

ALIVE
Memorandum of Understanding
among the
Colorado Department of Transportation
Federal Highway Administration
US Fish and Wildlife Service
The USDA Forest Service
US Bureau of Land Management
Colorado Department of Natural Resources, Division of Wildlife

This Memorandum of Understanding (MOU) is made and entered into this 11th day of April, 2008, between the Colorado Department of Transportation (CDOT), the Federal Highway Administration (FHWA), the US Fish and Wildlife Service (USFWS), the USDA Forest Service (USFS), the US Bureau of Land Management (BLM), and the Colorado Department of Natural Resources, Colorado Division of Wildlife (CDOW), hereinafter referred to as “Parties” or “Agencies.”

The Parties to this agreement are public entities with responsibilities pertaining to the I-70 Mountain Corridor (I-70 Corridor) Tier I Programmatic Environmental Impact Statement (PEIS) and Tier II (site-specific, project-level) National Environmental Policy Act (NEPA) documents.

The PEIS recognizes that the existing I-70 Corridor and the proposed future improvements pass through several life zones and ecosystems that support numerous aquatic and terrestrial wildlife species. While all Parties to this MOU recognize that the I-70 transportation system provides important benefits to Colorado citizens, the local communities, and economic interests on a statewide level, they also acknowledge that the I-70 Corridor fragments or isolates existing habitats, interferes with free movement of animals within their habitat, and reduces remaining quality wildlife habitat by making such habitat less accessible to many native species. In addition, high-traffic volumes form a difficult-to-penetrate barrier to movement, often resulting in animal-vehicle collisions and serious levels of mortality for some rare or low-density species. Therefore, over time, the benefits derived from a transportation system can come at a cost to other resources, including interference with the ability of wildlife to use the landscape in a manner that maintains population effectiveness.

The Parties to this agreement desire to improve conditions for wildlife in this Corridor. To meet that need, CDOT convened the ALIVE Committee, a technical advisory committee consisting of biologists from each of this MOU’s signatory government agencies. The **ALIVE Committee** (“A Landscape Level Inventory of Valued Ecosystem Components”) has developed a landscape-based ecosystem approach for consideration of wildlife needs and conservation measures, and has identified measures to improve existing aquatic and terrestrial ecosystem connectivity across the I-70 Corridor between Denver and Glenwood Springs.

Using best available information, the ALIVE Committee identified 13 high-priority locations where evidence suggests that the highway’s barrier effect impedes important wildlife migration or movement routes or zones of dispersal. The PEIS and this MOU refer to these locations as linkage interference zones (LIZs). The 13 LIZs are described on Table 1 and shown on Figure 1, both appended to and made a part of this MOU. The ALIVE program provides a starting point for, and ensures Agencies’ participation in development of, subsequent Tier II site-specific analyses and implementation of long-term impact mitigation measures within the context of a Corridor-long, landscape-based ecosystem approach to Corridor impacts on wildlife needs and conservation measures. It is understood by all parties to this MOU that, because the I-70 Mountain Corridor project is anticipated to span many years, the descriptions of the LIZs, species affected, and recommended mitigation strategies in Table 1 are subject to change through time. All parties to this MOU agree to coordinate to update this Table, if necessary, during each applicable Tier II process and in those respective NEPA documents.

I. Purpose and Intent of the MOU

With this MOU, the Parties identify their interdependence in identifying, designing, and managing landscape elements to ensure effective populations of species identified by the ALIVE Committee. The Parties herewith establish a program of cooperation for the purpose of early and full implementation of corrective actions to solve

permeability problems in identified LIZs, and to streamline the section 7 consultation process under the Endangered Species Act for the I-70 Corridor Tier II projects. Time and resources will be better invested in proactive programs that involve a corridor-wide, coordinated program of species and habitat conservation and provide the maximum benefit to wildlife.

It is the intent of the Parties to increase the permeability of the I-70 Corridor to terrestrial and aquatic species, including but not limited to deer, elk, the boreal toad, fish (for example, greenback cutthroat trout), and forest carnivores (for example, Canada lynx). This includes development of management strategies that will result in the long-term protection and restoration of wildlife linkage areas that intersect the I-70 Corridor, improve habitat connectivity, and preserve essential ecosystem components.

The Parties recognize that:

1. This process goes beyond the ordinary regulatory or statutory requirements of its participants. While CDOT and FHWA have an obligation under the Endangered Species Act (ESA) section 7(a)(1) “to utilize their authorities in furtherance of the purposes of the Act by carrying out programs for the conservation of species listed pursuant to the Act,” neither CDOT nor FHWA has a mission to sustain wildlife populations. They cooperate with and rely on resource and regulatory agencies to further the conservation of wildlife and the protection of endangered species.
2. Regulatory and resource agencies, and other stakeholders with an interest in wildlife habitat connectivity and conservation along the I-70 Corridor, have limited resources to address the barrier effects of the I-70 Corridor and to pursue key conservation objectives and principles for game animals and threatened, endangered, or otherwise sensitive aquatic and terrestrial species. By working together, these agencies can make the most effective and efficient use of limited resources.
3. Traditional project-by-project evaluation and treatment of regulatory requirements for, and mitigation of, impacts on wildlife have limited effectiveness in a corridor the extent of I-70.
4. Constructing wildlife passages at the earliest possible opportunity, particularly in locations where ordinary regulatory processes do not require mitigation or conservation measures for wildlife, would require the financial support of the Parties and other stakeholders, as well as an active pursuit of other elements essential to the function of wildlife passages. Financial support can include but is not limited to direct funding, in-kind contribution of labor or equipment, etc.
5. Resources otherwise devoted to the regulatory consultation and documentation process would be better spent by combining and streamlining the processes for multiple projects over an extended timeframe and the furtherance of a coordinated program to address habitat fragmentation and wildlife viability for the entire length of the Corridor, i.e., at the landscape, ecosystem level.
6. Existing planning and funding mechanisms for transportation projects can create limitations to the programmatic approaches envisioned by this MOU. Full implementation of a successful ALIVE outcome would require the participation by all Parties and other stakeholders in the commitment of resources beyond those meant for transportation mitigation.

With this MOU, the Parties propose to develop mechanisms that focus resources on results. The Parties will work together to identify programs or actions for implementing the MOU as opportunities, funding, or proposed transportation improvement projects warrant. The Parties seek to collaborate in identifying the means for funding and constructing wildlife passages as soon as possible, to use all available means to protect and maintain the viability of these passages as allowed by land management policy, and to identify regulatory review processes to accelerate project permitting.

Other stakeholders not party to this MOU also hold keys to full implementation of the ALIVE recommendations. Specifically, local governments, land managers, and private landowners with jurisdiction over or ownership of lands affected by the Corridor are instrumental in developing growth policies and defining conservation easements, land holdings, and other mechanisms which are needed to ensure the long-term viability of wildlife passages and other

best management practice (BMP) investments. In addition, financial participation by these other stakeholders, as well as other interested parties, would be necessary to fully implement the recommendations of ALIVE.

Construction of effective wildlife passages will require the cooperation of transportation, resource, and regulatory agencies and those other stakeholders with jurisdiction or ownership affected by the Corridor, whether or not they are Parties to this MOU. All Parties to this agreement understand that CDOT cannot commit public funding to construction of wildlife passages unless the Parties and other affected stakeholders with jurisdiction or ownership are in agreement to commit their respective resources, regulation, and management policies and practices to ensuring functional key wildlife passages in respective LIZs. Recognizing that, all Parties to this agreement commit to ensuring functional key wildlife passages and linkage areas along the length of the Corridor not only through full analysis of a reasonable range of alternatives in the PEIS and subsequent project-specific NEPA and their own respective management, regulation, design, construction, maintenance, and monitoring authorities, but also through collectively and actively seeking agreement and cooperation among those who are not Parties to this agreement but who have pertinent jurisdiction or ownership or are interested parties in the respective LIZs.

II. Cooperation

- A.** All Parties, within their statutory and regulatory authority, agree to work together toward the long-term protection and restoration of wildlife habitat or habitat linkages that intersect the I-70 Corridor. All Parties to this MOU understand that any action that would curtail or prohibit restoration of the functionality of a movement corridor identified by the ALIVE Committee could result in a reconsideration of the feasibility of an alternative or a wildlife passage associated with this Corridor. Based on this understanding, all Parties agree to reasonably cooperate in the implementation of this MOU. Such cooperation-would include:
1. Supporting the concepts identified in this MOU and working to actively implement this MOU as authorized under applicable laws, regulations, and policies.
 2. Providing transportation and wildlife expertise, data, and technical support to the ALIVE Committee for planning and project review that will mitigate impacts on, or provide betterments for, wildlife, and increase and improve wildlife habitat connectivity across the I-70 Corridor.
 3. Considering the ALIVE Committee's recommendations when the opportunity to construct a specific wildlife passage arises; with the expectation that additional analyses are needed prior to any investment in wildlife passages or BMPs. Analysis will include evaluations of the effectiveness of previously-installed structures, including their location and design, as well as the compatibility of associated land use with the intended function of the structure.
 4. Identifying programs or actions that could result in the long-term protection, restoration, or enhancement of wildlife habitat or habitat connectivity intersected by the I-70 Corridor. Implementation of ALIVE Committee recommendations would be subject to the respective Parties' planning, NEPA, and decision-making requirements. All Parties recognize the importance of management of enough land adjacent to each passage so that a reasonable person can conclude that the intended permeability function of each passage will be sustained as growth and other land uses inevitably occur.
 5. Establishing more efficient processes of regulatory review and permitting, thereby helping to reduce the cost and delay of subsequent individual Tier II construction projects in the I-70 Corridor.
 6. Working with the ALIVE Committee, local governments, and other stakeholders as appropriate to:
 - a. pursue potential partnerships and funding mechanisms;
 - b. identify and promote opportunities and resources to construct wildlife passages in the most effective locations based on the best available information on wildlife use of passages over or under highways and determined by supporting land use, and

- c. sustain partnerships for the long-term protection and restoration of habitat in important habitat conservation and linkage areas.
7. All Parties to this MOU agree:
- a. that passages in LIZs (see map, Figure 1) where construction of I-70 occurs as a result of the PEIS Decision and subsequent Tier II decisions will be built before or during such construction, providing all Parties and other stakeholders with jurisdiction or ownership in those respective LIZs are cooperatively committed to and are coordinating to ensure functional LIZs and passages. In coordination with the ALIVE Committee, Tier II NEPA and ESA section 7 analyses will identify the specific location and appropriate structure(s) for passages within each LIZ, based on best available information on wildlife species of concern, habitat connectivity, effectiveness of wildlife passages, and type and adjacent land use plans. Included in this effort are the development of other BMPs such as a fencing plan intended to direct or inhibit wildlife movement, as required, and an identification of the necessary funding to build and maintain the BMPs including wildlife passages and the corridor easements;
 - b. that, when funding options are identified through successful efforts of one or more of the Parties or stakeholders, or other independent initiatives, wildlife passages in identified LIZs that will not undergo construction as a result of the PEIS and subsequent Tier II decisions will be constructed with consideration of priorities developed by the ALIVE Committee;
 - c. All Parties to this MOU agree to partner as authorized in an effort to understand and satisfy the wildlife and habitat needs associated with each passage within the context of a Corridor-long, landscape-level ecosystem approach to wildlife needs and conservation measures. The design and location of each passage within each of the LIZs is necessarily site-specific, but all Parties agree as authorized to locating, designing, constructing, and maintaining each passage within the Corridor-long context.

B. Such cooperation by FHWA and CDOT shall include:

1. Leading the primary effort to initiate the ALIVE program, thereby helping to achieve the environmental goals of the PEIS and subsequent Tier II decisions, which extend beyond the requirements of CDOT and FHWA.
2. The design criteria of all alternatives considered in full in the PEIS will not preclude incorporation and construction of viable wildlife passages for the species of concern in that LIZ, as identified by the ALIVE Committee.
3. Pursuing options for identifying, and if necessary funding, an administrative position for a maximum of two (2) years. The function of the administrator would be to explore, identify, and pursue funding sources and mechanisms to construct wildlife passages, especially for those passages to be pursued beyond CDOT's legal responsibility. In the best interest of the ALIVE program, determining the need for an administrative position will be revisited regularly by the Parties and funding sought to maintain the position as determined necessary by the Parties.

C. Such cooperation by the USFS and the BLM shall include:

1. Considering the recommendations of the ALIVE program in the review of Tier II NEPA documents, considering the granting of any land actions or other use permits germane to movement corridors, and reviewing for consideration of approval of biological reports and participating in section 7 consultation under the ESA so that transportation projects and associated conservation measures can proceed in a timely manner.
2. Encouraging the cooperation and support of land lease holders and other entities with legal interest on public lands to ensure the realization of the objectives of the MOU, which could include their active participation in achieving the goals of the ALIVE program.

3. Exercising their respective regulatory requirements and authorities to protect wildlife species and their habitat. Accordingly, the USFS and the BLM, by means of ordinary and established planning and subsequent NEPA processes, will consider lands in proximity to I-70 for their habitat and wildlife movement attributes, among other multiple use considerations. They will treat installed wildlife passages consistent with their intended purpose of connecting functional wildlife movement corridors, and strive to maintain associated wildlife movement corridors.
4. Informing the CDOT Environmental Programs Branch, Transportation Regions 1 and 3 by letter of all requested land actions, special use permits, USFS and BLM plan amendments, or other pertinent actions, that could affect an identified habitat linkage and conflict with a planned wildlife passage area.
5. As opportunities arise, and in compliance with the Forest Service land adjustment policy, seeking to consolidate lands along the Corridor to maintain or improve habitat connectivity adjacent to the I-70 Corridor.

D. Such cooperation by the USFWS shall include:

Participating in and facilitating the development of regulatory streamlining instruments that accelerate the section 7(a)(2) consultation process under the Endangered Species Act as it may apply to transportation projects and their associated conservation measures, and any related right-of-way actions from the USFS or the BLM to FHWA and CDOT. A separate Programmatic Agreement will be pursued among FHWA, CDOT, and USFWS for this purpose.

E. Such cooperation by CDOW shall include:

Providing in-kind support through cooperation and consultation with other Parties, jurisdictions, and landowners to facilitate a Corridor-long perspective and understanding of wildlife needs and conservation measures; providing wildlife data and management expertise; and assist with monitoring the effectiveness of wildlife passages and LIZ management.

III. Principal Contacts

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Other Parties' principle contacts are their ALIVE Committee members, i.e., each Party's respective affected Regional, Field Office, or Forest biologist.

IV. Non-Fund Obligating Document

Nothing in this MOU shall obligate either the Forest Service or any other Parties to obligate or transfer any funds. Specific work projects or activities that involve the transfer of funds, services, or property among the various agencies and offices of the Forest Service and any other Parties will require execution of separate agreements and be contingent upon the availability of appropriated funds. Such activities must be independently authorized by appropriate statutory authority. This MOU does not provide such authority. Negotiation, execution, and administration of each such agreement must comply with all applicable statutes and regulations.

V. Freedom Of Information Act (FOIA)

Any information furnished to the Forest Service under this instrument is subject to the Freedom of Information Act (5 U.S.C. 552).

VI. Participation in Similar Activities

This instrument in no way restricts the Forest Service or the Parties from participating in similar activities with other public or private agencies, organizations, and individuals.

VII. Responsibilities of Parties

The Forest Service and other Parties and their respective agencies and office will handle their own activities and utilize their own resources, including the expenditure of their own funds, in pursuing these objectives. Each Party will carry out its separate activities in a coordinated and mutually beneficial manner. Nothing in this MOU precludes the Parties from using outside grants or other funding sources to fulfill their responsibilities.

VIII. Effective Date

This MOU is effective as of the date of the signatures shown below and will expire upon the full implementation of the Selected Alternative in the Record of Decision for the I-70 Mountain Corridor PEIS.

Full implementation of this MOU may take place over a long time span. To deal with changing conditions, the Parties will meet within 60 days after the MOU is signed and annually thereafter, unless all Parties agree to another schedule, to review changes, consider unforeseen developments, and make decisions regarding the priorities, placement, and design of wildlife passages considered in this MOU.

IX. Modification

To be effective, all Parties must agree in writing to any modifications to this MOU.

X. Termination

Parties may terminate their participation in this MOU with a 30-day notice to the other Parties. Termination by any one Party will terminate the entire MOU and eliminate any remaining requirements for any of the Parties. Termination of this MOU does not relieve CDOT and FHWA of obligations identified in the PEIS/ROD, section 7 consultation, or other permit requirements.

XI. Availability of Funds

Implementation of this MOU by the federal agencies is subject to the requirements of the Anti-Deficiency Act (31 USC 1341) and the availability of appropriate funds. Nothing in this MOU will be construed by the Parties to require the obligation, appropriation, or expenditure of any money from the US Treasury.

XII. Dispute Resolution

All Parties agree to work cooperatively to avoid and resolve conflicts. The Parties agree to explore issues thoroughly before escalating disputes. Resolution mechanisms to ensure that adequate communication has occurred, such as mediation and facilitation, may be used at any level to help expedite resolution. If disagreements emerge which cannot be resolved at any level, the dispute will be escalated through management as appropriate.

XIII. Retention of All Authorities

Nothing in this MOU is intended to limit or diminish the legal obligations, responsibilities, and management authority of the Parties.

XIV. Establishment of Responsibility

This MOU is not intended to, and does not create, any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity, by a party against the United States, its agencies, its officers, or any person.

XV. Authorized Representatives

By signature below, the Parties certify that the individuals listed in this document as representatives of the Parties are authorized to act in their respective areas for matters related to this agreement.

COLORADO DEPARTMENT OF TRANSPORTATION

By: Margaret A. Corle
Russell George, Executive Director

COLORADO DIVISION, FEDERAL HIGHWAY ADMINISTRATION

By: Karla S. Petty
Karla S. Petty, P.E., Division Administrator

US FISH AND WILDLIFE SERVICE, ECOLOGICAL SERVICES

By: Susan Linner
Susan Linner, Colorado Field Supervisor

USDA FOREST SERVICE

By: Glenn P. Casamassa
Glenn P. Casamassa, Forest Supervisor, Arapaho & Roosevelt National Forests and Pawnee National Grassland
AND FOR
White River National Forest

US BUREAU OF LAND MANAGEMENT

By: Jamie Connell
Jamie Connell, Field Manager, Glenwood Springs Resource Area

COLORADO DEPARTMENT OF NATURAL RESOURCES, COLORADO DIVISION OF WILDLIFE

By: Thomas E. Remington
Thomas E. Remington, Director, Colorado Division of Wildlife

The authority and format of this instrument has been reviewed and approved for FS signature.

Luann Waida 4/11/08
LUANN WAIDA Date
FS Agreements Coordinator

Attachments to ALIVE MOU

Table 1. Linkage Interference Zones and Recommended Mitigation

Life Zones	Linkage Interference Zones	Animal-Vehicle Collisions	Proposed Mitigation
Western Slope Foothills Glenwood Springs to Avon (mp 116 to mp 170)	Zone 1: Dotsero (mp 131.4 to mp 134.5) <u>Setting:</u> <ul style="list-style-type: none"> Predominantly sagebrush with little tree cover. The Nature Conservancy (TNC) recently purchased a conservation easement on the Bair Ranch property near this zone, which will enhance and preserve wildlife movement opportunities in this area. <u>Wildlife Movement:</u> <ul style="list-style-type: none"> Known movement corridor for deer and elk. Area fairly heavily used for crossing. Most deer and elk in this zone cross from mp 133 west to the mouth of the Glenwood Canyon, avoiding the nearby lakes south of I-70 where several developments are under construction. Mule deer severe winter range and winter concentration areas on both sides of I-70. Elk winter range north of I-70. Located adjacent to the BLM Glenwood Canyon lynx linkage that provides movement between Flattops Wilderness and Red Tables in WRNF. CDOW indicates that as few as 30 percent of the roadkills in this area are ever reported. <u>Existing Structures and Fencing:</u> The existing transportation underpasses in this area are not being used as wildlife crossings and are not suitable for wildlife.	1.4 per mile per year	<ul style="list-style-type: none"> mp 132.5 to mp 132.8: Repair/replace wildlife fencing, as appropriate. mp 132.5 to mp 132.8: Redesign fence in areas prone to rockfall (approximately 100 feet); use concrete barrier/fence combination.
	Zone 2: Eagle County Airport to Town of Eagle (mp 142.0 to mp 145.3) <u>Setting:</u> <ul style="list-style-type: none"> Open piñon-juniper woodland near I-70. Riparian forest and shrub habitats. Adjacent to the Eagle River. Rapid development through the 1990s occurred in this area around Eagle County Airport. Planned developments in this area include, Frost Creek, and Diamond S Ranch developments south of I-70. <u>Wildlife Movement:</u> <ul style="list-style-type: none"> CDOW describes this section of I-70 as a highway crossing area for big game. Provides for movement to and from deer and elk severe winter range, winter concentration areas, and fawning/calving habitat to the north and south of I-70. Mule deer severe winter range areas on north and south of I-70. Elk severe winter range on north of I-70 on BLM lands. Lands managed by the WRNF as elk habitat are located to the south of the zone. <u>Existing Structures and Fencing:</u> Game fencing exists through the entire length of zone on both sides of I-70, for approximately 35,850 total linear feet.	0.39 per mile per year	<ul style="list-style-type: none"> mp 143.1: Remove fill at bridge west of Cottonwood Creek to increase height, making it more suitable for an elk crossing. mp 142.0 to mp 142.3: Realign wildlife fencing in steep areas north of I-70 where rockfall damage occurs, and repair damaged fencing as necessary. mp 145.5: Remove berm from south entrance of passage. mp 143.8: Investigate potential costs for conservation easement on private land surrounding the Eagle River.
	Zone 3: Eagle to Wolcott (mp 147.3 to mp 153.4) <u>Setting:</u> <ul style="list-style-type: none"> The eastern portion of the zone is moderately forested, while the western portion closer to the town of Eagle is sparsely forested. Zone extends through Red Canyon. Steep slopes on both sides of highway for most of its length. Large areas of BLM lands are located to the north and south with mixed private lands in between. Recreation uses near the zone include numerous BLM trails. <u>Wildlife Movement:</u> <ul style="list-style-type: none"> Elk severe winter range southwest of I-70. Mule deer severe winter range, winter concentration to the south of I-70. Forest carnivores including bear and mountain lion frequent the area. Providing for lynx movement across shrub-steppe habitats from Flattops Wilderness in the east to Castle Peak in the west, the BLM has designated this zone as a lynx linkage area. <u>Existing Structures and Fencing:</u> Solid 8-foot fencing exists on both sides of I-70 through the entire zone. No suitable wildlife crossing structures are currently located through this area.	0.39 per mile per year	<ul style="list-style-type: none"> mp 153.8: Extend existing fencing to I-70 bridge across Eagle River. mp 151.8: Recommend new wildlife crossing structures to be as large as possible depending on engineering design requirements and topographic limitations of the area. Investigate median barriers with gaps large enough to accommodate small mammals (for example, raccoons and skunks). Place barriers every 0.25 mile. Investigate costs of conservation easement around mp 151.8.

Table 1. Linkage Interference Zones and Recommended Mitigation (Continued)

Life Zones	Linkage Interference Zones	Animal-Vehicle Collisions	Proposed Mitigation
Western Slope Foothills – Continued Glenwood Springs to Avon (mp 116 to mp 170)	Zone 4: Wolcott to Avon (mp 154.5 to mp 166.5) <u>Setting:</u> <ul style="list-style-type: none"> Sparsely forested. Rapid development around Avon and Edwards occurred through the 1990s. Significant development is still occurring through the eastern half of the zone, including 250 housing units, soccer fields, a school, and a church south of mp 163. Red Sky Ranch, a large development of 35-acre lots southwest of the zone, is being subdivided into 15-acre lots. The BLM recently completed a 1,400-acre land swap to private interests near the zone in exchange for lands outside Grand Junction. <u>Wildlife Movement:</u> <ul style="list-style-type: none"> Heavily traveled by carnivores, including black bear and mountain lion (Bellyache Ridge); designated by CDOW as a human conflict area for both species. CDOW considers most of the area a highway conflict zone for deer and elk. Elk and mule deer severe winter range and winter concentration both sides of I-70. The area south of I-70 through the eastern portion of this zone contains elk severe winter range and calving areas. Federal lands to the north are managed by the WRNF for deer and elk winter range, while the Holy Cross Wilderness is located to the south. Rapid development, combined with habitats historically occupied by deer, elk, and forest carnivores has resulted in wildlife conflicts in this zone. The zone is located at the western edge of the Castle Peak BLM lynx linkage. BLM has designated the area between mp 154.0 and 160.0 as lynx habitat linkage. <u>Existing Structures and Fencing:</u> This linkage interference zone currently has no CDOT wildlife fencing.	1.2 per mile per year	<ul style="list-style-type: none"> mp 153.9 to mp 159.0: Add wildlife fencing on south side of I-70 between Wolcott interchange and where I-70 crosses the Eagle River. Create gaps with berms or one-way gates to enable wildlife to escape from highway side. Recommend new wildlife crossing structures to be as large as possible depending on engineering design requirements and topographic limitations of the area. mp 155.3 or mp 155.6: Add crossing structure across I-70 and US 6 north and west of Bellyache Ridge, just south of Alkali Creek. mp 159.7: Add crossing structure south of Red Canyon Creek and Bear Gulch, south and east of existing motorized underpass. mp 163 to mp 166.5: Add wildlife fencing on both sides of I-70. Investigate conservation easements for each proposed crossing.
Western Slope Montane Avon to East Vail (mp 170 to mp 182)	Zone 5: Dowd Canyon (mp 169.5 to mp 172.3) <u>Setting:</u> <ul style="list-style-type: none"> The area has little forest cover adjacent to I-70. Steep slopes on the north side are a significant rockfall hazard. The WRNF surrounds the zone to the north and south, while pockets of residential development are located to the east and west. Federal lands and good habitat are located north and south. Wildlife fencing has been damaged. <u>Wildlife Movement:</u> <ul style="list-style-type: none"> This is a western Vail north-south connection for wildlife movement. Elk winter range/severe winter range is located south of the zone. Important elk and mule deer migration corridor. Camera studies performed by CDOW have shown the area to be used by elk, deer, and mountain lion. Bear and lion conflict areas. Designated as a lynx linkage area by USFS. <u>Existing Structures and Fencing:</u> This linkage interference zone has median and guardrail barriers along most of I-70. A concrete box culvert and several land leases by CDOW are located in this zone for wildlife movement. The existing crossing structure is long and only 10 feet in height, inhibiting the movement of large elk. Most of I-70 in this zone includes CDOT wildlife fencing on both sides, which is often damaged by rockfall on the north and winter snowplowing activities from residences to the south. A paved bike path with restricted winter usage is located near the existing crossing structure in addition to several trails and a river rafting "put in" location. Eagle County plans to expand the paved bike path to the west.	0.59 per mile per year	<ul style="list-style-type: none"> Recommend new wildlife crossing structures to be as large as possible depending on engineering design requirements and topographic limitations of the area. mp 170.2 to mp 172.5: Replace existing wildlife fencing with reinforced fence through rockfall area north of I-70, where current fencing has numerous holes. CDOT should coordinate with community at West Vail to avoid damage caused by plowing snow against fences.

Table 1. Linkage Interference Zones and Recommended Mitigation (Continued)

Life Zones	Linkage Interference Zones	Animal-Vehicle Collisions	Proposed Mitigation
<p>Subalpine East Vail to US 40 (mp 182 to mp 233)</p>	<p>Zone 6a and 6b: Upper and Lower West Vail Pass (mp 181.7–188.5) <u>Setting:</u></p> <ul style="list-style-type: none"> Coniferous forest grows to the edge of both sides of the highway through most of the zone. Bridges are highly effective as wildlife crossings to connect forest lands from mp 182.5–185.3. Eagles Nest Wilderness Area is located directly north of I-70 through most of the zone. The land on the southwest side of lower west Vail Pass is forest property managed as forested landscape linkage, intended to be maintained for a connection between Eagles Nest Wilderness Area to the east and the Holy Cross Wilderness Area to the southwest. The forest lands at the top of upper west Vail Pass are managed for year-round motorized backcountry recreation to the west and for nonmotorized backcountry recreation to the east. <p><u>Wildlife Movement:</u></p> <ul style="list-style-type: none"> Surrounded by the WRNF, this zone is used heavily by wildlife and has a low amount of roadkill. Designated as a lynx linkage area by the USFS; based on habitat of the area, lynx usage is highly probable. (Note: Two lynx were killed within a short distance of each other in vehicle collisions on upper west Vail Pass, one in 1999 and one in 2004, both near mile marker 187.) Bighorn sheep range north. Bear and lion conflict area. <p><u>Existing Structures and Fencing:</u> Six open-span bridges are located contiguously in the eastbound and westbound direction of I-70 through lower west Vail Pass, although there are no existing crossing structures through upper west Vail Pass. Animals in the area are found to readily jump over median barriers but showed reluctance to cross in areas with guardrail structures (Barnum 2002). The offset lanes of the interstate and associated jersey barriers are significant movement barriers to wildlife in portions of this LIZ.</p>	<p>0.03 per mile per year</p>	<ul style="list-style-type: none"> mp 188.0 and mp 186.3: Recommend new wildlife crossing structures to be as large as possible depending on engineering design requirements and topographic limitations of the area. mp 188.0 to mp 186.3: Add CDOT wildlife fencing between proposed structures on both sides of I-70.
	<p>Zone 7: East Vail Pass to Copper Mountain (mp 190.4 to mp 194.0) <u>Setting:</u></p> <ul style="list-style-type: none"> Most of zone is forested, although not as densely as west Vail Pass. Significant open areas exist. The eastbound and westbound lanes of I-70 are separated through this section with an open wetland area containing West Tenmile Creek. The zone is surrounded by ski areas, forest property managed as forested landscape linkage, nonmotorized backcountry recreation, and primitive wilderness. Several parcels of private land are located within the east end of the zone, just west of Copper Mountain near the Guller Creek and West Tenmile Creek bridges. In addition to the Tenmile-Vail Pass National Recreation Trail that runs the length of the zone, USFS trails are located through Stafford Gulch, Wilder Gulch, Corral Creek, and Guller Creek. <p><u>Wildlife Movement:</u></p> <ul style="list-style-type: none"> This zone is located within the USFS Vail Pass lynx linkage zone. CDOW indicates that wildlife cross through drainages predominantly at Smith Gulch and Guller, Stafford, Wilder, and Corral creeks. CDOW also noted that forest carnivores are frequently seen crossing at Stafford Creek. The forest cover is less dense in this area than that seen on west Vail Pass. <p><u>Existing Structures and Fencing:</u> Five existing open-span bridge structures occur in the eastbound direction through this zone. Only one structure exists in the westbound direction, and it is not directly adjacent to a corresponding structure in the eastbound direction.</p>	<p>0.68 per mile per year</p>	<ul style="list-style-type: none"> Recommend new wildlife crossing structures to be as large as possible depending on engineering design requirements and topographic limitations of the area. mp 192.5: Add crossing structure to westbound side of I-70 north of Stafford Creek. mp 193.4: Add crossing structure to westbound side of I-70 north of Guller Creek. Add berms and screening vegetation to guide wildlife between existing Wilder Gulch (eastbound) and Corral Creek (westbound) crossings. Add berms and screening vegetation to guide wildlife between existing Smith Gulch (eastbound) and Corral Creek (westbound) crossings. Provide space between guardrail structures and the road to allow wildlife jumping over barriers to avoid jumping directly into traffic.
	<p>Zone 8: Officers Gulch/Owl Canyon (mp 195.5 to mp 200.5) <u>Setting:</u></p> <ul style="list-style-type: none"> Area dominated by extreme slopes on all sides; canyon opens up to Wheeler Flats area near Copper Mountain (south) and Frisco (north). Borders Eagles Nest Wilderness Area (west) and WRNF lands managed for nonmotorized backcountry recreation and scenic byways, which is conducive to wildlife habitat. This steep canyon area has several water bodies, including Uneva Lake, Officers Gulch Pond, and Wheeler Flats Ponds. The area is heavily forested with tree cover for wildlife use close to I-70. While the area is encompassed by the WRNF, the land surrounding Uneva Lake to the east of I-70 is a forest inholding, although the owners have indicated to the USFS that they do not plan to develop the land. Several other private mine inholdings are located to the east of I-70 in this area, although they are located on very steep slopes. The lands are managed by the WRNF as pristine wilderness, nonmotorized backcountry recreation, and scenic byways or travel corridors. The Tenmile-Vail Pass National Recreation Trail runs through the length of this linkage interference zone. <p><u>Wildlife Movement:</u></p> <ul style="list-style-type: none"> Connection between habitats in the Gore Mountain Range and Tenmile Mountain Range, especially for carnivores. CDOW considers mp 200.8 a black bear movement corridor. Mule deer migration corridor runs parallel. Located within the USFS Officers Gulch lynx linkage area, providing movement between Eagles Nest Wilderness Area and the Tenmile Mountain Range. USFS biologists have indicated that most of the ungulate movement in the area is lateral with the highway. <p><u>Existing Structures and Fencing:</u> A single box culvert is located at mp 199.6. Box culverts are viewed as acceptable structures for the area by USFS and CDOW for most carnivore highway crossing activity in the area. An interchange at Officers Gulch is used as an informal overnight truck pullover. WRNF manages an area adjacent to Officers Gulch Pond that is proposed as an overnight camping area, although the area is currently not for overnight use and USFS indicated overnight use would potentially inhibit carnivore movement.</p>	<p>0.24 per mile per year</p>	<ul style="list-style-type: none"> mp 198.0, mp 199.2, and mp 200.8: Recommend new wildlife crossing structures to be as large as possible depending on engineering design requirements and topographic limitations of the area. Investigate amending WRNF plan to exclude overnight use of area surrounding Officers Gulch Pond, planned and secondarily managed as a campground site.

Table 1. Linkage Interference Zones and Recommended Mitigation (Continued)

Life Zones	Linkage Interference Zones	Animal-Vehicle Collisions	Proposed Mitigation
<p>Subalpine – Continued East Vail to US 40 (mp 182 to mp 233)</p>	<p>Zone 9a: Laskey Gulch (mp 207.0 to mp 209.7) <u>Setting:</u></p> <ul style="list-style-type: none"> The area is moderately forested, transitioning to sagebrush closer to the town of Dillon. Located between Dillon and a steep pass leading to the EJMT and constructed on steep cut-and-fill slopes of I-70. In Dillon, condominiums have been built along the western edge of the linkage interference zone on the south side of I-70 within 0.5 miles of Laskey Gulch. Sound walls are currently being constructed adjacent to the condominiums. Due to the vertical height of these walls, they would be considered a movement barrier to most species of terrestrial wildlife. Solid median and guardrail barriers are located through the length of the linkage interference zone, and no crossing structures currently exist. This zone is within the WRNF and is managed as forested landscape linkage. Most private lands are developed in this area, although the Denver Water Board possesses several large undeveloped inholdings in the central portion of the zone. <p><u>Wildlife Movement:</u></p> <ul style="list-style-type: none"> Laskey Gulch is an important connection for deer, elk, and bear. Elk severe winter range habitat north and south of I-70. Elk and mule deer highway conflict areas. Mule deer and bear migration corridors. Potential lynx crossing. Located within the USFS Loveland Pass lynx linkage area, this zone provides for north-south lynx movement from the Ptarmigan Peak Wilderness Area and Williams Fork River area to forest lands south of I-70. <p><u>Existing Structures and Fencing:</u> CDOW noted that resident populations of elk and deer in the area were not obstructed by the golf course south of I-70 and would benefit from a crossing structure at Laskey Gulch to reconnect lands managed by the WRNF as deer and elk winter range north and south of I-70.</p>	<p>0.50 per mile per year (total zone 9)</p>	<ul style="list-style-type: none"> mp 208.3: Recommend new wildlife crossing structures to be as large as possible depending on engineering design requirements and topographic limitations of the area. Coordinate with local planners to ensure that area zoning accommodates a wildlife structure in this location. Continue interagency efforts to ensure that future land planning and zoning efforts improve the viability of the wildlife corridor.
	<p>Zone 9b: Hamilton Gulch/Dead Coon Gulch (mp 210.7 to mp 212.6) <u>Setting:</u></p> <ul style="list-style-type: none"> With the exception of cut-and-fill slopes of I-70, this area is densely forested. This zone includes 3- to 5-foot concrete center barrier structure throughout its length, and approximately 2,300 feet of guardrail. Straight Creek follows the length of the zone along I-70. Several large road cuts and a runaway truck ramp are located north of I-70 in this zone. Straight Creek and wetland areas are located below I-70 through the zone to the south. Hamilton Gulch reaches I-70 at mp 211.5, while Dead Coon Gulch lays further to the east at mp 212.2. Members of the ALIVE committee from both the USFS and CDOW commented that they felt that Hamilton Gulch and Laskey Gulch were both important and that they should both be considered equally. <p><u>Wildlife Movement:</u></p> <ul style="list-style-type: none"> High usage by deer and elk along Hamilton Gulch and near Dead Coon Gulch to the east. Located within the USFS Loveland Pass lynx linkage area and managed as forested landscape linkage. The USFS noted that numerous elk and deer tracks are seen through the area and the zone would connect areas north of I-70 managed as forested landscape linkage and pristine wilderness to lands managed for forested landscape linkages south of I-70. <p><u>Existing Structures and Fencing:</u> I-70 was constructed on large fill slopes through this zone and no crossing structures currently exist, although two 4-foot plastic pipes and one corrugated metal pipe are located in the zone. Solid median barriers and an offset height between eastbound and westbound directions of I-70 are located through the length of this zone.</p>	<p>As above</p>	<ul style="list-style-type: none"> mp 212.2: Recommend new wildlife crossing structures to be as large as possible depending on engineering design requirements and topographic limitations of the area.

Life Zones	Linkage Interference Zones	Animal-Vehicle Collisions	Proposed Mitigation
	<p>Zone 10: Herman Gulch/Bakerville (mp 216.7 to mp 220.8) <u>Setting:</u></p> <ul style="list-style-type: none"> Herman Gulch is located 3 miles east of EJMT, surrounded by the ARNF. The forest lands are managed for scenery, ski-based areas (Loveland), and nonmotorized backcountry recreation. Six residential structures are located near I-70 north of the underpass at Herman Gulch. The Continental Divide National Scenic Trail traverses through this area along the Herman Gulch trail to the north of I-70 and along the Loveland to Bakerville trail to the south of I-70. <p><u>Wildlife Movement:</u></p> <ul style="list-style-type: none"> Considered important lynx habitat. Herman Gulch lynx linkage area is located within this zone, designated as a connection between suitable lynx habitats to the north and south of I-70. If quality habitat north of I-70 were combined with that south of the highway, a more viable lynx range would be possible, especially if connectivity across the Corridor improved. ARNF has designated the area a lynx linkage zone. Boreal toad breeding area. Snowshoe hare inhabit the Mount Bethel Avalanche Path east of Herman Gulch and other avalanche paths in the area, providing forage for lynx and other forest carnivores. USFS and CDOW indicated that evidence existed that two female lynx were using the area as home range. A lynx was killed on I-70 by a vehicle in the area of Herman Gulch in 2000. Another female (pregnant with 2 fetuses) was killed near eastbound mp 217 on 5/19/2005. <p><u>Existing Structures and Fencing:</u> Motorists use the shoulder of I-70 as informal parking on the south side of I-70 near mp 219. Few median barriers are located through this zone, although guardrails are located through most of its length.</p>	Data Unavailable	<ul style="list-style-type: none"> mp 217.3: Design corridor to allow free movement of wildlife under I-70 within this zone. Continue interagency efforts to ensure that future land planning and zoning efforts improve the viability of the wildlife corridor.

Table 1. Linkage Interference Zones and Recommended Mitigation (Continued)

Life Zones	Linkage Interference Zones	Animal-Vehicle Collisions	Proposed Mitigation
<p>Eastern Slope Montane Silver Plume to Mount Vernon Canyon (mp 233 to mp 255)</p>	<p>Zone 11: East of Empire on US 40 (off I-70 – approximately mp 232.0) <u>Setting:</u></p> <ul style="list-style-type: none"> North-facing slope heavily forested; south face primarily bare exposed rock cliffs. ARNF is located just to the east of this zone. <p><u>Wildlife Movement:</u></p> <ul style="list-style-type: none"> Steep slopes used by bighorn sheep on both sides of US 40. This zone was delineated specifically to address issues with bighorn sheep, which approach the edge of the highway to lick salt and are sometimes hit by vehicles at the edge of the I-70 and US 40 interchange. Bighorn sheep generally do not attempt to cross I-70 (except near the Henderson Mine west of this zone) but do cross US 40 and are frequently hit west of Empire. Mule deer winter concentration north; mule deer highway conflict area. Mountain lion conflict area. <p><u>Existing Structures and Fencing:</u> CDOW stated that bighorn sheep would not use an underpass or enclosed structure to cross a roadway.</p>	0.42 per mile per year	<ul style="list-style-type: none"> Good place for overpass structure 4.2 miles west of US 40/I-70 interchange, primarily for bighorn sheep crossing. Investigate using jersey barriers or other barrier structures on both US 40 and I-70 to keep sheep away from road edge.
	<p>Zone 12: Fall River (mp 237.2 to mp 238.2) <u>Setting:</u></p> <ul style="list-style-type: none"> Primarily forested, though not densely. No wildlife fencing. Relatively gentle slopes throughout zone. Located entirely on private land with the ARNF approximately 2 miles away to the north and south. Numerous residences are located along Fall River Road and several along US 40. <p><u>Wildlife Movement:</u></p> <ul style="list-style-type: none"> The Fall River area provides a significant break in the surrounding topography and functions as a movement corridor for mule deer, elk, bighorn sheep, mountain goat, black bear, and mountain lion. CDOW noted that carnivores are frequently hit in this area, and there are concerns about elk populations becoming habituated and inhabiting the area year-round. Bighorn sheep, elk, bear, and mountain lion frequent the area and are hit occasionally. Resident elk living close to populated areas are a concern in this area. Elk calving 0.25 miles north. Mule deer severe winter and winter concentration north. The ALIVE Committee identified this zone, however, CDOW has concerns regarding the introduced mountain goats currently inhabiting the Mount Evans area south of I-70 having the ability to reach areas north of I-70 and compete with native bighorn sheep. <p><u>Existing Structures and Fencing:</u> Two concrete box culverts, one 4 feet in height at Georgia Gulch, the other 10 feet in height at Fall River, currently exist in this linkage interference zone. An underpass is located at the intersection of US 40 and I-70. Solid median barriers are located through the length of the linkage interference zone and a guardrail is located on the south side of I-70 through most of the zone.</p>	Reported numbers too low for average	<ul style="list-style-type: none"> Recommend new wildlife crossing structures to be as large as possible depending on engineering design requirements and topographic limitations of the area. Factor improvements into bridge redesign (Fall River Road Interchange) such as a wider span and leaving adequate space along road and river for wildlife passage.

Life Zones	Linkage Interference Zones	Animal-Vehicle Collisions	Proposed Mitigation
	<p>Zone 13: Mount Vernon Canyon (mp 246.5 to mp 258.1) <u>Setting:</u></p> <ul style="list-style-type: none"> • Several Denver Mountain Park and Jefferson County open space properties are situated in or adjacent to this zone. • Mountain subdivisions have been extensively built through this area. • The 2,340-acre Denver Mountain Park (Genesee) extends north and south of I-70 between mp 251 and 254 and approximately 20 percent is fenced for bison rangeland adjacent to I-70. The park includes open forests and grasslands. <p><u>Wildlife Movement:</u></p> <ul style="list-style-type: none"> • Overall, this zone sees more reported roadkill than any other zone through the Corridor. • Several deer and elk highway conflict areas mapped by CDOW. • Bear summer and human conflict areas south of I-70. • Due to extensive subdivisions, elk in zone have habituated to human presence. • Resident elk are frequently hit by vehicles; groups of five or more elk have been killed in individual accidents in this linkage interference zone. <p><u>Existing Structures and Fencing:</u> CDOW indicated that fencing in this area would be detrimental and could trap wildlife in the roadway. CDOW also indicated that it would be difficult to direct wildlife to crossing structures in this zone. No wildlife fencing and very little guardrail and median barriers exist in this zone. No suitable wildlife crossing structures currently exist for larger mammals, except for a transportation dirt road underpass at Soda Creek near mp 249.</p>	2.37 per mile per year	<ul style="list-style-type: none"> • Recognized as a problem area; mitigation measures currently being evaluated. • Fencing throughout the length of the zone may be the only solution. However, CDOW has stated that fencing could be detrimental to the wildlife in the area and has suggested that wildlife fencing through the zone not be considered as a mitigation measure for the area. • Investigate costs of adding intelligent signs to warn motorists about wildlife movement.

Figure 1. Wildlife Linkage Interference Zones

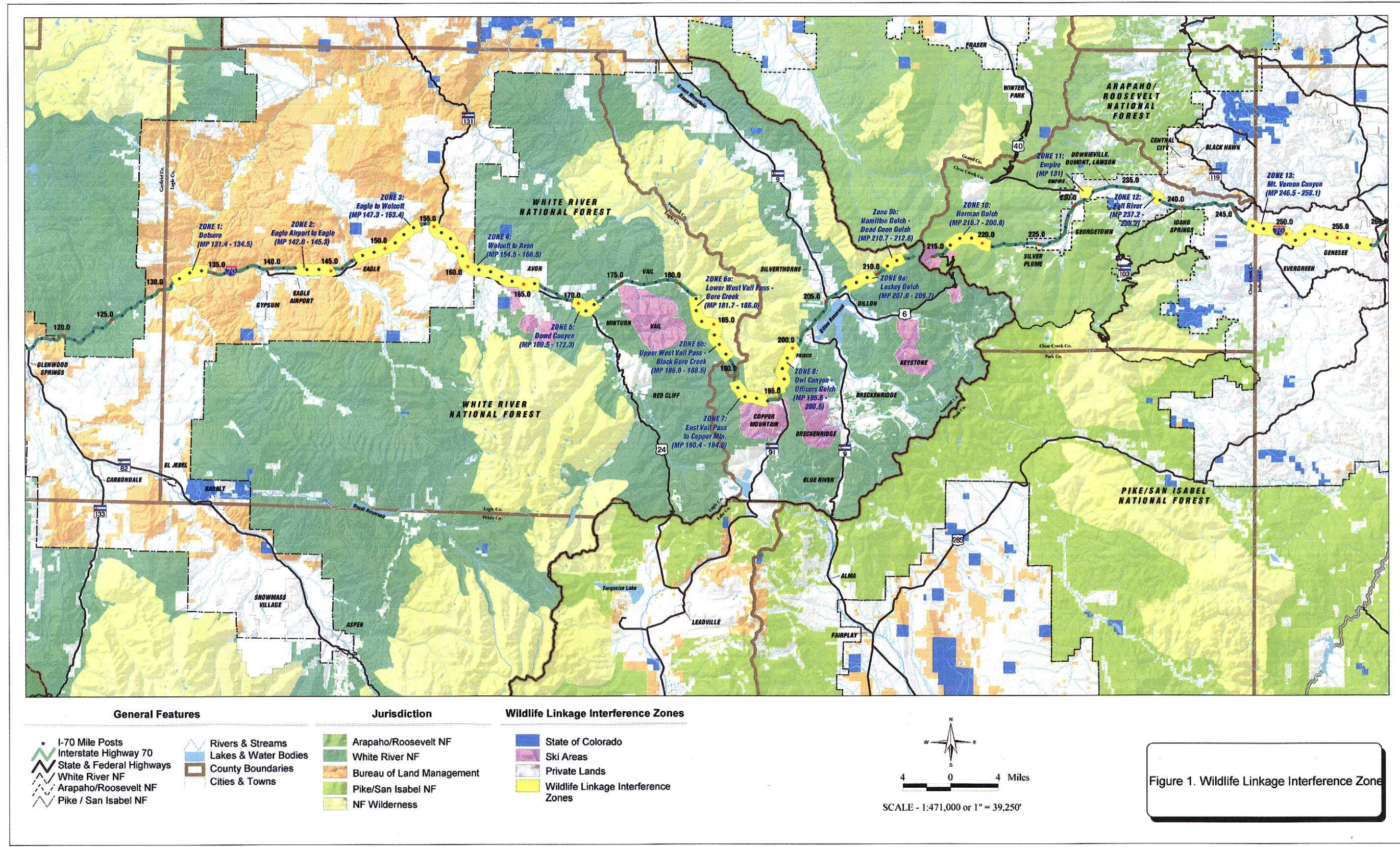


Figure 1. Wildlife Linkage Interference Zone