Buechner 1960, p. 69; Barrett 1965, p. 43; Riegelhuth 1965, p. 35; Dunaway 1971, p. 19; Wehausen *et al.* 1987, p. 66; Wehausen 1988a, pp. 100–101; Wehausen 1988b, p. 100; Berger 1990, p. 94). Furthermore, we have determined that all designated unoccupied habitat is essential for the conservation of the subspecies and will decrease the degree of fragmentation within the current geographic distribution of the subspecies. For further information on occupancy status see Table 3 and the Unit Descriptions sections below.

Primary Constituent Elements for Sierra Nevada Bighorn Sheep

Under the Act and its implementing regulations, we are required to identify the known physical and biological features within the geographical area occupied by Sierra Nevada bighorn sheep at the time of listing that are essential to the conservation of the species and which may require special management considerations or protection. The physical and biological features are those primary constituent elements (PCEs) laid out in a specific spatial arrangement and quantity to be essential to the conservation of the subspecies. All areas designated as critical habitat for Sierra Nevada bighorn sheep are within the subspecies' historical geographic range, and contain sufficient PCEs to support at least one life history function.

Based on the above needs and our current knowledge of the life history, biology, and ecology of the subspecies, we have determined that the Sierra Nevada bighorn sheep's PCEs are:

(1) Non-forested habitats or forest openings within the Sierra Nevada from 4,000 ft (1,219 m) to 14,500 ft (4,420 m) in elevation with steep (greater than or equal to 60 percent slope), rocky slopes that provide for foraging, mating, lambing, predator avoidance, and bedding and that allow for seasonal elevational movements between these areas.

(2) Presence of a variety of forage plants as indicated by the presence of

grasses (e.g., *Achnanthera* spp.; *Elymus* spp.) and browse (e.g., *Ribes* spp.; *Artemisia* spp., *Purshia* spp.) in winter, and grasses, browse, sedges (e.g., *Carex* spp.) and forbs (e.g., *Eriogonum* spp.) in summer.

(3) Presence of granite outcroppings containing minerals such as sodium, calcium, iron, and phosphorus that could be used as mineral licks in order to meet nutritional needs.

We determined that these PCEs contained within the designated critical habitat units discussed below provide for the physiological, behavioral, and ecological requirements of the Sierra Nevada bighorn sheep. The first PCE provides for the general biotic communities that are known to support Sierra Nevada bighorn sheep habitat in the Sierra Nevada of California. Sierra Nevada bighorn sheep are not known to occur outside of the communities and elevations described in this PCE. This PCE further provides the components necessary for foraging (summer and winter), breeding, lambing, predator avoidance, and bedding, and allows for seasonal elevational movements among these areas.

The second PCE describes the types of food necessary to meet the biological needs of the Sierra Nevada bighorn sheep related to seasonal range movements. Altitudinal migration by Sierra Nevada bighorn sheep allows them to maximize nutrient consumption during the year (Wehausen and Hansen 1988, pp. 256–257, 265–267; Wehausen 1996, pp. 476–477), as the relationship between elevation and temperature (Major 1977, pp. 44–45) influences plant growth (Wehausen 1980, pp. 86–91, 133–135), as discussed earlier. Wehausen (1980, p. 86) found winter diet quality was improved with warmer winter temperatures that aided plant growth; summer diet quality was improved, apparently, by the amount of snowfall the previous winter, which may influence soil moisture for alpine plants (Wehausen 1980, p. 133).

The third PCE provides for additional nutritional needs. Mineral licks provide necessary nutrients, important in meeting dietary requirements.

This final designation is designed for the conservation of the PCEs necessary to support the life history functions of the subspecies and the areas containing those PCEs in the appropriate quantity and spatial arrangement essential to the conservation of the subspecies. Some units contain all of these PCEs and support multiple life processes, while some units contain only a portion of these PCEs, those necessary to support the species' particular use of that habitat. Because not all life history functions require all the PCEs, not all critical habitat units will contain all the PCEs.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the areas occupied by the subspecies at the time of listing contain the features that are essential to the conservation of the subspecies, and whether these features may require special management considerations or protection. As described in more detail in the unit descriptions below, we find that the PCEs within the units occupied at the time of listing (Units 1, 2, 4, 6, 7, 8, and 10) may require special management considerations or protection due to threats to the Sierra Nevada bighorn sheep or its habitat. All of these units occur almost exclusively on Federal lands managed by the Forest Service, National Park Service, and the Bureau of Land Management. Management considerations and protection of the essential features may include review of various activities proposed in Sierra Nevada bighorn sheep habitat that are authorized, funded, or carried out by these agencies. These activities can include habitat enhancement projects to reverse fire suppression effects, development activities, livestock grazing, mining actions, and recreational activities. In addition, because all of the herds are relatively small, management actions to protect Sierra Nevada bighorn sheep habitat from catastrophic, naturally occurring events (e.g., wildfires, avalanches) may be necessary.

Fire suppression can modify the structure of Sierra Nevada bighorn sheep habitat by allowing taller vegetation, such as trees, to become established, resulting in cover for predators. Mountain lions, a primary predator of Sierra Nevada bighorn sheep, use vegetative cover and terrain to conceal themselves prior to attacks. Fires may have burned more frequently in the past in bighorn sheep habitat. Old ground and aerial photographs show habitats in the eastern Sierra Nevada had little vegetation tall enough to obstruct the vision of bighorn sheep; pinyon pine woodlands have mostly developed since 1860 (Miller and Tausch 2001, pp. 15–16). Continued suppression of fires in Sierra Nevada bighorn sheep range is a threat, as habitat succession alters the abundance of suitable bighorn sheep habitat and increases bighorn sheep vulnerability to mountain lion predation (Torres *et al.* 1996, p. 29). Performing habitat enhancements, such as prescribed burning, or enabling ''let burn'' policies, helps to provide open habitats. Open habitats will help to reduce predation by decreasing the effectiveness of ambushing by predators (such as mountain lions) from cover. Providing more open habitat will allow more opportunity for connectivity among herd units and likely promote greater gene flow to conserve genetic diversity. According to Johnson *et al.* (2005, p. 34), all of the herd units would benefit from forest reduction in winter range; those units that would incur the highest benefit are Units 8 and 10. Thus, the PCEs in all of the units occupied at the time of listing (Units 1, 2, 4, 6, 7, 8, and 10) may require special management considerations or protection to reverse the impacts of fire suppression.

There is limited development within Sierra Nevada bighorn sheep habitat because most habitat occurs on Federal lands; however, there is some recreational development (e.g., resorts). There are several paved and unpaved roads that access Federal lands within Sierra Nevada bighorn sheep habitat. For example, State Highway 120 is located primarily between Units 1 and 2, but some sections lie within Unit 1. Bighorn sheep have been killed due to collisions with vehicles on this road (65 FR 28; January 3, 2000). State Route 158 and Road 16S02 occur in or adjacent to portions of Units 2 and 10, respectively. The PCE's in Units 1, 2, 4, and 10 require special management considerations or protection to address the impacts from development activities, including road construction and maintenance within Sierra Nevada bighorn sheep habitat.

Management of domestic livestock (sheep, goats, cattle) grazing practices that result in overgrazing or allow for contact between domestic sheep, domestic goats, and Sierra Nevada bighorn sheep is a threat. Domestic livestock could compete with Sierra Nevada bighorn sheep for forage at some level in designated critical habitat units. As the number of Sierra Nevada bighorn sheep is still limited, this may not be a concern currently on those allotments within or near critical habitat. However, some areas can be especially important foraging areas for Sierra Nevada bighorn sheep during winter. After domestic livestock grazing has been completed and they have been removed from the allotment, regrowth of forage at higher elevations can be a slow process. This may result in less forage being available for Sierra Nevada bighorn sheep during the winter at these higher elevations.

Although die-offs of bighorn sheep due to disease have occurred unrelated to domestic sheep (Miller *et al.* 1991, pp. 534–540), a major contributing

factor responsible for the decline of Sierra Nevada bighorn sheep populations over the years is thought to be the introduction of diseases by domestic livestock (Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, p. 5; 65 FR 25, January 3, 2000).

Clifford *et al.* (2007) used available spatial, demographic, and disease data to assess the risk for and potential impact of a respiratory disease outbreak in Sierra Nevada bighorn sheep due to contact with domestic sheep. They evaluated the risk of disease transmission between the two species by determining the probabilities of interspecies contact from Sierra Nevada bighorn sheep monitoring data and domestic sheep grazing data. A prediction of short-term population-level impacts of a respiratory disease outbreak was made using an epidemiologic simulation model. While acknowledging the study's limitations, Clifford *et al.* (2007, p. 18) indicate concern for the probability of a respiratory disease case occurring from disease transmission between domestic sheep and Sierra Nevada bighorn sheep, especially in the northern part of bighorn sheep range.

Domestic grazing allotments within the vicinity of Sierra Nevada bighorn sheep habitat should be reviewed and activities should be modified as necessary to prevent competition and contact between the domestic livestock (sheep and goats) and bighorn sheep. These modifications could include such variables as the number of domestic livestock allowed on an allotment, where the domestic livestock may graze on an allotment, and the length and timing of the grazing period. These variables can assist in reducing resource competition as well as reducing contact between domestic sheep (and goats) and bighorn sheep. The PCEs within Units 1, 2, and 4 may require special management considerations or protection to address the potential impacts of domestic sheep and goat grazing within Sierra Nevada bighorn sheep habitat. The PCEs within Units 1, 2, 3, 4, 5, 8, 10, and 12 may require special management considerations or protection to address the potential impacts of cattle grazing within Sierra Nevada bighorn sheep habitat. While we are addressing the potential for contact and the possible transmission of disease to Sierra Nevada bighorn sheep due to the presence of domestic sheep or goats within critical habitat, it is not strictly a habitat-related threat. The concern for disease transmission from domestic sheep and goat grazing in proximity to Sierra Nevada bighorn sheep did not serve as the foundation for this critical habitat designation.

Patented mining claims occur within habitat used by the Sierra Nevada bighorn sheep, but the area of the claims is small. Mining activities and associated facilities threaten bighorn sheep by causing the loss of vegetation structure required for foraging activities; the destruction of habitats used for escape, bedding, lambing, or connectivity between ranges; and the disturbance due to ongoing mining activities. Disturbance could modify bighorn sheep behavior or cause them to flee an area. Mining occurs within the habitat of Sierra Nevada bighorn sheep in Unit 4. These mines are underground, thus reducing some impacts of habitat loss. PCEs within this unit may require special management considerations or protection to address mining and associated facility development impacts within Sierra Nevada bighorn sheep habitat.

It remains unclear how significantly Sierra Nevada bighorn sheep may be affected by human disturbance (Jones 1950, pp. 71–72; Dunaway 1971, p. 19; Wehausen *et al.* 1977, p. 31; Hicks and Elder 1979, p. 914; Wehausen 1980, pp. 200–201; MacArthur *et al.* 1982, p. 356; Papouchis *et al.* 2001, pp. 579–580). Additional investigations are needed to identify areas of conflict as situations arise where the increased presence of humans could be detrimental to the Sierra Nevada bighorn sheep or its habitat. These areas of use could displace Sierra Nevada bighorn sheep from important habitats.

Increases in human uses of bighorn sheep habitat, including recreational activities such as rock and ice climbing, mountaineering, ski touring, hiking, camping, pack station establishment, snowmobiling, and off-road vehicle use may disturb Sierra Nevada bighorn sheep in key areas. This could result in abandonment of these areas or disruption of feeding, resulting in reduced nutrient intake. A cost in biological energetics could also occur due to flight. These losses could translate into reduced reproductive success. Impacts to the habitat could occur through trampling and reduced vegetation structure due to grazing by pack animals. The presence of dogs accompanying recreationists is also a concern in bighorn sheep habitat as dogs may cause strong alarm reactions by bighorn sheep (MacArthur *et al.* 1982, p. 356).

Bighorn sheep can be conditioned or habituated to human activities such as trail hiking, where bighorn sheep are able to watch humans approaching from a distance and from below (Hicks and Elder 1979, p. 914), road traffic (Papouchis *et al.* 2001, p. 580), or predictable activities such as photographers taking pictures near a road (MacArthur *et al.* 1982, p. 356). This conditioning can minimize alarm reactions. Other individuals have shown avoidance of roads (Papouchis *et al.* 2001, p. 580). Particular groups (e.g., ewe-lambs) may demonstrate a more extreme alarm reaction at a greater distance than other groups when encountered from above as their path is blocked (Wehausen *et al.* 1977, p. 31). Review of recreational activities should take into account various factors such as location, ground disturbance, timing of year, duration, and noise level to determine if impacts may occur to Sierra Nevada bighorn sheep and its habitats.

The PCEs within the units occupied at the time of listing (Units 1, 2, 4, 6, 7, 8, and 10) may require special management considerations or protection to protect Sierra Nevada bighorn sheep and its habitat from recreational activities. While recreation could be a threat factor throughout an occupied herd unit, it is more likely in some portions of units due to their inclusion of these higher use areas or their proximity to these areas. These areas include the Virginia Lakes, the Lundy Lake, the Saddlebag Lake, and the Lee Vining Canyon recreational areas associated with Unit 1; the Lee Vining Canyon recreational area associated with Unit 2; the Rock Creek recreational area associated with Unit 4; the Baxter Pass and Onion Valley recreational area associated with Unit 7; and the Whitney Portal and Trailhead and the Cottonwood Lakes recreational areas associated with Units 8 and 10.

Management actions to protect Sierra Nevada bighorn sheep habitat from catastrophic, naturally occurring events may be necessary. Events such as wildfires and avalanches could temporarily destroy large areas that provide summer or winter foraging habitat.

Criteria Used To Identify Critical Habitat

We are designating critical habitat in areas that were occupied by the subspecies at the time of listing and that contain PCEs in the quantity and spatial arrangement to support life history functions essential for the conservation of the subspecies. Some lands contain only a portion of the PCEs necessary to support the particular use of that habitat during that portion of the life process. We are also designating critical habitat in specific unoccupied areas that were not occupied by the subspecies at the

time of listing. We have determined that these areas, which were historically occupied, are essential to the conservation of the subspecies.

In our analysis, we reviewed existing data to determine the distribution of areas occupied by the subspecies at the time of listing. We also reviewed available information related to the habitat requirements of the subspecies. We used information from literature cited in the final listing rule (65 FR 20; January 3, 2000), the final recovery plan, site records, reports prepared by CDFG, and other published scientific literature.

We used the following criteria to select areas occupied by the Sierra Nevada bighorn sheep at the time of listing for inclusion in critical habitat:

(a) Areas occupied by the Sierra Nevada bighorn sheep at the time of listing (1999–2000) as indicated in the final listing rule (65 FR 20; January 3, 2000). In the final listing rule, we identified five subpopulations of Sierra Nevada bighorn sheep that existed: (1) Lee Vining Canyon (Mount Warren and Mount Gibbs Herd Units), (2) Wheeler Crest (Wheeler Ridge Herd Unit), (3) Mount Baxter (Sawmill Canyon and Mount Baxter Herd Units), (4) Mount Williamson (Mount Williamson Herd Unit), and (5) Mount Langley (Mount Langley Herd Unit) in Mono and Inyo counties, California (Wehausen 1999, pp. 1–7; 2000, pp. 1–6);

(b) Areas that are representative of the distribution of the Sierra Nevada bighorn sheep throughout the geographical range occupied at the time of listing with the goal of maintaining the subspecies' range of habitat and genetic variability; and

(c) Areas that allow for the continued existence of viable subpopulations under varying environmental conditions and that can serve as locations for source populations. The locations of all five subpopulations identified in the original listing rule continue to remain occupied today.

Current population estimates of the Sierra Nevada bighorn sheep in 2006 indicate 350 to 400 individuals occur throughout its range (Wehausen and Stephenson 2006, p. 7); this is an increase from the 125 individuals estimated at the time of listing (65 FR 20; January 3, 2000). Current individual herd numbers in the different subpopulations range from 8 to 113 individuals (Wehausen and Stephenson 2006, p. 7). Current occupancy of these herd units is supported by agency reports (Wehausen and Stephenson 2004, pp. 2–10; 2005, pp. 2–6; 2006, pp. 2–6); status reports (Wehausen 1999, pp. 1–7; 2000, pp. 1–6); and monthly CDFG monitoring reports based on GPS, telemetry, and monitoring data collected during 2001 through 2006. We have determined that the areas occupied at the time of listing continue to be occupied, contain the features essential to the conservation of the subspecies (possess one or more PCEs such that the area supports one or more of the Sierra Nevada bighorn sheep's life processes), and provide sufficient habitat to protect these populations.

In addition, we are designating critical habitat on lands that were historically occupied by the Sierra Nevada bighorn sheep, but were not occupied at the time of listing and are not currently occupied. These areas were all historically occupied within the past 90 years (Jones 1950, pp. 33–35) and are essential to the conservation of the subspecies. Based on the best available information, we have determined that without protection and management of these unoccupied areas, conservation of the subspecies will not be possible.

We applied each of the following criteria to select areas historically occupied, but not known to be occupied at the time of listing by the Sierra Nevada bighorn sheep, for inclusion in critical habitat:

(1) Areas where habitat contains sufficient PCEs (e.g., characteristics such as non-forested, steep, rocky slopes and foraging areas) to support life history functions.

(2) Areas where habitat has been occupied by the subspecies. In some areas this was as long ago as 90 years (Jones 1950, pp. 33–35). In all of the areas the habitat has not changed appreciably in size or quality during that time.

(3) Areas where appropriate habitat for Sierra Nevada bighorn sheep has been predicted by CDFG based on Resource Selection Probability Functions modeling (Johnson *et al.* 2005) (i.e., contains habitat with the PCEs and additional, more specific characteristics that allow for a range of the subspecies' biological needs, such as sites for feeding).

(4) Areas where there is potential for reoccupation by the subspecies, either through natural means of dispersal from currently occupied areas or by future re-introduction efforts.

(5) Areas that are geographically separated from currently occupied units by approximately 0.5 to 8 mi (0.8 to 12.9 km) to provide redundancy of habitat in the event of a natural catastrophe removing habitat (PCEs) from currently occupied units.

The designation of these unoccupied areas would decrease the degree of fragmentation within the current geographic distribution of the Sierra Nevada bighorn sheep. We believe that the designation of these additional areas is essential for the conservation of the subspecies because:

(1) Population increases, either through natural means or reintroductions into the additional units, are expected to increase the viability of the herds within occupied areas, as well as the existence of the Sierra Nevada bighorn sheep as a whole (i.e., increase the likelihood of persistence at the local population level and of this subspecies rangewide).

(2) The Sierra Nevada bighorn sheep is recognized as a unique subspecies (Wehausen and Ramey 2000, p. 156; Wehausen *et al.* 2005, p. 217), and the additional units will serve to decrease the degree of fragmentation of the current geographic distribution of the sheep (i.e., increase connectivity between areas known to be currently occupied). Fragmented distribution across the landscape reduces the connectivity between subpopulations. If small populations are isolated and remain small, there is an increased risk of genetic drift and risk to persistence due to naturally occurring events (Gilpin and Soule 1986, pp. 25, 33). Maintenance of genetic variation is important in reducing inbreeding depression and the ability to respond to environmental changes over time, especially in small populations (Schwartz *et al.* 1986, pp. 180–186; Lande 1988, pp. 1,456–1,457). Establishing additional units or subpopulations in unoccupied areas would fill in range gaps between the other occupied units and/or subpopulations. All of the unoccupied units lie within 8 mi (12.9 km) of an occupied area. This would reduce migration distances and increase the opportunity for genetic exchange between the subpopulations. The addition of these unoccupied units would ensure the full geographic distribution of the Sierra Nevada bighorn sheep is represented.

(3) The current overall population size of the Sierra Nevada bighorn sheep is small, and it must increase to ensure the long-term survival of this subspecies, as small populations are more vulnerable to extinction (Meffe and Carroll 1994, pp. 190–197; Shaffer 1987, pp. 71–73). While the occupied units provide habitat for current populations, additional units would provide habitat for population growth either through natural means or through reintroductions. Population increase in the additional units would assist in reducing the risk of extinction of the subspecies through stochastic events,

such as wildfire, disease (Bunch *et al.* 1999, pp. 209–237), or avalanches (Torres *et al.* 1996, p. 28), as the current isolated populations are few in number, small in size, and at risk from such stochastic events. Establishing additional subpopulations, increasing a subpopulation's size, and increasing the overall distribution of subpopulations across the landscape are fundamental to reducing the significance of losing any single subpopulation.

We have determined that the unoccupied Twin Lakes, Green Creek, and Coyote Ridge Herd Unit areas, as identified in the final recovery plan (Service 2007, p. 41), are not essential for the conservation of the Sierra Nevada bighorn sheep. During the recovery team's efforts to finalize the recovery plan, an additional herd unit, Bubbs Creek, was included in the final recovery plan due to bighorn sheep occupying this area (Wehausen and Stephenson 2004, p. 5; Benz 2007, p. 1; Service 2007, p. 41). Though these four herd units are mentioned in the final recovery plan they were not considered to be essential in the plan. These four herd units are considered not essential for the following reasons:

(1) We believe that the 12 units we are designating as critical habitat provide the necessary habitat and area to ensure the viability and long-term survival of the Sierra Nevada bighorn sheep at the local and subspecies levels, as well as provide for sufficient resiliency, representation, and redundancy of the subspecies.

(2) There is uncertainty regarding whether viable Sierra Nevada bighorn sheep herds can become established in the Twin Lakes, Green Creek, and Coyote Ridge Herd Unit areas due to the lack of historical evidence regarding the number of animals that may have occurred in these areas and our limited understanding of the availability and connectivity between foraging habitats in these areas. Thus, there is a question as to whether there is a potential for reoccupation by the subspecies, either through natural means of dispersal or by future reintroduction efforts. As a result, these three herd unit areas do not meet our criterion number 4 for identification of critical habitat outlined above. Therefore, the Twin Lakes, Green Creek, and Coyote Ridge Herd Unit areas are not considered essential for recovery.

(3) Bighorn sheep were discovered in the Bubbs Creek Herd Unit area in 2001 and were likely a result of a recent colonization. This herd unit area is west of the crest of the Sierra Nevada where snowfall is much greater than the east side of the range. Because there are no historical records of bighorn sheep winter range in the Bubbs Creek area, there is uncertainty as to the long-term viability of this herd unit. Consequently, the Bubbs Creek Herd Unit area is not considered essential for recovery.

Further, our concern for disease transmission from domestic sheep to Sierra Nevada bighorn sheep is reduced because we are not including the unoccupied herd units as essential to the recovery of the subspecies. Twin Lakes and Green Creek overlap with portions of a few currently active domestic sheep allotment boundaries. Bubbs Creek and Coyote Ridge Herd Units do not occur near domestic sheep allotments. While the potential for disease transmission from domestic sheep and goat grazing in proximity to Sierra Nevada bighorn sheep is a management concern, it did not serve as the foundation for this critical habitat designation.

We delineated polygon boundaries for each unit for critical habitat designation within the Sierra Nevada bighorn sheep's historical range and around areas occupied at the time of listing, or known to have been historically occupied and considered essential for the conservation of the subspecies. We based our boundary delineation on the knowledge that bighorn sheep are naturally philopatric and fit a metapopulation model. Separate female groups tend to be geographically segregated, and these groups can be defined by separate home range patterns. The existing herds provided information related to home range and habitat use patterns. Low-elevation winter range habitat is an important, and apparently limiting, factor in the Sierra Nevada that occurs in disjunct patches. We defined unit boundaries around those patches and geographically connected habitat that provides visually open habitat on steeper slopes (Wehausen 2006, p. 1). We also considered factors such as knowledge of the range of elevations used by Sierra Nevada bighorn sheep, topographic features known to be needed by the subspecies, sighting records, published literature, and the expertise of bighorn sheep biologists regarding local conditions (high elevation, snow-free winter habitat; lower elevation, south or east-facing habitat; visual openness; and high elevation, summer habitat) during boundary delineation. In addition, a Resource Selection Probability Functions model for winter and summer habitat was developed that can quantitatively evaluate habitat conditions (Johnson *et al.* 2005). This modeling effort was used to support and refine unit boundaries (Wehausen 2006, p. 2) which contain the PCEs and additional, more specific characteristics. The model included variables such as elevation, slope, aspect, hillshade, terrain ruggedness, distance to escape terrain, and vegetation to determine visibility (Johnson *et al.* 2005, pp. 8–9). Pixels (smallest element of an image that can be individually processed in a video display system) in the study area that received a relative winter and summer probability of use value in the 90–100 percent quartile were considered winter and summer ranges. Each unit boundary surrounds the areas we consider to be winter and summer range, as well as areas necessary to provide connectivity between these ranges. These boundary lines translate onto the ground by roughly following elevation and geomorphic features. As one progresses from south to north along the Sierra Nevada, the lower boundary elevation of the units increases. The elevation of the boundary lines begins at a low of 4,000 ft (1,219 m) for Unit 12 (Olancha Peak) at the southern end of the Sierra Nevada. From this unit northward, the remaining units begin at a low elevation of 4,500 ft (1,372 m) or higher.

When determining critical habitat boundaries for this rule, we made every effort to avoid including developed areas such as lands covered by buildings, paved areas, and other structures that lack PCEs for the Sierra Nevada bighorn sheep. The scale of the maps prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed areas. Any such structures and the land under them inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the final rule and are not designated as critical habitat. Therefore, Federal actions limited to these areas would not trigger section 7 consultation, unless they may affect the subspecies or its PCEs in adjacent critical habitat.

We designate critical habitat (7 units) on lands that we have determined were occupied at the time of listing that contain the physical and biological features essential for the conservation of the subspecies that may require special management considerations or protection, and additional areas (5 units) not occupied at the time of listing that we have determined to be essential to the conservation of the subspecies. The 12 units that we designate as critical habitat encompass about 417,577 ac (168,992 ha) within Tuolumne, Mono, Fresno, Inyo, and Tulare Counties, California. The designated units contain habitat that

supports biological and population-level functions of the Sierra Nevada bighorn sheep. A brief discussion of each unit designated as critical habitat is provided in the unit descriptions below.

Units both occupied and unoccupied at the time of listing are designated based on sufficient PCEs being present to support Sierra Nevada bighorn sheep life processes. Some units contain all PCEs and support multiple life processes. Some units contain only a portion of the PCEs necessary to support the Sierra Nevada bighorn sheep's particular use of that habitat.

Section 10(a)(1)(B) of the Act authorizes us to issue permits for the take of listed species incidental to otherwise lawful activities. An incidental take permit application must be supported by a HCP that identifies conservation measures that the permittee agrees to implement to minimize and mitigate the impacts of the taking on the species. We often exclude from designated critical habitat non-Federal public lands and private lands that are covered by an existing operative HCP and executed implementation agreement under section 10(a)(1)(B) of the Act, where we determine that the benefits of exclusion outweigh the benefits of inclusion in accordance with section 4(b)(2) of the Act. There are no existing operative HCPs within the areas designated as critical habitat.

Final Critical Habitat Designation

We are designating 12 units as critical habitat for the Sierra Nevada bighorn sheep. The critical habitat areas described below constitute our best current assessment of areas determined to be occupied at the time of listing, that meet the definition of critical habitat for the Sierra Nevada bighorn sheep, and those additional areas that were not occupied at the time of listing but were found to be essential to the conservation of the Sierra Nevada bighorn sheep. The 12 areas designated as critical habitat are: Mount Warren, Mount Gibbs, Convict Creek, Wheeler Ridge, Taboose Creek, Sawmill Canyon, Mount Baxter, Mount Williamson, Big Arroyo, Mount Langley, Laurel Creek, and Olancha Peak.

The approximate area encompassed within each designated critical habitat unit is shown in Table 2.

TABLE 2—DESIGNATED CRITICAL HABITAT UNITS FOR SIERRA NEVADA BIGHORN SHEEP

[Area estimates reflect all land within critical habitat unit boundaries]

Critical habitat unit	Land ownership by type	Size of unit in acres (hectares)
1. Mount Warren	Federal	35,279 (14,277)
	Private	568 (230)
	Local Government	165 (67)
2. Mount Gibbs	Federal	29,702 (12,020)
3. Convict Creek	Federal	36,497 (14,770)
	Private	17 (7)
4. Wheeler Ridge	Federal	80,568 (32,605)
	Private	398 (161)
5. Taboose Creek	Federal	28,805 (11,657)
6. Sawmill Canyon	Federal	30,508 (12,346)
7. Mount Baxter	Federal	32,198 (13,030)
	Private	22 (9)
8. Mount Williamson	Federal	32,560 (13,177)
9. Big Arroyo	Federal	24,987 (10,112)
10. Mount Langley	Federal	32,845 (13,292)
11. Laurel Creek	Federal	22,037 (8,918)
12. Olancha Peak	Federal	30,421 (12,311)
Subtotal	Federal	416,407 (168,518)
	Private	1,005 (407)
	Local Government	165 (67)
Grand Total*		417,577 (168,992)

*Columns may not sum exactly due to rounding of values.

TABLE 3—OCCUPANCY OF SIERRA NEVADA BIGHORN SHEEP BY DESIGNATED CRITICAL HABITAT UNIT

Unit	Occupied at time of listing?	Currently occupied?	Size of unit in acres (hectares)
1. Mount Warren	Yes	Yes	36,012 (14,574)
2. Mount Gibbs	Yes	Yes	29,702 (12,020)
3. Convict Creek	No	No	36,514 (14,777)
4. Wheeler Ridge	Yes	Yes	80,966 (32,766)
5. Taboose Creek	No	No	28,805 (11,657)
6. Sawmill Canyon	Yes	Yes	30,508 (12,346)
7. Mount Baxter	Yes	Yes	32,220 (13,039)
8. Mount Williamson	Yes	Yes	32,560 (13,177)
9. Big Arroyo	No	No	24,987 (10,112)
10. Mount Langley	Yes	Yes	32,845 (13,292)
11. Laurel Creek	No	No	22,037 (8,918)
12. Olancha Peak	No	No	30,421 (12,311)
Total*			417,577 (168,992)

*Columns may not sum exactly due to rounding of values.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for Sierra Nevada bighorn sheep, below.

Universal Transverse Mercator (UTM) coordinates and more precise legal descriptions of each unit are provided in the Regulation Promulgation section.

Sierra Nevada bighorn sheep throughout their range utilize elevations from about 4,790 ft (1,460 m) to above 14,100 ft (4,300 m) (Wehausen 1980, pp. 3, 82). As described in the Criteria Used to Identify Critical Habitat section above, we used modeling to further refine and clarify our knowledge of those areas that may be essential to the conservation of the subspecies. Based on these modeling efforts, Sierra Nevada bighorn sheep habitat is known to be available as low as elevation 4,000 ft (1,219 m) in the southern portion of its range (Johnson *et al.* 2005). Within this elevational range, a variety of vegetation communities occur including (from lowest to highest elevations): Sagebrush-bitterbrush-bunchgrass scrub; pinyon-juniper woodland and mountain mahogany scrub; mid-elevation and subalpine, meadows, forests, and woodlands; and alpine meadows and other habitats from cliffs to plateaus (Service 2007, p. 3). All units contain one or more of these habitat types in varying amounts.

Unit 1: Mount Warren

Unit 1 consists of approximately 36,012 ac (14,574 ha) in Tuolumne and Mono Counties. Unit 1 is generally located within an area bounded on the east by U.S. Highway 395 (located about 1 mi (1.6 km) away), on the south by SR 120, on the north by Green Creek, and on the west by the ridge connecting Ragged Peak in the south to Camiaca Peak in the north. It is located northwest of the town of Lee Vining. Land ownership within the unit includes approximately 35,279 ac (14,277 ha) of Federal land, 165 ac (67 ha) of Los Angeles Department of Water and Power lands, and 568 ac (230 ha) of other private land. The Federal land is administered by the Humboldt-Toiyabe and Inyo National Forests, Yosemite National Park, and Bureau of Land Management.

Unit 1 begins at a low elevation of about 7,500 ft (2,286 m) on the eastern slope and rises to about 12,000 ft (3,658 m) on the west. It encompasses some areas from 12,000 to over 14,000 ft (3,658–4,267 m). It is the northernmost unit designated as critical habitat for the Sierra Nevada bighorn sheep. This unit was occupied at the time of listing (65 FR 20, January 3, 2000; Wehausen 1996, p. 477; Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, pp. 6–7; Wehausen 1999, pp. 6, 8; 2000, pp. 5–7) and is currently occupied with a minimum population estimate of 26 individuals (Wehausen and Stephenson 2006, p. 7). Unit 1 contains all of the features essential to the conservation of the Sierra Nevada bighorn sheep. It contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements; contains a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5); and contains mineral licks (PCE 3) (Chow 1992, p. 52). This unit has good high- and low-elevation winter habitat in the area north of Lee Vining Canyon. Mount Warren has a minimum winter range elevation of about 7,546 ft (2,300 m), while Tioga Crest has this type of habitat at 9,515 ft (2,900 m). In the Lundy Canyon area there is good low-elevation south-facing winter range near 8,038 ft (2,450 m). Dunderberg Peak can provide large areas free of snow in the winter. It does not connect to low-elevation winter range but does connect to summer range in Lundy Canyon; visual winter range condition is mixed to open (Service 2007, pp. 127, 129).

The essential features found within Unit 1 may require special management considerations or protection to ameliorate the threats of overgrazing. Additionally, the PCEs within this unit may require special management considerations or protection to reverse the impacts of fire suppression which would provide more open habitat and potentially reduce predation, and to protect against the impacts of recreation (e.g., Virginia Lakes, Lundy Lake, Lee Vining Canyon) and development activities (Sections of State Highway 120 are located in this unit). Furthermore, PCEs within Unit 1 may require special management considerations or protection in the form of avalanche control to protect against catastrophic events.

Unit 2: Mount Gibbs

Unit 2 consists of approximately 29,702 ac (12,020 ha) in Tuolumne and Mono Counties. Unit 2 is generally bounded on the north by SR 120 with U.S. Highway 395 located approximately 4 mi (6.4 km) to the east. State Route 158 lies along a portion of the southeastern boundary of this unit. The unit is bounded on the west, in part, by Lyell Canyon. It is immediately south of Unit 1 (Mount Warren) and is located southwest of Lee Vining. Land ownership within the unit includes approximately 29,702 ac (12,020 ha) of Federal land administered by the Inyo National Forest and Yosemite National Park.

Unit 2 begins at a low elevation of about 7,500 ft (2,286 m) on the eastern slope and rises to 9,000–12,000 ft (2,743–3,658 m) on the west. It encompasses areas from 12,000 to over 14,000 ft (3,658–4,267 m). Unit 2 was occupied at the time of listing (Wehausen 1996, p. 477; Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, pp. 6–7; Wehausen 1999, pp. 7–8; 2000, pp. 6–7; 65 FR 20, January 3, 2000) and is currently occupied, with a minimum population estimate of 8 individuals (Wehausen and Stephenson 2006, p. 7). Unit 2 contains all of the features essential to the conservation of the Sierra Nevada bighorn sheep. It contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements; contains a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5); and contains mineral licks (PCE 3) (Chow 1992, p. 52). An area between Mount Dana and Mount Wood provides considerable high-elevation habitat that is blown free of snow in the winter and connects to south-facing slopes that decline to lower elevations. Winter habitat occurs at a minimum elevation of 9,105 ft (2,775 m) around Mount Gibbs; 8,859 ft (2,700 m) around Mount Lewis; and 7,546 ft (2,300 m) around Mount Wood. Visual winter range condition is open (Service 2007, p. 127). The south-facing side of Mount Lewis is steep and supports little snow in winter. The slopes above Silver Lake offer low-elevation east-facing winter range to 7,599 ft (2,316 m). This area may provide birthing habitat in spring during some years (Service 2007, p. 129).

The essential features found within Unit 2 may require special management considerations or protection to ameliorate the threats of overgrazing. Additionally, PCEs within this unit may require special management considerations or protection to reverse the impacts of fire suppression which would provide more open habitat and potentially reduce predation, and to protect against the impacts of recreation (e.g., Lee Vining Canyon) and development activities (sections of SR 120 are located along the northern boundary of this unit; SR 158 lies along a portion of the southeastern boundary of this unit). Furthermore, PCEs within Unit 2 may require special management considerations or protection in the form

of avalanche control to protect against catastrophic events.

Unit 3: Convict Creek

Unit 3 consists of approximately 36,514 ac (14,777 ha) in Mono and Fresno Counties. Unit 3 is generally located within an area bounded on the northeast by U.S. Highway 395 (located about 2 mi (3.2 km) away), by Fish Creek and the boundary between Inyo and Sierra National Forests on the west, and by Mono Creek on the south. This unit is located about 3 mi (4.8 km) south of Mammoth Lakes. Land ownership within the unit includes approximately 36,497 ac (14,770 ha) of Federal land and 17 ac (7 ha) of private land. Federal land is administered by the Inyo and Sierra National Forests.

Unit 3 begins at a low elevation of about 7,500 ft (2,286 m) and rises to about 10,500–12,000 ft (3,200–3,658 m). The unit encompasses areas from 12,000 to over 14,000 ft (3,658–4,267 m). This unit was not occupied at the time of listing and is not currently occupied, but is essential to the conservation of the Sierra Nevada bighorn sheep. The unit contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements, and a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5). Mineral licks (PCE 3) may or may not occur in this unit. This unit contains south-facing winter habitat above Convict Lake that descends down to 7,874 ft (2,400 m). This habitat is connected to high-elevation windswept patches on Laurel and Bloody Mountains. McGee Mountain has south-facing winter habitat down to about 8,005 ft (2,440 m) but only a small amount of high-elevation habitat. Nevahbe Ridge has windblown habitat, but it is east-facing and habitat occurs down to 8,530 ft (2,600 m) (Service 2007, pp. 127, 130). Visual winter range condition is open (Service 2007, p. 127).

While this unit was not occupied at the time of listing, Sierra Nevada bighorn sheep occupied the area historically (Ober 1931, p. 32; Jones 1950, p. 40; Buechner 1960, p. 69; Barrett 1965, p. 43; Dunaway 1971, p. 19; Wehausen *et al.* 1987, p. 66; Wehausen 1988a, p. 100). This unit is essential to the conservation of the Sierra Nevada bighorn sheep for increasing the number of herds to reduce the significance of losing any particular herd, increasing population viability, decreasing the degree of fragmentation of the current geographic distribution between this unit and Units 4 (Wheeler Ridge) and 2 (Mount Gibbs), increasing opportunities for genetic exchange between these units, and increasing overall herd numbers to reduce extinction risk from stochastic events. Conservation of this unit is necessary to achieve the long-term viability of this subspecies within its range.

Unit 4: Wheeler Ridge

Unit 4 consists of approximately 80,966 ac (32,766 ha) in Fresno, Inyo, and Mono Counties. Unit 4 is generally located within an area bounded by U.S. Highway 395 (located about 5–17 mi (8–27.4 km) to the east; Evolution Creek on the south; Pavilion Dome, Pilot Nob, and Mills Creek on the west; and Mono Creek on the north. This unit is located about 12 mi (19.3 km) west of Bishop. Land ownership within the unit includes approximately 80,568 ac (32,605 ha) of Federal land and 398 ac (161 ha) of private land. Federal land is administered by the Inyo and Sierra National Forests, Kings Canyon National Park, and the Bureau of Land Management.

Unit 4 begins at a low elevation of about 5,500 ft (1,676 m) on the eastern slope and rises to about 12,000 ft (3,658 m) on the west. It encompasses numerous areas from 12,000 to over 14,000 ft (3,658–4,267 m). This unit was occupied at the time of listing (Wehausen 1996, p. 477; Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, pp. 6–7; Wehausen 1999, pp. 5–6, 8; 2000, pp. 3–5, 7; 65 FR 20, January 3, 2000) and is currently occupied with a minimum population estimate of 113 individuals (Wehausen and Stephenson 2006, p. 7). Unit 4 contains features that are essential to the conservation of the Sierra Nevada bighorn sheep. It contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements; contains a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5); and contains/provides mineral licks (PCE 3) (Stephenson 2007, p. 1). The area around Wheeler Ridge provides minimum elevation winter habitat at 5,578 ft (1,700 m) and is visually open (Service 2007, p. 127). Mount Tom is located south of Wheeler Ridge and provides an open winter visual condition and winter habitat at a minimum elevation of 6,398 ft (1,950 m) in Elderberry Canyon (Service 2007, p. 127, 129–130). High-elevation winter habitat is extensive on the west side of Mount Tom's north ridge. Narrow ridges on the south side can be snow free. Between Basin Mountain and Mount Humphreys, the plateau remains snow free and is accessible to sheep traveling ridge lines from Mount Tom by Four Gables and along the crest.

The essential features found within Unit 4 may require special management considerations or protection to ameliorate the threats of overgrazing. Additionally, PCEs within this unit may require special management considerations or protection to reverse the impacts of fire suppression which would provide more open habitat and potentially reduce predation. Finally, PCEs within Unit 4 may require special management considerations or protection for the threats due to mining, development, and recreation (e.g., Pine Creek area), and avalanche control may be needed to protect against catastrophic events.

Unit 5: Taboose Creek

Unit 5 consists of approximately 28,805 ac (11,657 ha) in Inyo and Fresno Counties. Unit 5 is generally located within an area bounded on the north by Big Pine Creek and on the south by Taboose Creek. U.S. Highway 395 is about 8.5 mi (13.7 km) to the east, and Marion and Observation Peaks are located to the west. This unit is located about 5 mi (8 km) southwest of Big Pine. Land ownership within the unit includes approximately 28,805 ac (11,657 ha) of Federal land administered by the Inyo National Forest and Kings Canyon National Park.

Unit 5 begins at a low elevation of about 6,000 ft (1,829 m) on the eastern slope and rises to 12,000 to over 14,000 ft (3,658–4,267 m) on the west. This unit was not occupied at the time of listing and is not currently occupied, but the unit is essential to the conservation of the Sierra Nevada bighorn sheep. The unit contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements, and a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5). Mineral licks (PCE 3) may or may not occur in this unit. High windblown areas (9,187 ft (2,800 m)) occur on Birch and Kid Mountains that may support bighorn sheep. There appears to be limited low-elevation south- or east-facing habitat unless animals move south to Red Mountain or Taboose Creeks. Taboose Creek offers patches of high-elevation winter habitat and south-facing, low-elevation habitat where it occurs as low as 6,398 ft (1,950 m). The northeast side of Kid Mountain provides

some low habitat near 7,218 ft (2,200 m) (Service 2007, pp. 128, 132). The winter range visual condition is open in these areas (Service 2007, p. 128).

While this unit was not occupied at the time of listing, Sierra Nevada bighorn sheep occupied the area historically (Ober 1914, p. 125; Jones 1950, p. 38; Buechner 1960, 69; Dunaway 1971 p. 19; Wehausen *et al.* 1987 p. 66; Wehausen 1988a, p. 101; Berger 1990, p. 94). This unit is essential to the conservation of the Sierra Nevada bighorn sheep for increasing the number of herds to reduce the significance of losing any particular herd, increasing population viability, decreasing the degree of fragmentation of the current geographic distribution between this unit and Units 6 (Sawmill Canyon) and 4 (Wheeler Ridge), increasing opportunities for genetic exchange between these units, and increasing overall herd numbers to reduce extinction risk from stochastic events. Conservation of this unit is necessary to achieve the long-term viability of this subspecies within its range.

Unit 6: Sawmill Canyon

Unit 6 consists of about 30,508 ac (12,346 ha) in Fresno and Inyo Counties. Unit 6 is generally located within an area bounded on the east by U.S. Highway 395 (located about 3 mi (4.8 km) away), on the south by Unit 7 (Mount Baxter) and Sawmill Pass and Creek, on the west by Woods Creek and the South Fork of Woods Creek, and on the north by Taboose Creek. Land ownership within the unit includes approximately 30,508 ac (12,346 ha) of Federal land administered by the Inyo National Forest and Kings Canyon National Park.

Unit 6 begins at a low elevation of about 4,500 ft (1,372 m) on the eastern slope and rises to about 10,500 to over 14,000 ft (3,200–4,267 m). Unit 6 was occupied at the time of listing (Wehausen 1996, p. 477; Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, pp. 6–7; Wehausen 1999, pp. 4–5, 8; 2000, pp. 3, 7; 65 FR 20, January 3, 2000) and is currently occupied with a minimum population estimate of 36 individuals (Wehausen and Stephenson 2006, p. 7). Unit 6 has features that are essential to the conservation of the Sierra Nevada bighorn sheep. It contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements, and a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5). It is not known if mineral licks (PCE 3) occur on this unit. Unit 6 provides foraging habitat at the northern boundary near Mount Pinchot (Service 2007, p. 132). In addition, minimum elevations of winter habitat occur in the Goodale Creek area at 6,890 ft (2,100 m) and in the Sawmill Creek area at 4,922 ft (1,500 m); winter visual condition is open (Service 2007, p. 128).

The essential features found within Unit 6 may require special management considerations or protection to reverse the impacts of fire suppression which would provide more open habitat and potentially reduce predation. The PCEs in Unit 6 may also require special management considerations or protection for threats due to recreation, and avalanche control may be needed to protect against catastrophic events.

Unit 7: Mount Baxter

Unit 7 consists of approximately 32,220 ac (13,039 ha) in Fresno and Inyo Counties. Unit 7 is generally located within an area bounded on the east by U.S. Highway 395 (located about 3 mi (4.8 km) away); on the south by Bubbs Creek and Forest Route 13S17 to Independence; on the west by Mount Bago, Gardiner Lakes, and Mount Clarence King; and on the north by Unit 6 (Sawmill Canyon) and Sawmill Pass and Creek. This unit is located about 6 mi (9.7 km) west of Independence. Land ownership within the unit includes approximately 32,198 ac (13,030 ha) of Federal land and 22 ac (9 ha) of private land. Federal land is administered by the Inyo National Forest and Kings Canyon National Park.

Unit 7 begins at a low elevation of about 4,500 ft (1,372 m) on the eastern slope and rises to about 10,500 to 12,000 ft (3,200–3,658 m) on the west. It encompasses areas from 12,000 to over 14,000 ft (3,658–4,267 m). Unit 7 was occupied at the time of listing (Wehausen 1996, p. 477; Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, pp. 6–7; Wehausen 1999, pp. 3–4, 8; 2000, pp. 2–3, 7; 65 FR 20, January 3, 2000) and is currently occupied with a minimum population estimate of 69 individuals (Wehausen and Stephenson 2006, p. 7). Unit 7 contains features that are essential to the conservation of the Sierra Nevada bighorn sheep. It contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements; contains a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5); and contains mineral licks (PCE 3) (Jones 1950, p. 63; Hicks and Elder 1979, p. 911). This unit provides foraging habitat along the ridges and in drainages of Mount Baxter. Minimum elevations of winter habitat in the Thibaut-Sand Mountain area occur at 5,003 ft (1,525 m), and in the Onion Valley area at 7,546 ft (2,300 m); winter visual condition is open (Service 2007, p. 128).

In addition to containing the features essential to the conservation of the Sierra Nevada bighorn sheep, Unit 7 has additional conservation value as it served as a source population, due to its size and productivity, for reintroductions to the Wheeler Crest area (1979, 1980, 1982, 1986, 1988), Mount Langley (1980 and 1982), and Lee Vining Canyon area (1986, 1988) (Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, p. 6). Individuals from this population may be used for future translocations within the range.

The essential features found within Unit 7 may require special management considerations or protection to reverse the impacts of fire suppression which would provide more open habitat and potentially reduce predation. PCEs within Unit 7 also may require special management considerations or protection for threats due to recreation (e.g., Baxter Pass and Onion Valley), and avalanche control may be needed to protect against catastrophic events.

Unit 8: Mount Williamson

Unit 8 consists of about 32,560 ac (13,177 ha) in Inyo and Tulare Counties. Unit 8 is generally located within an area bounded on the east by U.S. 395 (located about 9 mi (14.5 km) away); on the south by Tulainyo Lake; on the west by the Kern River (located about 3.5 miles (5.6 km) away); and on the north by Forest Route 13S17 to Independence (located about 1.5 mi (2.4 km) away). This unit is located southwest of Independence and northwest of Lone Pine. Land ownership within the unit includes approximately 32,560 ac (13,177 ha) of Federal land administered by the Inyo National Forest and Sequoia and Kings Canyon National Parks.

Unit 8 begins at a low elevation of about 6,000 ft (1,829 m) on the eastern slope and rises to 12,000 to over 14,000 ft (3,658–4,267 m) on the west. Unit 8 was occupied at the time of listing (Wehausen 1996, p. 477; Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, pp. 6–7; Wehausen 1999, pp. 2–3, 8; 2000, pp. 1–2, 7; 65 FR 20, January 3, 2000) and is currently occupied with a minimum population estimate of 20 individuals (Wehausen and Stephenson 2006, p. 7). Unit 8

contains features that are essential to the conservation of the Sierra Nevada bighorn sheep. The unit contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements, and a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5). It is not known if mineral licks (PCE 3) occur in this unit. The Shepherd Creek-Pinyon Creek area in this unit offers winter habitat at a minimum elevation of 6,808 ft (2,075 m); the George Creek-North Bairs Creek provides this habitat at 6,234 ft (1,900 m) (Service 2007, p. 128). The winter visual condition is mixed (Service 2007, p. 128).

The essential features found within Unit 8 may require special management considerations or protection to reverse the impacts of fire suppression which would provide more open habitat and potentially reduce predation. This unit could provide an estimated additional 2.2 sq mi (5.8 sq km) of winter range with a relative probability of equal to or greater than 10 percent use if forests were reduced by burning (Johnson *et al.* 2005, p. 34). PCEs within Unit 8 may require special management considerations or protection to ameliorate the possible threat of overgrazing due to the proximity of this unit to Federal grazing allotments. Furthermore, PCEs within Unit 8 also may require special management considerations or protection for threats due to recreation (e.g., Whitney Portal and Trailhead), and avalanche control may be needed to protect against catastrophic events.

Unit 9: Big Arroyo

Unit 9 consists of approximately 24,987 ac (10,112 ha) in Tulare County. Unit 9 is generally located within an area bounded on the east by the Kern River; on the north by Kern-Kaweah River, Junction Meadow, and Wallace Creek area; and on the west and south by the Big Arroyo Creek. Land ownership within the unit includes approximately 24,987 ac (10,112 ha) of Federal land is administered by Sequoia National Park.

Unit 9 begins at a low elevation of about 6,500 ft (1,981 m) on the eastern slope and rises to about 12,000 ft (3,658 m) on the west. The northern boundary encompasses areas from 12,000 to over 14,000 ft (3,658–4,267 m). This unit was not occupied at the time of listing and is not currently occupied, but is essential to the conservation of Sierra Nevada bighorn sheep. The unit contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements, and a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5). It is not known if mineral licks (PCE 3) are located within this unit. This unit contains no high-elevation wind-swept areas (Service 2007, p. 134). Winter habitat is provided at a minimum elevation of 6,890 ft (2,100 m) with a mixed visual condition due to scattered trees (Service 2007, pp. 128, 134). From the upper end of the Big Arroyo drainage, sheep could find access to alpine habitat on Kaweah Peaks.

While this unit was not occupied at the time of listing, Sierra Nevada bighorn sheep occupied the area historically (Jones 1950, p 35; Buecher 1960, p. 69; Barrett 1965, p. 43; Riegelhuth 1965, p. 35; Wehausen 1988b, p. 100). This unit is essential to the conservation of the Sierra Nevada bighorn sheep for increasing the number of herds to reduce the significance of losing any particular herd, increasing population viability, decreasing the degree of fragmentation of the current geographic distribution between this unit and Units 8 (Mount Williamson), and 10 (Mount Langley), increasing opportunities for genetic exchange between these units, and increasing overall herd numbers to reduce extinction risk from stochastic events. Conservation of this unit is necessary to achieve the long-term viability of this subspecies within its range.

Unit 10: Mount Langley

Unit 10 consists of approximately 32,845 ac (13,292 ha) in Inyo and Tulare Counties. Unit 10 is generally located within an area bounded on the east by Forest Route 16S02 located from immediately adjacent to the unit to 7 mi (11.3 km) away, on the south by Muah Mountain, on the west by Cirque Peak and the Perrin Creek area, and on the north by Lone Pine Creek. This unit is located about 7 mi (11.3 km) southwest of Lone Pine. Land ownership within the unit includes approximately 32,845 ac (13,292 ha) of Federal land administered by the Inyo National Forest, Sequoia National Park, and Bureau of Land Management.

Unit 10 begins at a low elevation of about 4,500 ft (1,372 m) on the eastern slope and rises to 9,000 to 12,000 ft (2,743–3,658 m) on the west side. It encompasses areas between 12,000 and 14,000 ft (3,658–4,267 m). Unit 10 was occupied at the time of listing (Wehausen 1996, p. 477; Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, pp. 6–7; Wehausen 1999, pp. 1–2, 8; 2000, pp. 1, 7; 65 FR 20, January 3, 2000) and is currently occupied with a minimum population estimate of 90 individuals (Wehausen and Stephenson 2006, p. 7). Unit 10 contains features that are essential to the conservation of the Sierra Nevada bighorn sheep. The unit contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements, and a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5). It is not known if mineral licks (PCE 3) occur in this unit. The unit provides low elevation (5,742 ft, 1,750 m) mixed winter range in the Carroll Creek-Turtle Creek area. It also provides low-elevation (4,757 ft, 1,450 m), open winter range in the Slide Canyon-Cottonwood Creek area (Service 2007, pp. 128, 133). From this area, it is possible that bighorn sheep could cross a short distance of the open south-facing forest by Wonoga Peak to access the large open plateau country. It is also possible that bighorn sheep using the Cottonwood Creek area use summer range to the southeast of the Kern Plateau where elevations are about 10,000 ft (3,048 m) (Service 2007, p. 130).

The essential features found within Unit 10 may require special management considerations or protection to reverse the impacts of fire suppression which would provide more open habitat and potentially reduce predation. This unit could provide an estimated additional 1.8 sq mi (4.7 sq km) of winter range with a relative probability of equal to or greater than 10 percent use if forests were reduced by burning (Johnson *et al.* 2005, p. 34). PCEs within Unit 10 may require special management considerations or protection to ameliorate the possible threat of overgrazing due to the proximity of this unit to Federal grazing allotments. PCEs within Unit 10 may also require special management considerations or protection for threats due to recreation (e.g., Whitney Portal and Trailhead) and development (Forest Route 16S02 crosses a portion of this unit). Furthermore, PCEs within Unit 10 may require special management considerations or protection in the form of avalanche control to protect against catastrophic events.

Unit 11: Laurel Creek

Unit 11 consists of approximately 22,037 ac (8,918 ha) in Tulare County. Unit 11 is generally located within an

area bounded on the east by the Kern River; on the south by Pistol, Laurel, and Golden Trout Creeks; on the west by a portion of Little Kern River; and on the north by Soda Creek. Land ownership within the unit includes approximately 22,037 ac (8,918 ha) of Federal land administered by the Sequoia National Forest and Sequoia National Park.

Unit 11 begins at a low elevation of about 6,500 ft (1,981 m) on the eastern slope and rises to 10,500 to 12,000 ft (3,200–3,658 m) on the west. It includes a few small areas from 12,000 to over 14,000 ft (3,658–4,267 m). This unit was not occupied at the time of listing and is not currently occupied, but the unit is essential to the conservation of Sierra Nevada bighorn sheep. The unit contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements, and a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5). It is unknown whether mineral licks (PCE 3) occur in this unit. This unit contains no high-elevation wind-swept areas (Service 2007, p. 134). Winter habitat is provided at a minimum elevation of 6,808 ft (2,075 m) with a mixed visual condition due to scattered trees (Service 2007, pp. 128, 134). Laurel Creek provides access to summer range.

While this unit was not occupied at the time of listing, Sierra Nevada bighorn sheep occupied the area historically (Buechner 1960 p. 69; Barrett 1965, p. 43; Wehausen 1988b, p. 100). This unit is essential to the conservation of the Sierra Nevada bighorn sheep for increasing the number of herds to reduce the significance of losing any particular herd, increasing population viability, decreasing the degree of fragmentation of the current geographic distribution between this unit and Unit 10 (Mount Langley), increasing opportunities for genetic exchange between these units, and increasing overall herd numbers to reduce extinction risk from stochastic events. Conservation of this unit is necessary to achieve the long-term viability of this subspecies within its range.

Unit 12: Olancha Peak

Unit 12 consists of approximately 30,421 ac (12,311 ha) in Tulare and Inyo Counties. Unit 12 is generally located within an area bounded on the east by U.S. Highway 395, on the south by Falls and Walker Creeks, on the west by a portion of the Pacific Crest National Scenic Trail, and on the north by Muah Mountain. This unit is located west of the towns of Cartago and Olancha. Land ownership within the unit includes approximately 30,421 ac (12,311 ha) of Federal land administered by the Inyo National Forest and Bureau of Land Management.

Unit 12 begins at a low elevation of about 4,000 ft (1,219 m) on the eastern slope and rises to about 9,000 to 10,500 ft (2,743–3,200 m) on the west. It is the southernmost unit designated as critical habitat for the Sierra Nevada bighorn sheep. This unit was not occupied at the time of listing and is not currently occupied, but is essential to the conservation of the Sierra Nevada bighorn sheep. The unit contains steep, rocky terrain which provides for foraging (summer and winter), mating, lambing, predator avoidance, and bedding and also allows for seasonal elevational movements, and a range of vegetation types (PCE 1 and PCE 2) (Johnson *et al.* 2005, pp. 4–14, 31–32, 34, 37–38; Service 2007, pp. 3–5). It is not known if mineral licks (PCE 3) occur within this unit. This unit provides bighorn sheep habitat in the areas of Ash, Braley, Cartago, Olancha, and Falls Creeks. Cartago, Olancha and Falls Creeks connect by Olancha Canyon to Olancha Peak (12,123 ft, 3,695 m) which provides some alpine summer habitat (southernmost in the Sierra Nevada) (Service 2007, p. 133). Winter range occurs as open, low-elevation (4,757 ft, 1,450 m), south-facing slopes (Service 2007, pp. 128, 133).

While this unit was not occupied at the time of listing, Sierra Nevada bighorn sheep occupied the area historically (Jones 1950, p. 39; Wehausen *et al.* 1987, p. 66; Wehausen 1988a, p. 101). This unit is essential to the conservation of the Sierra Nevada bighorn sheep for increasing the number of herds to reduce the significance of losing any particular herd, increasing population viability, decreasing the degree of fragmentation of the current geographic distribution between this unit and Unit 10 (Mount Langley), increasing opportunities for genetic exchange between these units, and increasing overall herd numbers to reduce extinction risk from stochastic events. Conservation of this unit is necessary to achieve the long-term viability of this subspecies within its range.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies to ensure that actions they fund, authorize, or carry out are not likely to jeopardize the continued existence of a listed species or destroy or adversely modify designated critical habitat. Decisions by the Fifth and Ninth Circuit Courts of Appeals have invalidated our definition of ''destruction or adverse modification'' (50 CFR 402.02) (see *Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service*, 378 F. 3d 1059 (9th Cir 2004) and *Sierra Club* v. *U.S. Fish and Wildlife Service et al.*, 245 F. 3d 434, 442F (5th Cir 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain the current ability for the PCEs to be functionally established) to serve its intended conservation role for the species.

Under section 7(a)(2) of the Act, if a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. As a result of this consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that are likely to adversely affect listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat, we also provide reasonable and prudent alternatives to the project, if any are identifiable. We define ''Reasonable and prudent alternatives'' at 50 CFR 402.02 as alternative actions identified during consultation that:

- Can be implemented in a manner consistent with the intended purpose of the action,
- Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,
- Are economically and technologically feasible, and
- Would, in the Director's opinion, avoid jeopardizing the continued existence of the listed species or destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to

extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies may sometimes need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Federal activities that may affect the Sierra Nevada bighorn sheep or its designated critical habitat will require section 7(a)(2) consultation under the Act. Activities on State, Tribal, local or private lands requiring a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or involving some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency) or a permit from us under section 10(a)(1)(B) of the Act) are examples of agency actions that may be subject to the consultation process under section 7(a)(2) of the Act. Federal actions not affecting listed species or critical habitat, and actions on State, Tribal, local or private lands that are not Federally funded, authorized, or carried out, do not require section 7(a)(2) consultations.

Application of the ''Adverse Modification'' Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain the current ability for the PCEs to be functionally established) to serve its intended conservation role for the species. Activities that may result in the destruction or adverse modification of critical habitat are those that alter the physical and biological features to an extent that appreciably reduces the conservation value of critical habitat for Sierra Nevada bighorn sheep. Generally, the conservation role of Sierra Nevada bighorn sheep critical habitat units is to support viable core area populations.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may result in the destruction or adverse modification of such habitat, or that may be affected by such designation.

Activities that, when carried out, funded, or authorized by a Federal agency, may affect critical habitat and, therefore, should result in consultation for Sierra Nevada bighorn sheep include, but are not limited to:

(1) Actions that would significantly reduce ongoing management and conservation efforts that benefit the Sierra Nevada bighorn sheep on public lands. Such activities could include, but are not limited to, the sale, exchange, or lease of lands managed by the USFS or other Federal agency. These activities could reduce the amount of space that is available for individual and population growth and normal behavior, as well as reduce or eliminate the number and extent of sites for foraging, breeding, reproduction, and rearing of offspring. These activities could also reduce the opportunities available to Federal agencies to exercise their section 7(a)(1) authorities to carry out programs to conserve listed species.

(2) Actions that would significantly reduce the availability of or accessibility to summer and winter ranges. Such activities could include, but are not limited to, grazing, mining, and road construction activities. These activities could degrade, reduce, fragment or eliminate available foraging resources or alter current foraging activities of Sierra Nevada bighorn sheep.

(3) Actions that would result in the significant expansion of tall, dense vegetation, such as timber, within bighorn sheep habitat. Such activities could include, but are not limited to, fire suppression. These activities could allow expansion of vegetation cover such that movement patterns of bighorn sheep are altered by avoidance of these areas. Tall, dense vegetation provides cover for predators such as the mountain lion, a common predator of Sierra Nevada bighorn sheep.

(4) Actions that would create significant barriers to movement. Such activities could include, but are not limited to, road construction and resort or campground facility development or expansion. These activities could interfere with movement within and between habitats reducing the availability of habitat for foraging, breeding, reproduction, sheltering, and rearing of offspring. These activities could also reduce opportunities for movement between existing populations. Dispersal and interaction between populations could be affected, restricting gene flow and jeopardizing the integrity of the gene pool. Road construction can result in the direct mortality of individuals through collisions with vehicles.

(5) Actions that would significantly degrade habitat or cause a disturbance to Sierra Nevada bighorn sheep. Such activities could include, but are not limited to, recreational activities, such as hiking, camping, rock and ice climbing, outfitter guides and pack animal expeditions, snowmobiling, and off-road vehicle use. These activities could impact the quality and quantity of forage across the landscape, or displace animals from key foraging areas. These activities could also impact the accessibility to key habitats such as escape terrain, breeding sites, or lambing areas. If animals flee these areas as a result of these activities, energy is expended which can negatively impact the animal's body condition, resulting in possible reduced reproductive success.

We consider all of the units designated as critical habitat to contain features essential to the conservation of the Sierra Nevada bighorn sheep, including those units which were not occupied at the time of listing. All units are within the historical geographic range of the subspecies, and those units which were not occupied at the time of listing have been determined to be essential for the conservation of the Sierra Nevada bighorn sheep. Detailed descriptions of the units and their occupancy status can be found in each of the unit descriptions or within Table 3. Under section 7 of the Act, Federal agencies already consult with us on activities in areas currently occupied by the Sierra Nevada bighorn sheep, or if the subspecies may be affected by the action, the consultation is to ensure that their actions do not jeopardize the continued existence of the Sierra Nevada bighorn sheep.

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary must designate and revise critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, impact on national security, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he

determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

Under section 4(b)(2) of the Act, in considering whether to exclude a particular area from the designation, we must identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and determine whether the benefits of exclusion outweigh the benefits of inclusion. If we consider an area for exclusion, then we must determine whether excluding the area would result in the extinction of the species.

In the following sections, we address a number of general issues that are relevant to the exclusions we are considering. In addition, we conducted an economic analysis of the impacts of the proposed critical habitat designation and related factors, which was available for public review and comment. Based on public comment on that document, the proposed designation itself, and the information in the final economic analysis, the Secretary may exclude from critical habitat additional areas beyond those identified in this assessment under the provisions of section 4(b)(2) of the Act. This is also addressed in our implementing regulations at 50 CFR 242.19.

Currently, we are aware of four documents related to the conservation and recovery of the Sierra Nevada bighorn sheep. We reviewed these documents, but we are not excluding lands covered by them for reasons indicated below. These documents include the Sierra Nevada Bighorn Sheep Recovery and Conservation Plan (Sierra Nevada Bighorn Sheep Interagency Advisory Group 1984), the Bighorn Sheep Management Plan (National Park Service 1986), the Inyo National Forest Resource & Management Plan (U.S. Forest Service 1988), and A Conservation Strategy for Sierra Nevada Bighorn Sheep (Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997). All of these documents were prepared prior to the emergency listing of the Sierra Nevada bighorn sheep in 1999.

The goal of the Sierra Nevada Bighorn Sheep Recovery and Conservation Plan (Sierra Bighorn Sheep Interagency Advisory Group 1984, pp. 1–2) was to improve the status of the Sierra Nevada bighorn sheep by: (1) Maintaining the health and viability of existing populations and promoting the establishment of at least three populations that exceeded 100 animals and were geographically distant from one another; (2) restoring bighorn sheep to former ranges within the Sierra Nevada where ecologically, economically, and politically feasible and where favorable to their success; and (3) ensuring genetic integrity by using only bighorn sheep from existing Sierra Nevada populations to restock historical ranges. Conservation recommendations made in A Conservation Strategy for Sierra Nevada Bighorn Sheep (Sierra Nevada Bighorn Sheep Interagency Advisory Group 1997, pp. 11–14) include restoration of the Sierra Nevada bighorn sheep in a distribution that assures long-term viability and reestablishment throughout its native range and preservation of current populations, predator control, fire (let burn policy), addressing grazing by domestic sheep and goats, ensuring genetic diversity, reintroductions and augmentations, and research and monitoring. The goal of the Bighorn Sheep Management Plan (National Park Service 1986, pp. 1–2) was to restore and perpetuate bighorn sheep and to protect the integrity of the ecosystem. Management was directed toward restoring and maintaining populations of bighorn sheep for ecological, scientific, educational, aesthetic, and recreational values. The Inyo National Forest's Land & Resource Management Plan (U.S. Forest Service 1988, pp. 101–102) provided guidance to maintain existing sheep habitat, expand the range of bighorn sheep by transplanting animals into suitable unoccupied habitats within the historical range, maintain the health of existing herds by not allowing an increase in livestock use if disease transmission was shown to be harmful to bighorn sheep, and prohibit the conversion of livestock type from cattle to sheep on or adjacent to existing or approved reintroduction sites for the bighorn sheep.

The Inyo National Forest also established two California Bighorn Sheep Zoological Areas for the Mount Baxter and Mount Williamson herds. These areas totaled 4,505 ac (1,823 ha) in addition to existing wilderness lands (36,235 ac, 14,664 ha)) occupied by bighorn sheep. In 1981, forest officials issued Order No. 04–81–3, which prohibited entrance into these areas without a valid visitor use permit, restricted entrance into closed portions of the zoological areas during certain time periods, restricted the presence of dogs, and restricted the discharge of firearms unless taking a game animal legally permitted by the State of California (U.S. Forest Service 1981, p. 1). Exemptions were allowed for certain individuals, duties, and activities. This order was issued during a time when recreational use was believed to be detrimentally impacting the Mount Baxter and Mount Williamson herds.

While these plans were prepared to assist in the restoration and recovery and habitat protection of the Sierra Nevada bighorn sheep, they were written prior to the final listing of this subspecies in 2000, and they generally offer only guidance and recommendations related to translocations, research, monitoring, education, and habitat management with little specificity of actions to be implemented. The guidance provided in these documents and the recreational prohibitions in the California Bighorn Sheep Zoological Areas did not provide a basis for excluding lands covered by them.

Economic Analysis

Section 4(b)(2) of the Act requires us to designate critical habitat on the basis of the best scientific information available and to consider economic and other relevant impacts of designating a particular area as critical habitat. Section 4(b)(2) of the Act allows the Secretary to exclude areas from critical habitat for economic reasons if the Secretary determines that the benefits of such exclusion outweigh the benefits of designating the area as critical habitat. However, this exclusion cannot occur if it will result in the extinction of the species concerned.

Following the publication of the proposed critical habitat designation, we conducted an economic analysis to estimate the potential economic effect of the designation. The draft analysis was made available for public review on February 5, 2008 (73 FR 6684). We accepted comments on the draft analysis until March 6, 2008. Following the close of the comment period, a final analysis of the potential economic effects of the designation was developed taking into consideration the public comments and any relevant new information.

The primary purpose of the EA is to estimate the potential economic impacts associated with the designation of critical habitat for the Sierra Nevada bighorn sheep. This information is intended to assist the Secretary in making decisions about whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation. This EA considers the

economic efficiency effects that may result from the designation, including habitat protections that may be co-extensive with the listing of the species. It also addresses distribution of impacts, including an assessment of the potential effects on small entities and the energy industry. This information can be used by the Secretary to assess whether the effects of the designation might unduly burden a particular group of the economic sector.

The intent of the economic analysis is to quantify the economic impacts of all potential conservation efforts for the Sierra Nevada bighorn sheep; some of these costs will likely be incurred regardless of whether we designate critical habitat. The economic analysis provides estimated costs of the foreseeable potential economic impacts of the critical habitat designation (incremental impacts) and other conservation-related actions (baseline impacts) for this species over the next 20 years. It also considers past costs associated with conservation of the species from the time it was listed in 2000 (65 FR 20, January 3, 2000), until the year the proposed critical habitat rule was published (72 FR 40956, July 25, 2007).

The economic analysis considers the potential economic effects of actions relating to the conservation of the Sierra Nevada bighorn sheep, including costs associated with sections 4, 7, and 10 of the Act, as well as those attributable to the designation of critical habitat. It further considers the economic effects of protective measures taken as a result of other Federal, State, and local laws that aid habitat conservation for the Sierra Nevada bighorn sheep in areas containing features essential to the conservation of the species. The analysis considers both economic efficiency and distributional effects. In the case of habitat conservation, efficiency effects generally reflect the ''opportunity costs'' associated with the commitment of resources to comply with habitat protection measures (such as lost economic opportunities associated with restrictions on land use).

The economic analysis also addresses how potential economic impacts are likely to be distributed, including an assessment of any local or regional impacts of habitat conservation and the potential effects of conservation activities on government agencies, private business, and individuals. The analysis measures lost economic efficiency associated with residential and commercial development and public projects and activities, such as economic impacts on water management and transportation projects, Federal lands, small entities, and the energy industry. Decision-makers can use this information to assess whether the effects of the designation might unduly burden a particular group or economic sector. Finally, the economic analysis looks retrospectively at costs that have been incurred since the date Sierra Nevada bighorn sheep was listed as endangered (65 FR 20, January 3, 2000) and considers those costs that may occur in the 20 years following the designation of critical habitat. Forecasts of economic conditions and other factors beyond this point would be speculative.

Activities associated with the conservation of the Sierra Nevada bighorn sheep are likely to primarily impact future domestic sheep grazing, recreation management, and habitat management. The EA forecasts baseline economic impacts in the areas designated. The present value of these impacts, applying a 3 percent discount rate, is $21.0 million ($1.41 million annualized), or $15.5 million ($1.46 million annualized) using a 7 percent discount rate. The EA forecasts the present value of the incremental economic impacts to be $120,000 ($8,080 annualized), applying a 3 percent discount rate, or $94,900 ($8,960 annualized) using a 7 percent discount rate.

We evaluated the potential economic impact of this designation as identified in the economic analysis. Based on this evaluation, we believe that there are no disproportionate economic impacts that warrant exclusion under section 4(b)(2) of the Act at this time. The final economic analysis is available at *http://www.regulations.gov* and *http://www.fws.gov/nevada* or upon request from the Nevada Fish and Wildlife Office (see **ADDRESSES** section).

After consideration of the impacts under section 4(b)(2) of the Act, we have not excluded any areas from the final critical habitat designations based on the identified economic impacts, any impact on national security, and any other relevant impacts.

Required Determinations

Regulatory Planning and Review

The Office of Management and Budget (OMB) has determined that this rule is not significant and has not reviewed this rule under Executive Order 12866 (E.O. 12866). OMB bases its determination upon the following four criteria:

(a) Whether the rule will have an annual effect of $100 million or more on the economy or adversely affect an economic sector, productivity, jobs, the environment, or other units of the government.

(b) Whether the rule will create inconsistencies with other Federal agencies' actions.

(c) Whether the rule will materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients.

(d) Whether the rule raises novel legal or policy issues.

Regulatory Flexibility Act

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA), whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities. In this final rule, we are certifying that the critical habitat designation for Sierra Nevada bighorn sheep will not have a significant economic impact on a substantial number of small entities. The following discussion explains our rationale.

According to the Small Business Administration (SBA), small entities include small organizations, such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; as well as small businesses. Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and agricultural businesses with annual sales less than $750,000. To determine if potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under

this rule, as well as the types of project modifications that may result. In general, the term ''significant economic impact'' is meant to apply to a typical small business firm's business operations.

To determine if the rule could significantly affect a substantial number of small entities, we consider the number of small entities affected within particular types of economic activities (e.g., housing development, grazing, oil and gas production, timber harvesting). We apply the ''substantial number'' test individually to each industry to determine if certification is appropriate. However, the SBREFA does not explicitly define ''substantial number'' or ''significant economic impact.'' Consequently, to assess whether a ''substantial number'' of small entities is affected by this designation, this analysis considers the relative number of small entities likely to be impacted in an area. In some circumstances, especially with critical habitat designations of limited extent, we may aggregate across all industries and consider whether the total number of small entities affected is substantial. In estimating the number of small entities potentially affected, we also consider whether their activities have any Federal involvement.

Designation of critical habitat only affects activities authorized, funded, or carried out by Federal agencies. Some kinds of activities are unlikely to have any Federal involvement and so will not be affected by critical habitat designation. In areas where the species is present, Federal agencies already are required to consult with us under section 7 of the Act on activities they authorize, fund, or carry out that may affect Sierra Nevada bighorn sheep (see Section 7 Consultation section). Federal agencies also must consult with us if their activities may affect critical habitat. Designation of critical habitat, therefore, could result in an additional economic impact on small entities due to the requirement to reinitiate consultation for ongoing Federal activities (see Application of the ''Adverse Modification'' Standard section).

In our economic analysis of the critical habitat designation, we evaluated the potential economic effects on small business entities resulting from conservation actions related to the listing of the Sierra Nevada bighorn sheep and the designation of critical habitat. The analysis estimated prospective economic impacts associated with the proposed rulemaking as described in Chapters 2 through 4 and Appendix A of the economic analysis and evaluates the potential for economic impacts related to three categories: Grazing, recreation management, and habitat management.

The economic analysis identified one domestic sheep grazing permittee operating in the Humboldt-Toiyabe National Forest, and two resorts and unidentified outdoor pack companies operating in the Humboldt-Toiyabe and Inyo National Forests that qualify as small businesses that could be impacted due to their activities within areas designated as critical habitat.

For the one grazing permittee, the economic analysis estimates a cost of $13,000 associated with conservation activities for the Sierra Nevada bighorn sheep over the next 20 years at a 3 percent discounted rate ($875 annualized). For the two resorts and unidentified outdoor pack companies, the analysis estimates a cost of $2,730 associated with conservation activities for the Sierra Nevada bighorn sheep over the next 20 years at a 3 percent discounted rate ($183 annualized). Incremental impacts are expected only to occur in designated critical habitat Units 1 and 2. This number of small business entities is not considered a substantial number.

The USFS is expected to incur incremental costs as a result of this designation, but it is not considered a small entity by the SBA.

In summary, we have considered whether the final rule would result in a significant economic impact on a substantial number of small entities. Based on the above reasoning and currently available information, we certify that this rule will not have a significant economic impact on a substantial number of small business entities. Therefore, a regulatory flexibility analysis is not required.

Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 801 et seq.)

Under SBREFA, this rule is not a major rule. Our detailed assessment of the economic effects of this designation is described in the economic analysis. Based on the effects identified in the economic analysis, we believe that this rule will not have an annual effect on the economy of $100 million or more, will not cause a major increase in costs or prices for consumers, and will not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises. Refer to the final economic analysis for a discussion of the effects of this determination (see **ADDRESSES** for information on obtaining a copy of the final economic analysis).

Energy Supply, Distribution, or Use

On May 18, 2001, the President issued an Executive Order (E.O. 13211; ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'') on regulations that significantly affect energy supply, distribution, and use. E.O. 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. OMB has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute ''a significant adverse effect'' when compared without the regulatory action under consideration. The economic analysis finds that none of these criteria are relevant to this analysis. Thus, based on information in the economic analysis, energy-related impacts associated with Sierra Nevada bighorn sheep conservation activities within the final critical habitat designation are not expected. As such, the designation of critical habitat is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following findings:

(a) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.'' These terms are defined in 2 U.S.C. 658(5)–(7). ''Federal intergovernmental mandate'' includes a regulation that ''would impose an enforceable duty upon State, local, or tribal governments'' with two exceptions. It excludes ''a condition of Federal assistance.'' It also excludes ''a duty arising from participation in a voluntary Federal program,'' unless the regulation ''relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority,'' if the provision would ''increase the stringency of conditions of assistance'' or ''place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding,'' and the State, local, or Tribal

governments ''lack authority'' to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. ''Federal private sector mandate'' includes a regulation that ''would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.''

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under section 7 of the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not result in the destruction or adverse modification of critical habitat. Non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat. However, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(b) We do not believe that this rule will significantly or uniquely affect small governments because it will not produce a Federal mandate of $100 million or greater in any year, that is, it is not a ''significant regulatory action'' under the Unfunded Mandates Reform Act. The designation of critical habitat imposes no obligations on State or local governments. By definition, Federal agencies are not considered small entities, although the activities they fund or permit may be proposed or carried out by small entities. As such, a Small Government Agency Plan is not required.

Executive Order 12630—Takings

In accordance with E.O. 12630 (''Government Actions and Interference with Constitutionally Protected Private Property Rights''), we have analyzed the potential takings implications of designating critical habitat for the Sierra Nevada bighorn sheep in a takings implications assessment. Critical habitat designation does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. The takings implications assessment concludes that this designation of critical habitat for the Sierra Nevada bighorn sheep does not pose significant takings implications.

Federalism

In accordance with E.O. 13132 (Federalism), this rule does not have significant Federalism effects. A Federalism assessment is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this designated critical habitat designation with appropriate State resource agencies in California. The designation of critical habitat in areas currently occupied by the Sierra Nevada bighorn sheep imposes no additional restrictions to those currently in place and, therefore, has little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments in that the areas that contain the physical and biological features essential to the conservation of the subspecies are more clearly defined, and the PCEs of the habitat necessary to the conservation of the subspecies are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

Civil Justice Reform

In accordance with E.O. 12988 (Civil Justice Reform), the regulation meets the applicable standards set forth in sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. This final rule uses standard property descriptions and identifies the physical and biological features essential to the conservation of the subspecies within the designated areas to assist the public in understanding the habitat needs of the Sierra Nevada bighorn sheep.

Paperwork Reduction Act of 1995

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (NEPA)

It is our position that, outside the Jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses as defined by the NEPA (42 U.S.C. 4321 *et seq.*) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951), E.O. 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997, ''American Indian Tribal Rights, Federal—Tribal Trust Responsibilities, and the Endangered Species Act,'' we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes. We have determined that there are no Tribal lands occupied at the time of listing that contain the features essential for the conservation, and no unoccupied Tribal lands that are essential for the conservation of the Sierra Nevada bighorn sheep. Therefore, critical habitat for the Sierra Nevada bighorn sheep has not been designated on Tribal lands.

References Cited

A complete list of all references cited in this rulemaking is available on the

Internet at *http://www.regulations.gov* and *http://www.fws.gov/nevada/*.

Author(s)

The primary authors of this rulemaking are staff members of the Nevada Fish and Wildlife Office, Reno, Nevada, and the Ventura Fish and Wildlife Office, Ventura, California.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

■ Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

■ 2. In § 17.11(h), revise the entry for ''Sheep, Sierra Nevada bighorn'' under ''MAMMALS'' in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(*h*) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
MAMMALS							
*	*	*	*	*	*	*	
Sheep, Sierra Nevada bighorn.	*Ovis canadensis sierrae*.	U.S.A. (CA)—Sierra Nevada.	U.S.A. (CA)—Sierra Nevada.	E	660E, 675	17.95(a) ...	NA
*	*	*	*	*	*	*	

■ 3. In § 17.95(a), add an entry for ''Sierra Nevada bighorn sheep (*Ovis canadensis sierrae*)'' in the same alphabetical order in which the subspecies appears in the table in § 17.11(h) to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

(a) *Mammals.*

* * * * *

Sierra Nevada Bighorn Sheep (*Ovis canadensis sierrae*)

(1) Critical habitat units are depicted for Mono, Fresno, Inyo, Tulare, and Tuolumne Counties, California, on the maps below.

(2) The primary constituent elements of critical habitat for the Sierra Nevada bighorn sheep are the habitat components that provide:

(i) Non-forested habitats or forest openings within the Sierra Nevada from 4,000 ft (1,219 m) to 14,500 ft (4,420 m) in elevation with steep (greater than or equal to 60 percent slope), rocky slopes that provide for foraging, mating, lambing, predator avoidance, and bedding and that allow for seasonal elevational movements between these areas.

(ii) Presence of a variety of forage plants as indicated by the presence of grasses (e.g., *Achnanthera* spp.; *Elymus* spp.) and browse (e.g., *Ribes* spp.; *Artemisia* spp., *Purshia* spp.) in winter, and grasses, browse, sedges (e.g., *Carex* spp.) and forbs (e.g., *Eriogonum* spp.) in summer.

(iii) Presence of granite outcroppings containing minerals such as sodium, calcium, iron, and phosphorus that could be used as mineral licks in order to meet nutritional needs.

(3) Critical habitat does not include manmade structures, such as buildings, aqueducts, airports, roads, and other paved areas, and the land on which they are located, existing on the effective date of this rule and not containing one or more of the primary constituent elements.

(4) *Critical Habitat Map Units*—Boundaries of designated critical habitat were derived from Sierra Nevada Bighorn Sheep Herd Units developed by the California Department of Fish and Game for the final Sierra Nevada Bighorn Sheep recovery plan. The designated critical habitat unit boundaries differ from Sierra Nevada bighorn sheep Herd Unit polygons by the removal of developed areas and private parcels that are unlikely to contain the primary constituent elements. The data were projected to Universal Transverse Mercator (UTM), zone 11, on the North American Datum of 1983.

(5) Note: Index map of Sierra Nevada bighorn sheep critical habitat follows:

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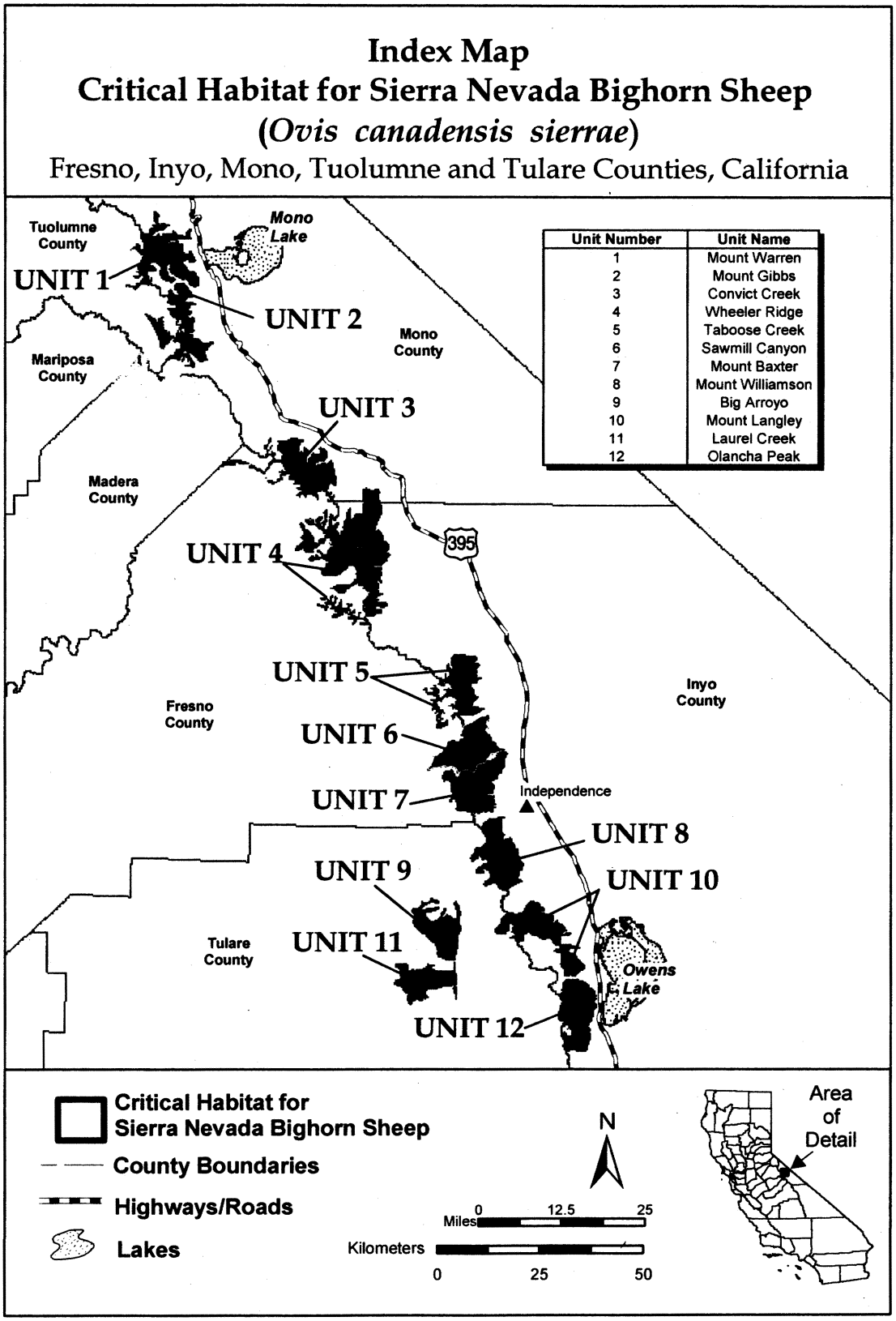

BILLING CODE 5310–55–C

(6) Unit 1 (Mount Warren); Mono and Tuolumne Counties, California.

(i) From USGS 1:24,000 scale quadrangles Dunderberg Peak, Lundy, Tioga Pass, and Mount Dana. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 300786, 4215918; 301348, 4215650; 301467, 4215784; 302384, 4216077; 303459, 4215689; 303626, 4215452; 303452, 4215254; 303072, 4215278; 302764, 4215064; 302495, 4214977; 302218, 4214677; 302052, 4214558; 301783, 4214281; 300486, 4214005; 300351, 4213839; 299853, 4213704; 299442, 4213475; 299007, 4213079; 298991, 4212842; 299252, 4212723; 299640, 4212755; 300185, 4212913; 300359, 4213103; 300525, 4213166; 300565, 4213498; 300952, 4213562; 301111, 4213158; 301435, 4212858; 301593, 4213150; 301807, 4213253; 302566, 4213245; 303396, 4213317; 303902, 4213419; 304227, 4214044; 304567, 4214092; 304891, 4213752; 305310, 4213467; 305864, 4213158; 306239, 4212945; 306714, 4212984; 307362, 4212747; 307474, 4212940; 307514, 4213252; 307539, 4213822; 307697, 4214242; 307964, 4214386; 308395, 4214515; 308841, 4214450; 308846, 4214218; 308653, 4213802; 308499, 4213297; 308529, 4212618; 308692, 4211980; 308673, 4211876; 308514, 4211856; 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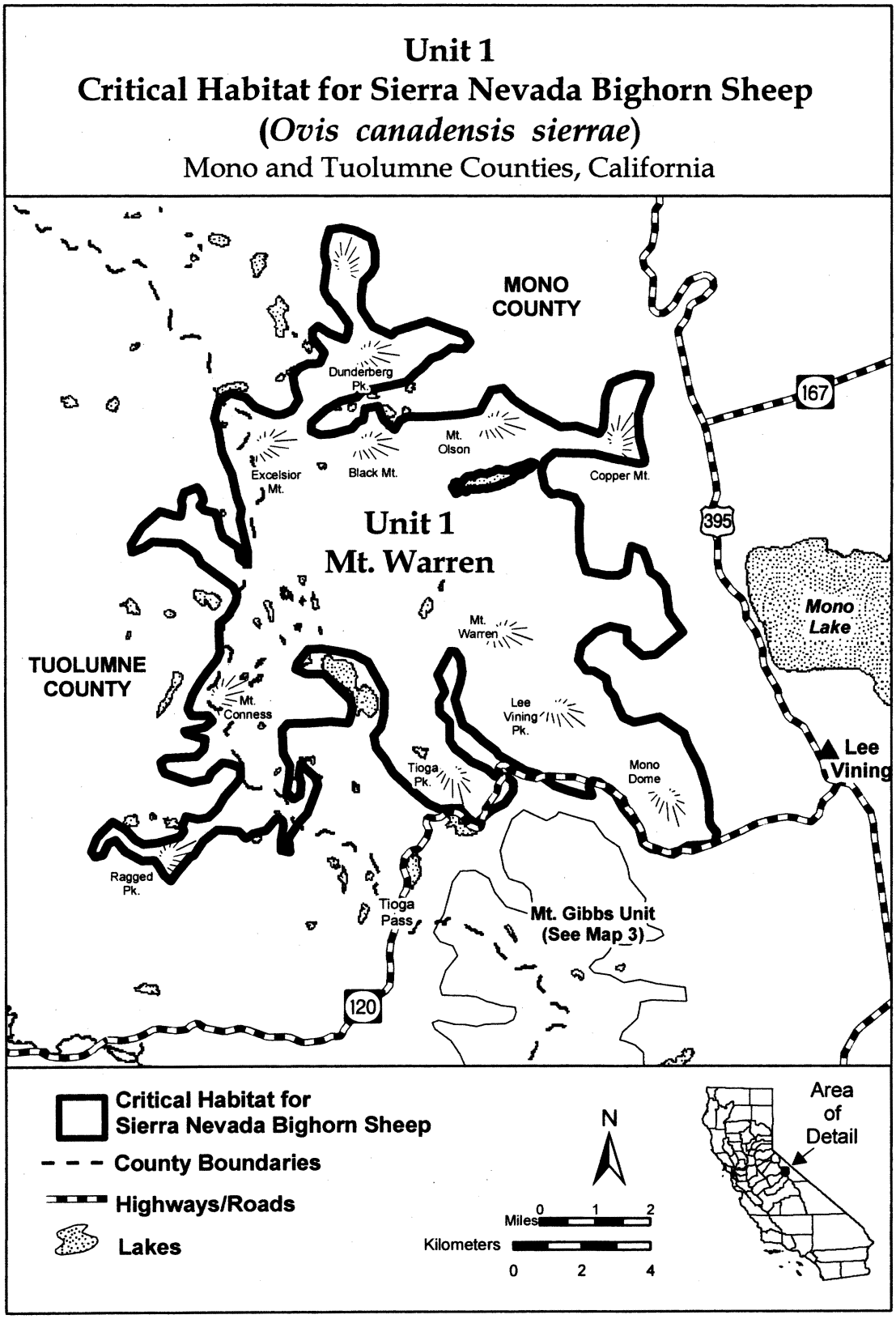
(ii) Note: Map of Unit 1 Mount Warren for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



BILLING CODE 5310–55–C

(7) Unit 2 (Mount Gibbs); Mono and Tuolumne Counties, California.

(i) From USGS 1:24,000 scale quadrangles Mount Dana, Vogelsang Peak, Kiop Peak, and June Lake. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 305185, 4201586; 305855, 4201263; 306124, 4201406; 306203, 4201516; 306615, 4201390; 307214, 4201220; 307539, 4200758; 307946, 4200481; 308191, 4199870; 308255, 4199529; 308437, 4199297; 308728, 4198949; 308679, 4198612; 308778, 4198157; 309188, 4197993; 309259, 4197840; 308990, 4197698; 308498, 4197676; 308268, 4197570; 308079, 4197576; 307891, 4197582; 307737, 4197512; 307657, 4197364; 307500, 4197181; 307271, 4197113; 307075, 4196893; 307221, 4196737; 307673, 4196685; 308081, 4196446; 308575, 4196543; 308912, 4196457; 309062, 4196415; 309890, 4196313; 309934, 4195897; 309443, 4195913; 309141, 4195923; 308877, 4195931; 308572, 4195866; 308570, 4195790; 308525, 4195566; 308481, 4195379; 308053, 4194978; 307970, 4194755; 308120, 4194712; 308418, 4194590; 308675, 4194356; 308668, 4194130; 308697, 4193865; 308613, 4193604; 308382, 4193461; 308112, 4193281; 307734, 4193293; 307728, 4193105; 307761, 4192953; 308063, 4192944; 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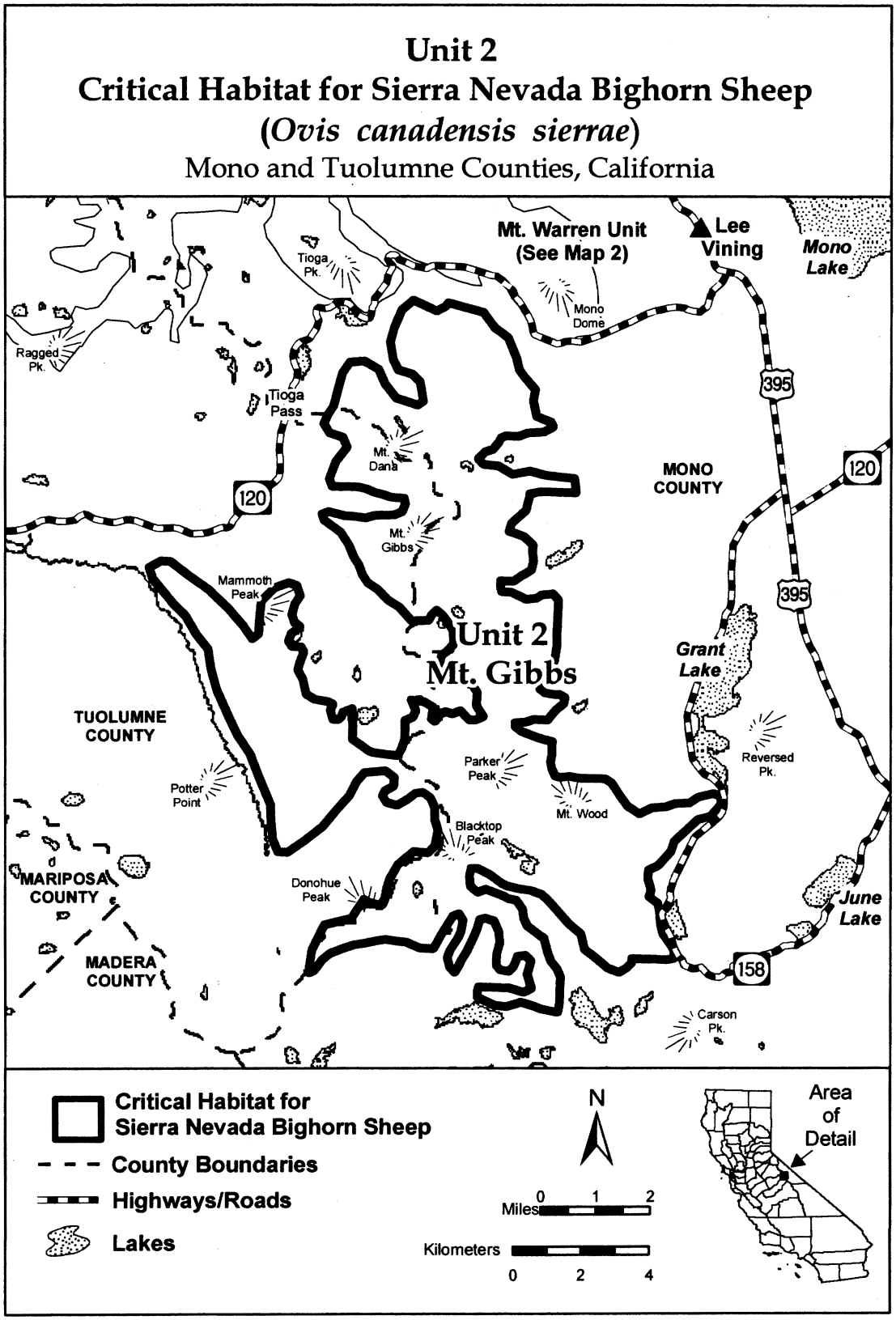
(ii) Note: Map of Unit 2 (Mount Gibbs) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



BILLING CODE 5310–55–C

(8) Unit 3 (Convict Creek); Fresno and Mono Counties, California.

(i) From USGS 1:24,000 scale quadrangles Crystal Crag, Bloody Mountain, Convict Lake, Graveyard Peak, and Mount Abbot. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 327481, 4161516; 327397, 4161255; 327279, 4161108; 327082, 4160851; 327076, 4160663; 327184, 4160508; 327409, 4160464; 327720, 4160717; 327917, 4160975; 328080, 4161346; 328312, 4161527; 328424, 4161486; 328373, 4161073; 328322, 4160660; 328009, 4160294; 327814, 4160112; 327619, 4159930; 327573, 4159668; 327755, 4159436; 327980, 4159391; 328058, 4159464; 328100, 4159613; 328112, 4159989; 328455, 4160091; 328333, 4159794; 328366, 4159642; 328515, 4159600; 329004, 4159509; 329304, 4159462; 329223, 4159276; 329061, 4158942; 329089, 4158640; 329077, 4158264; 329260, 4158070; 329631, 4157870; 329891, 4157711; 330272, 4157812; 330655, 4157988; 330812, 4158171; 330677, 4158665; 330869, 4158772; 330951, 4158957; 330667, 4159531; 330492, 4159989; 330469, 4160441; 330231, 4160072; 329887, 4159970; 329706, 4160202; 329604, 4160582; 329624, 4161184; 329708, 4161445; 329829, 4161705; 329701, 4162424; 329860, 4162683; 330161, 4162636; 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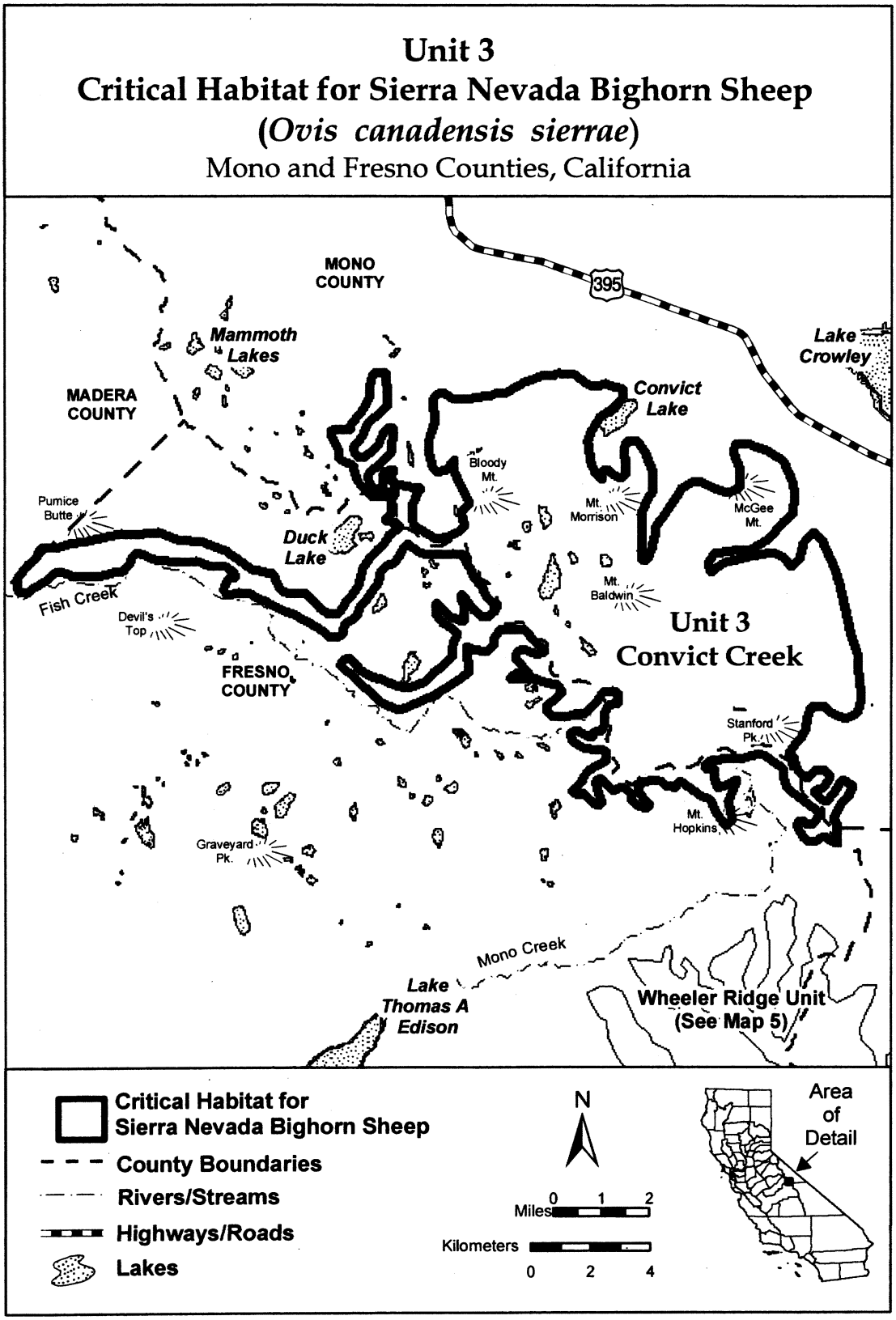
(ii) Note: Map of Unit 3 (Convict Creek) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



BILLING CODE 5310–55–C

(9) Unit 4 (Wheeler Ridge); Fresno, Inyo and Mono Counties, California.

(i) From USGS 1:24,000 scale quadrangles Mount Abbot, Mount Morgan, Mount Hilgard, Mount Tom, Tungsten Hills, Mount Henry, Mount Darwin and Mount Thompson. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 351676, 4150867; 352490, 4150441; 352738, 4150510; 353065, 4150282; 353442, 4150500; 353779, 4150847; 354294, 4150817; 354552, 4150341; 354641, 4149994; 354681, 4149558; 354453, 4149439; 354245, 4149221; 354463, 4148953; 354522, 4148735; 354413, 4148398; 354532, 4148140; 354493, 4147862; 354909, 4147912; 354711, 4147119; 355098, 4146296; 355132, 4146201; 355158, 4146034; 355162, 4145681; 355123, 4145288; 355123, 4144981; 355035, 4144787; 354974, 4144489; 354895, 4144120; 354745, 4143840; 354537, 4143588; 354359, 4143519; 354349, 4143132; 354329, 4142934; 354141, 4142686; 353967, 4141942; 353729, 4141853; 353600, 4141804; 353610, 4141566; 353729, 4141328; 353610, 4141219; 353600, 4141000; 354066, 4140584; 354463, 4140584; 354780, 4140286; 355068, 4140019; 355256, 4139642; 355425, 4139136; 355395, 4138799; 355489, 4138412; 355499, 4138254; 355618, 4138144; 355737, 4137748; 356035, 4137639; 356560, 4137272; 356818, 4136984; 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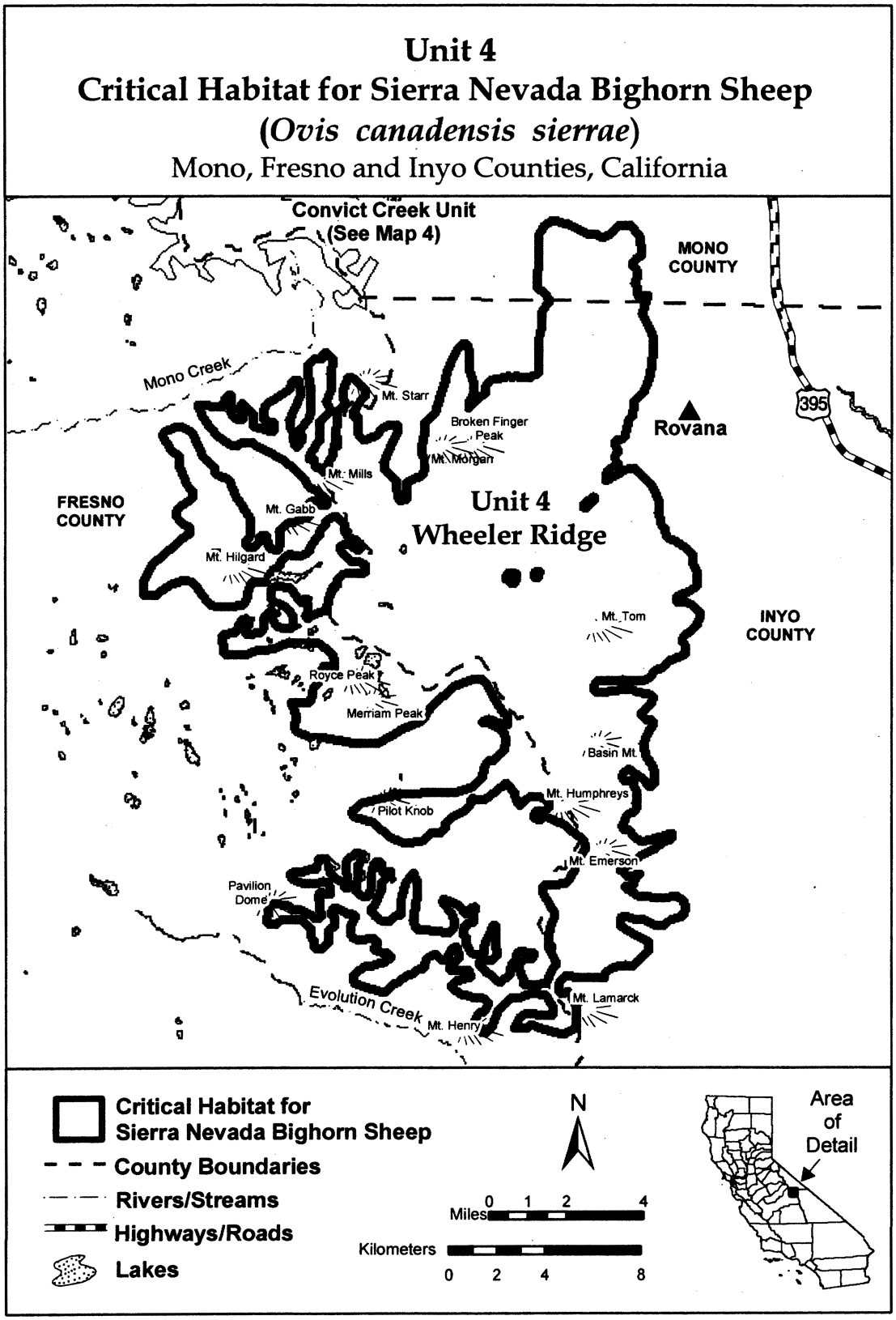
(ii) Note: Map of Unit 4 (Wheeler Ridge) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



BILLING CODE 5310–55–C

(10) Unit 5 (Taboose Creek); Fresno and Inyo Counties, California.

(i) From USGS 1:24,000 scale quadrangles Coyote Flat, North Palisade, Split Mountain, Fish Springs, Mount Pinchot, and Aberdeen. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 376756, 4109414; 376837, 4109413; 376838, 4109467; 376865, 4109466; 377166, 4109426; 377588, 4109383; 377647, 4109351; 377738, 4109348; 377949, 4109341; 378189, 4109273; 378307, 4109179; 378423, 4109025; 378417, 4108844; 378288, 4108608; 378131, 4108402; 377943, 4108197; 377878, 4108048; 377872, 4107868; 377869, 4107777; 378016, 4107622; 378227, 4107615; 378408, 4107610; 378649, 4107602; 378949, 4107502; 378970, 4107230; 378903, 4107022; 378751, 4106996; 378625, 4106820; 378498, 4106643; 378218, 4106381; 378030, 4106176; 377814, 4106032; 377809, 4105881; 377958, 4105817; 378200, 4105809; 378319, 4105745; 378467, 4105650; 378524, 4105558; 378552, 4105466; 378547, 4105316; 378483, 4105198; 378299, 4105113; 378206, 4105056; 378232, 4104904; 378410, 4104808; 378404, 4104628; 378341, 4104539; 378248, 4104452; 378126, 4104426; 378006, 4104459; 377826, 4104495; 377612, 4104412; 377461, 4104416; 377400, 4104418; 377007, 4104401; 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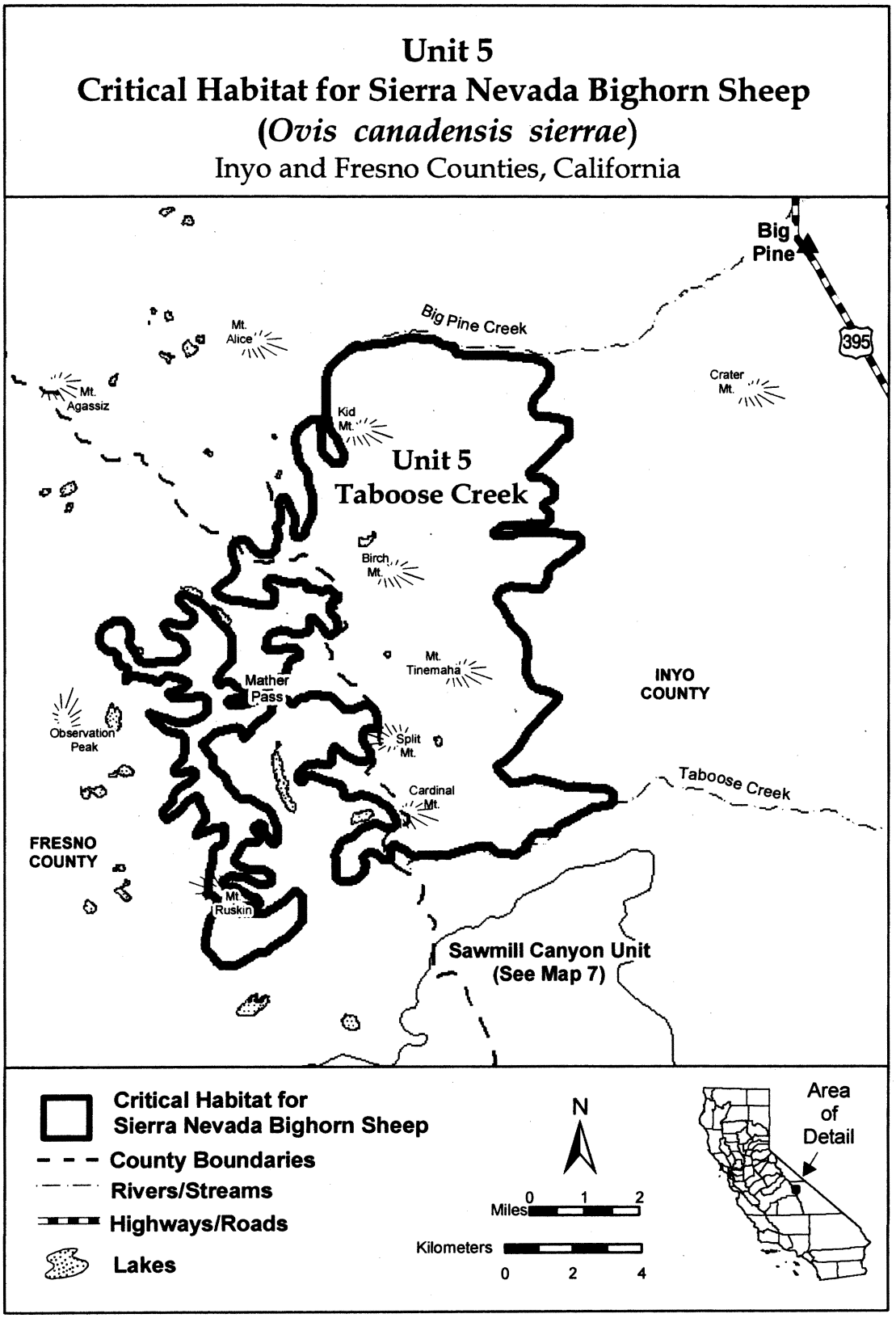
(ii) Note: Map of Unit 5 (Taboose Creek) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



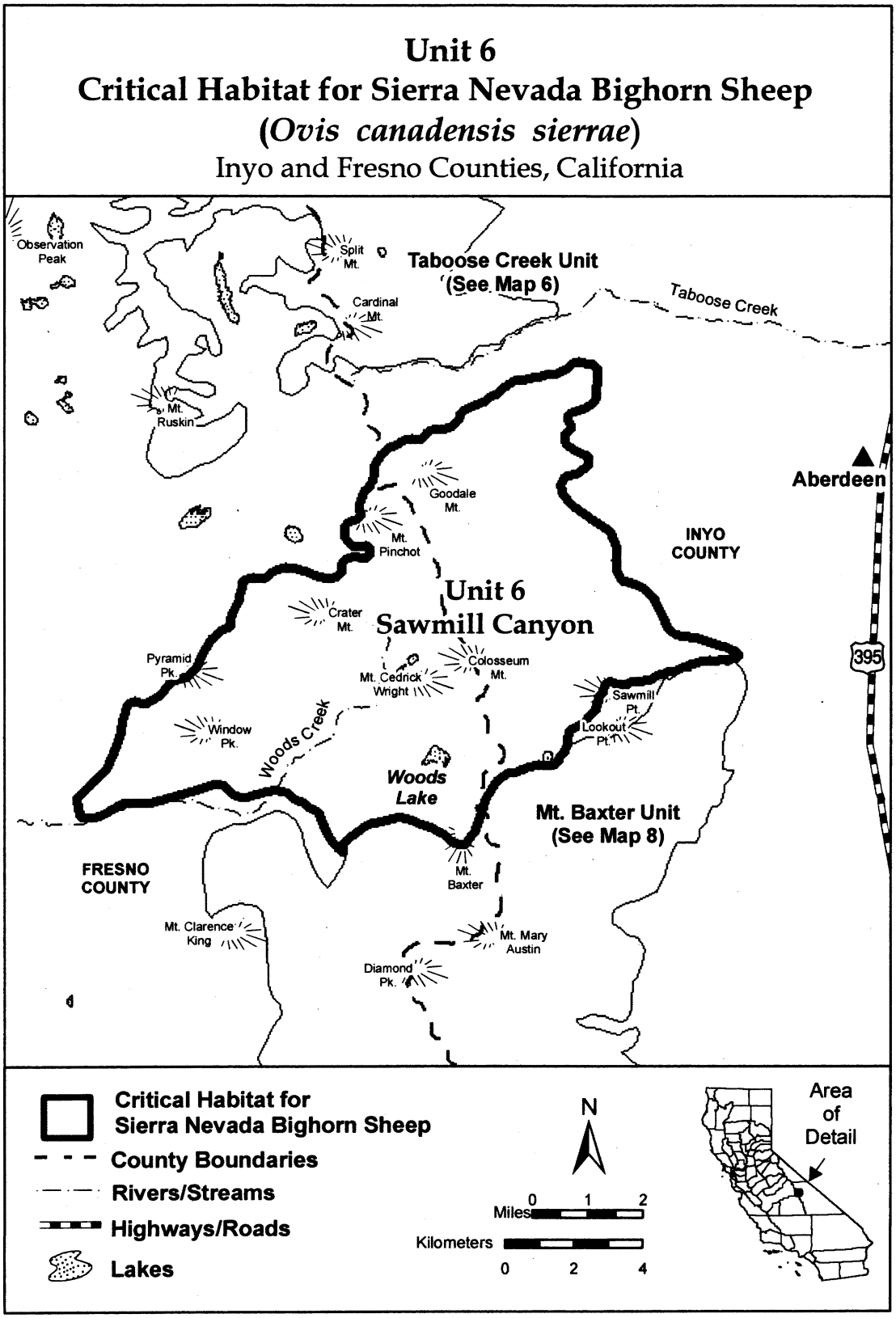
BILLING CODE 5310–55–C

(11) Unit 6 (Sawmill Canyon); Fresno and Inyo Counties, California.

(i) From USGS 1:24,000 scale quadrangles Mount Pinchot, Aberdeen, Mount Clarence King and Kearsarge Peak. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 380512, 4083384; 380416, 4083207; 380321, 4083059; 380256, 4082940; 380133, 4082854; 379980, 4082799; 379859, 4082802; 379709, 4082837; 379527, 4082813; 379374, 4082757; 379265, 4082696; 379160, 4082674; 379038, 4082647; 378867, 4082568; 378795, 4082595; 378516, 4082363; 378327, 4082128; 378166, 4081831; 378065, 4081503; 377933, 4081146; 377834, 4080878; 377738, 4080700; 377610, 4080493; 377442, 4080457; 377339, 4080502; 377219, 4080536; 376984, 4080754; 376746, 4080882; 376628, 4080946; 376239, 4081079; 376030, 4081176; 375641, 4081278; 375519, 4081252; 375032, 4081147; 374788, 4081064; 374635, 4081009; 374295, 4080749; 373983, 4080457; 374028, 4080221; 373860, 4080371; 373684, 4080557; 373540, 4080772; 373455, 4080956; 373288, 4081413; 373050, 4081541; 372934, 4081695; 372606, 4081826; 372340, 4082015; 372244, 4082045; 372121, 4082062; 371940, 4082079; 371706, 4082035; 371156, 4081842; 370857, 4081941; 370503, 4082224; 370199, 4082263; 369698, 4082060; 368468, 4081749; 367602, 4081695; 367089, 4081384; 366778, 4081235; 366399, 4081303; 366264, 4081871; 366778, 4082344; 367143, 4082763; 367427, 4083358; 367548, 4083750; 367616, 4084237; 367778, 4084629; 367995, 4084724; 368279, 4084669; 368495, 4084764; 368738, 4084940; 368968, 4085237; 369198, 4085400; 369536, 4085481; 369769, 4085771; 369933, 4086158; 370188, 4086602; 370528, 4086832; 370742, 4086916; 370782, 4087216; 370816, 4087335; 370850, 4087454; 370978, 4087691; 371016, 4087931; 371050, 4088051; 371089, 4088321; 371394, 4088401; 371664, 4088363; 371848, 4088447; 371973, 4088564; 372034, 4088592; 372340, 4088703; 372640, 4088633; 372970, 4088562; 373118, 4088467; 373447, 4088367; 373629, 4088361; 373659, 4088360; 373750, 4088387; 373842, 4088414; 373968, 4088591; 373971, 4088682; 374007, 4088861; 374100, 4088949; 374253, 4089004; 374464, 4088967; 374645, 4088962; 374768, 4089048; 374801, 4089137; 374776, 4089289; 374686, 4089322; 374443, 4089269; 374323, 4089303; 374265, 4089365; 374147, 4089459; 374089, 4089551; 374033, 4089674; 374071, 4089913; 374164, 4090001; 374256, 4090058; 374379, 4090115; 374439, 4090113; 374535, 4090260; 374479, 4090413; 374486, 4090623; 374585, 4090891; 374648, 4090980; 374742, 4091067; 374806, 4091186; 374869, 4091274; 374873, 4091394; 374944, 4091724; 375104, 4092020; 375353, 4092253; 375506, 4092308; 375784, 4092480; 376026, 4092503; 376146, 4092469; 376298, 4092494; 376391, 4092582; 376454, 4092670; 376548, 4092757; 376700, 4092783; 376851, 4092778; 377125, 4092860; 377249, 4092946; 377375, 4093123; 377410, 4093272; 377564, 4093358; 377719, 4093474; 378147, 4093641; 378302, 4093756; 378486, 4093841; 378704, 4094045; 378951, 4094218; 379315, 4094267; 379468, 4094322; 379649, 4094316; 379894, 4094399; 380136, 4094421; 380289, 4094477; 380473, 4094561; 380690, 4094735; 380873, 4094790; 381053, 4094754; 381294, 4094716; 381411, 4094592; 381403, 4094351; 381394, 4094081; 381389, 4093900; 381322, 4093691; 381288, 4093572; 381041, 4093429; 380797, 4093346; 380552, 4093234; 380575, 4093022; 380630, 4092839; 380441, 4092604; 380495, 4092392; 380611, 4092238; 380818, 4092111; 380998, 4092045; 381116, 4091981; 381142, 4091829; 381107, 4091680; 380983, 4091593; 380798, 4091479; 380494, 4091398; 380431, 4091340; 380366, 4091191; 380361, 4091041; 380386, 4090859; 380532, 4090704; 380796, 4090454; 381061, 4090235; 381269, 4090108; 381504, 4089920; 381771, 4089761; 381913, 4089455; 381966, 4089213; 381956, 4088912; 381975, 4088550; 382088, 4088305; 382178, 4088272; 382237, 4088240; 382297, 4088238; 382537, 4088170; 382775, 4088042; 383039, 4087793; 383123, 4087580; 383323, 4087242; 383434, 4086907; 383638, 4086690; 383908, 4086621; 384089, 4086615; 384330, 4086578; 384450, 4086544; 384718, 4086445; 384987, 4086346; 385137, 4086311; 385317, 4086245; 385466, 4086180; 385554, 4086117; 385552, 4086057; 385399, 4085971; 385278, 4085975; 385186, 4085948; 385065, 4085922; 384944, 4085926; 384792, 4085900; 384672, 4085934; 384490, 4085910; 384369, 4085914; 384277, 4085856; 384185, 4085829; 384094, 4085802; 383696, 4085634; 383574, 4085607; 383452, 4085581; 383330, 4085525; 383178, 4085499; 383086, 4085472; 382963, 4085386; 382749, 4085332; 382537, 4085309; 382385, 4085283; 382231, 4085198; 381960, 4085206; 381842, 4085300; 381721, 4085304; 381628, 4085217; 381595, 4085127; 381529, 4084949; 381466, 4084890; 381429, 4084681; 381331, 4084443; 381176, 4084297; 381080, 4084150; 381016, 4084031; 380956, 4084033; 380773, 4083979; 380619, 4083893; 380582, 4083683; 380513, 4083414; returning to 380512, 4083384.

(ii) Note: Map of Unit 6 (Sawmill Canyon) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



BILLING CODE 5310–55–C

(12) Unit 7 (Mount Baxter); Fresno and Inyo Counties, California.

(i) From USGS 1:24,000 scale quadrangles Aberdeen, Mount Clarence King and Kearsarge Peak. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 374028, 4080221; 373983, 4080457; 374295, 4080749; 374635, 4081009; 374788, 4081064; 375032, 4081147; 375519, 4081252; 375641, 4081278; 376030, 4081176; 376239, 4081079; 376628, 4080946; 376746, 4080882; 376984, 4080754; 377219, 4080536; 377339, 4080502; 377442, 4080457; 377610, 4080493; 377738, 4080700; 377834, 4080878; 377933, 4081146; 378065, 4081503; 378166, 4081831; 378327, 4082128; 378516, 4082363; 378795, 4082595; 378867, 4082568; 379038, 4082647; 379160, 4082674; 379265, 4082696; 379374, 4082757; 379527, 4082813; 379709, 4082837; 379859, 4082802; 379980, 4082799; 380133, 4082854; 380256, 4082940; 380321, 4083059; 380416, 4083207; 380512, 4083384; 380727, 4083498; 380880, 4083553; 381125, 4083666; 381307, 4083660; 381760, 4083676; 382157, 4083814; 382374, 4083988; 382561, 4084163; 382902, 4084423; 382969, 4084632; 383097, 4084869; 383261, 4085256; 383416, 4085401; 383537, 4085398; 383692, 4085513; 383967, 4085625; 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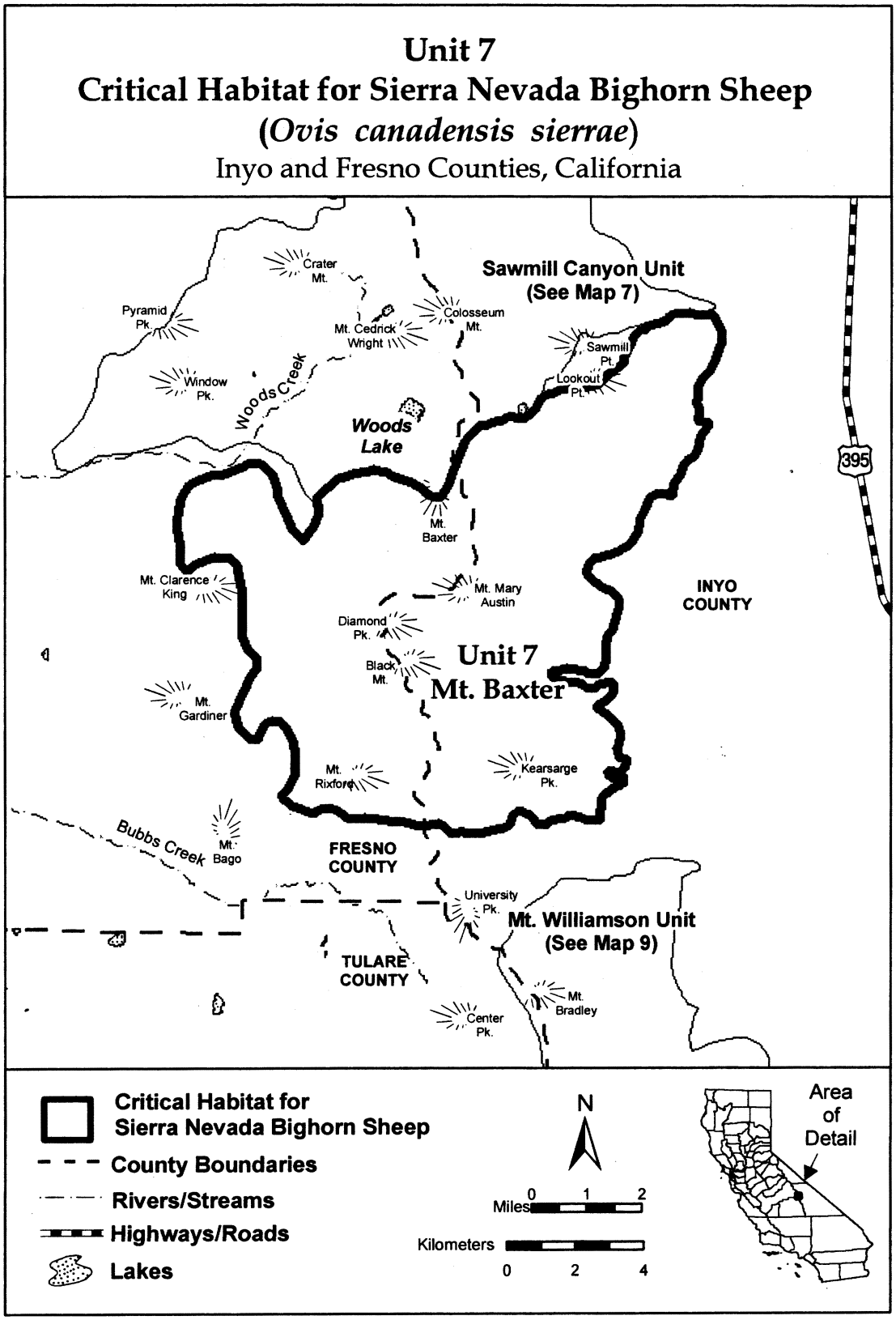
(ii) Note: Map of Unit 7 (Mount Baxter) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



BILLING CODE 5310–55–C

(13) Unit 8 (Mount Williamson); Inyo and Tulare Counties, California.

(i) From USGS 1:24,000 scale quadrangle Kearsarge Peak, Mount Brewer, Mount Williamson, Manzanar, Mount Whitney and Mount Langley. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 384282, 4069770; 384492, 4069703; 384612, 4069699; 384763, 4069694; 384974, 4069658; 385152, 4069562; 385148, 4069441; 384994, 4069356; 384934, 4069358; 384840, 4069270; 384627, 4069217; 384623, 4069096; 384617, 4068886; 384580, 4068676; 384570, 4068345; 384463, 4067836; 384390, 4067447; 384376, 4066995; 384334, 4066635; 384385, 4066332; 384439, 4066120; 384495, 4065998; 384611, 4065813; 384637, 4065692; 384753, 4065538; 384810, 4065445; 384959, 4065380; 385077, 4065286; 384980, 4065079; 384910, 4064780; 384839, 4064450; 384862, 4064209; 384918, 4064056; 385100, 4064081; 385438, 4064281; 385590, 4064306; 385804, 4064360; 386017, 4064413; 386229, 4064437; 386532, 4064457; 386649, 4064333; 386769, 4064299; 386886, 4064205; 387004, 4064111; 387091, 4063988; 387176, 4063804; 387171, 4063654; 387194, 4063412; 387310, 4063258; 387397, 4063135; 387484, 4063042; 387660, 4062855; 387746, 4062702; 387828, 4062458; 387887, 4062396; 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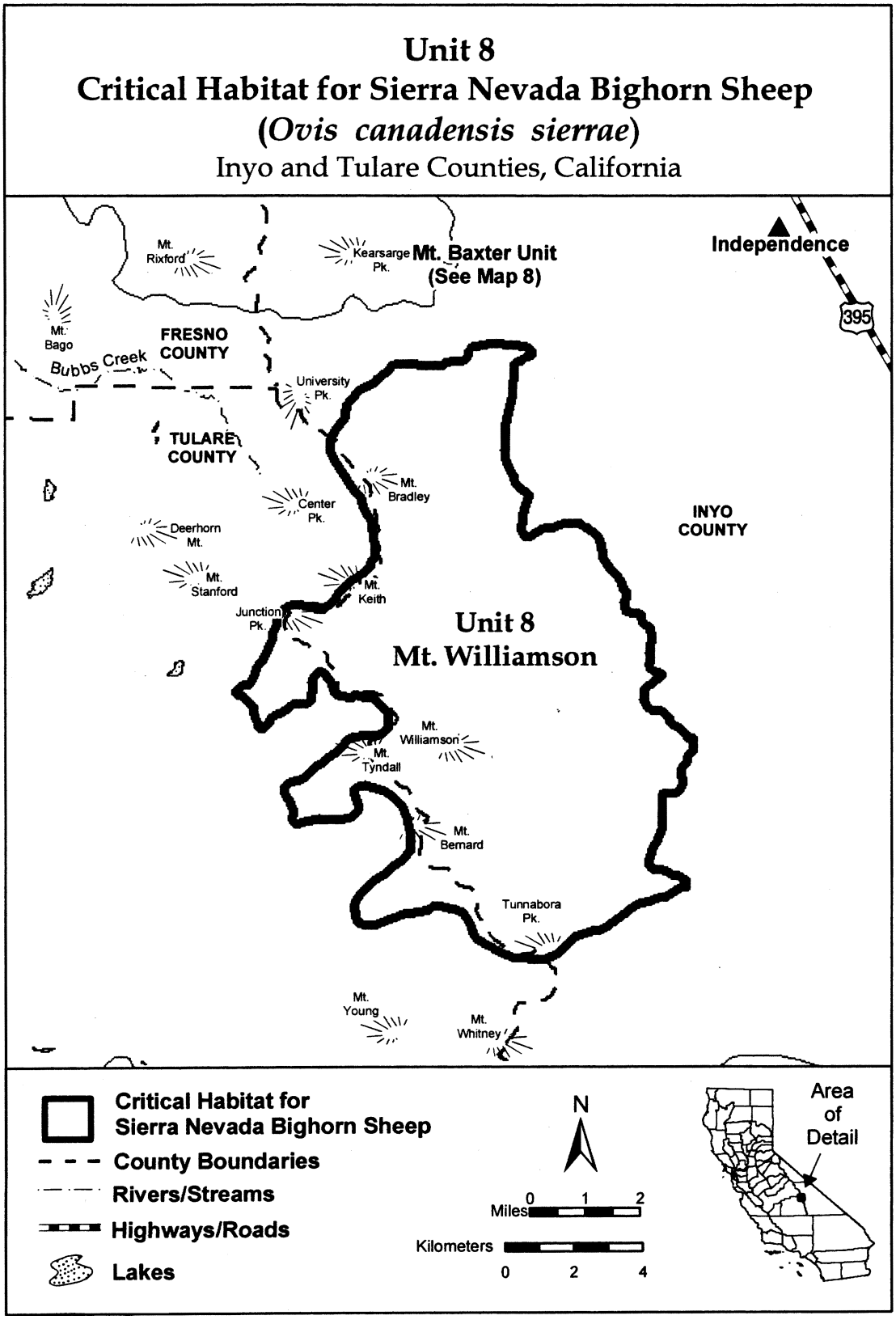
(ii) Note: Map of Unit 8 (Mount Williamson) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



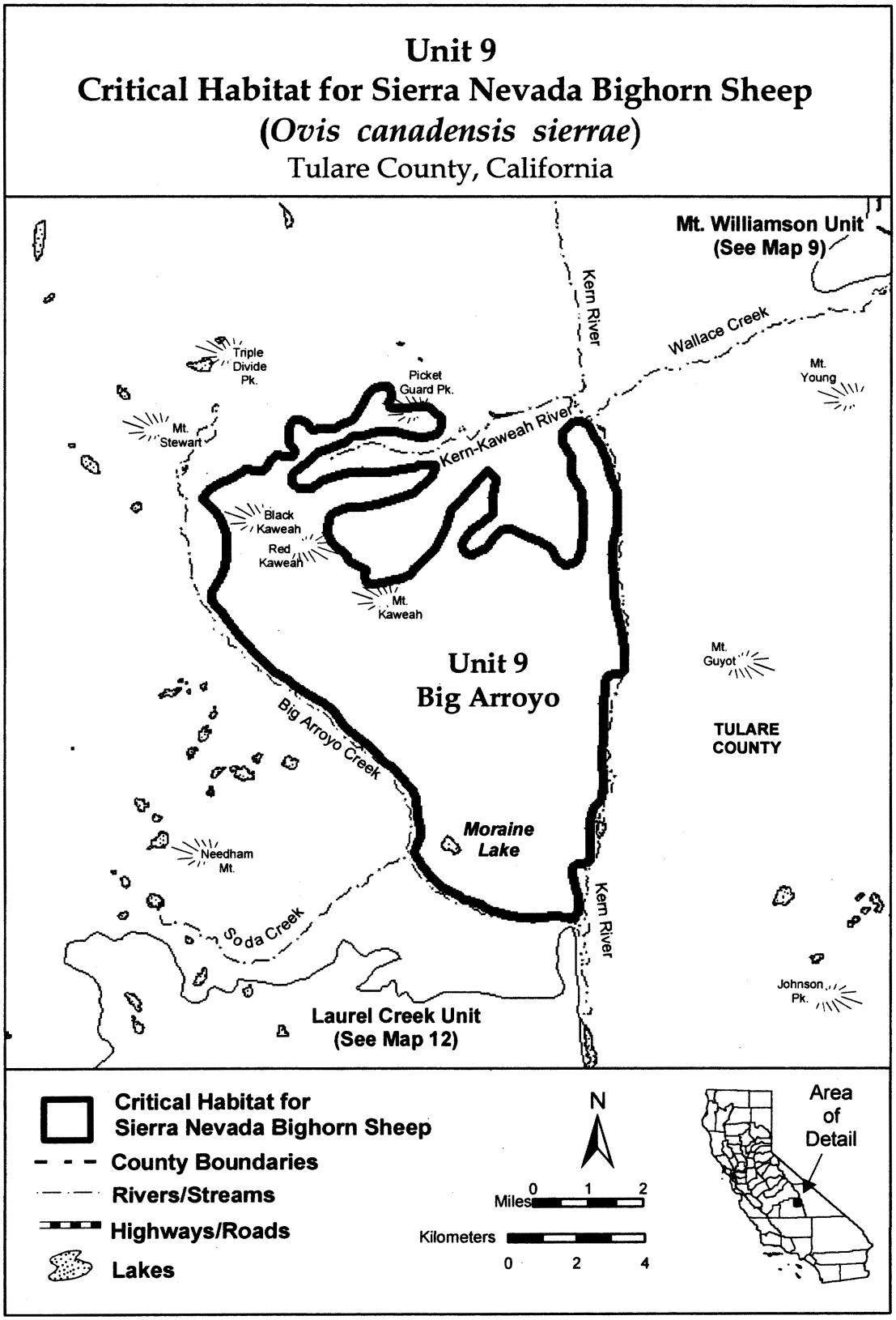
BILLING CODE 5310–55–C

(14) Unit 9 (Big Arroyo); Tulare County, California.

(i) From USGS 1:24,000 scale quadrangles Triple Divide Peak, Mount Kaweah, and Chagoopa Falls. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 367856, 4049078; 368038, 4049073; 368311, 4049124; 368644, 4049144; 368824, 4049108; 369090, 4048919; 369207, 4048795; 369203, 4048644; 369201, 4048584; 369169, 4048525; 369072, 4048347; 368645, 4048210; 368224, 4048284; 367925, 4048383; 367593, 4048394; 367503, 4048397; 367260, 4048374; 366955, 4048293; 366591, 4048244; 366345, 4048102; 365916, 4047904; 365549, 4047765; 365361, 4047560; 364989, 4047270; 364864, 4047124; 364797, 4046915; 364973, 4046759; 365395, 4046715; 365735, 4046946; 366102, 4047085; 366467, 4047164; 366891, 4047211; 367465, 4047193; 367920, 4047269; 368407, 4047374; 368560, 4047429; 369013, 4047415; 368911, 4047057; 368632, 4046825; 368322, 4046593; 367802, 4046399; 367406, 4046291; 366767, 4046130; 366404, 4046141; 366068, 4046031; 365913, 4045886; 365868, 4045435; 366038, 4045068; 366392, 4044786; 366506, 4044572; 367012, 4044315; 366916, 4044167; 366999, 4043924; 367179, 4043858; 367575, 4043966; 367970, 4044044; 368277, 4044185; 368402, 4044331; 368714, 4044653; 369028, 4045005; 369348, 4045597; 369454, 4046076; 369830, 4046486; 370175, 4046897; 370518, 4047247; 370783, 4047028; 370644, 4046430; 370695, 4046127; 370690, 4045977; 370534, 4045831; 370317, 4045657; 370041, 4045515; 369914, 4045338; 369817, 4045130; 369781, 4044951; 369897, 4044797; 370077, 4044731; 370292, 4044844; 370507, 4044958; 370665, 4045194; 370946, 4045487; 371279, 4045506; 371607, 4045345; 372024, 4045152; 372379, 4044929; 372551, 4044623; 372817, 4044434; 373092, 4044546; 373223, 4044843; 373304, 4045503; 373323, 4046105; 373219, 4046650; 372992, 4047109; 372919, 4047684; 372692, 4048143; 372701, 4048414; 373011, 4048675; 373283, 4048667; 373432, 4048602; 373602, 4048265; 373805, 4047988; 373975, 4047621; 374080, 4047105; 374277, 4046647; 374322, 4046164; 374308, 4045712; 374200, 4045174; 374158, 4044783; 374181, 4044572; 374200, 4044210; 374217, 4043787; 374236, 4043425; 374288, 4043152; 374391, 4042607; 374467, 4042122; 374516, 4041759; 374537, 4041488; 374470, 4041279; 374347, 4041192; 374136, 4041229; 374014, 4041173; 373950, 4041054; 373904, 4040574; 373897, 4040333; 373915, 4039971; 373903, 4039579; 373888, 4039098; 373877, 4038737; 373895, 4038375; 373915, 4038043; 373877, 4037773; 373839, 4037533; 373619, 4037269; 373549, 4036970; 373479, 4036670; 373530, 4036368; 373518, 4035976; 373478, 4035676; 373263, 4035563; 373112, 4035567; 373019, 4035480; 373040, 4035208; 373120, 4034844; 373172, 4034601; 373171, 4034571; 373195, 4034360; 373188, 4034149; 373125, 4034061; 373093, 4034001; 372881, 4033978; 372671, 4034015; 372489, 4034020; 372278, 4034027; 372096, 4034002; 372005, 4034005; 371642, 4033987; 371403, 4034054; 371161, 4034062; 371012, 4034127; 370652, 4034198; 370474, 4034294; 370386, 4034387; 369997, 4034520; 369847, 4034555; 369670, 4034681; 369253, 4034875; 368900, 4035187; 368785, 4035372; 368611, 4035588; 368408, 4035866; 368444, 4036045; 368544, 4036343; 368613, 4036612; 368531, 4036916; 368483, 4037309; 368432, 4037582; 368318, 4037827; 368114, 4038044; 367910, 4038291; 367764, 4038447; 367616, 4038542; 367411, 4038759; 367265, 4038914; 366971, 4039194; 366588, 4039508; 366295, 4039788; 366005, 4040159; 365710, 4040409; 365323, 4040602; 364940, 4040885; 364704, 4041073; 364407, 4041233; 364172, 4041451; 363937, 4041670; 363675, 4041979; 363294, 4042383; 363033, 4042722; 362830, 4043000; 362598, 4043309; 362513, 4043462; 362550, 4043702; 362773, 4044056; 362873, 4044354; 362976, 4044743; 362987, 4045104; 362907, 4045438; 362796, 4045743; 362624, 4046049; 362419, 4046267; 362243, 4046423; 362434, 4046718; 362771, 4046888; 363048, 4047030; 363355, 4047201; 363540, 4047316; 363809, 4047217; 363990, 4047211; 364085, 4047329; 364213, 4047566; 364430, 4047740; 364638, 4047643; 364880, 4047635; 364946, 4047814; 364918, 4047875; 364772, 4048061; 364751, 4048332; 364757, 4048543; 364885, 4048750; 365096, 4048743; 365274, 4048647; 365419, 4048432; 365540, 4048458; 365753, 4048482; 365964, 4048475; 366116, 4048500; 366302, 4048645; 366454, 4048671; 366638, 4048755; 366736, 4048993; 366926, 4049288; 367023, 4049466; 367148, 4049613; 367333, 4049727; 367635, 4049718; 367747, 4049443; 367652, 4049296; 367648, 4049175; 367736, 4049082; returning to 367856, 4049078.

(ii) Note: Map of Unit 9 (Big Arroyo) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



BILLING CODE 5310–55–C

(15) Unit 10 (Mount Langley); Inyo and Tulare Counties, California.

(i) From USGS 1:24,000 scale quadrangles Mount Whitney, Mount Langley, Lone Pine, Johnson Peak, Cirque Peak, and Bartlett. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 391201, 4048676; 391835, 4048656; 392289, 4048672; 392648, 4048570; 393008, 4048499; 393517, 4048332; 393840, 4048051; 393861, 4047749; 393701, 4047453; 393997, 4047263; 394301, 4047313; 394691, 4047241; 394959, 4047112; 394980, 4046810; 394761, 4046576; 394545, 4046432; 394209, 4046322; 393872, 4046182; 393805, 4045973; 393952, 4045848; 394346, 4045866; 394557, 4045859; 394797, 4045822; 394914, 4045698; 395096, 4045722; 395312, 4045836; 395435, 4045922; 395609, 4045676; 395357, 4045352; 395142, 4045239; 394955, 4045064; 394737, 4044860; 394607, 4044562; 394630, 4044351; 394785, 4044466; 394972, 4044641; 395189, 4044815; 395465, 4044957; 395741, 4045069; 396017, 4045211; 396292, 4045323; 396624, 4045312; 396865, 4045275; 397011, 4045120; 396916, 4044972; 396912, 4044852; 396906, 4044671; 396989, 4044427; 397139, 4044392; 397225, 4044239; 397130, 4044092; 397004, 4043945; 396941, 4043856; 396910, 4043827; 396816, 4043710; 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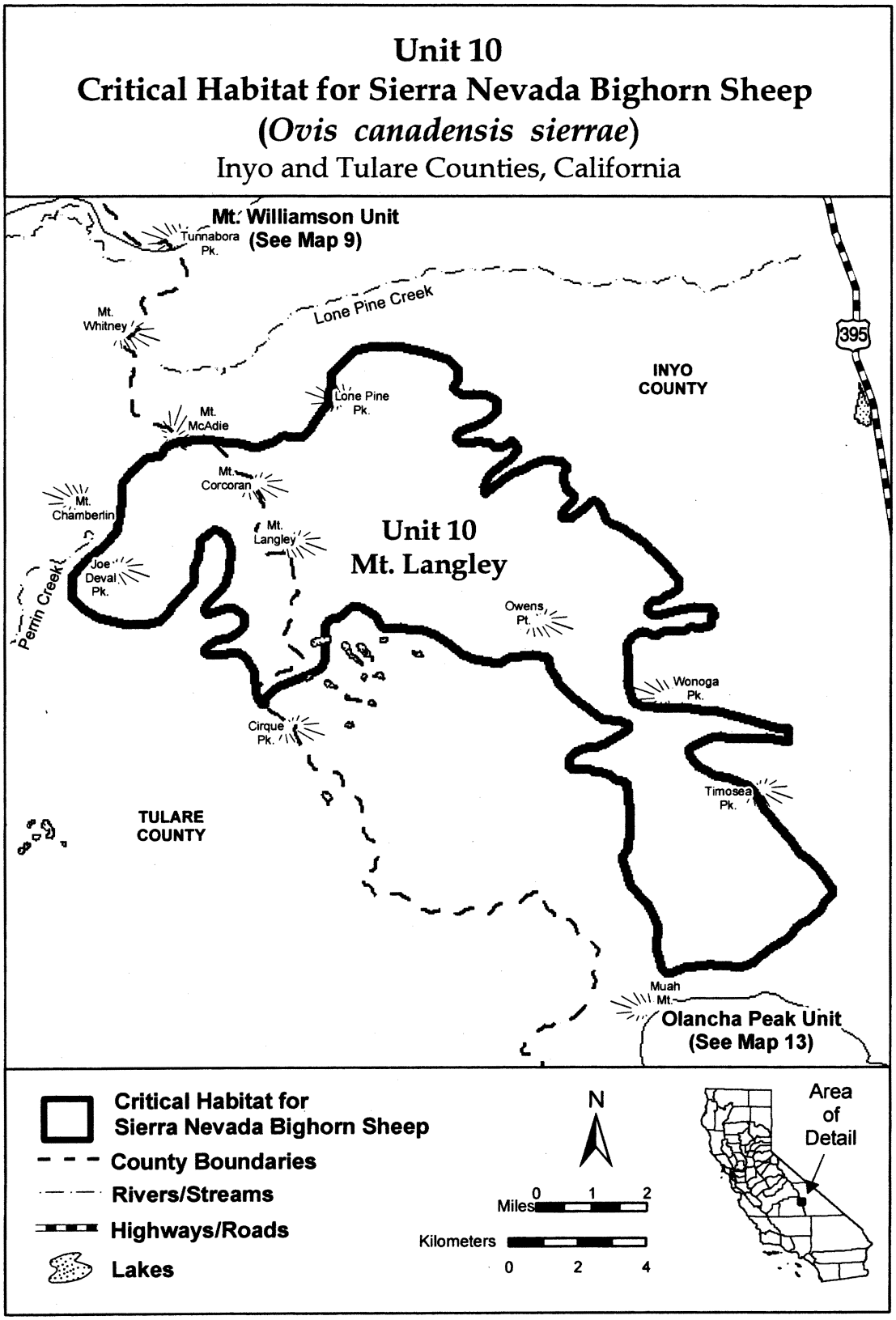
(ii) Note: Map of Unit 10 (Mount Langley) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



BILLING CODE 5310–55–C

(16) Unit 11 (Laurel Creek); Tulare County, California.

(i) From USGS 1:24,000 scale quadrangles Mineral King, Chagoopa Falls, Quinn Peak, and Kern Lake. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 373174, 4031891; 373186, 4031558; 373154, 4031248; 373234, 4030979; 373246, 4030646; 373240, 4030446; 373299, 4030200; 373294, 4030045; 373311, 4029867; 373368, 4029577; 373315, 4029290; 373265, 4029114; 373238, 4028981; 373232, 4028782; 373228, 4028671; 373244, 4028471; 373261, 4028292; 373235, 4028160; 373118, 4027986; 373114, 4027853; 373201, 4027784; 373307, 4027625; 373303, 4027492; 373295, 4027248; 373288, 4027026; 373370, 4026802; 373343, 4026647; 373335, 4026403; 373361, 4025803; 373349, 4025426; 373426, 4025046; 373542, 4024488; 373421, 4024158; 373270, 4024319; 373084, 4024791; 372982, 4025082; 372972, 4025460; 373002, 4025726; 372967, 4026015; 372813, 4026087; 372622, 4026381; 372567, 4026738; 372492, 4027184; 372494, 4027251; 372544, 4027449; 372683, 4027600; 372797, 4027685; 372844, 4027773; 372868, 4027839; 372850, 4027950; 372627, 4027957; 372493, 4027939; 372334, 4027833; 372088, 4027819; 371867, 4027848; 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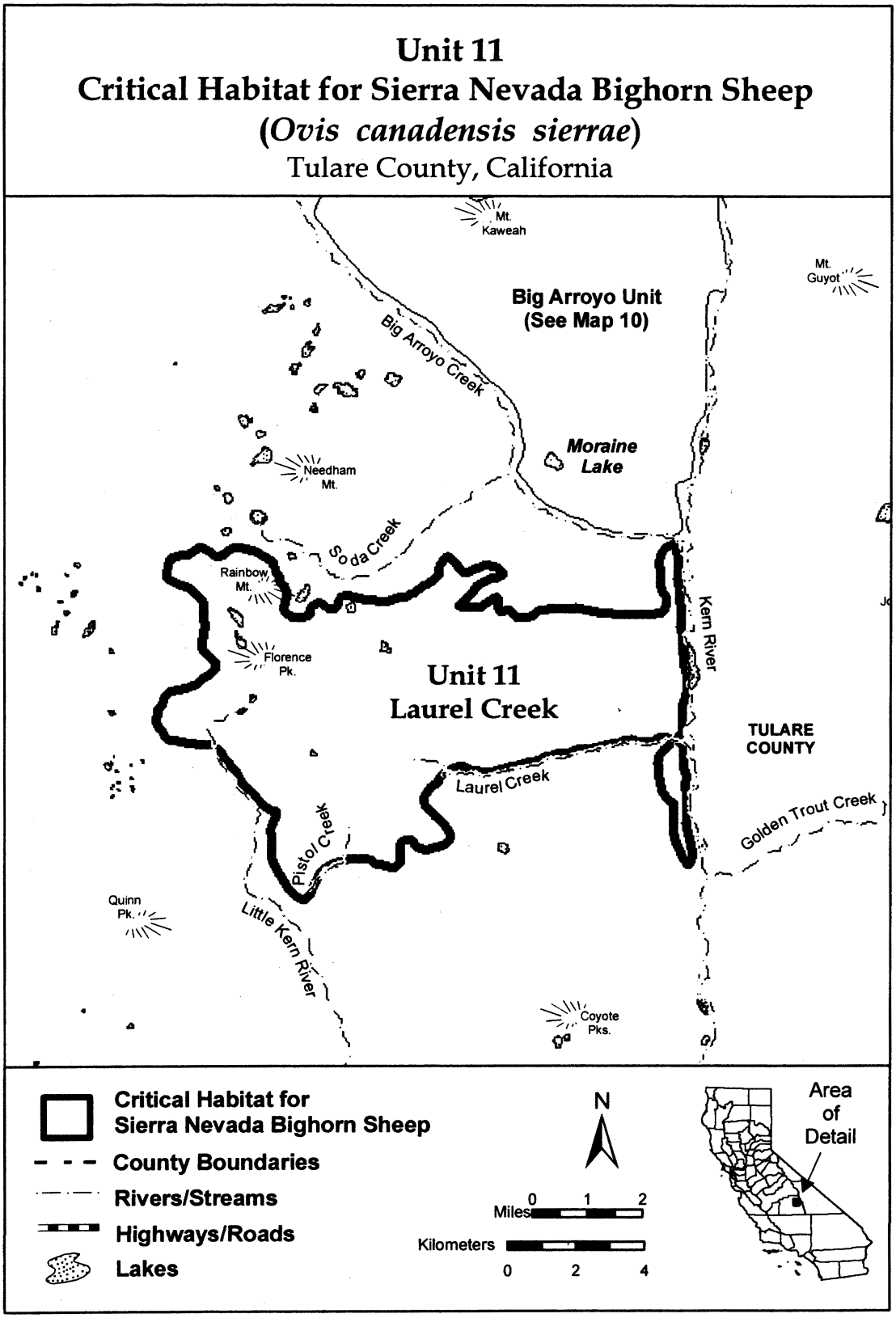
372548, 4032533; 372578, 4032776; 372564, 4033021; 372571, 4033264; 372624, 4033507; 372783, 4033635; 372942, 4033719; 373052, 4033671; 373028, 4033628; 373070, 4033537; 373088, 4033404; 373101, 4033115; 373095, 4032937; 373087, 4032671; 373125, 4032470; 373138, 4032159; returning to 373174, 4031891.

(ii) Note: Map of Unit 11 (Laurel Creek) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



BILLING CODE 5310–55–C

(17) Unit 12 (Olancha Peak); Inyo and Tulare Counties, California.

(i) From USGS 1:24,000 scale quadrangles Cirque Peak, Bartlett, Templeton Mountain, Olancha, and Haiwee Pass. Land bounded by the following UTM zone 11 NAD83 coordinates (E, N): 403133, 4029453; 403358, 4029282; 403619, 4029209; 403945, 4029133; 404369, 4029021; 404658, 4028816; 404816, 4028614; 405104, 4028376; 405331, 4028270; 405620, 4028065; 405682, 4027932; 405805, 4027666; 405734, 4027504; 405863, 4027434; 406060, 4027428; 406290, 4027421; 406385, 4027320; 406479, 4027153; 406544, 4027151; 406674, 4027081; 406738, 4027046; 406835, 4026978; 406993, 4026776; 407086, 4026610; 407116, 4026510; 407176, 4026345; 407206, 4026245; 407201, 4026082; 407131, 4025953; 407161, 4025854; 407158, 4025755; 407190, 4025722; 407251, 4025589; 407282, 4025522; 407279, 4025424; 407210, 4025328; 407206, 4025197; 407203, 4025099; 407234, 4025032; 407263, 4024933; 407291, 4024768; 407287, 4024637; 407250, 4024507; 407178, 4024313; 407042, 4024153; 406975, 4024123; 406909, 4024125; 406811, 4024128; 406841, 4024061; 406903, 4023928; 406933, 4023829; 406963, 4023763; 407057, 4023596; 407118, 4023463; 407282, 4023458; 407411, 4023355; 407439, 4023223; 407499, 4023025; 407524, 4022795; 407487, 4022632; 407350, 4022473; 407214, 4022313; 407044, 4022154; 407010, 4022123; 406941, 4021994; 406870, 4021832; 406765, 4021639; 406663, 4021511; 406627, 4021414; 406622, 4021283; 406686, 4021215; 406682, 4021085; 406739, 4020821; 406701, 4020658; 406634, 4020595; 406565, 4020498; 406562, 4020400; 406557, 4020237; 406553, 4020106; 406515, 4019943; 406508, 4019747; 406537, 4019615; 406434, 4019487; 406336, 4019490; 406301, 4019425; 406296, 4019262; 406194, 4019167; 406127, 4019103; 406121, 4018939; 406086, 4018842; 405983, 4018714; 405817, 4018654; 405649, 4018561; 405584, 4018563; 405583, 4018530; 405611, 4018398; 405572, 4018203; 405538, 4018139; 405435, 4018011; 405400, 4017946; 405332, 4017883; 405395, 4017783; 405428, 4017782; 405460, 4017748; 405620, 4017612; 405779, 4017443; 405875, 4017374; 405935, 4017209; 405999, 4017141; 405962, 4017011; 405959, 4016913; 405955, 4016782; 405919, 4016685; 405885, 4016653; 405816, 4016557; 405749, 4016494; 405747, 4016428; 405843, 4016360; 405942, 4016356; 406040, 4016353; 406104, 4016286; 406134, 4016219; 406131, 4016121; 406063, 4016025; 406026, 4015895; 405988, 4015732; 406018, 4015666; 406016, 4015600; 406108, 4015368; 406101, 4015172; 406062, 4014976; 406055, 4014747; 405918, 4014555; 405816, 4014460; 405812, 4014329; 405703, 4014005; 405598, 4013811; 405530, 4013715; 405491, 4013520; 405488, 4013422; 405480, 4013192; 405405, 4012900; 405336, 4012771; 405329, 4012542; 405353, 4012279; 405416, 4012179; 405313, 4012051; 405109, 4011828; 404843, 4011738; 404673, 4011547; 404541, 4011551; 404414, 4011686; 404316, 4011689; 404187, 4011758; 404086, 4011696; 403921, 4011668; 403724, 4011675; 403625, 4011678; 403527, 4011681; 403365, 4011751; 403199, 4011691; 403002, 4011697; 402935, 4011667; 402706, 4011707; 402610, 4011775; 402480, 4011845; 402250, 4011819; 402186, 4011887; 401989, 4011893; 401860, 4011962; 401729, 4011999; 401598, 4012003; 401366, 4011945; 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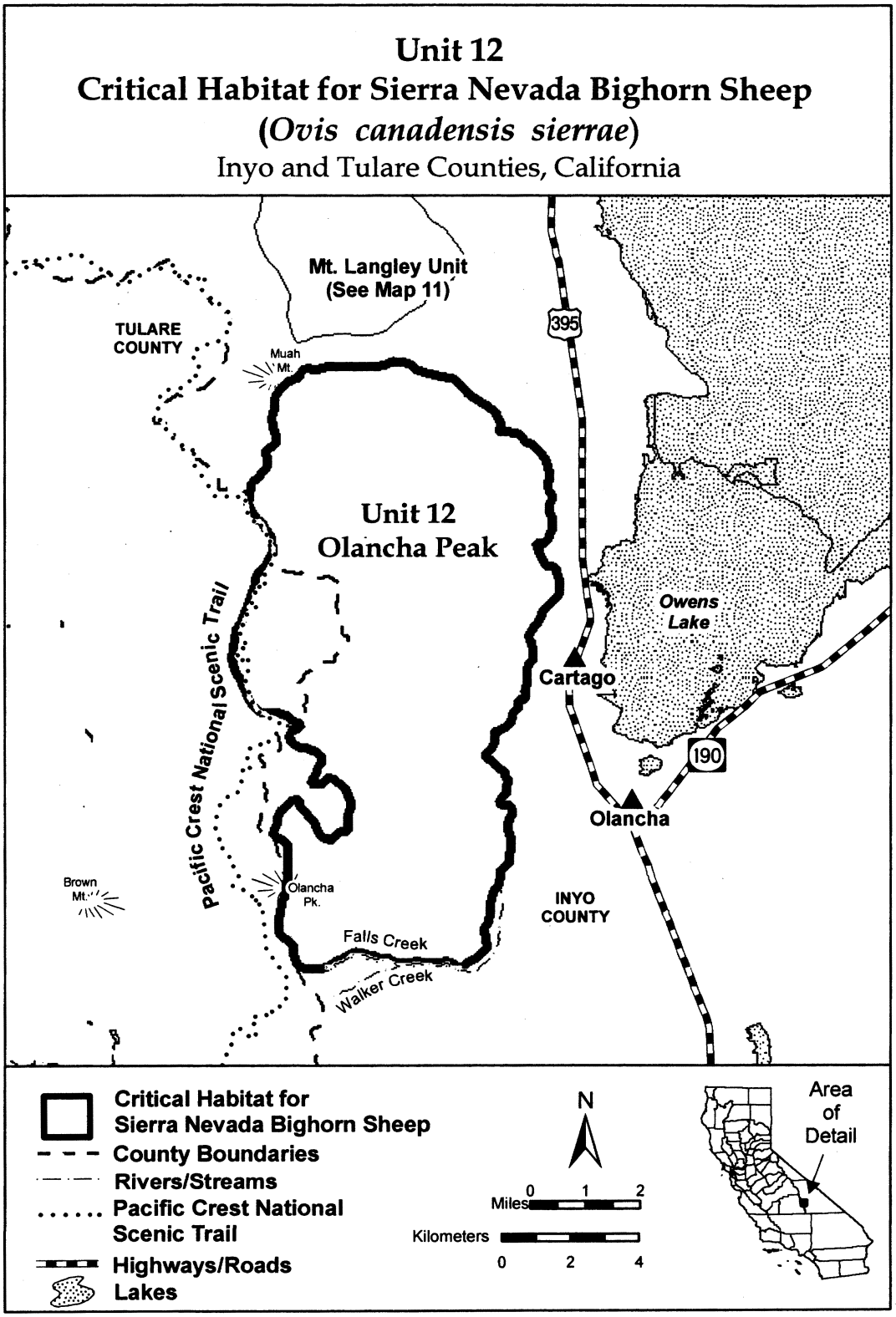
(ii) Note: Map of Unit 12 (Olancha Peak) for Sierra Nevada bighorn sheep follows:

BILLING CODE 5310–55–P



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Dated: July 16, 2008.

David M. Verhey,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. E8–16813 Filed 8–4–08; 8:45 am]

BILLING CODE 4310–55–C