



Floyd Hill Design - Technical Team

Meeting Summary

May 13, 2022, 9 AM to 12 PM

CDOT Golden Office – Lookout Mountain Conference Room and Virtual (Zoom)

1. Introductions, Meeting Purpose and Project Updates

CDR Associates opened the meeting and welcomed participants. The purpose of the meeting was to review the Preferred Alternative and Major Alignment Innovations for the Central Section and finalize the Measures of Success applicable to evaluating the Preferred Alternative against the Major Alignment Innovations.

The ideal timeline to reach a decision on the Major Alignment Innovations by mid-June. The Design Working Groups are also ramping up and are currently focused primarily on the East Section.

- **TT Question:** What is the status of the ITFs (SWEEP, ALIVE, Emergency Services)?
 - **Response:** CDOT is actively working to finalize the invitation letters to the relevant Emergency Responder organizations. ALIVE is working on the Floyd Hill Early Projects and SWEEP is scheduled to come back online after the Major Alignment Innovations evaluation process is completed later this summer.
 - Trout Unlimited noted that the Technical Team and SWEEP should work together on the evaluation of the design.
 - **ACTION:** CDOT to distribute the invitation letters to Emergency Response ITF members

Grant Applications and Funding

Mandy Whorton, Peak Consulting, thanked members for providing letters of support for the grant application process. She said there has been great participation from the TT jurisdictions and the team is currently coordinating the grant package.

- **ACTION:** Mandy to send Mike Raber the grant template so Bicycle Users Group can participate

Charter Confirmation

CDR reviewed the TT Charter and said there had been no additional comments on the document since the previous meeting. The group was asked if they agreed to Confirm the Charter.

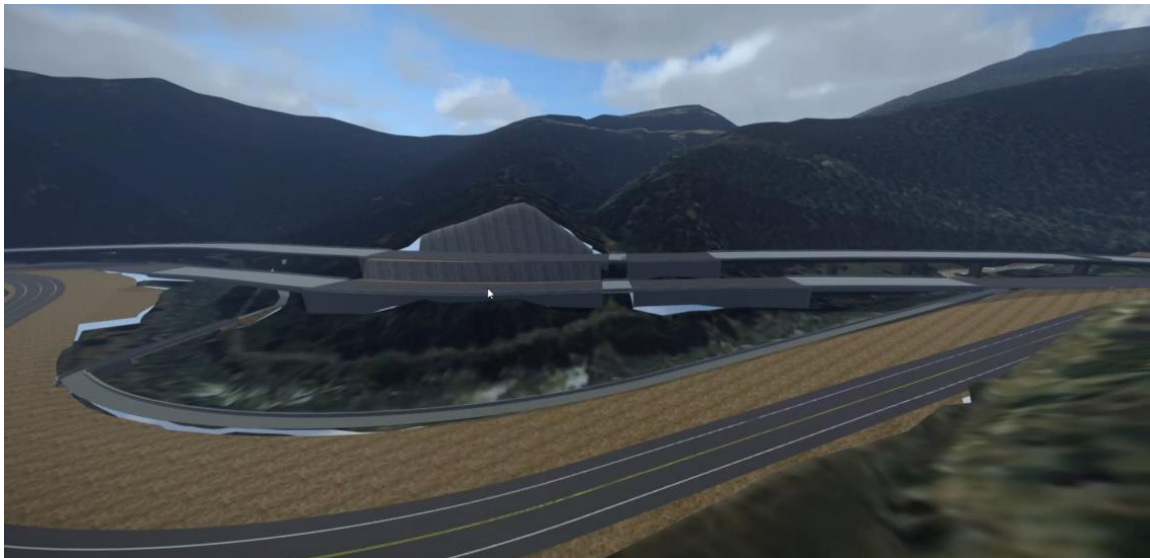


- **TT Question:** Clarification on the expectations and deliverables of the TT; the Charter did not specify clear deliverables.
 - **Response:** CDOT said the role of the TT is to build the Floyd Hill project by providing recommendations on the design refinements and giving input as issues arise. The TT will help shape the project and provide context and subject matter expertise based on the Core Values and Measures of Success to inform the best possible outcome for Floyd Hill. Additional roles and responsibilities are laid out in the Charter.
- **AGREEMENT:** TT Charter is adopted with the potential for change as needed as the TT moves forward.

2. Review Section Alignment Innovations and Stakeholder Perspectives

Atkins presented updated graphics of the Central Section Alignment Innovations. A key focus of the visuals presented was to show trail accommodation and fire access.

Braided Bridges Access:





Braided Bridges Option Facing West:



- Frontage Road on the right
- Tan section is the area open for more development for recreation
- Kraemer noted the Preferred Alternative offers some flexibility in the design profile ability to accommodate fire trail access in the Sawmill Gulch area.
 - **TT Question:** Where is the Preferred Alternative located in relation to this option?
 - **Response:** EB and WB are higher and further to the south near the wall on the Braided Bridges option compared to the Preferred Alternative.



Eastbound Down Facing East:



Eastbound Down Facing West:





Atkins noted that one difference between the Braided Bridges and Eastbound Down is that more Greenway space is available with the Braided Bridges option because of the stacking of the roadway. However, with the Braided Bridges option the asphalt trail on the south side of the Creek will need to be removed (which is not the case for the Eastbound Down option). WB is similar between both the Eastbound Down and Braided Bridge options, with Eastbound Down being closer to at-grade.

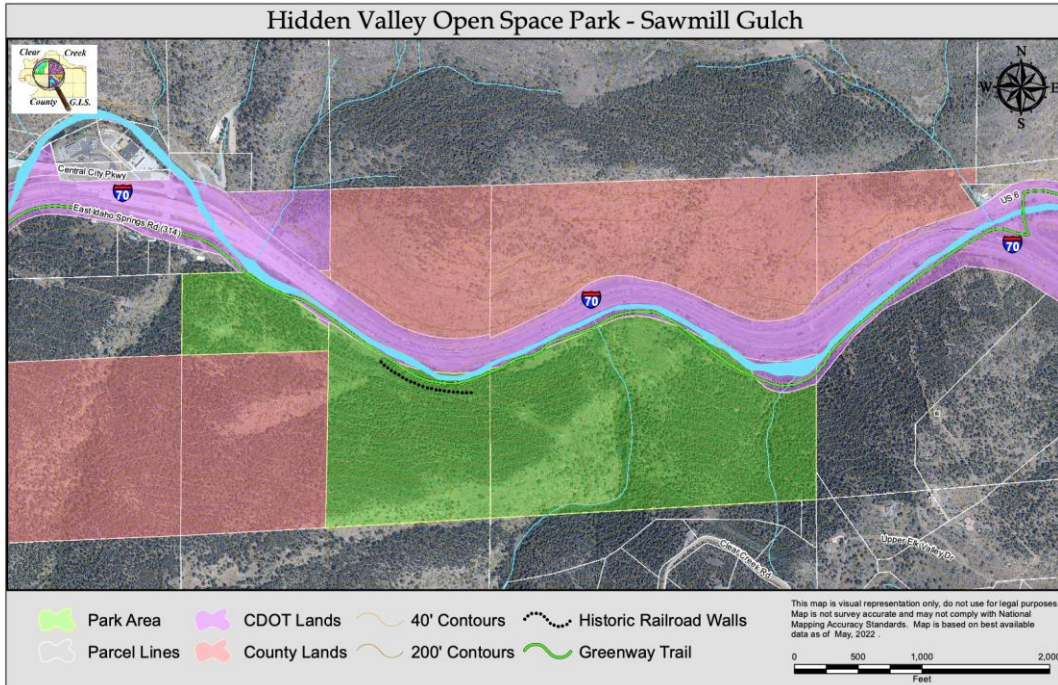
- **TT Comment:** Clear Creek County noted that these images give the impression that the Eastbound Down option is approximately the same elevation as the Braided Bridges option, but this is not the case.
 - **Response:** The elevations are becoming closer. This visual is trying to show a broader perspective of the alignment.
- **TT Question:** How long are the longitudinal cuts that are needed on the south side of the highway?
 - **Response:** Slightly shorter than those for the Preferred Alternative (less than 900 feet).
- **TT Request:** For future demonstrations it would be helpful to show the Preferred Alternative version first, then the proposed innovations to show the differences.
 - **Response:** The Project Team will work to accommodate this request.
- **TT Comment:** Users are rarely, if ever, going to see the road from this point of view. It would be helpful to see what it looks like from someone who is on the trail (i.e. the user perspective).
 - **Response:** The Project Team will work to accommodate this request.

Clear Creek County Presentation: Greenway and Open Space Interests

Clear Creek County presented the following slides:

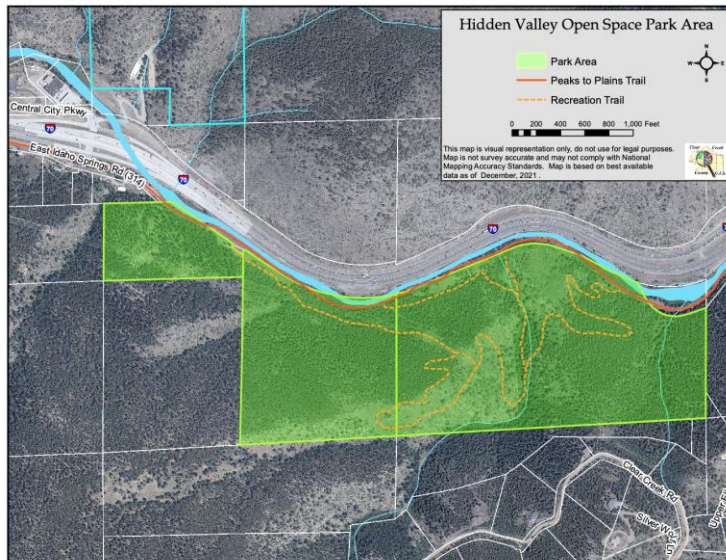


Provided by Clear Creek County



This land was purchased to become part of the Greenway complex. The green and pink areas show land that has been purchased by Clear Creek County to create the Hidden Valley Open Space Park. The green areas of the trail are a registered historical segment. In the Environmental Assessment, CDOT had the designation removed by law, to which CCC objected. CCC continues to object to this decision because of the RR bed and retaining wall (indicated by the black dots).

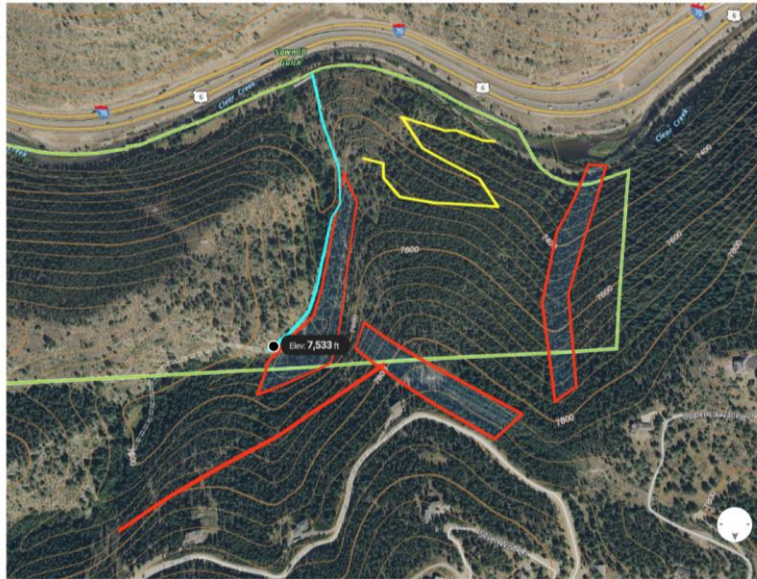
Provided by Clear Creek County



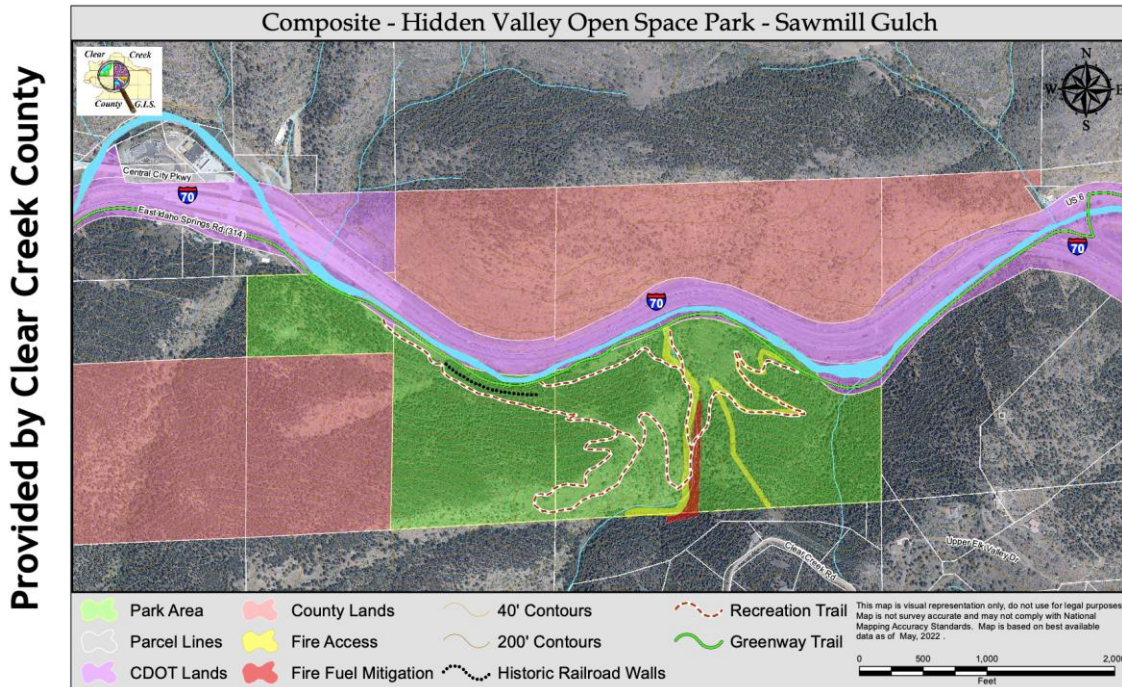


Clear Creek County has engaged ERO Resources to start trail planning in the green area, indicated by the orange line in the graphic above. This is the preliminary plan for Hidden Valley Open Space Park. FHWA does not consider this a park – if they did, it would require a 4F review. It would be helpful to convene CCC, CDOT, and FHWA to discuss differences. At this time, the organizations have “agreed to disagree,” but there is hope on the part of CCC that planning and construction will take these issues into consideration throughout the Floyd Hill Project.

Provided by Clear Creek County



The above image depicts high priority areas that back up into Stagecoach. This is a fire mitigation area. The blue line that comes off of the trail is necessary for fire mitigation and access – this is not an egress route, but an access route.



Clear Creek County added that many of CCC’s concerns relate to a tunnel alternative and that most of the County’s goals can be accommodated with the Preferred Alternative. The County wants to make sure its objection to the southern alignment frontage road is on record and clearly understood.

The County supports the idea of a viaduct because it would help mitigate highway sounds impacting greenway users. CCC supports the project and believes there can be workable alignment adjustments.

- **TT Question:** Where is the planned fire access road located on the slide?
 - **CCC Response:** It is the big yellow line. The Road is not yet there. Currently it’s an old road that is overgrown. CCC would like to preserve this area for Hidden Valley use.
- **TT Question:** Is the proposal for a temporary or permanent access road?
 - **CCC Response:** Permanent

THK Associates said that this area of Sawmill Gulch has a very steep bank. The Emergency Responder ITF would be helpful in understanding this and other issues related to feasibility.

- **TT Question:** With that expanse of open space, is there going to be incorporation of adequate parking access and areas for Hidden Valley Open Space?



- **CCC Response:** Parking will be incorporated at either end of the open space – at Hwy 6 and 40 or Hidden Valley exit.
- **ACTION:** Clear Creek County to send PDF maps to Atkins

4. Central Section Innovations Evaluation Matrix - Measures of Success

The group divided into breakout groups to work through the evaluation matrix for the Central Section Innovations. The goal of the process was to review the Measures of Success and remove any Measures of Success that are not differentiators between the proposed innovations and the Preferred Alternative. The group was able to accomplish this task in the allotted time.

The full list of Measures of Success, prior to the updates made by the TT for the Central Section, can be found in [this spreadsheet](#).

The final recommendations for the Measures of Success to bring forward for evaluation can be found in [this spreadsheet](#).

- **ACTION:** CDR to make updates to the Central Section matrix based on TT input and distribute to ITF.
- **ACTION:** CDR to schedule ITF with TT volunteers (Amy Saxton, Anthony Pisano, Matt Aguirre, Matt Hogan, Lisa Wolff, Kevin Shanks, Bill Coffin, Melinda Urban, Kurt Kionka)

4. Next Steps, TT #3 Agenda Topics

The TT agreed that an ITF will be convened to begin the process of working through the Innovations and comparing them to the Preferred Alternative based on the Measures of Success. The ITF will present its recommendations to the TT for further discussion at the May 27 meeting.

8. Attendees

Cindy Neely, Amy Saxton (Clear Creek County); Bill Coffin (Saddleback POA), Lisa Wolff, Will Cassidy (Floyd Hill POA); Lynnette Hailey (City of Black Hawk); Jessica North (Clear Creek School District); Mike Raber (Clear Creek Bicycle User Group); Margaret Bowes (I-70 Coalition); Melinda Urban, Elizabeth Cramer (FHWA); John Curtis (Idaho Springs); Dale Drake (Clear Creek Rafting); JoAnn Sorensen (UCCWA); Sam Hoover (Central City); James Proctor (Bridge & Tunnel Enterprise); Steve Durian (Jefferson County); Tracy Sakaguchi (CMCA); Vanessa Halladay, Kurt Kionka, Tyler Brady (CDOT); Anthony Pisano, Matt Aguirre (Atkins); Koichiro Shimomura, Brandon Simao, Austin Knapp, Tim Maloney (Kraemer); Tammy Hebron (HDR); Mandy Whorton (Peak Consulting Group); Jonathan Bartsch, Taber Ward, Daniel Estes (CDR Associates)



Floyd Hill Design // CMGC Technical Team

May 13, 2022

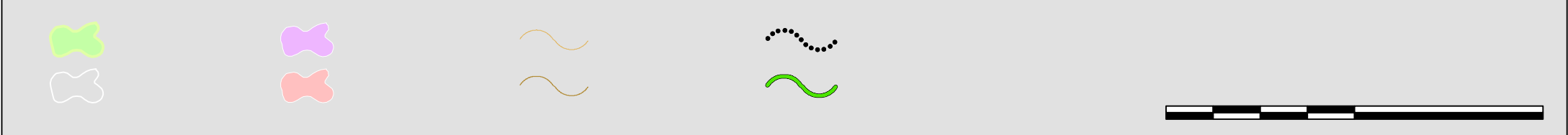
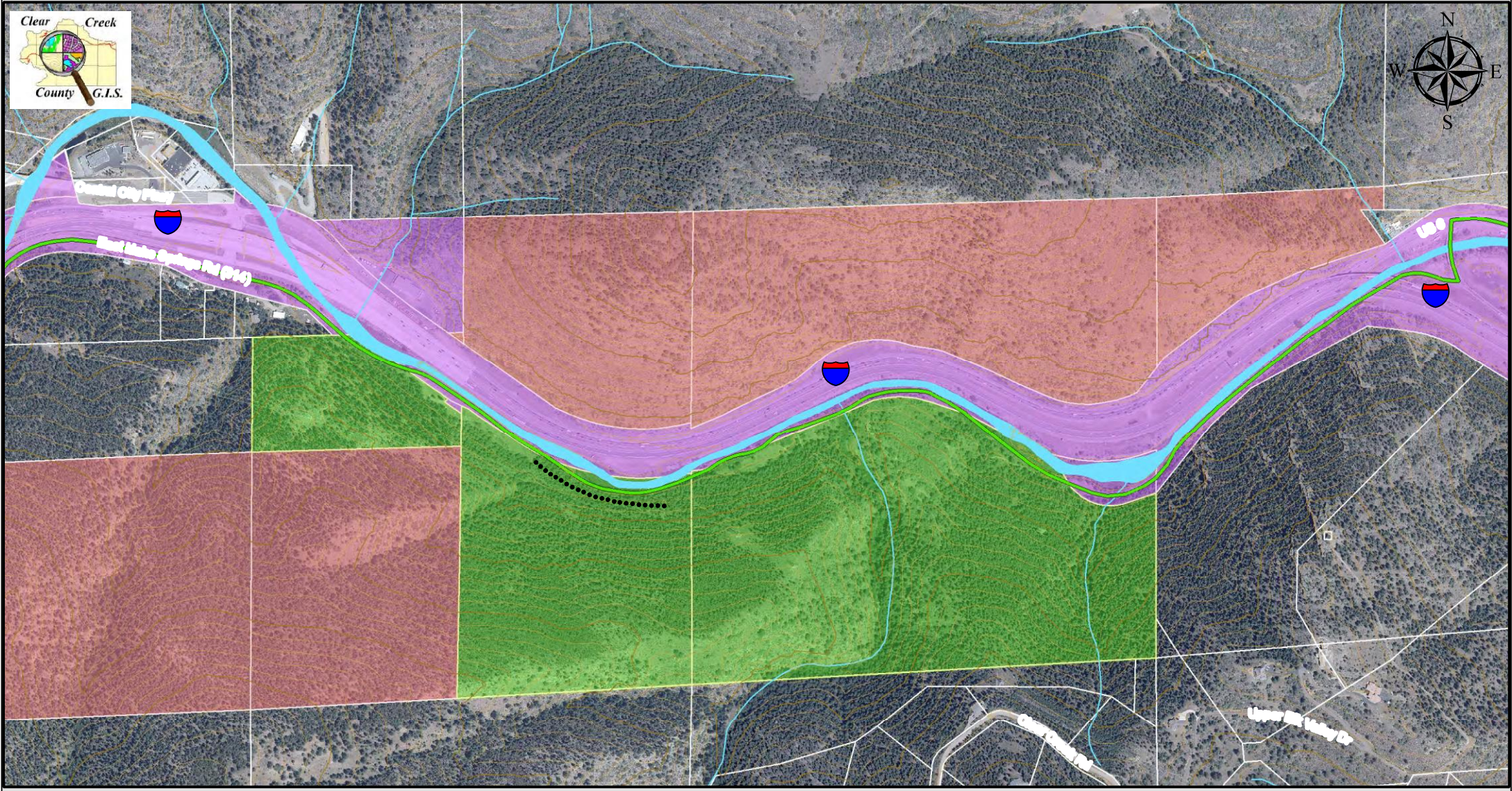
- 1. Introductions, Meeting Purpose and Project Updates**
- 2. Review Section Alignment Innovations and Stakeholder Perspectives**
- 3. CSS Flow Chart - Measures of Success**
- 4. Evaluation Matrix and Central Section Innovations**
- 5. Next Steps, TT #4 Agenda Topics**

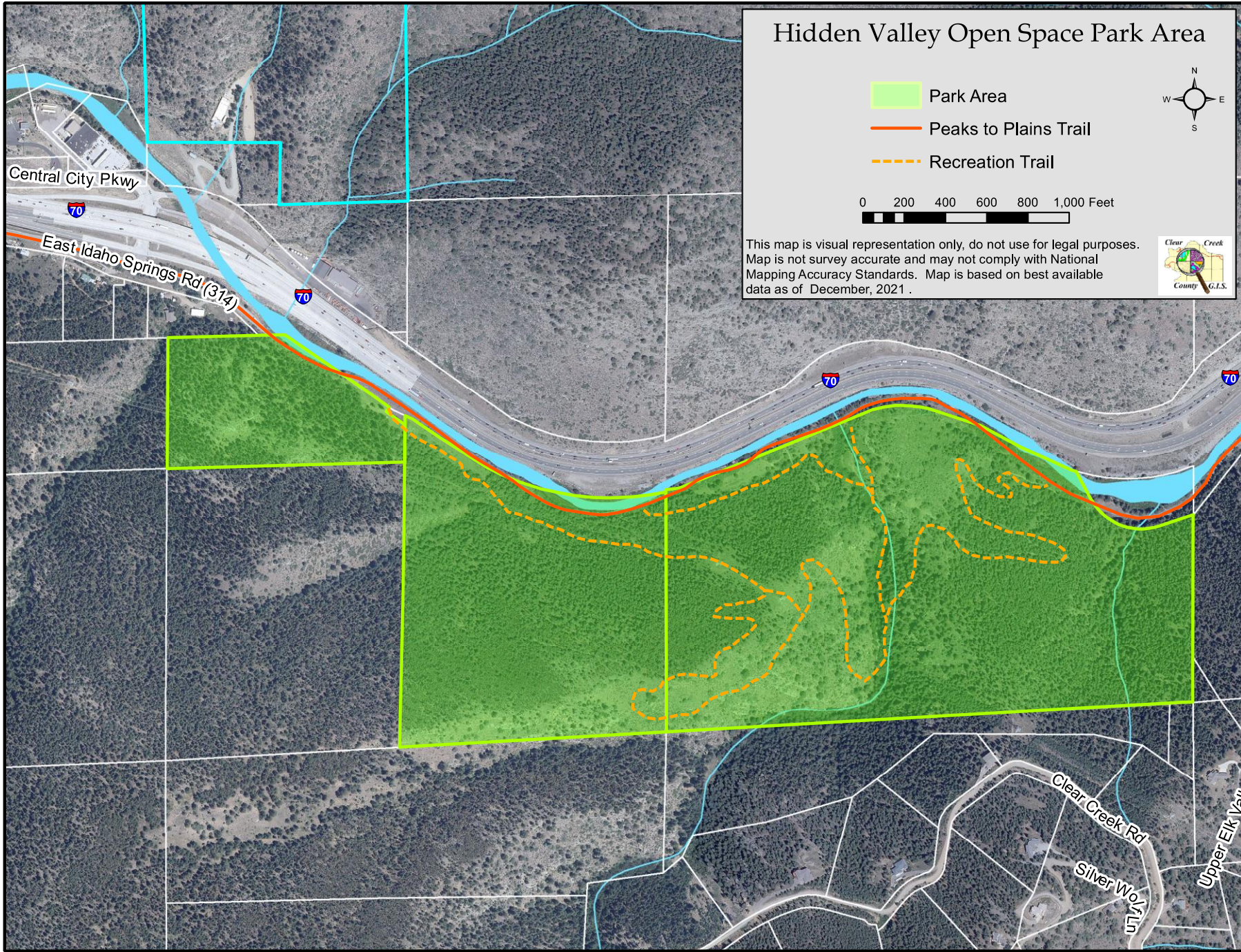


Review Section Alignment Innovations and Stakeholder Perspectives

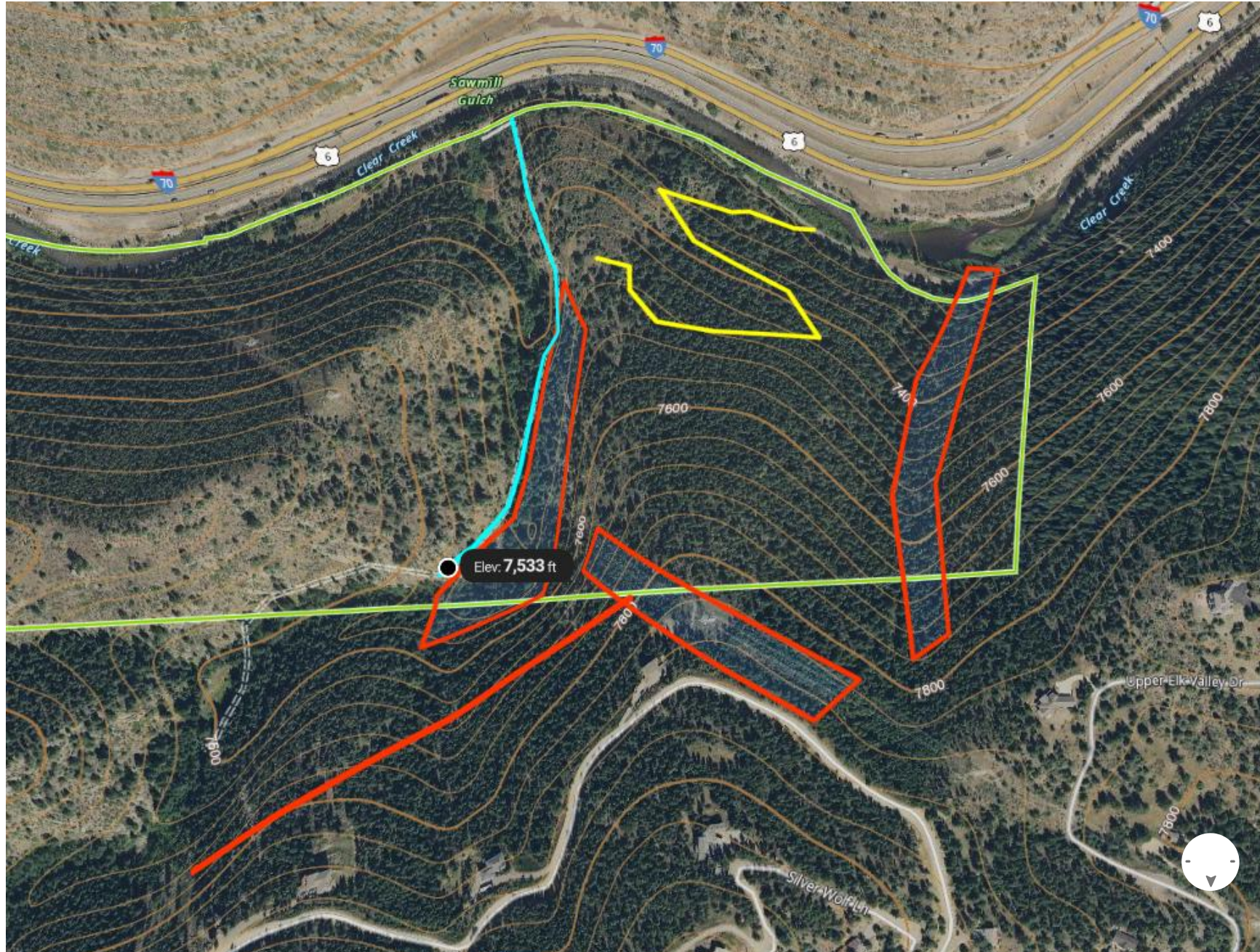
Hidden Valley Open Space Park - Sawmill Gulch

Provided by Clear Creek County

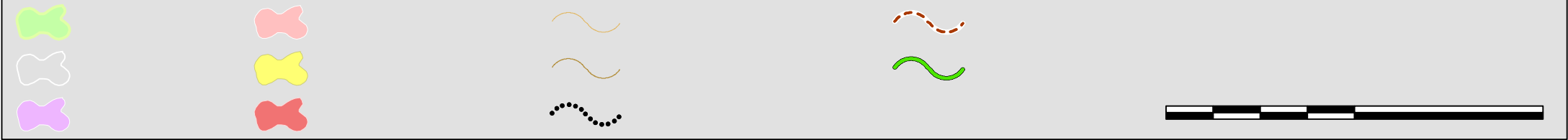
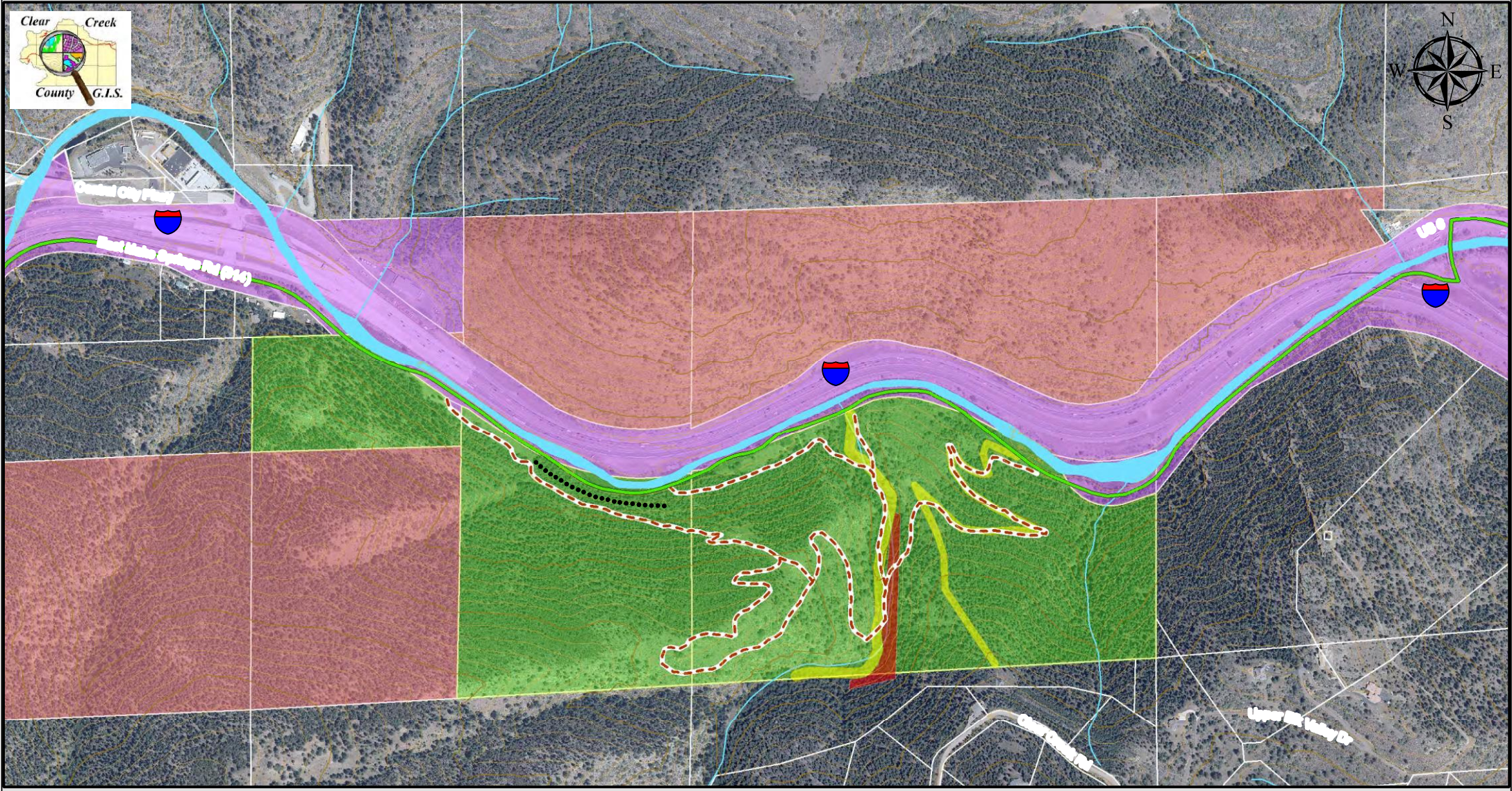




Provided by Clear Creek County



Composite - Hidden Valley Open Space Park - Sawmill Gulch





CSS Considerations

Objectives:

- Review measures of success for confirmation
- Determine what measures of success are applicable to evaluating major alignment innovations

1:70 Floyd Hill to Veterans Memorial Tunnels Meeting Date: 5.13.2022

FLOYD HILL CENTRAL SECTION

Evaluation Criteria		Design Option Comparison					
ID	Evaluation Questions - How does the option...?	Measures of Success	Preferred Alternative	Braided Bridges Option	East Bound Down Option	Data Needs	
Safety	1	Accommodate emergency access & egress responses for I-70, local incidents, and recreationalists?	*Emergency Parking *Response Time *High School Evacuation *Residential Evacuation *Access to Creek	Forage Road allows for more emergency truck parking. Forage Road allows for most opportunity to create emergency access to the Creek. More room on both sides of creek under product to create access for emergency and recreation.			
	2	Address safety needs of non-vehicular traffic?	*Reduction in auto conflicts with bikes, pedestrians, walking, fishing. *Number of multi-use opportunities with Greenway, Central City Park, US 40 *Mitigation of impacts for non-vehicular traffic during construction	More separation between Forage Road vehicles and Greenway pedestrians/ Bike traffic making it safer for Greenway users. Forage Road further from the Greenway, so may have less debris on trail from the Forage Road. However, I-70 over the Greenway may lead to more debris potential and maintenance considerations. Lower volume of traffic on the Forage Road due to I-70 US 40 ramp directly connecting to I-70. More opportunities for multi-use access.			
	3	Address safety of the traveling public and the community (local and regional)?	*Neighborhood Traffic Movement *Visible Service Conflicts				
	4	Address safety of the traveling public and trucks?	*Number & severity of design variances *Compliance with Incident Management & Fire Mitigation Plans	Less challenging for truck turnaround when US 40 is closed due to geometry of Hidden Valley interchange			
	5	Impose traffic operations at interchanges?	*Measure taken to reduce number of neighborhood traffic conflicts	Not a differentiator			
Mobility and Reliability	6	Impose mobility and reliability?	*Ease of circulation on roadway network including local businesses, residents, and regional travel *Registration of Fire with W & MDC *Access to trails and creeks for recreation including rafting *Visual alignment meets driver expectation *Avoid negative impacts or unintended consequences to Idaho Springs *Communication of construction conditions (from range and interstate levels) *Support ACT and Corridor multi-modal improvements *Support ease of freight movement	More separation between US 6 and Hidden Valley. More common interchange configuration at Hidden Valley supports better driver expectancy. Potentially better traffic operations at Hidden Valley interchange.			
	7	Maintain economic viability/business access during and after construction?	*Estimated Cost / predicted life cycle and consistency with CSO values *Construction operations are communicated to set and meet driver expectations *Ease of utility implementation *Opportunities to reduce GHG and other air pollutants	Least tall rock cuts are expensive and difficult to maintain. Forage Road alignment better meets the function and purpose of the Greenway.			
Implementability	8	Enable infrastructure investments that are measurable to construct and provide the best value for their life cycle, function and purpose?	*Question of Construction *Community access during construction *Impacts to existing roadway networks *Economic impacts to businesses during construction *Ability to coordinate construction activities and traveling public *Communications are both digital and traditional to accommodate all audiences *Ability to comply with the lane closure strategy	Least impact due to less rock blasting. Proctor construction duration by approximately one week, and easier maintenance of traffic with two-way traffic, instead of roadcut.			
	9	Minimize construction impacts to the community and traveling public?					



BREAK

April 29, 2022



Evaluation Matrix & Central Section Innovations

Objectives:

- Introduce the evaluation matrix for the major alignment innovations in the Central Section.
- TT understands how measures of success will be implemented.

1-70 Floyd Hill to Veterans Memorial Tunnels Meeting Date: 5.13.2022

		FLOYD HILL CENTRAL SECTION					
		Evaluation Criteria		Design Option Comparison			
ID	Evaluation Questions - How does the option...?	Measures of Success	Preferred Alternative	Braided Bridges Option	East Bound Down Option	Data Needs	
Safety	1	Accommodate emergency access & egress response for I-70, local residents, and recreationalists?	<ul style="list-style-type: none"> *Emergency Parking *Response Time *High School Evacuation *Resident Evacuation *Access to Creek 	<ul style="list-style-type: none"> Frontage Road allows for more emergency truck parking Frontage Road allows for most opportunity to create emergency access to the Creek More room on both sides of creek under product to create access for emergency and recreation 			
	2	Address safety needs of non-vehicular traffic?	<ul style="list-style-type: none"> *Reduction in auto conflicts with bikers, pedestrians, e-bike, fishing *Number of multi-use opportunities with Greenway, Central City Pike, US 40 *Mitigation of impacts for non-vehicular traffic during construction 	<ul style="list-style-type: none"> More separation between storage road vehicles and Greenway pedestrian/bike traffic making it safer for Greenway users. Frontage Road further from the Greenway, so they have less debris on trail from the frontage road. However, 1-20 over the Greenway may lead to more debris potential and maintenance considerations. Lower volume of traffic on the Frontage Road due to WB US 40 more directly connecting to I-70. More opportunities for multi-use access. 			
	3	Address safety of the traveling public and the community (local and regional)?	<ul style="list-style-type: none"> *Neighborhood Traffic Movement *W/Viable Vehicle Collisions 				
	4	Address safety of the traveling public and trucks?	<ul style="list-style-type: none"> *Number & severity of design violations *Compliance with Incident Management & Fire Mitigation Plans 	<ul style="list-style-type: none"> Less challenging for truck turnaround when US 4 is closed due to geometry of Hidden Valley interchange 			
	5	Improve traffic operations at interchanges?	<ul style="list-style-type: none"> *Measures taken to reduce number of neighborhood traffic conflicts 	<ul style="list-style-type: none"> Not a differentiator 			
Mobility and Reliability	6	Improve mobility and reliability?	<ul style="list-style-type: none"> *Ease of circulation on roadway network including local businesses, residents and regional travel *Integration of transit with MTC *Access to trails and creek for recreation including e-bike *Trail alignment meets driver expectation *Good negative impacts or unintended consequences to Idaho Springs *Communication of construction conditions (frontage and interstate levels) *Support ACS and Corridor multi-modal improvements *Support ease of freight movement 	<ul style="list-style-type: none"> More separation between US 4 and Hidden Valley More common interchange configuration at Hidden Valley supports better driver expectancy Preferably better traffic operations at Hidden Valley interchange. 			
	7	Maintain economic viability/business access during and after construction?					
Implementability	8	Create infrastructure investments that are reasonable to construct and provide the best value for their life cycle, function and purpose?	<ul style="list-style-type: none"> *Estimated Cost / predicted life cycle and consistency with CSI values *Construction operations are communicated to set and meet driver expectations *Ease of utility implementation *Opportunities to reduce GHG and other air pollutants 	<ul style="list-style-type: none"> Least full rock cut use expensive and difficult to maintain Frontage Road alignment better meets the function and purpose of the Greenway. 			
	9	Minimize construction impacts to the community and traveling public?	<ul style="list-style-type: none"> *Duration of Construction *Community access during construction *Impacts to existing roadway networks *Economic impacts to businesses during construction *Ability to separate construction activities and traveling public *Communications are both digital and traditional to accommodate all audiences *Ability to comply with the lane closure strategy 	<ul style="list-style-type: none"> Least impact due to less rock blasting, shorter construction duration (by approximately one year), and easier maintenance of traffic with barrier traffic shield to protect 			



Next Steps & TT Agenda Topics

Next Steps and Actions

- Review Action Items
- Discuss next TT agenda items

Central Section

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Preferred Alternative

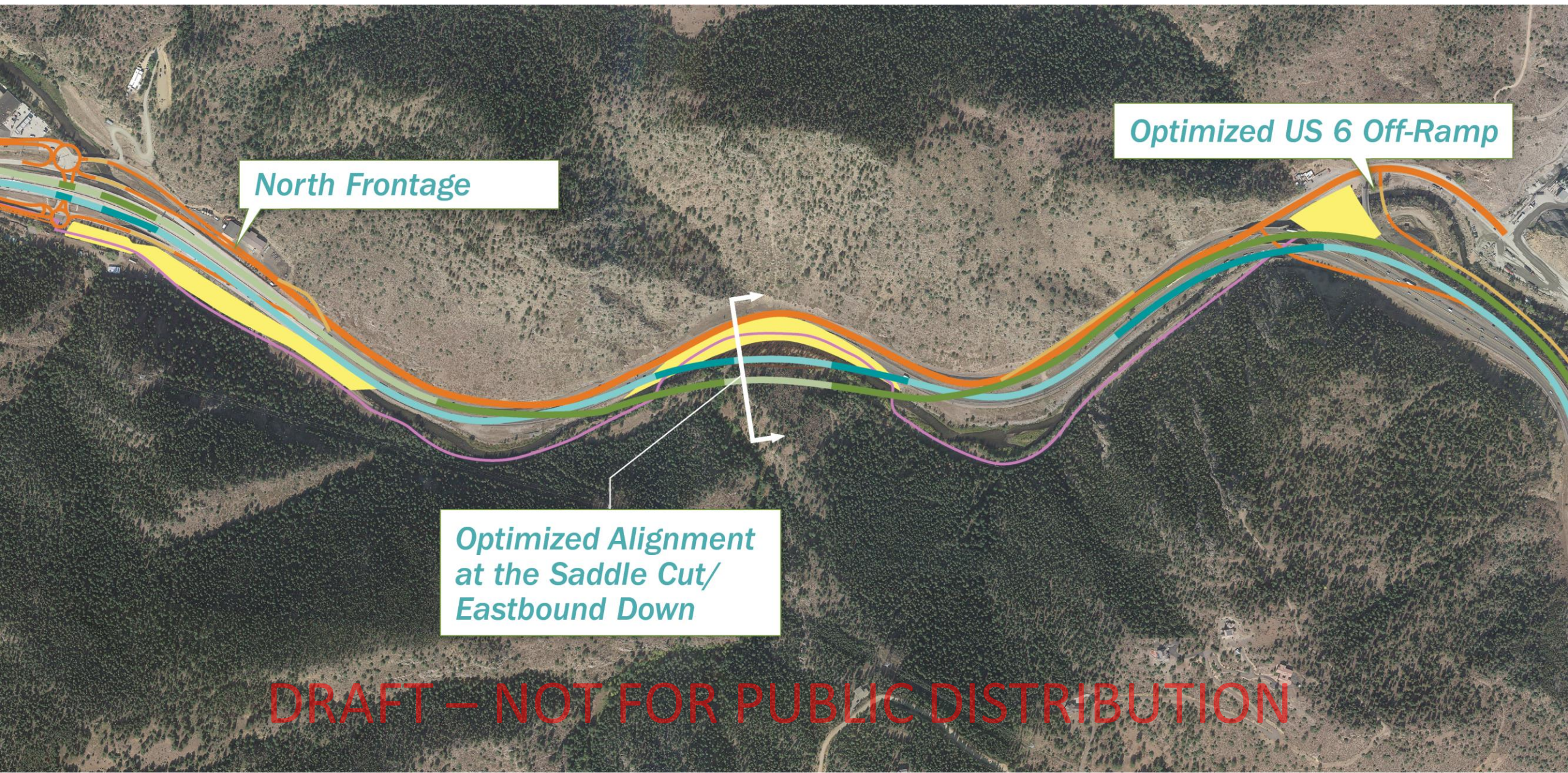


Preferred Alternative



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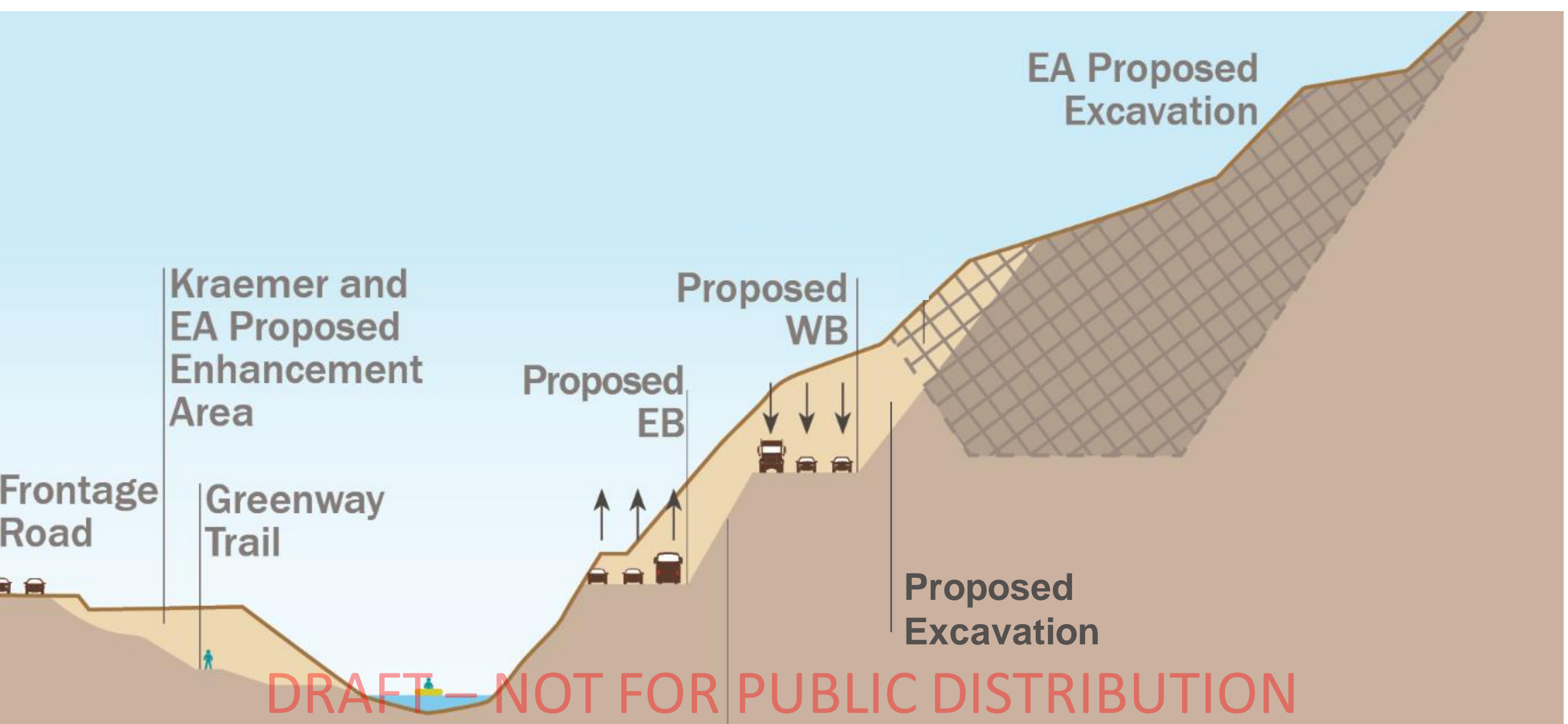


North Frontage

Optimized US 6 Off-Ramp

*Optimized Alignment
at the Saddle Cut/
Eastbound Down*

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Walls, slopes and other features to be refined

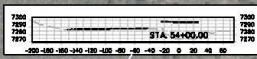
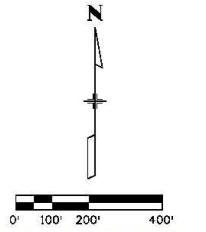


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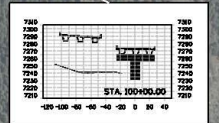
Eastbound Down



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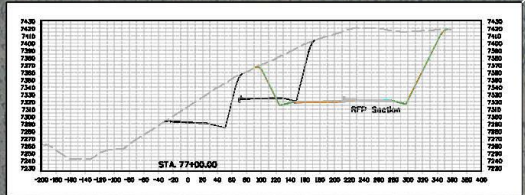


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LEGEND

	PROPOSED BRIDGE
	ROCK CUT



CENTRAL SECTION
BRAIDED OPTION DESIGN
4/28/2022

Project No./Code
24949

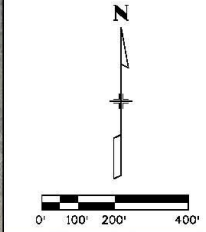
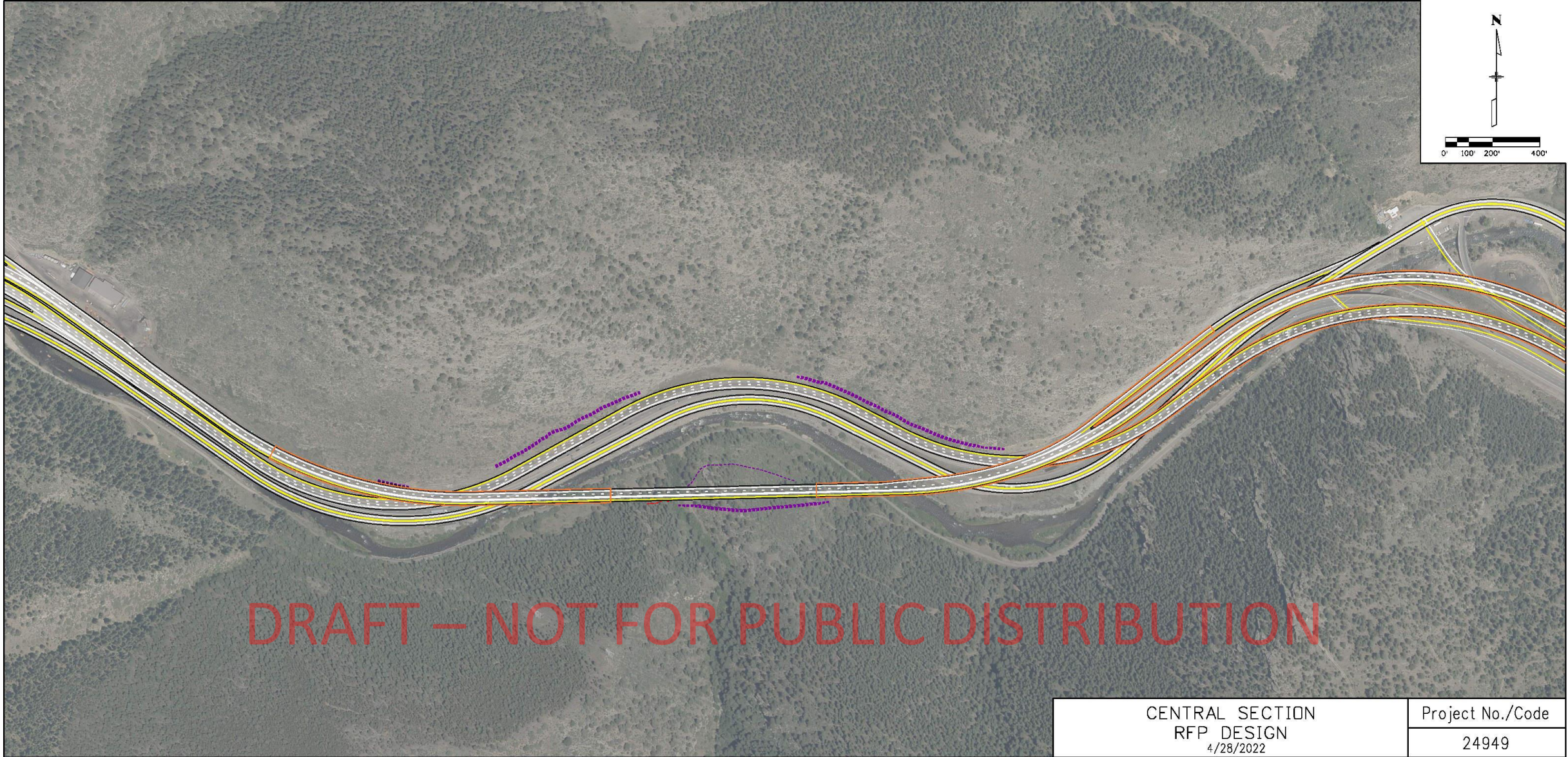
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Preferred alternative



Atkins innovation



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<p>CENTRAL SECTION RFP DESIGN 4/28/2022</p>	<p>Project No./Code 24949</p>
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Move frontage road south

Creek improvements

Save maintenance yard

Eliminate rock cut

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Major Alignment Innovations

Central Section: Braided Bridges Option – Eastbound weaves below WB, Crosses to South Side of Highway (North of Creek), Frontage Road is North of Creek

Benefits

- Reduces structure needs
- Reduces rock cuts on North side
- Reduced rock cuts on saddle cut
- Opportunity for stream restoration
- Maintain creek access and improvement opportunities
- Preserves greenway access
- Raised profile from creek reduces noise at creek level
- Maintains access to CC Open Space

Drawbacks

- EB and WB at different elevations reducing emergency access on viaducts



Major Alignment Innovations

Central Section: Eastbound Down Option – Eastbound weaves below WB, stays north of creek, Frontage Road south of EB on north side of creek

Benefits

- Reduces structure needs
- Opportunity for stream restoration
- Maintains access to CC open space
- Reduces rock cut required at saddle cut

Drawbacks

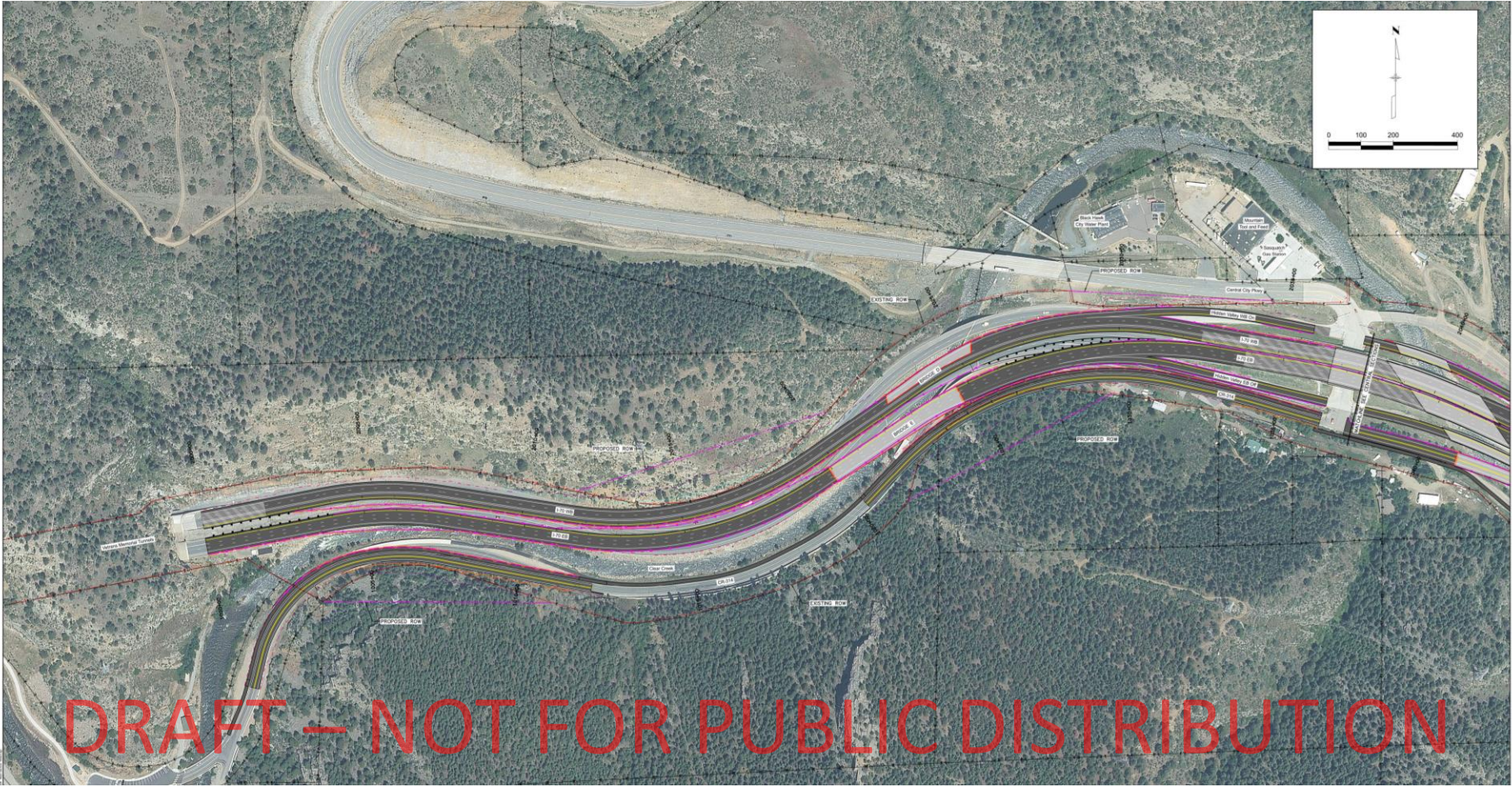
- Increased rock excavation north of creek
- EB at same level as frontage road increasing noise
- EB and WB at different elevations reducing emergency access on viaducts

Discuss: What additional information or data does the TT need to be able to evaluate the two Central Section major alignment innovations?

West Section

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Preferred Alternative





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04/27/22 08:45:17 For 24949 - 170' from 145' W/100' Bridge/Overpass/Structure/Structure/Structure - West Section - From Station 0+00 to Station 0+400



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WEST SECTION NORTH SHIFT, EB BRIDGE IN MEDIAN 4/27/2022	Project No./Code 24949
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WEST SECTION RFP DESIGN 4/28/2022	Project No./Code
	24949

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Major Alignment Innovations

West Section: Option A – All Rock Cut moved to North

Benefits

- Eliminates need to rock excavation on CR314
- Eliminates need for utility relocation on CR314
- Eliminates reconstruction of CR314
- Opportunity to create riparian bench on north side of creek

Drawbacks

- Large increase to overall Rock excavation on the North
- Possible issues with Xcel transmission tower on North



Major Alignment Innovations

West Section: Option B – Optimized South and North Rock Cuts

Benefits

- Reduces rock excavation on CR314
- Reduces utility relocation on CR314
- Reduces reconstruction of CR314

Drawbacks

- Increase to overall Rock excavation on the North

Discuss: What additional information or data does the TT need to be able to evaluate the two major alignment innovations for the West Section?