

Meeting Notes



Project: I-70 Floyd Hill to VMT
Meeting: ALIVE Meeting #5
Date: February 26, 2020, 9:00am-12:00pm
Location: CDOT Region 1, 425A Corporate Circle, Golden, CO, Lookout Mountain Room

Meeting Objectives:

- Present and discuss in detail Mitigation Option B (Alternative) in the Beaver Brook LIZ
- Obtain consensus from the ALIVE Committee on which Option to pursue in the Beaver Brook LIZ
- Review and discuss wildlife considerations for the three alternative alignments (Tunnel Alternative, North and South Frontage Road Options; and Canyon Viaduct Alternative) in the Clear Creek LIZ and obtain input for inclusion in the CSS Alternatives Matrix

Agenda:

- 1) Welcome / Introductions
- 2) Follow-up on Action Items from January ALIVE Meeting
- 3) Beaver Brook LIZ
 - a) Review Mitigation Option A: Overpass
 - b) Mitigation Option B: Alternative Mitigation
 - i) Potential alternative location(s) for wildlife crossings mitigation outside of the project area on I-70 in R1 (matrix)
 - ii) In project area wildlife fencing mitigation to reduce wildlife-vehicle collisions
 - c) ALIVE recommendation for Beaver Brook LIZ mitigation
- 4) Clear Creek LIZ
 - a) Review Alternatives / Options
 - i) Tunnel Alternative: North and South Frontage Road Design Options
 - ii) Canyon Viaduct Alternative
 - b) Discussion of wildlife connectivity values, challenges, and priorities
- 5) Next Steps / Action Items



Floyd Hill - ALIVE ITF Meeting #5 Notes
February 26, 2020, 9 AM to 12 PM
CDOT Golden - Lookout Mountain Conference Room

Welcome and Introductions

The meeting began with Vanessa Henderson, Colorado Department of Transportation's (CDOT) I-70 Mountain Corridor Environmental Manager, welcoming the group, which was followed by roundtable self-introductions. Attendees are listed at the end of these notes. Alison Deans Michael, US Fish and Wildlife Service (USFWS), is retiring and was recognized as the longest standing member of the ALIVE Committee. Colorado Parks and Wildlife (CPW) members were not able to attend the meeting so Julia Kintsch with ECO-resolutions, and Francesca Tordonato, CDOT's Region 1 Environmental Program Manager, followed up with them and to obtain input on items presented during the meeting. (A summary of the follow-up is included as an attachment to these notes.)

Follow-up on Action Items from January 2020 ALIVE meeting

Many of the action items from the January 2020 ALIVE meeting were discussed as part of the meeting and are included in these notes. However, two items were discussed up front as information learned during the follow-up process affects the discussion about Mitigation Option B: 1) setting up a mitigation fund and 2) purchasing property at the top of Floyd Hill.

1) Mitigation Fund

To determine the applicability of a wildlife crossing mitigation fund for the I-70 Mountain Corridor, Vanessa and Francesca consulted with Jeff Peterson, CDOT Wildlife Program Manager. Jeff said it took several years to set up the existing CDOT Lynx In-lieu Fee Mitigation Fund and explained that mitigation dollars could remain unused in the fund for years before mitigation is constructed. With this information and given that it is unlikely that CDOT would use this fund for alternate crossing locations on future projects (i.e. this would be a one time or rare event), CDOT decided that it would be better to pursue alternate crossing project(s) concurrent with the Floyd Hill project rather than investing the time and effort in the creation of a fund for a one-time mitigation option.

Question: What if the mitigation funding doesn't line up? What if there is a surplus or not enough?

Answer: Clarifying the budget and identifying an actual substitute project would reduce the uncertainty about equivalent costs. CDOT's intention is to dedicate the same amount of money on Option B as would be required for Option A. This may result in more than one crossing being constructed.

Question: How would the new crossing or crossings be constructed? Would they be part of the Project or separate?

Answer: There are options to construct as part of the project with the same contractor or separately, but the funding and commitment would be part of this Project. The mitigation commitment would be included in the Project and would need to be completed before the Project could be closed out.

2) Property Purchases at the Top of Floyd Hill

The Colorado Attorney General advised against early discussions with property owners since the Project timing and right-of-way needs are uncertain. However, CDOT Right-of-Way staff provided information on the property values for discussion purposes. It could cost approximately \$7 to \$9 million to purchase

the four properties around the elk meadow. Purchasing these properties would reduce funds available for the construction of a crossing structure(s). Habitat availability and protection is an important consideration for wildlife crossing success; however, habitat protection alone does not mitigate for the wildlife barrier impacts associated with the project. Therefore, purchasing all four parcels has been eliminated from further consideration. However, purchasing 1-2 parcel(s) may still be an option combined with construction of a wildlife crossing structure in a different location along the corridor, depending on costs and the availability of funds.

Beaver Brook LIZ, Mitigation Option A: Floyd Hill Wildlife Overpass

Julia reminded the group of the location for Mitigation Option A, the proposed crossing (overpass) at the top of Floyd Hill. The current cost estimate for the crossing is \$17.6 million.

Julia provided information on surrounding land uses adjacent to the proposed crossing. On the north, there is a lot of protected land or low-density residential. Adam Springer, Clear Creek County, said that on the south side of I-70 in Clear Creek County there is potential for higher density commercial development but there are some water infrastructure constraints in this area.

Mitigation Option B: Alternative Wildlife Crossings Mitigation

Julia presented six alternative wildlife crossing locations on I-70 that were in the boundaries of CDOT Region 1 (see attached matrix). These locations were identified by reviewing previous recommendations (e.g., I-70 EcoLogical Study; 2014 Traffic and Revenue Study) and considering, for each location, biological value, wildlife-vehicle collision rates, land ownership and land use, construction feasibility and a cost estimate for constructing a crossing at that location. These costs are high-level estimates for comparative purposes and have not been formally reviewed, so these values are subject to change.

Julia noted that the 2003 rankings of each Linkage Interference Zone (LIZ) were included in the matrix for reference; however, these rankings were developed over 15 years ago and need to be viewed in the context of the ALIVE Committee's thinking at the time. Julia suggested the rankings weighted wildlife value more heavily than wildlife-vehicle collisions (WVCs). Alison agreed and explained that in 2003, the ALIVE Committee didn't think much could be done in the high WVC areas because there were multiple access points in those locations. Since 2003, however, crossings had been successfully implemented in these types of landscapes with access points through the fencing controlled with wildlife guards. Julia also suggested that Canada lynx reintroductions may have influenced the 2003 rankings. The species had recently been reintroduced in Colorado, and individual populations and animal movements were not well established. Alison confirmed that the rankings were geared toward lynx and explained that a breeding population of lynx has not established in this area despite earlier predictions.

Crossing Location 1 - Genesee

This location is within the Mt. Vernon LIZ and it has the highest rate of WVCs within the corridor. CPW has identified this location as an important wildlife crossing zone and CDOT has identified it as a WVC hot spot for safety improvements. The 2011 EcoLogical study documented elk, mule deer, and other species here.

The crossing would be an underpass situated near Mt Vernon creek through a large embankment.

Question: Would the crossing replace the culvert?

Answer: No. The culvert would not necessarily need to be replaced. There are examples of crossings above or adjacent to drainages that keep the existing drainage culverts in place. The riparian

corridor still attracts wildlife to the location.

A structure in this location could potentially be constructed entirely within CDOT right-of-way. Land on the south side of the interstate appears to be HOA open space. On the north side there is a vacant parcel that is for-sale-by-owner. If land in these areas could be protected it would be very beneficial to the wildlife in this area. Jefferson County zoning is not indicative of future development plans and a lot of land is zoned as “potential development” even where there are no immediate development plans or an area is already built out. If this location is selected, additional investigation would be needed to assess land use suitability.

Crossing Location 2 - Ruby Ranch

This location is within the Beaver Brook LIZ but outside of the Project area. A high rate of WVCs in this area have been reported to law enforcement. Mule deer is the primary target species, although other wildlife would also benefit. It would not serve the elk population at the top of Floyd Hill but elk could opportunistically use a crossing structure at this location.

The structure would be a wildlife underpass and it could potentially be constructed entirely within the existing CDOT right-of-way. There is a 30-foot-wide median between opposing traffic lanes. The surrounding zoning is primarily defined as ‘suburban rural’ with some parcels zoned for planned development. If this location is selected, additional investigation would be needed to assess land use suitability.

Crossing Location 3 - Soda Creek

This location is within the Beaver Brook LIZ and within the Project area. It would serve deer but is not expected to serve the elk herd at the top of Floyd Hill. There are two options for the crossing. The existing bridge could be lengthened, or a new bridge could be built at the creek crossing, which is approximately 300 feet east of the existing bridge. The existing bridge can function for wildlife passage but it is not ideal because it is a low-volume road. CPW has reported that some deer and other species cross under the roadway bridge. There is existing wildlife fencing on the north side of the interstate that will need to be replaced/extended as part of the Project whether or not a crossing structure is built.

Alison noted that Soda Creek is within potential Preble’s meadow jumping mouse (PMJM) habitat. Constructing a new riparian crossing could potentially improve PMJM habitat connectivity. **Follow-up: After the meeting, Francesca looked up PMJM habitat maps and determined that this location is not contiguous with PMJM occupied range. She also noted that no trapping has occurred at Soda Creek and determining PMJM presence would require further investigation.**

Question: What is the date range of the WVC data?

Answer: Julia will follow up. It is either 5 or 10 years; she will confirm and add the note in the matrix. **Follow-up response: the calculation of WVC crashes per mile per year is based on the most recent five years of available data, from 2014-2018.**

Crossing Location 4 - US 40

This location is within the Empire Junction LIZ on US 40. The target species for this location is bighorn sheep. It is a very important location for sheep movement and provides a genetic connection between two subpopulations of the large Georgetown herd, which is the largest in the state. CPW has identified this location as a high priority crossing area. It is recommended that a crossing at this location be designed to accommodate movement by other species as well as bighorn sheep.

There are private lands on the north and south sides of US 40 in this location. The north side is undevelopable due to steep slopes. Adam said the landowner on the south was originally planning on developing a quarry but that did not pan out and now he is interested in finding a new use for the property and may be willing to consider a conservation easement.

The cost of this crossing is less than the others because it would span a much narrower roadway footprint but there are constructability issues with rock cuts and blasting.

Question: What about the WVC area further south, along the I-70 westbound on-ramp? Would WVCs increase in this location if a wildlife crossing was constructed over US 40? Would the crossing result in more bighorn sheep movement to this area?

Answer: The specific issues with WVCs along the on-ramp to I-70 are unique to that location and are complicated because of the merge where drivers are looking over their left shoulders to enter the highway. The habitat and road salt attractants that result in bighorn WVC at the end of the on-ramp occur regardless of the proposed new crossing and would not be anticipated to increase.

The purpose of this proposed crossing would be to preserve east-west connections on the north side of I-70. This location is in the Empire Junction LIZ but does not address movement across I-70. Wildlife movement across I-70 and WVC impacts to bighorn and other wildlife would still need to be addressed and would be part of the future Empire Junction project.

Question: Could there be additional mitigation at the I-70 on-ramp hotspot as part of developing this crossing?

Answer: The Westbound Peak Period Shoulder Lane project added warning signs. The fence alignment that would be part of the overpass design may consider WVCs in this location.

Crossing Locations 5 and 6

These crossings are located on the western end of the Region 1 boundary, near the Eisenhower-Johnson Memorial Tunnels (EJMT) and are in the Bakerville LIZ. Lands on either side of the interstate are owned by the U.S. Forest Service (USFS) and managed as lynx Linkage Areas. This segment of I-70 was identified as a lynx crossing area because two lynx WVCs occurred here in the early 2000s. However, over the last 15 years lynx activity has remained low in this area.

There are important wetland areas (mapped fens) and boreal toad habitat in these locations. Julia pointed out that creating toad connectivity in this area is an option. Both locations were selected, in part, because they are situated between chain-up stations that have lighting and human activity, which are disruptive for wildlife.

There are a number of challenges to crossings in this location. First, the road grade is steep and would be challenging for building an overpass. Second, there will likely be future interstate improvements in these areas. Any structure built now would have a high probability of being rebuilt to accommodate future highway designs. Additionally, Aurelia Denasha, USFS, said that Loveland Ski Area is planning parking lot expansions and increased snow cat activity in these areas.

Alison asked if providing a crossing in this location would encourage goat population expansion, which would conflict with CPW's goal of reducing disease transmission. CPW's input will be requested to answer this question.

Wildlife Fencing in Project Area

Wildlife fencing from the top of Floyd Hill to east of Soda Creek Road is pertinent to both Mitigation

Options A and B. Julia reviewed the conceptual fencing layout for the Project. She noted that fence ends are often problematic and recommended tying the western extent of the fencing into the Highland Hills interchange. On the north side of I-70, fencing would be installed between US 40 and I-70 because there are multiple access points along US 40 which would diminish the effectiveness of the fencing. Wildlife guards would be needed at each access point but they are not impenetrable and their effectiveness is reduced by snow pack accumulation in the winter. While there is less wildlife activity from the north to south and WVCs have been less of an issue on US 40, WVCs that do occur on US 40 would not be addressed by this fence alignment.

Fencing is more challenging at the east end of the Project because of the steep slopes and guardrail. There is no room to install the fencing at the top of the hill along the north side of I-70 and fencing installed part-way down the slope would be subject to damage from plowed snow and other debris. There is existing fencing at the bottom of the slope on the north side; however, the fence end is open and animals can get around it. This will need to be addressed. On the south side of I-70, the fence end can tie into a rock feature on the cut slope east of Soda Creek Road.

Beaver Brook LIZ ALIVE Recommendations and Discussion

The attendees were asked whether they supported moving forward with Mitigation Option A or Option B.

Question: Are Option B locations more valuable for wildlife than the Option A location?

Answer: Potentially, because more than one crossing could be built and because several of the alternate crossing locations are expected to have a greater benefit for wildlife connectivity and reducing WVCs.

Question: Is it a good idea to fence the entire length of the Project without providing crossing opportunities?

Answer: We would not fence the entire length of the Project; just the area around the elk meadow at the top of Floyd Hill east to Soda Creek. This segment has the highest WVCs in the Project area.

Question: What is the value of Option A?

Answer: It would be used by the Floyd Hill elk herd and would have value in connecting the herd with habitat on the north of I-70. The migration patterns of the elk and deer herds in this area have already been disrupted by past development, so there is limited ecological or genetic benefit for the cost. However, Option A is the best way to address connectivity needs within the Project area.

There are tradeoffs with each consideration.

The group decided that Option B has greater potential and provided the following input:

- US 40 has the highest wildlife value for bighorn sheep
- The Genesee location is the only location where elk is the primary target species. While it doesn't serve the same herd on Floyd Hill, it does serve the same species.
- The Project Team is leaning toward Empire and Genesee as best options.
- The Empire location does not address the impacts of this Project because bighorn sheep movements are not being impacted. This is a problem with all the Option B alternatives. Mitigation is usually tied to project-specific impacts.

- The FHWA EcoLogical framework provides guidance to support putting mitigation in the best place even if it is outside of project boundaries.
- Option B sounds like a good idea, but we need to determine how to be equitable. There was some concern about mitigating outside of the county in which the impacts occur. Francesca noted that the Genesee location would improve safety for all drivers, including Clear Creek County residents.
- One benefit of Option A is that it would be very visible. Selecting Option B would eliminate that benefit. However, one potential downside to Option A is also that because of its visibility it may be subject to more criticism on account of its location in very residential and human-impacted landscape.
- CDOT will ensure the cost of the final mitigation package is the same as the cost of Option A.
- The Genesee and Ruby Ranch Road locations should be ranked higher than the Empire location. The Genesee location provides mitigation for the same species that would be impacted by the Project; the Ruby Ranch Road location is in the same LIZ as the Floyd Hill project area.
- Soda Creek should remain on the table because it is within the Project area and fencing would direct animals to this location. There is also potential for PMJM habitat improvements to be made at this location.
- The two Bakerville locations should be eliminated from further consideration. They are expensive, subject to a throwaway investment, and do not address project-specific impacts.

Based on the challenges associated with Mitigation Option A and the input provided for Mitigation Option B, the group decided to move forward with Option B. The next step for the ALIVE Committee will be to consider and rank the alternative crossing locations to determine the best allocation of mitigation funds.

Clear Creek LIZ

Wildlife Considerations

Julia reviewed the designs for the Tunnel Alternative (both North and South Frontage Road Design Options) and the Canyon Viaduct Alternative. For this LIZ, the opportunities for wildlife connectivity improvements are largely to improve east-west connectivity along the riparian corridor. Both alternatives are similar with respect to US 6. In general, the high I-70 bridges are not a concern. The concerns are primarily around the lower US 6 off-ramp onto I-70 eastbound and the I-70 westbound off-ramp onto US 6. The Canyon Viaduct Alternative would reconstruct the off-ramp, which might provide more opportunity for improved wildlife passage, but the existing bridges are tall (20 feet high), and even with the bridges remaining in place, there are opportunities to excavate under the eastern end spans and improve height and width of the passageway under the existing bridge.

The frontage road options have different impacts for wildlife. In general, the location of the frontage road north of Clear Creek is better for concentrating infrastructure. It is better for recreational purposes and better for wildlife as well. It might also be better for resiliency because there would be less riprap and more opportunity for creek improvements.

The group discussed potential issues with water quality and habitat/creek quality. There are concerns about the use of mag chloride and shading of the creek/riparian habitat. Mandy Whorton, Peak Consulting, noted that this is something the Stream and Wetland Ecological Enhancement Program (SWEEP) Committee will be addressing. Aurelia asked if the USFS was represented on SWEEP. Vanessa

said USFS was represented and she will follow up with Aurelia on who the current representative is.

The group indicated interest in how rock cuts may affect bighorn sheep habitat.

Next Steps

- Refine plans for Genesee, Ruby Ranch Road, Soda Creek, and Empire crossings.
- Refine cost estimates to determine equivalent mitigation to the Option A crossing at the top of Floyd Hill.
- Follow up with Jefferson County on land use and development plans for lands surrounding proposed crossings.
- Update the matrix to support the ALIVE committee in ranking the remaining crossing locations and determining how mitigation funds could be allocated. The updated matrix will include the Floyd Hill crossing for comparison purposes. It will also include the individual parcels that comprise the meadow-wetland complex at the top of Floyd Hill as well as the parcel for sale on the north side of the Genesee crossing location.

Attendees

Adam Springer (Clear Creek County); Stephanie Gibson and Melinda Urban (FHWA); Vanessa Henderson, Neil Ogden and Francesca Tordonato (CDOT); Alison Dean Michaels (USFWS); Aurelia DeNasha (USFS); Anthony Pisano and Carol Coates (Atkins); Julia Kintsch (ECO-resolutions); Mandy Whorton (Peak Consulting Group).

I-70 Mountain Corridor Region 1 Alternative Wildlife Crossing Locations

Revised March 10, 2020

Milepost	Location Name	LIZ Name	Crossing Type	Biological Value	2003 LIZ Rank*	WVC Crashes†	WVC Carcasses	Landownership & Land Use Considerations	Feasibility	High Level Cost Estimate††
254.5	Genesee	Mt. Vernon	Underpass at fill slope	<ul style="list-style-type: none"> Primary target species: Elk and mule deer. CPW identified highway crossing zone. Secondary target species: Black bear, mountain lion, fox, coyote, bobcat. Monitored location for the I-70 EcoLogical Study (2009-2010) detected elk, mule deer, coyote, fox, skunk. 	Low	Very High (3.4 WVC/mile/year)	<ul style="list-style-type: none"> WVC Carcass: High Location identified by CDOT Traffic & Safety as a WVC hotspot. 	<ul style="list-style-type: none"> Private ownership. Properties immediately adjacent to proposed structure location are undeveloped (possible to obtain conservation easements?), but residential development around the greater area. 	<ul style="list-style-type: none"> Location does not require a crossing over/under US 40, which runs farther north of this location. Offset structure to west side of drainage to shorten structure length. Possible Traffic & Safety funding. Future project is unlikely as I-70 is already 3 lanes in both directions through this segment. 	\$4.2M (bridge underpass)
250	Ruby Ranch Road	Beaver Brook	Underpass at fill slope	<ul style="list-style-type: none"> Primary target species: Mule deer & elk. CPW identified highway crossing zone. Secondary target species: Black bear, mountain lion, fox, coyote, bobcat. 	Low	High (2.8 WVC/mile/year)	<ul style="list-style-type: none"> WVC Carcass: Very high 	<ul style="list-style-type: none"> Private ownership with dispersed residential development 	<ul style="list-style-type: none"> Location is within the Beaver Brook LIZ. Location does not require a crossing over/under US 40, which runs farther north of this location. Steep fill on north side, but structure doesn't need to be at deepest part of fill. Consider how to grade north side approach or build trails into the slope leading to the structure. 30'-wide median between I-70 EB and WB lanes - could narrow median width to reduce structure length. Future project is unlikely as I-70 is already 3 lanes in both directions through this segment. 	\$4.2M (bridge underpass)
249	Soda Creek	Beaver Brook	Underpass at creek drainage	<ul style="list-style-type: none"> Primary target species: Mule deer Secondary target species: Elk, black bear, mountain lion, fox, coyote, bobcat. 	Low	High (2.8 WVC/mile/year)	<ul style="list-style-type: none"> WVC Carcass: Moderate (high within LIZ) 	<ul style="list-style-type: none"> Private ownership with dispersed residential development 	<ul style="list-style-type: none"> Creek is nearly 300' from the existing bridge Location is within the current project boundaries 	\$4.2M (bridge underpass)
US 40 MP 257.4	Empire	Empire Junction	Overpass just west of interchange spanning cliffs on N side to small cut slope on S side.	<ul style="list-style-type: none"> Primary target species: Bighorn sheep. Georgetown herd is the largest herd in CO. Location is important for genetic connectivity between 2 subpopulations. On US 40 (not I-70), but within the Empire Junction interchange area. This is the most important crossing site for bighorn along the corridor. Secondary target species: Canada lynx, black bear, mountain lion, mule deer, elk, moose, fox, coyote, bobcat. 	Medium	Low (0.4 WVC/mile/year)	<ul style="list-style-type: none"> WVC Carcass: Low Very high for bighorn sheep (Huyer 2015). 	<ul style="list-style-type: none"> Private. There is a willing landowner for a conservation easement on the south side (as of 2014). Nearby residences S & N sides of US 40 	<ul style="list-style-type: none"> A crossing structure at this location would need to accommodate future improvements around Empire Junction. US 40 has a narrower road footprint requiring a smaller crossing structure. Would require blasting/rock cut. 	\$3.1M (overpass)

I-70 Mountain Corridor Region 1 Alternative Wildlife Crossing Locations

Revised March 10, 2020

Milepost	Location Name	LIZ Name	Crossing Type	Biological Value	2003 LIZ Rank*	WVC Crashes†	WVC Carcasses	Landownership & Land Use Considerations	Feasibility	High Level Cost Estimate††
220.5	Kearney Gulch	Bakerville	Overpass (Traffic and Revenue Study recommends MP 220.5-220.7; east of rock cut, but then the creek is much closer to I-70; consider west of rock cut ~MP 220.3-4)	<ul style="list-style-type: none"> Primary target species: Canada lynx. Ivan (2012) notes that 39% of lynx I-70 crossings occurred between the EJMT and Bakerville; segment identified as high probability of lynx highway crossing by Squires et al. (2013). Linkage has lower intensity lynx movements primarily used for summer dispersal movement; there are no breeding pairs in this area. Secondary target species: bighorn sheep, black bear, mountain lion, mule deer, elk, moose, fox, coyote, bobcat, and boreal toad. Monitored location for the I-70 EcoLogical Study (2009-2010) at MP 221.8 detected bighorn sheep, elk, mule deer. 	High (Herman Gulch)	Low (0.5 WVC/mile/year)	<ul style="list-style-type: none"> WVC Carcass: Low Two lynx WVCs have been recorded in this segment around MP 217.3 & MP 221 in 2000 & 2005. Moderate for bighorn sheep (Huwer 2015). Increasing moose conflict. 	<ul style="list-style-type: none"> Arapahoe National Forest on both sides of I-70; Managed as USFS lynx linkage area Bike path adjacent to creek on south side. 	<ul style="list-style-type: none"> Good location between chain-up stations (i.e., smaller road footprint and less affected by lights and activity) Feasibility challenged by uneven grades north and south of I-70. Creek parallel on south side, but with enough room for overpass wildlife approach ramp. Sensitive wetlands along Clear Creek. Future projects in this segment are planned but details are unknown. Preferred alternative includes 6 lanes, WB auxiliary lane, and AGS. 	\$13.8M (overpass)
217.4	Dry Gulch	Bakerville	Overpass recommended. An underpass would be very long and less preferable for bighorn sheep and elk.	<ul style="list-style-type: none"> Primary target species: Canada lynx. Ivan (2012) notes that 39% of lynx I-70 crossings occurred between the EJMT and Bakerville; segment identified as high probability of lynx highway crossing by Squires et al. (2013). Linkage has lower intensity lynx movements primarily used for summer dispersal movement; there are no breeding pairs in this area. Secondary target species: bighorn sheep, black bear, mountain lion, mule deer, elk, moose, fox, coyote, bobcat, and boreal toad (breeding site on north side of I-70). Monitored location for the I-70 EcoLogical Study (2009-2010) at MP 217.2 detected elk, mule deer, coyote, fox. Bike path/recreation impacts on lynx/wildlife movement (year-round but low winter intensity) 	High (Herman Gulch)	Low (0.3 WVC/mile/year)	<ul style="list-style-type: none"> WVC Carcass: Moderately low Two lynx WVCs have been recorded in this segment around MP 217 & MP 221 in 2000 & 2005. Moderately low for bighorn sheep (Huwer 2015). Increasing moose conflict. 	<ul style="list-style-type: none"> Arapahoe National Forest on both sides of I-70; Managed as lynx linkage area. Bike path adjacent to creek on south side. 	<ul style="list-style-type: none"> Feasibility challenged by road grade (~4%); uneven grades north and south of I-70; and proximity to creek on south side. Sensitive wetlands along Clear Creek. Future projects in this segment are unknown. Preferred alternative includes 6 lanes with WB auxiliary lane and AGS. 	\$13.8M (overpass)

NOTES

*2003 LIZ rankings based on potential and existing wildlife value at time of assessment (i.e., present and past utilization as a movement corridor, adjacency to suitable habitat and potential improvement value).

†WVC crash rate calculations based on data from 2014-2018.

††High level cost estimates have not been formally reviewed and are subject to change.

ACRONYMS

- AGS = Advanced Guideway System
- CDOT = Colorado Department of Transportation
- CPW = Colorado Parks and Wildlife
- LIZ = linkage interference zone
- MP = milepost
- USFS = United States Forest Service
- WVC = wildlife-vehicle collisions



I-70 Floyd Hill to Veterans Memorial Tunnels

ATKINS
Member of the SNC-Lavalin Group

ALIVE Meeting

February 26, 2020



Introductions

- Name
- Position
- Agency/Company



Meeting Objectives

- Beaver Brook LIZ
 - In depth presentation of Mitigation Option B (Alternative)
 - Obtain consensus from the ALIVE Committee
- Clear Creek LIZ
 - Review and discuss wildlife considerations for Tunnel Alternative (North & South Frontage Road Options) and Canyon Viaduct Alternative
 - Obtain input about wildlife connectivity values for inclusion in the CSS Alternatives Matrix



Follow-up on Action Items from January ALIVE meeting

- ✓ Cost for proposed wildlife overpass
- ✓ Map zoning around proposed wildlife overpass on Floyd Hill
- ✓ Further define Mitigation Option B:
 - Determine how to set up a mitigation fund and outline parameters, timeline for development
 - Evaluate Soda Creek bridge location for potential wildlife crossing upgrade
 - Create list of potential alternative crossing locations on I-70 in R1
 - Reach out to landowners regarding potential and cost of purchase for the 4 parcels comprising the meadow-wetland complex
- ✓ Wildlife fence alignment, wildlife guards and escape ramps



I-70 Floyd Hill to Veterans Memorial Tunnels

Beaver Brook LIZ

Mitigation Option A – Overpass

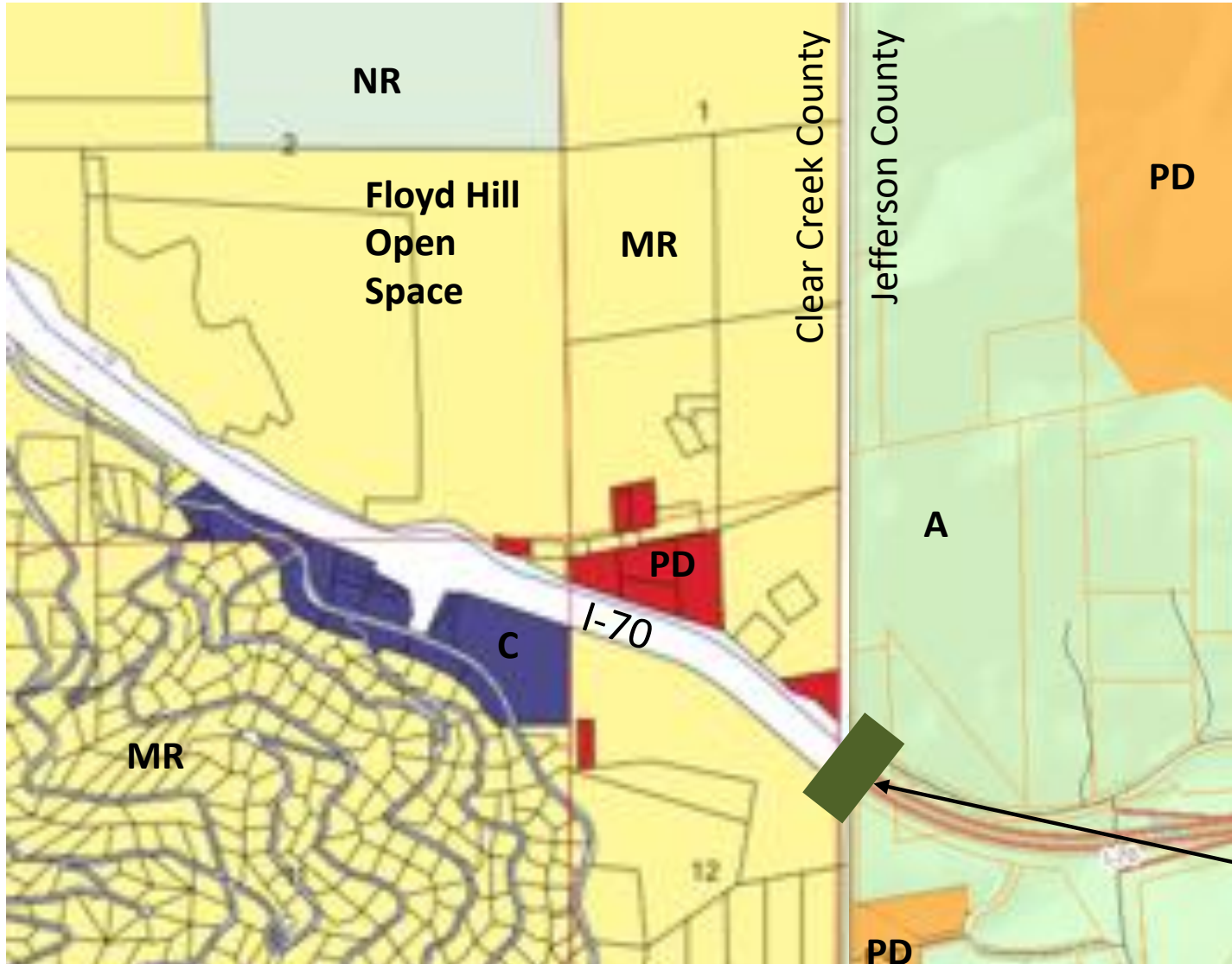




I-70 Floyd Hill to Veterans Memorial Tunnels

Beaver Brook LIZ

Mitigation Option A – Wildlife Overpass at the Top of Floyd Hill



Zoning

Clear Creek County

- C Commercial
- MR Mountain Residential
- NR Natural Resource Protection
- PD Planned Development

Jefferson County

- A Agricultural
- SR Suburban Rural
- PD Planned Development

Wildlife Overpass

Beaver Brook LIZ

Mitigation Option B

1. Select alternative location(s) for wildlife crossings mitigation on I-70 in Region 1
2. Fencing to reduce WVC at the top of Floyd Hill

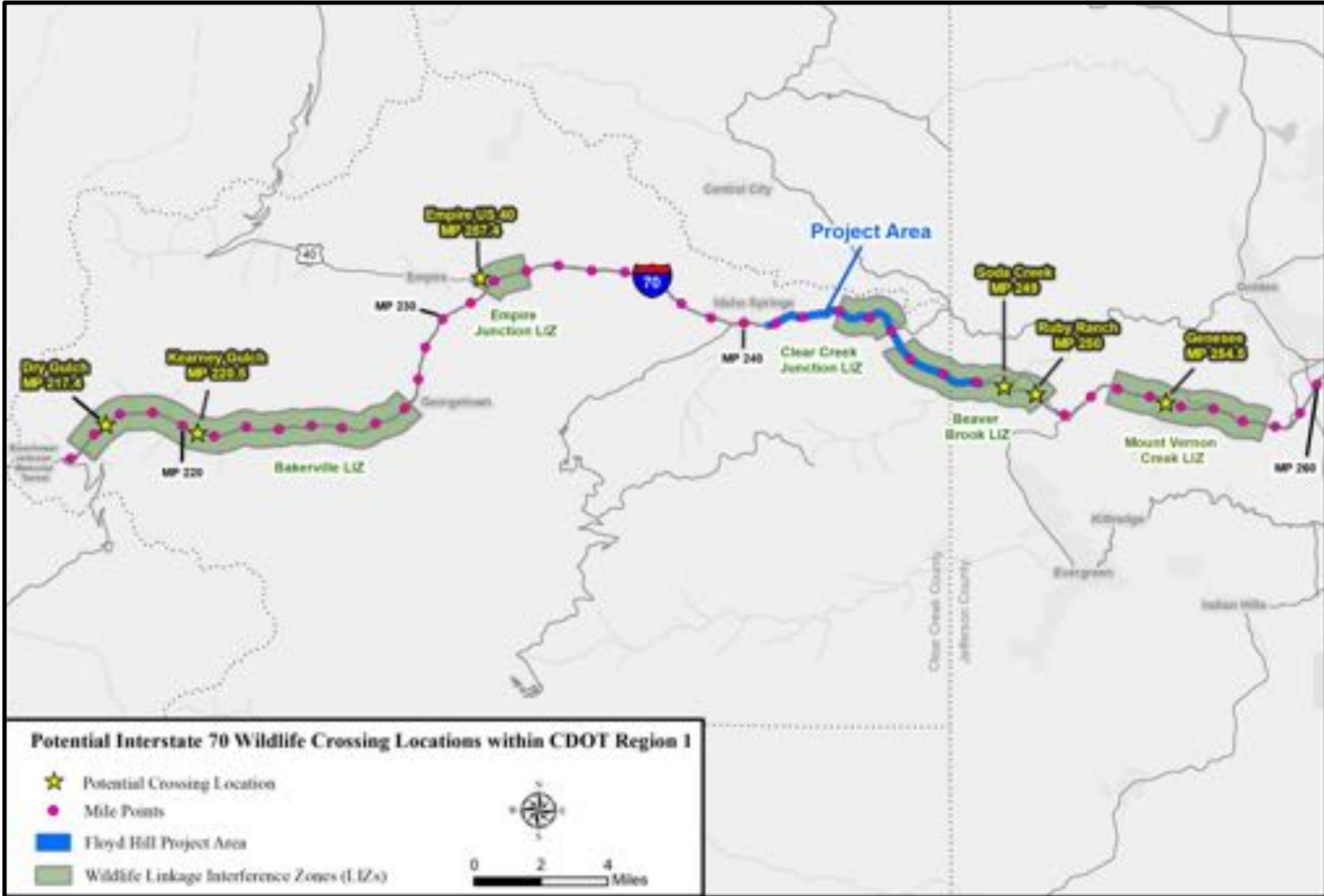


1. Alternative Wildlife Crossing Locations

- 12 locations reviewed; 6 selected for further consideration by ALIVE Committee (matrix)
- Consider:
 - Biological value
 - 2003 LIZ ranking
 - Safety (WVC crashes & carcass data)
 - Landownership & land use
 - Feasibility
 - High level cost estimate



I-70 Floyd Hill to Veterans Memorial Tunnels





MP 254.5 – Genesee

← 1 mile to Genesee Exit





I-70 Floyd Hill to Veterans Memorial Tunnels

MP 254.5 – Genesee

Looking southwest

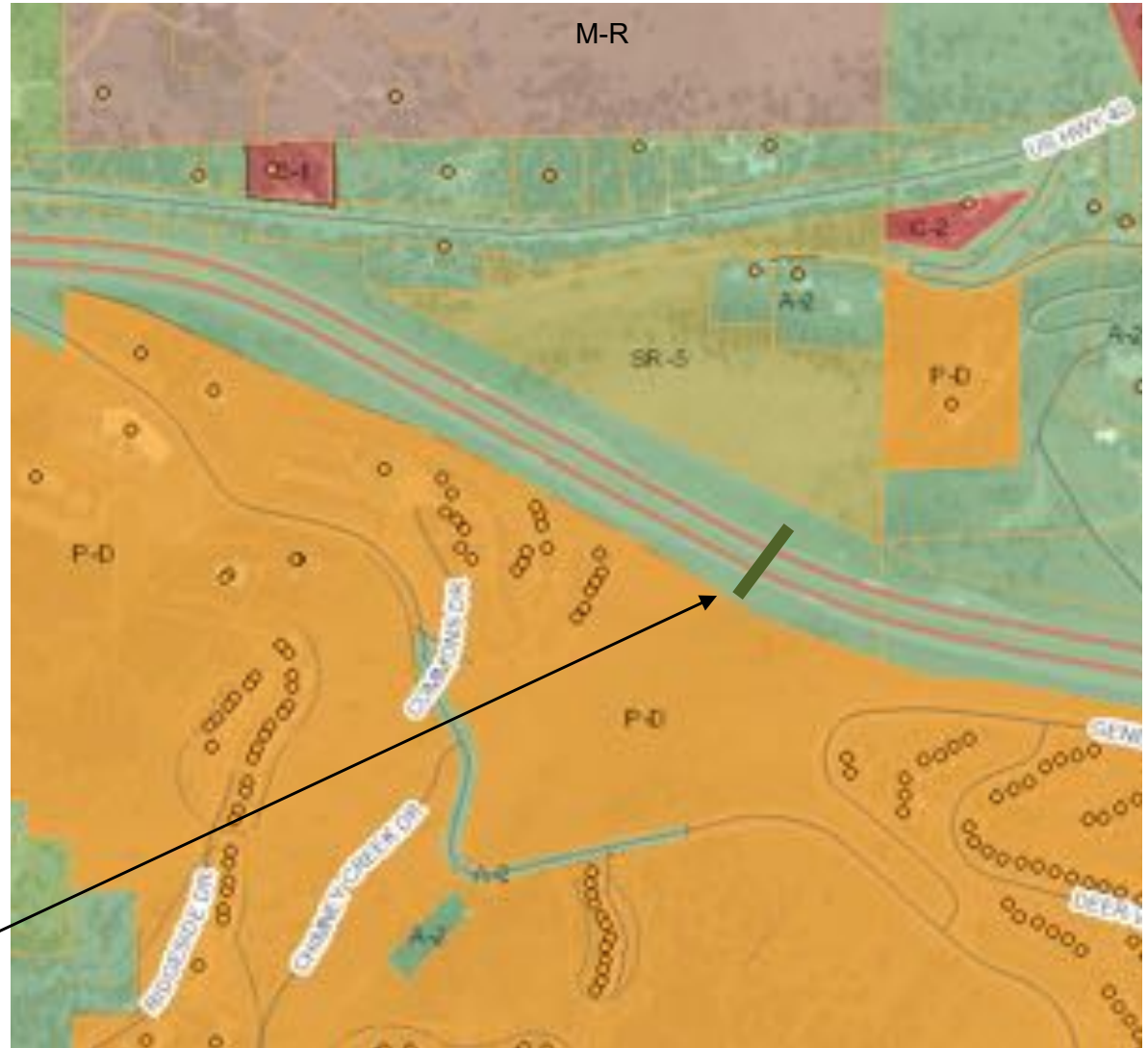




MP 254.5 – Genesee

Legend

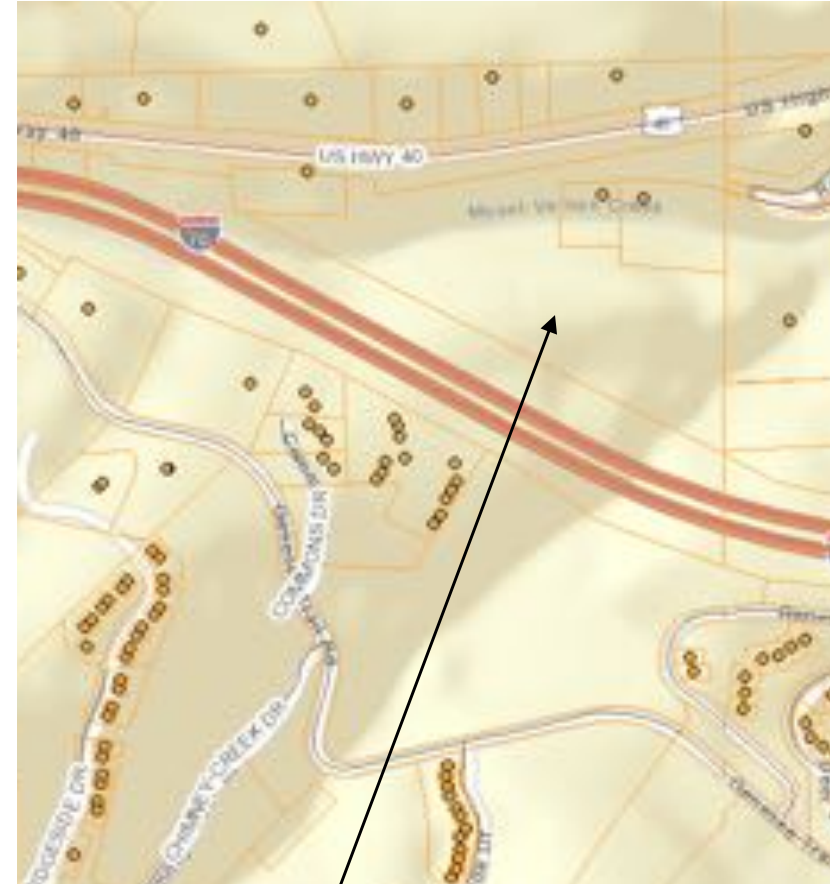
- A Agricultural
- SR Suburban Rural
- PD Planned Development
- MR Mountain Residential
- C Commercial



Proposed Wildlife Underpass



MP 254.5 - Genesee



Vacant land for sale



MP 250 – Ruby Ranch Road



→
½ mile to
El Rancho Exit



MP 250 – Ruby Ranch Road





MP 250 – Ruby Ranch Road



Legend

A Agricultural

SR Suburban Rural

PD Planned Development

C Commercial

Proposed Underpass



MP 249 – Soda Creek

Mule deer – winter
and overall range

Elk – resident &
winter range.

Resident elk likely to
adapt with fencing in
place; wintering elk
driven by need, e.g.,
winter severity or
human pressures

Mountain lion –
overall range





I-70 Floyd Hill to Veterans Memorial Tunnels

MP 249 – Soda Creek

- Existing bridge is 137' wide; dirt road with riprap slopes
- Residence in front of south entrance



Would replacing this bridge with a larger structure appreciably increase wildlife passage under I-70?

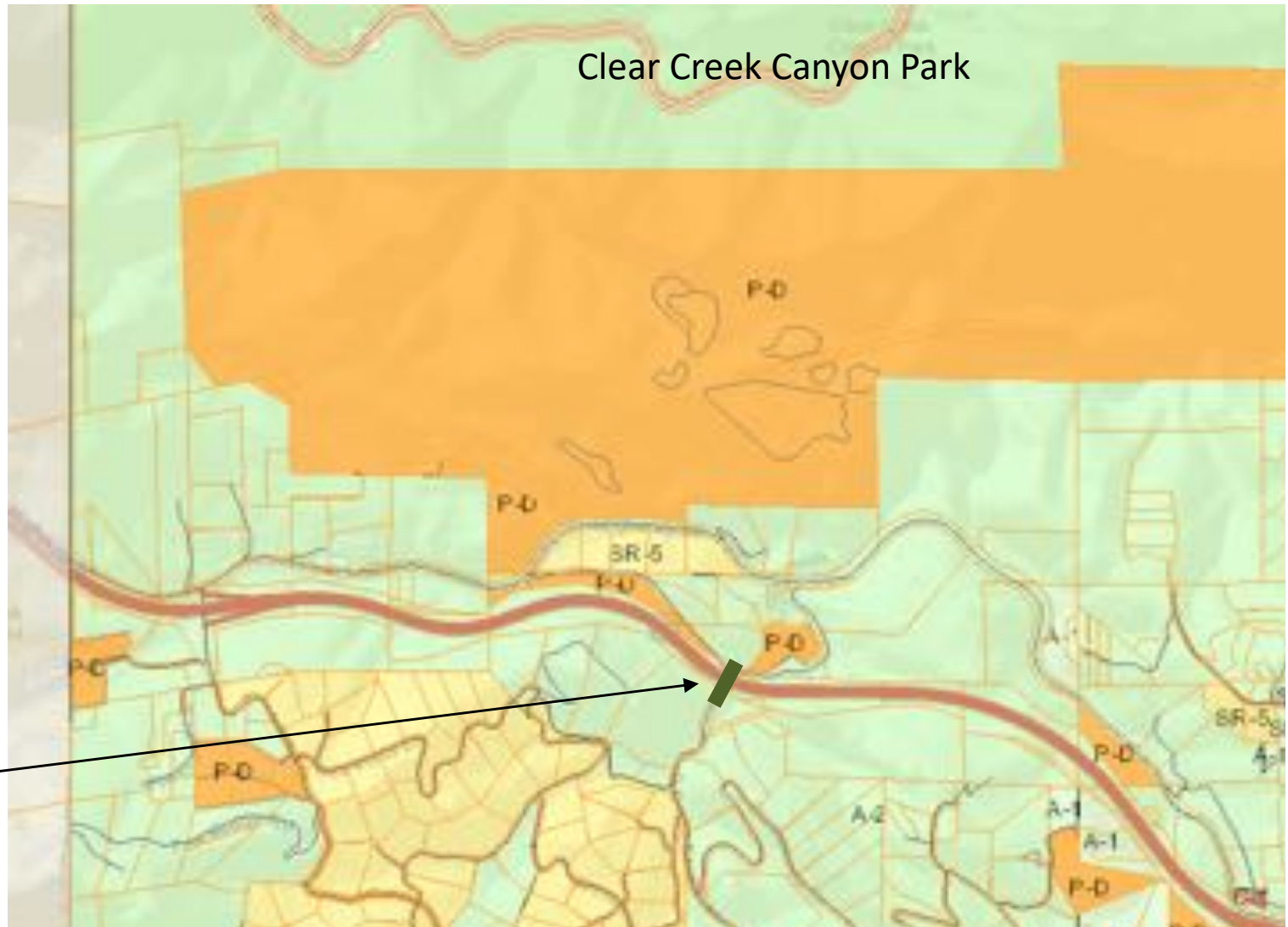


MP 249 – Soda Creek

Legend

- A Agricultural
- SR Suburban Rural
- PD Planned Development

Soda Creek Bridge





US 40, MP 257.4 – Empire





US 40, MP 257.4 – Empire





I-70 Floyd Hill to Veterans Memorial Tunnels

MP 220.5 – Kearney Gulch



→
½ mile to
Bakerville Exit



MP 220.5 – Kearney Gulch





I-70 Floyd Hill to Veterans Memorial Tunnels

MP 217.4 – Dry Gulch



→ Herman Gulch

EJMT ←



I-70 Floyd Hill to Veterans Memorial Tunnels

MP 217.4 – Dry Gulch





2. Fencing to Reduce WVC at the top of Floyd Hill

- Install wildlife exclusion fencing along I-70 from the Floyd Hill exit to east of Soda Creek Road
 - 8 Escape Ramps
 - 1 Wildlife Guard on SH 65
 - Pedestrian Access Gates



Wildlife Fence End – Floyd Hill



2 Escape Ramps near west fence end



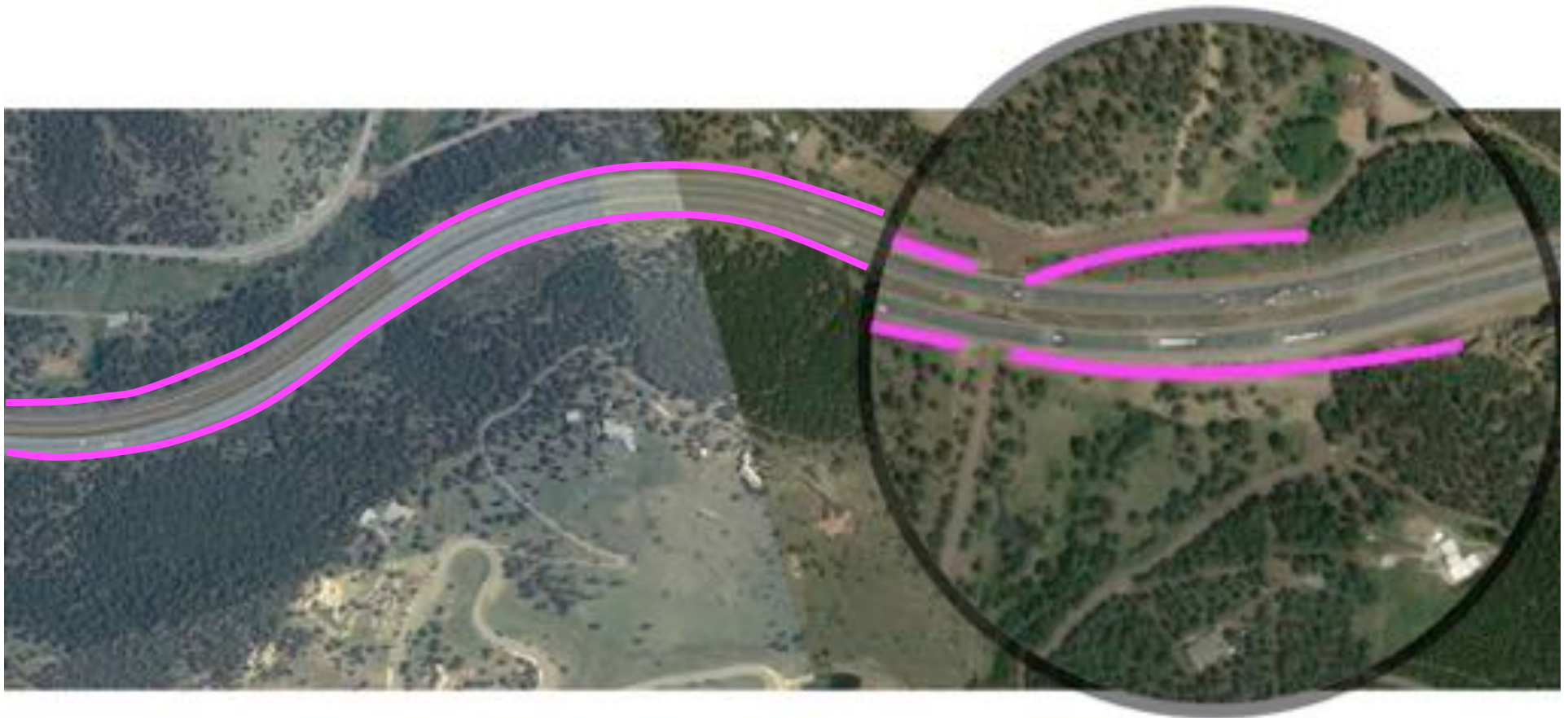
Wildlife Fence – Beaver Brook Interchange



4 Escape Ramps around interchange



Wildlife Fence End – Soda Creek



2 Escape Ramps near east fence end



East Fence End at Soda Creek





I-70 Floyd Hill to Veterans Memorial Tunnels

Clear Creek LIZ

Tunnel Alternative – North Frontage Road Design Option



Clear Creek LIZ

Tunnel Alternative – North Frontage Road Design Option



East Portal – Looking West (Figure 1)



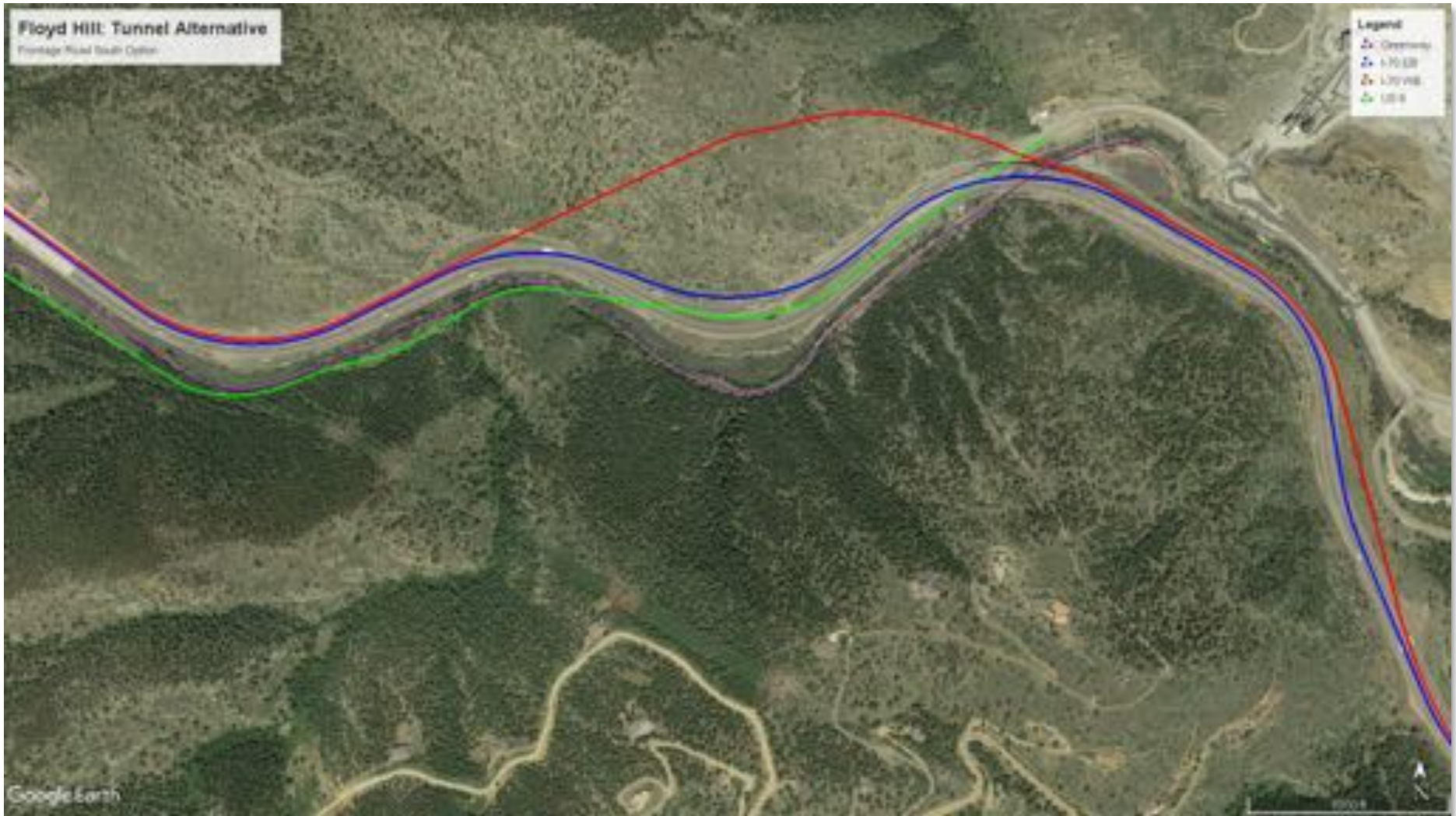
West Portal – Looking East (Figure 2)



I-70 Floyd Hill to Veterans Memorial Tunnels

Clear Creek LIZ

Tunnel Alternative – South Frontage Road Design Option



Clear Creek LIZ

Tunnel Alternative – South Frontage Road Design Option



East Portal – Looking West (Figure 1)



West Portal – Looking East (Figure 3)



I-70 Floyd Hill to Veterans Memorial Tunnels

Clear Creek LIZ Canyon Viaduct Alternative





I-70 Floyd Hill to Veterans Memorial Tunnels

Clear Creek LIZ Canyon Viaduct Alternative



East Portal – Looking West (Figure 4)



West Portal – Looking East (Figure 5)

Comparison of Alternatives

East Portal



Canyon Viaduct Alternative (Figure 4)



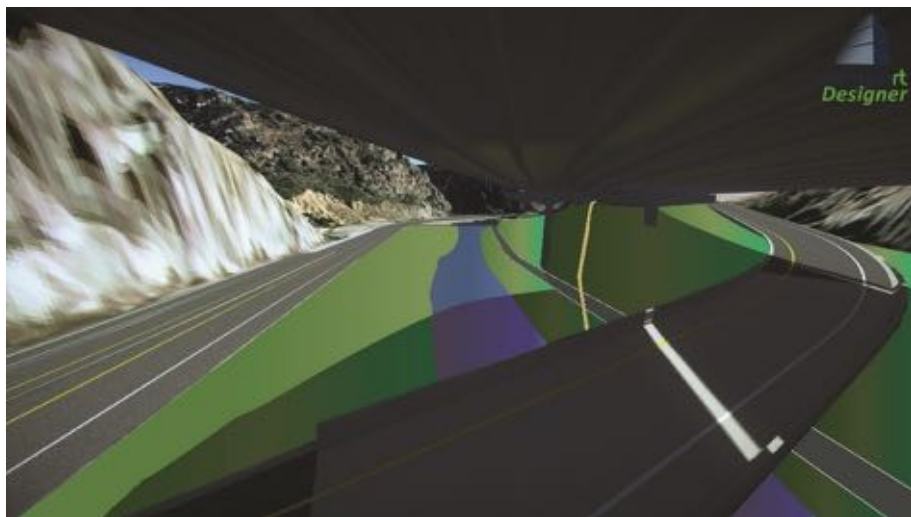
Tunnel Alt. – North and South Frontage Road Options (Figure 1)



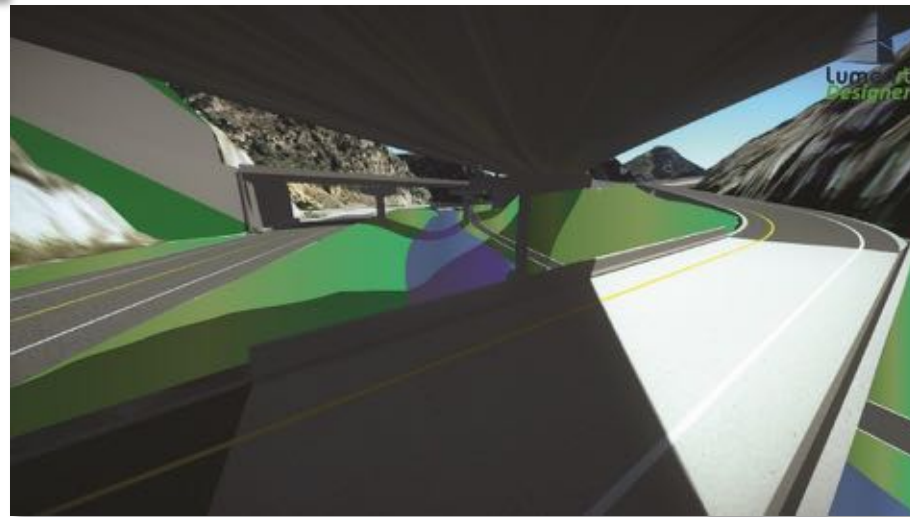
I-70 Floyd Hill to Veterans Memorial Tunnels

Comparison of Alternatives

East Portal - Riparian



Canyon Viaduct Alternative (Figure 6)



Tunnel Alt. – North & South Frontage Road Options (Figure 7)



I-70 Floyd Hill to Veterans Memorial Tunnels

Comparison of Alternatives

West Portal



Canyon Viaduct Alternative (Figure 5)



Tunnel Alt. – North Frontage Road Option (Figure 2)

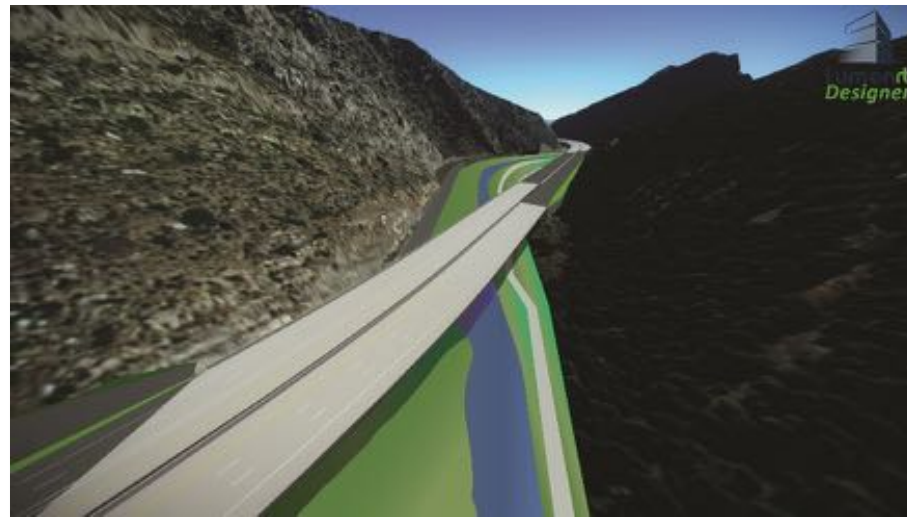


Tunnel Alt. – South Frontage Road Option (Figure 3) ³⁹

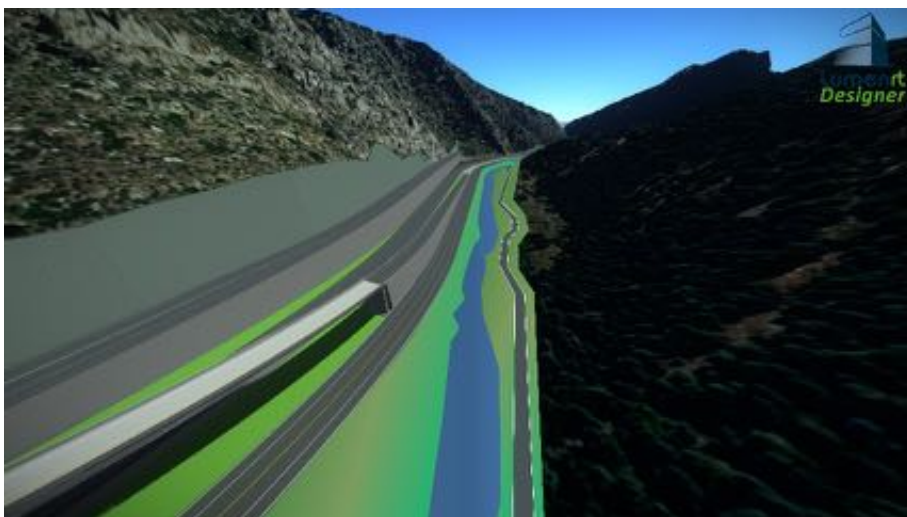


Comparison of Alternatives

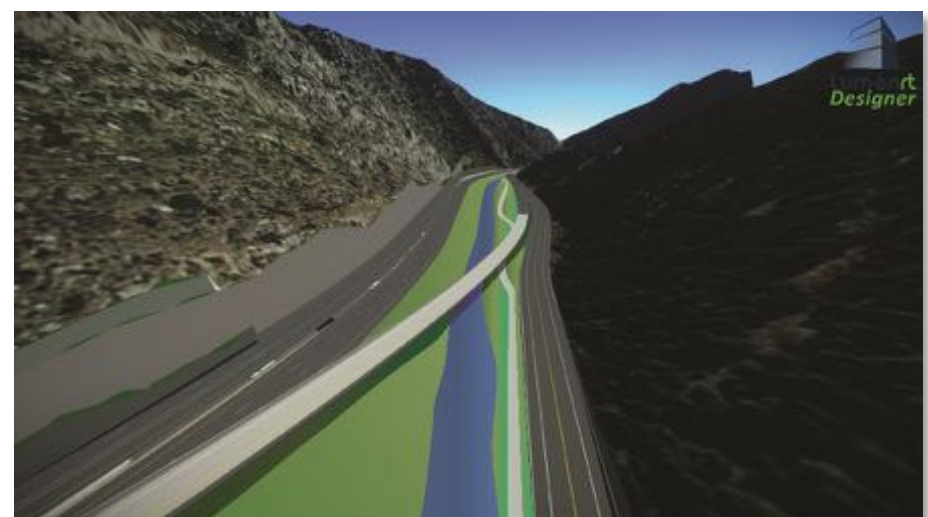
West Portal - Riparian



Canyon Viaduct Alternative (Figure 8)



Tunnel Alt. - North Frontage Road Option (Figure 9)



Tunnel Alt. - South Frontage Road Option (Figure 10)⁴⁰



Next Steps

- If pursuing Option A:
 - Refine preliminary design for Overpass
- If pursuing Option B:
 - Develop preliminary design for selected alternative wildlife crossing location(s)
- Follow up with ALIVE ITF in Spring 2020



Questions



3/18/2020- Floyd Hill ALIVE Follow-Up Discussion with CPW (Joe Walter) via Conference call- participants: Francesca Tordonato, Julia Kintsch, Joe Walter

The purpose of the conference call was to solicit comment and feedback on the Floyd Hill Project Wildlife Mitigation approach since CPW could not attend the last ALIVE meeting held on 2/26/2020.

Wildlife Mitigation Approach- Option A vs. Option B

CPW provided feedback that they are more in favor of mitigation Option B because it's a better use of funds (Joe's phrasing was "better bang for the buck").

Comments/Feedback on Alternative Mitigation Locations East of Floyd Hill

Joe was concerned about land use implications at the potential wildlife crossing locations east of Floyd Hill- his concern is that land owners may be upset about having elk funneled onto their property (similar to concern along SH 74). CDOT comment back to CPW- while there is private property and residences it is at a much lower density than along the SH 74 corridor (currently mostly large lot residential vs. higher density subdivisions on SH 74). The next ALIVE meeting will focus on soliciting detailed feedback on each of the alternative mitigation locations so they can be ranked.

US 40 Bighorn Sheep Overpass

CPW provided the same feedback consistent with previous comments- the potential US 40 wildlife overpass has high value for bighorn sheep from a genetic perspective as this is the location when the Dumont and Georgetown herds intersect. They would be in favor of increasing connectivity here to ensure long-term genetic diversity of the herd. Other bighorn sheep herds that are more isolated tend to be more susceptible to disease. Joe also said that the potential gravel quarry withdrew their application and that CPW was strongly against this quarry because of the impacts on wildlife. Joe mentioned that elk/deer mortality on I-70 doesn't really have an impact from a biological perspective in terms of herd size/health but bighorn sheep loss via wildlife vehicle collisions can have a much more pronounced population impact. Joe also thought engaging with the quarry owner or other landowners in the vicinity of the potential overpass to discuss habitat preservation via conservation easements or habitat protection would be worthwhile.

Wildlife Mitigation Options West of Georgetown

CDOT explained the challenges with the potential wildlife overpass locations west of Georgetown that were on the alternative mitigation location list. Joe mentioned that Kearney Gulch would be a better location among the western overpass locations because it has lower human use than Herman Gulch and there is more wildlife activity in the area. CPW is seeing more moose vehicle collisions in this area in the May/June timeframe between Bakerville and the Eisenhower Tunnel. They also have seen black bears hit in this area.

Regarding the comment about potential for increasing the mountain goat population expansion by building a wildlife overpass at these western locations- Joe didn't think that would be a big concern.