

# Twin Tunnels Environmental Assessment



Purpose:	<b>Twin Tunnels EA and Frontage Road Project SWEEP Meeting</b>		
Day:	<b>Thursday</b>	Date:	<b>January 19, 2012</b>

Location:	<b>CDOT Region 1 - Golden</b>
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## Participants:

Attendee	Representing	
Ben Acimovic	CDOT R 1	N
Phyllis Adams	Upper CC Watershed Assn.	N
Samer Alhaj	CDPOT R 1	Y
Chuck Attardo	CDOT R 1	N
Sandy Beazley	Jacobs	N
Jim Bemelen	CDOT R 1	Y
Rena Brand	USACE	N
Allan Brown	Atkins	Y
Carl Chambers	USFS	Y
John Connelly	Michael Baker	N
Jeff Crane	Colorado Watershed	N
Mike Crouse	Clear Creek Consultants	Y
Lynne Deibel	USFS	Y
Jim Eussen	CDOT R 1	Y
Lauren Evans	Pinyon	Y
Sarah Fowler	EPA	N
Gary Frey	Colorado Trout	N
Janet Gerak	CDOT R 1	Y
Stephanie Gibson	FHWA	N
Al Gross	CDOT R 1	Y
Josh Hollon	Atkins	N
Holly Huyck	CDOT	Y

Attendee	Representing	
Tamara Keefe	Michael Baker	Y
Carol Kruse	USFS	N
Kelly Larkin-McKim	USFS	N
Fred Lyssy	Upper CC Watershed Assn.	N
Gina McAfee	Jacobs	N
Wendy Magwire	USFS	N
Alison Michael	USFWS	Y
Ben Moline	Upper CC	Y
Matt Montgomery	USACE	N
Marc Morton	CDOT R 1	Y
Pat Noyes	Pat Noyes & Assoc.	Y
Brian Partington	Pinyon Environmental	Y
Becky Pierce	CDOT	Y
Bob Quinlan	Jacobs	Y
Ed Rapp	CC Watershed	N
David Singer	CDOT	Y
Jo Ann Sorensen	Clear Creek County	Y
Francesca Tordonato	Jacobs	N
Melinda Urban	FHWA	N
Mary Jo Vobejda	CH2M HILL	N
Paul Winkle	CO Parks &	Y
Mandy Whorton	CH2M HILL	N

## Discussion Items

The purpose of the meeting was to review the list of issues, the revised work plan; and review and finalize the recommendations made.

## Review of Issues, Approach & Recommendations

This was the third of three scheduled SWEEP Meetings for the EA phase of the Twin Tunnels and Frontage Road design phase.

The commitments CDOT makes will be documented in the Twin Tunnels FONSI and the Frontage Road Decision Document. The specific actions, documentation and the process to be used for mitigation will be carried through the design process for the Twin Tunnels and Frontage Road.

### Water Quality - Sediment Management

#### **Excavated Rock and possibilities for exposing mineralization**

The roadway sampling on I-70 has not uncovered any mineralization. The bore sampling will be done inside the tunnel at the end of January. One of the bores will go across the vein structures. Holly Huyck is pretty sure that there won't be anything uncovered that they already don't know about. There is always the possibility that something may be discovered during construction. After construction the tunnel will be sealed which will contain any mineralized rock.

#### **Sediment control and ongoing maintenance of BMPs**

The group reviewed the sections of the Draft SCAP pertaining to the Twin Tunnel project. The SCAP is for I-70 from the Eisenhower Tunnel to US 6. It contains more recommendations than will be built with these projects. Clear Creek Consultants have had several meetings with Atkins to include many of the Draft SCAP recommendations into the preliminary design. The SCAP will be finalized in August, 2012, which will give enough time for the recommendations to be incorporated into the final design of the Twin Tunnels. The SCAP does not address the Frontage Road because it is separated from I-70. Temporary BMPs will be put into place on the Frontage Road during construction and when CR314 is used as a detour by CDOT. The Twin Tunnels and Frontage Road projects will have SWMP plans and temporary BMPs in the plans and specs for each project and package.

There are five sediment basins in the Twin Tunnels design. There will be a sand/oil separator at the Chain Station.

Shoulders will be paved along the retaining walls to make it easier for maintenance sweeping operations. The tunnel will have a drainage system which will capture runoff. The tunnel will also be swept at part of maintenance operations.

### Water Quality - Clean Water Act

#### **Event Impacts**

There are more event-related impacts to Clear Creek above 9,000 feet than there are in the Twin Tunnels area due to the use of sand and deicing fluids during the winter. There has been an

increased use of deicing material and the recommendation was made to modify the BMP to reduce runoffs into Clear Creek.

CDOT has been doing ambient monitoring but not event monitoring. Holly Huyck said that CDOT may make a commitment to event monitoring.

Metals concentrations are low above the mining district. Clear Creek Consultants may start monitoring water at the Hidden Valley Draw during construction. The EPA cleanup of the Argo mine site will be going on at the same time as the Twin Tunnels construction. The suggestion was made to monitor upstream from the waste water treatment plant to determine to determine if there are effects from the EPA project. The EPA may have plans to do monitoring of their own. Marc Morton will get Holly the summary from the meeting he had with the EPA.

### **Dewatering**

Seep samples have been collected from two pipes on the west wall of the concrete box culvert on the east side of the Twin Tunnels. The samples meet all drinking water standards but the mercury levels are above the limit for fish. A retest will be done and if the mercury levels are still elevated this could require a subterranean discharge permit from the Health Department if the water daylight. It is possible that the discharge in this culvert may dry up after the tunnel expansion.

There will be no dewatering samples from the tunnel borings due to the type of equipment used.

Clear Creek County has acquired the property on the north side of the creek adjacent to the Frontage Road. Jo Ann Sorensen offered assistance in getting Pinyon Environmental access for sampling the well water for a background data point.

### **Spill Control**

The majority of the spills are on the east side of the tunnel. The containment area in this area will be small because most of the spills are diesel and lubricants from trucks overturning and are generally less than 150 gallons. The spill containment area at the bottom of Floyd Hill will be less structured so that recreational users will still have access to the creek.

Bench traps are recommended for the potential construction staging areas.

### **Water Quality - Mine Workings**

The mining done in the Twin Tunnels area was mainly dredging of Clear Creek. There may be some small isolated areas of mine waste discovered during construction. The mine waste will probably be mixed in with other road materials and will be inert. Encapsulating the waste under the pavement instead of moving it off-site is probably the best mitigation if it is found. The materials management plan will include training construction workers on how to identify the mine waste. This may require a revision to Section 250 of the specifications for this project.

Yeh's sampling of the retaining wall area showed no mineralized materials on the frontage road.

### **Water Quality - Mine Waste**

This does not appear to be an issue for this project. If the bore samples from the tunnel do not reveal a large amount of mineralized rock, CDOT will send the EPA & CDPHE a letter requesting the release from requiring a Liability Relief Memo.

### **Natural Habitat - Wetlands Protection**

There are no permanent impacts to wetlands or Waters of the U.S. from the Twin Tunnels project.

Minimal permanent impacts to wetlands and riparian areas from the Frontage Road project will occur in Phase 2.

The retaining walls in Phase 1 will be built from behind (from the road side) to minimize impacts to the creek.

### **Natural Habitat - Aquatic Species**

Jim Eussen complimented the design team for minimizing impacts to Clear Creek.

There are no greenback trout in Clear Creek.

The group received the Draft Aquatic Habitat Conceptual Design as a handout. The group would like to review the updated report during final design with specific locations, type of enhancements and the timing. The enhancements to Clear Creek will be done during construction to reduce the costs provided they can be done outside of brown trout spawning season (October-June). A baseline fish sampling will be done before and after the enhancements.

### **Information and Research Needs**

Janet Gerak said that as reports and tech memos are finalized they will be uploaded to the CSS website. She would prefer to be sent links instead of PDFs to minimize the amount of document management needed.

CDOT will use their standard Environmental Commitment Tracking Spreadsheet to document the commitments made and any changes to CDOT's normal standards for both the Twin Tunnels and Frontage Road projects. The stream enhancements will be added to the spreadsheet.

### **Next Steps**

The SWEEP group will reconvene prior to construction of the Frontage Road and during final design of the Twin Tunnels.



## Twin Tunnels EA and Frontage Road Project

### AGENDA

Purpose:	<b>SWEEP Meeting</b>		
Day:	<b>Thursday</b>	Date:	<b>January 19, 2012 9:00 am</b>
Location:	<b>CDOT Region 1 - Golden</b>		

#### Introductions

#### Review Issues

- List of issues

#### Review Approach to Issues

- Revised work plan

#### Review and Finalize Recommendations



## Twin Tunnels EA and Frontage Road Project SWEEP Issues Work Plan

Water Quality - Sediment Management			
<i>Issue</i>	<i>How it will be addressed</i>	<i>Information and data needs</i>	<i>CDOT Lead</i>
Excavated rocks and possibilities for exposing mineralization	Tunnel and roadway boring sampling and analysis plan (SAP)	Rock content, structure, mineralized structures	Holly Huyck
		Seep samples	Marc Morton
Sediment control and ongoing maintenance of BMPs	Clear Creek SCAP	Sediment sources and recommended BMPs	Holly Huyck
Water Quality - Clean Water Act			
<i>Issue</i>	<i>How it will be addressed</i>	<i>Information and data needs</i>	<i>CDOT Lead</i>
Event impacts	Monitoring Boring SAP	Stations at Kermitts and Twin Tunnels provided baseline data for PEIS	Holly Huyck
This segment of Clear Creek is on the Section 303(d) list for cadmium	Boring SAP Water quality monitoring	Heavy metals	Holly Huyck

Dewatering	Boring SAP Well sampling	Seep samples and flow rate before and after	Marc Morton
Spill control	Clear Creek SCAP	Spill and crash reports, BMPs	Holly Huyck
<b>Water Quality - Mine Workings</b>			
<i>Issue</i>	<i>How it will be addressed</i>	<i>Information and data needs</i>	<i>CDOT Lead</i>
Area of mineralized rock and mine workings east of Idaho Springs and west of Twin Tunnels	Review and document, develop recommendations Materials management plan	Inventory, mapping, roadway boring analysis	Marc Morton
County Road 314 could have mine waste as sub-base material	Review and document, develop recommendations Materials management plan	Inventory, mapping, roadway boring analysis	Marc Morton
South side of I-70, north bank, east of the Twin Tunnels	Review and document, develop recommendations Materials management plan	Inventory, mapping, roadway boring analysis	Marc Morton

<b>Water Quality - Mine Waste</b>			
<i>Issue</i>	<i>How it will be addressed</i>	<i>Information and data needs</i>	<i>CDOT Lead</i>
Mine waste impacts and mineralized rock disposal	Determine the need for a Liability Relief Memo	Identify properties, mine workings inventory	Marc Morton
<b>Natural Habitat - Wetlands Protection</b>			
<i>Issue</i>	<i>How it will be addressed</i>	<i>Information and data needs</i>	<i>CDOT Lead</i>
Wetlands impacts	Wetland delineation	Extent of permanent impacts	Becky Pierce
<b>Natural Habitat - Aquatic Species</b>			
<i>Issue</i>	<i>How it will be addressed</i>	<i>Information and data needs</i>	<i>CDOT Lead</i>
Aquatic species impacts, including construction impacts	Ecological and species inventory	Greenback cutthroat trout Brown trout spawning season Other species from CPW and River Watch inventories	Jim Eussen



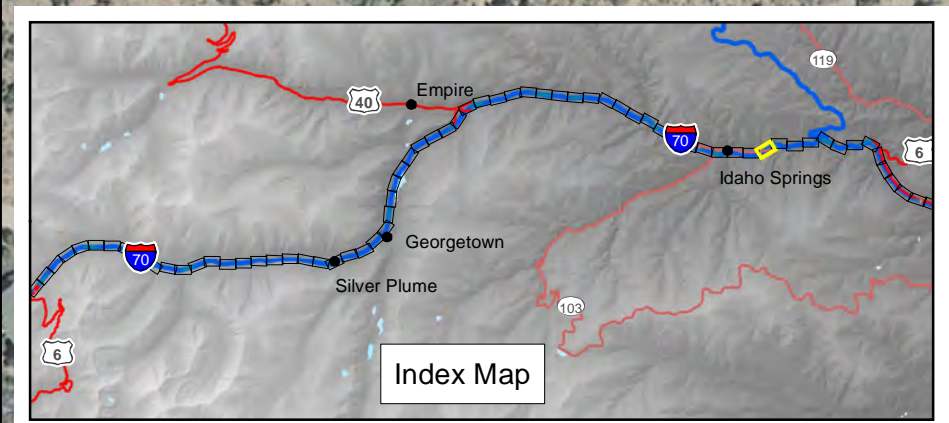
<b>Information &amp; Research Needs</b>			
<i>Issue</i>	<i>How it will be addressed</i>	<i>Information and data needs</i>	<i>CDOT Lead</i>
Repository for project data	Identify and post additional data on CSS website	Deicing studies Inventory of riparian and aquatic species Additional studies	Janet Gerak



# Clear Creek

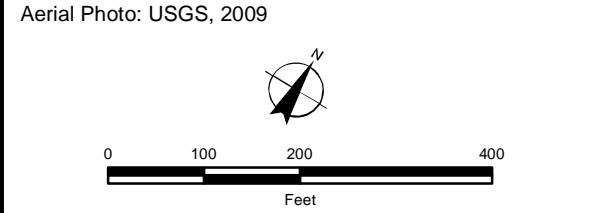
## Sediment Control Action Plan

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#### Legend

- × Mile Marker
- Existing Drainage Features (Approximate Location)**
- Channel
- Culvert
- × × Bench Trap
- Inlet
- ⓐ Groundwater Seep
- Ⓜ Exposed Mine/Mill Tailings
- Ⓣ Perennial Tributary
- Ⓦ Wetlands
- ▨ Sediment Basin
- ▨ Spill Containment
- Recommended BMPs and Site Reconnaissance Features**
- ⓑⓉ Bench Trap
- ⓐ Inlet
- ⓑⓈ Inlet Sediment Trap
- ⓑ Sediment Basin
- Ⓢ Snow Storage Area
- ▨ Vegetated Swale
- ▨ Clean Water Diversion
- ▨ Rundown
- ▨ Pan Drain / Curb & Gutter
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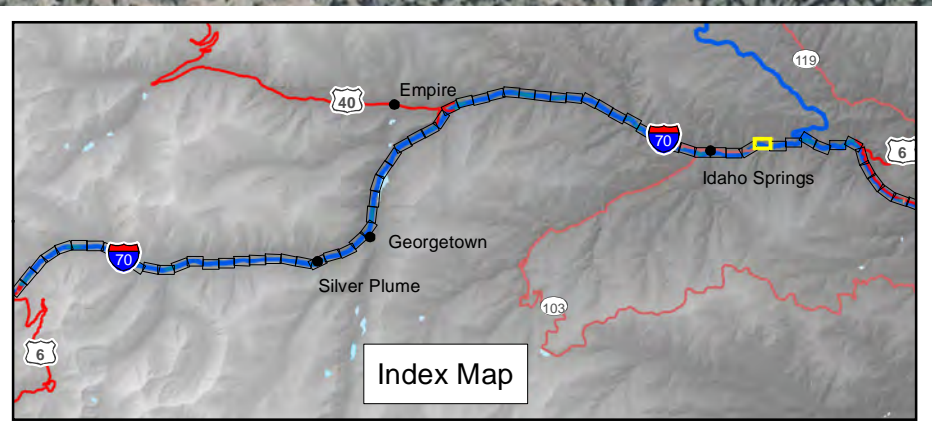
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# Clear Creek

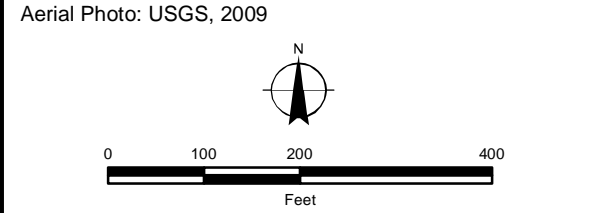
## Sediment Control Action Plan

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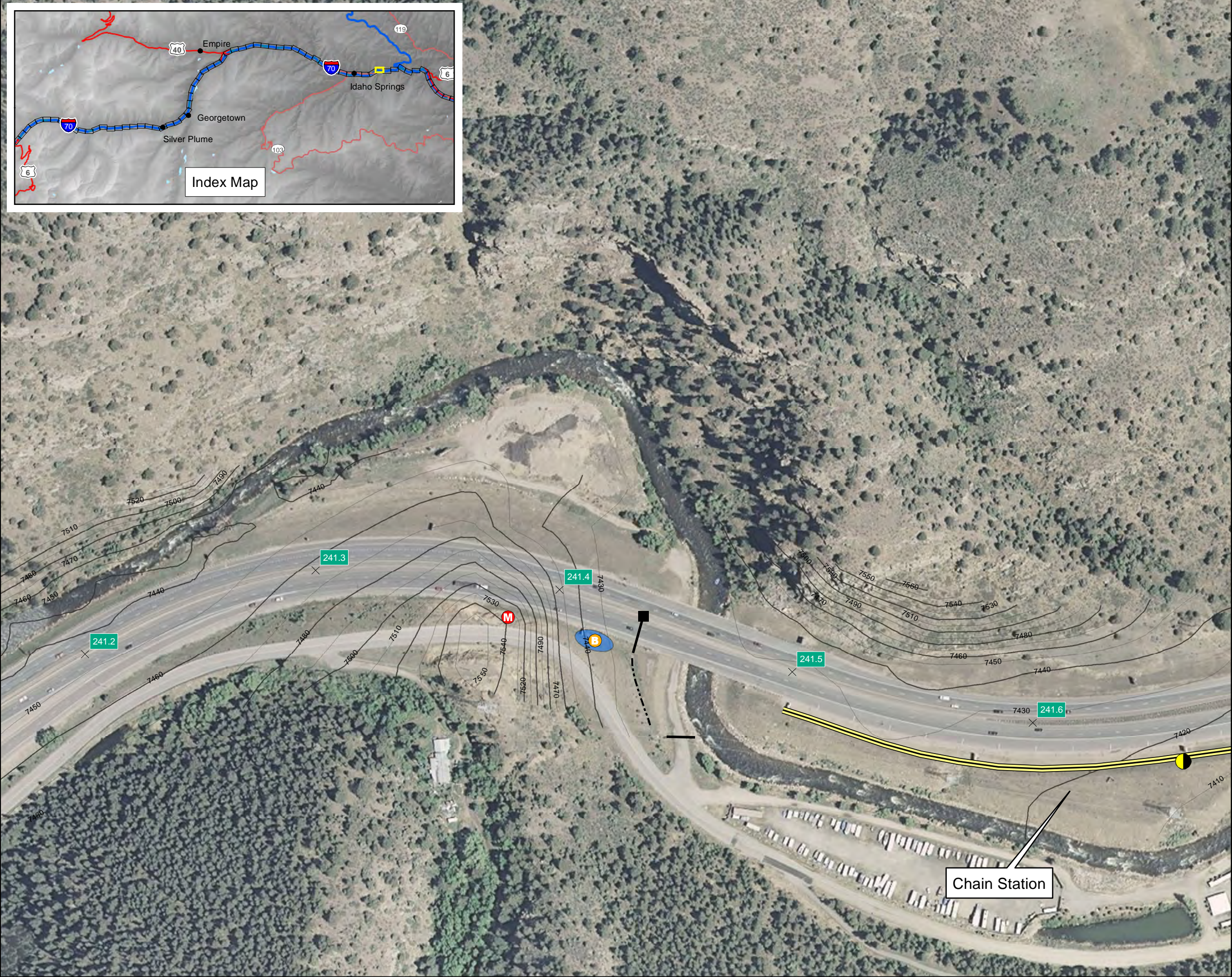


Index Map

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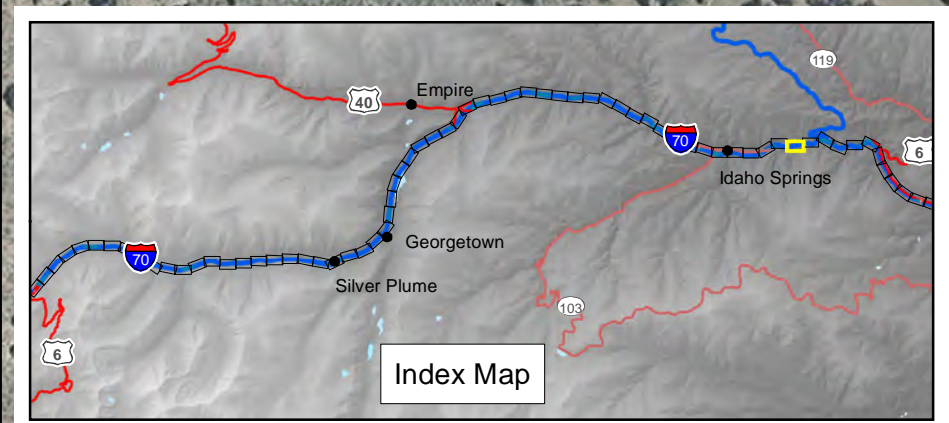
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Chain Station







Index Map



# Clear Creek

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Aerial Photo: USGS, 2009

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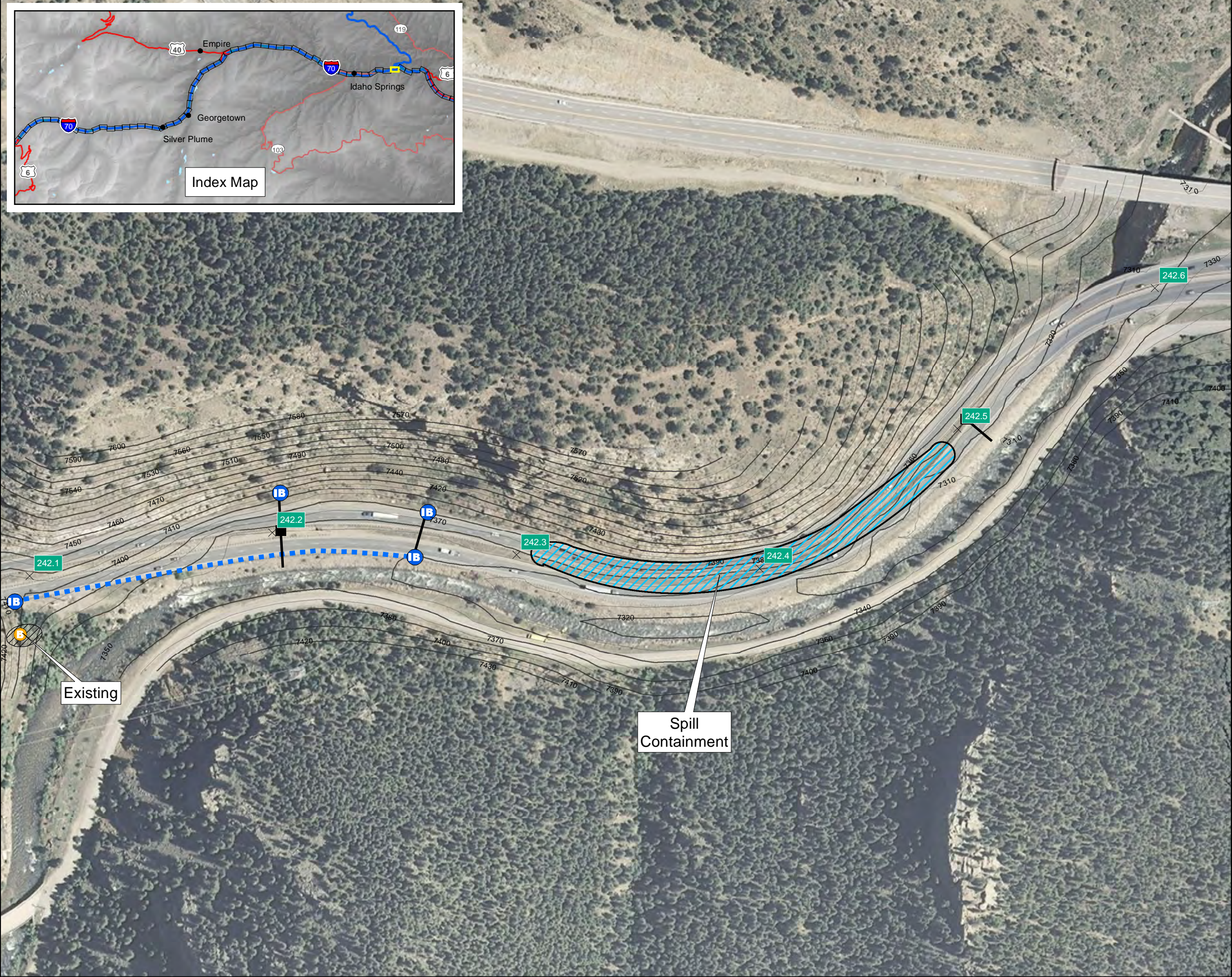
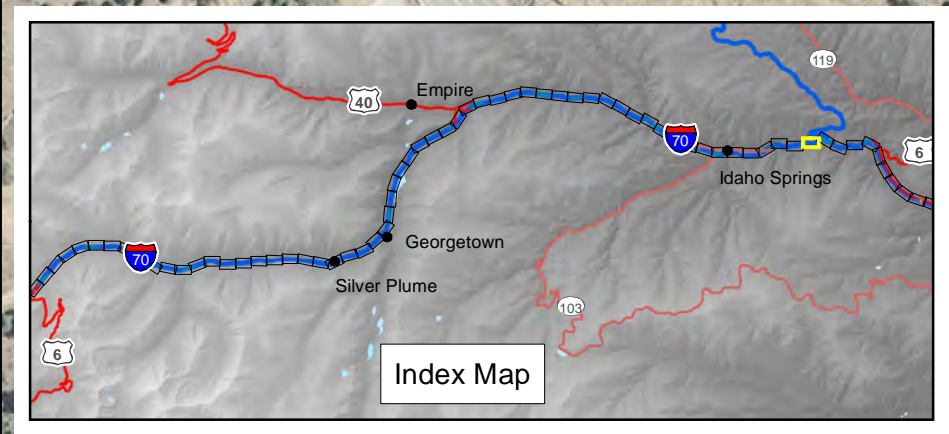




# Clear Creek

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Aerial Photo: USGS, 2009

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Existing

Spill Containment

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242.2

242.1

242.5

242.6

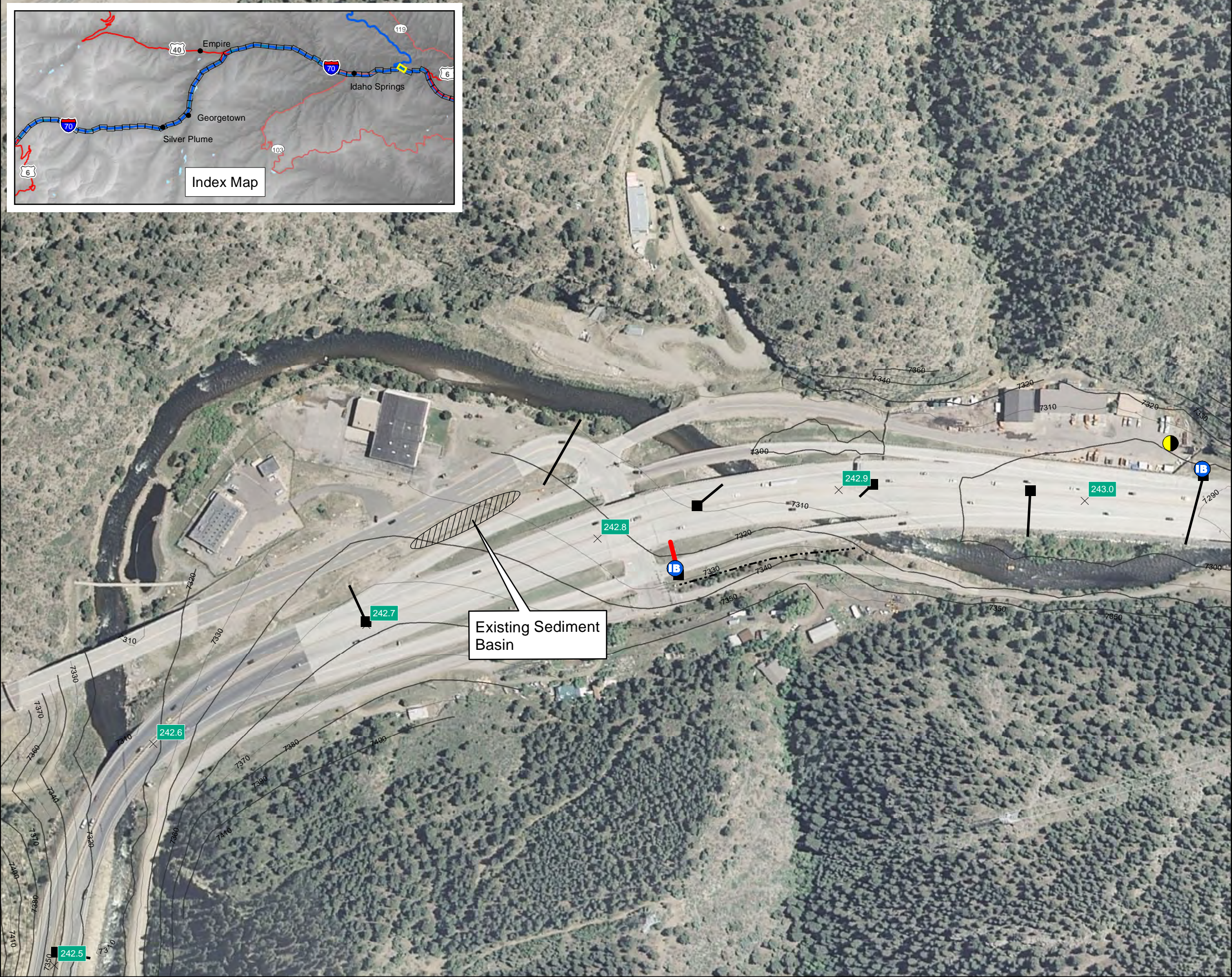
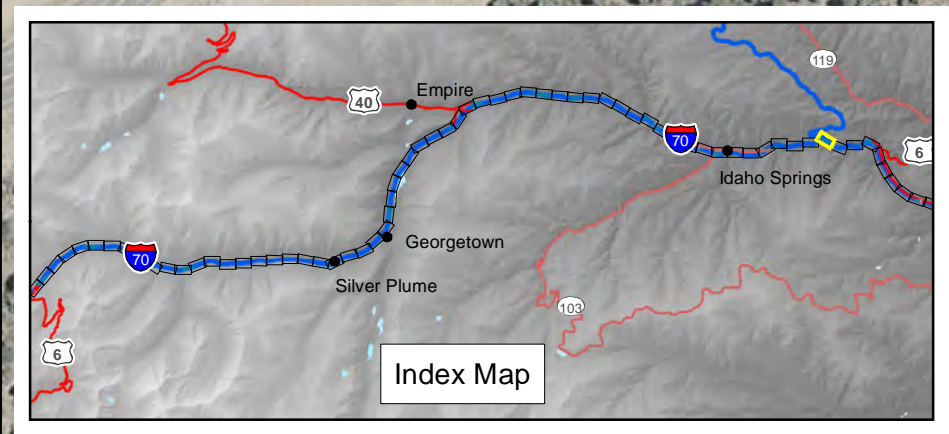
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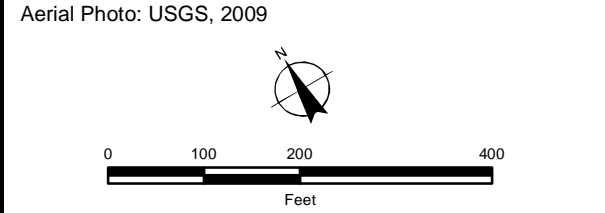
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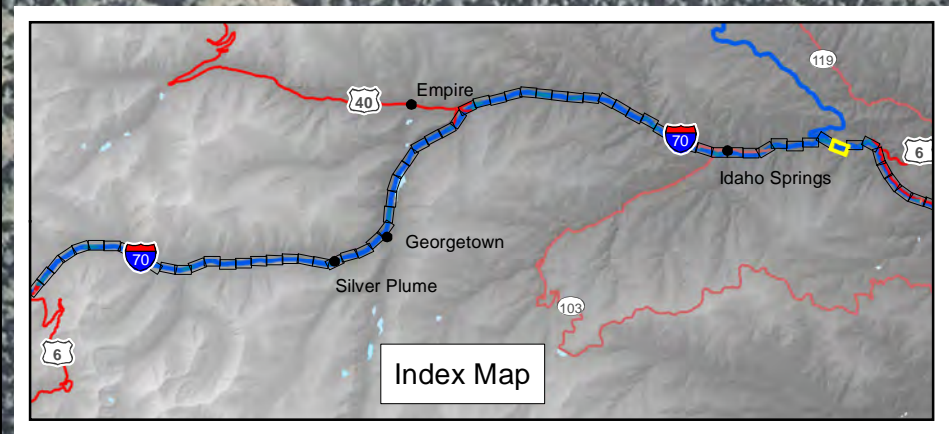
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# Clear Creek

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Aerial Photo: USGS, 2009

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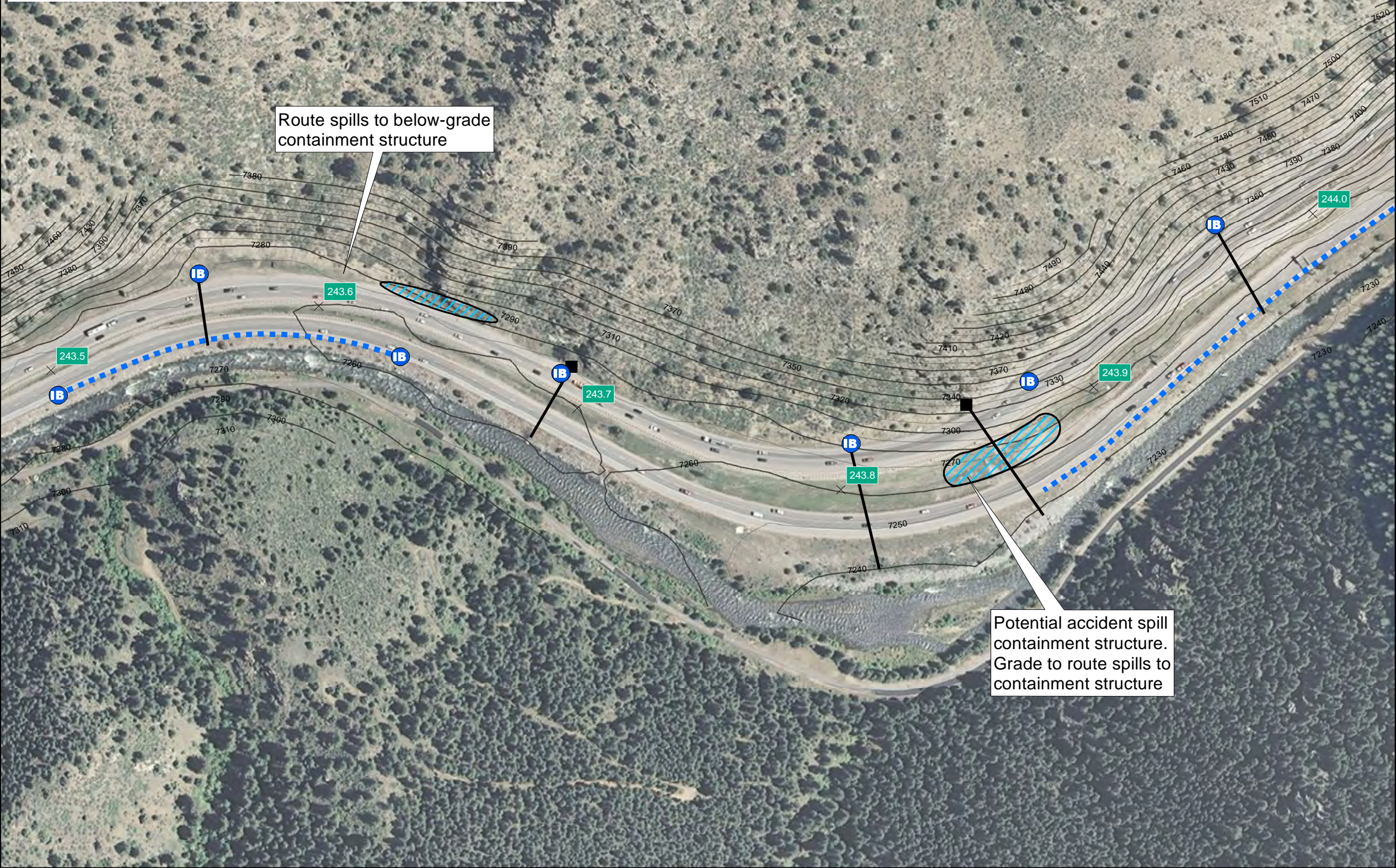
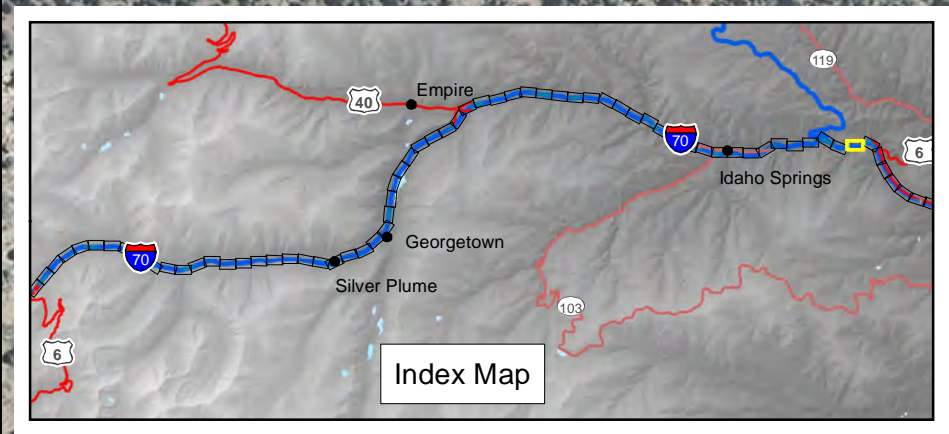




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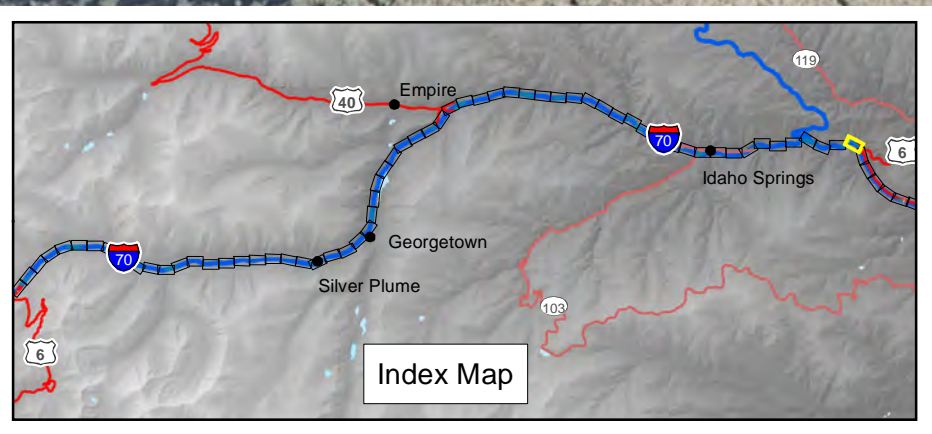




# Clear Creek

## Sediment Control Action Plan

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Spill containment structure with tiedowns for booms

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## **Habitat Concepts to consider for Clear Creek in Twin Tunnels project area.**

This document addresses the potential for habitat enhancements in Clear Creek in the Twin Tunnels Project area. It follows the SWEEP guidelines for CDOT to investigate stream enhancement opportunities in CDOT project areas. It is not intended as mitigation for the Twin Tunnels Project since no impacts to stream habitat are expected from the Twin Tunnels Project.

There are two dominant stream channel types in the project area. 1) a straight channel with relatively high gradient, high water velocity and confined by steep banks. 2) lower gradient sections that are 70 feet wide or greater with uniform depths with little instream cover from velocity and very little winter refuge habitat.

Objective – increase juvenile refuge in swift sections and overwinter trout habitat in sections where widths exceed 70 feet.

A habitat reference for the area is a section of stream upstream of I-70 on the upper end of the study area (Polygon A – Attached Sheet 2). This area is approximately 60 feet wide from grass line to grass line with approximately 40 feet of width at base flow. The stream has a deepened thalweg with boulders which provide velocity shelter. The greater depth, approximately 2-3 feet deep, provides low flow and winter refuge habitat. This stream section has a point bar on one bank that is overtopped at high flow but functions to narrow the stream width at lower flows (Figure 1). This habitat reference could be used as the pattern for stream improvement in the widened lower gradient stream locations. Examples of areas where this concept could be applied are Polygons C and D (Sheet 4, Figure 2), Polygon E and F (Sheet 7, Figure 3, Figure 4) and Polygon G (Sheet 10). There may be other locations as well. The examples are included to illustrate potential improvement areas. A full inventory of the study area is recommended prior to making the selection for habitat improvement sites.

The improvement site would ideally have a downstream riffle that provides a hydraulic control (Figure 5). The objective for this habitat concept is to create a deepened thalweg and use the material to create a shallow point bar on the side of the channel (Figure 6). The improvement should not alter the cross section to a point where the downstream water surface changes at lower flows. The improvements should include gradual bed surface changes in stream contours without hard breaks. The changes to depth would be excavation that creates a maximum low flow depth of approximately 2-3 feet at the deepest location and tapering to existing grade on the upstream and downstream section lines. After the bed is contoured, boulder clusters could be placed to create velocity shelters.



Figure 1. Reference habitat section upstream of I-70 bridge near Idaho Springs (Polygon A). Note the point bar on the opposite bank and deepened thalweg with boulders.





Figure 2. Potential habitat improvement site upstream of Dog House Bridge (Polygon C).

Subject to Revision



Figure 3. Potential habitat improvement site upstream from Central City parkway (Polygon E).

Subject to Revision





Figure 4. Potential habitat improvement site downstream from Hidden Valley exit (Polygon F).

Subject to Revision

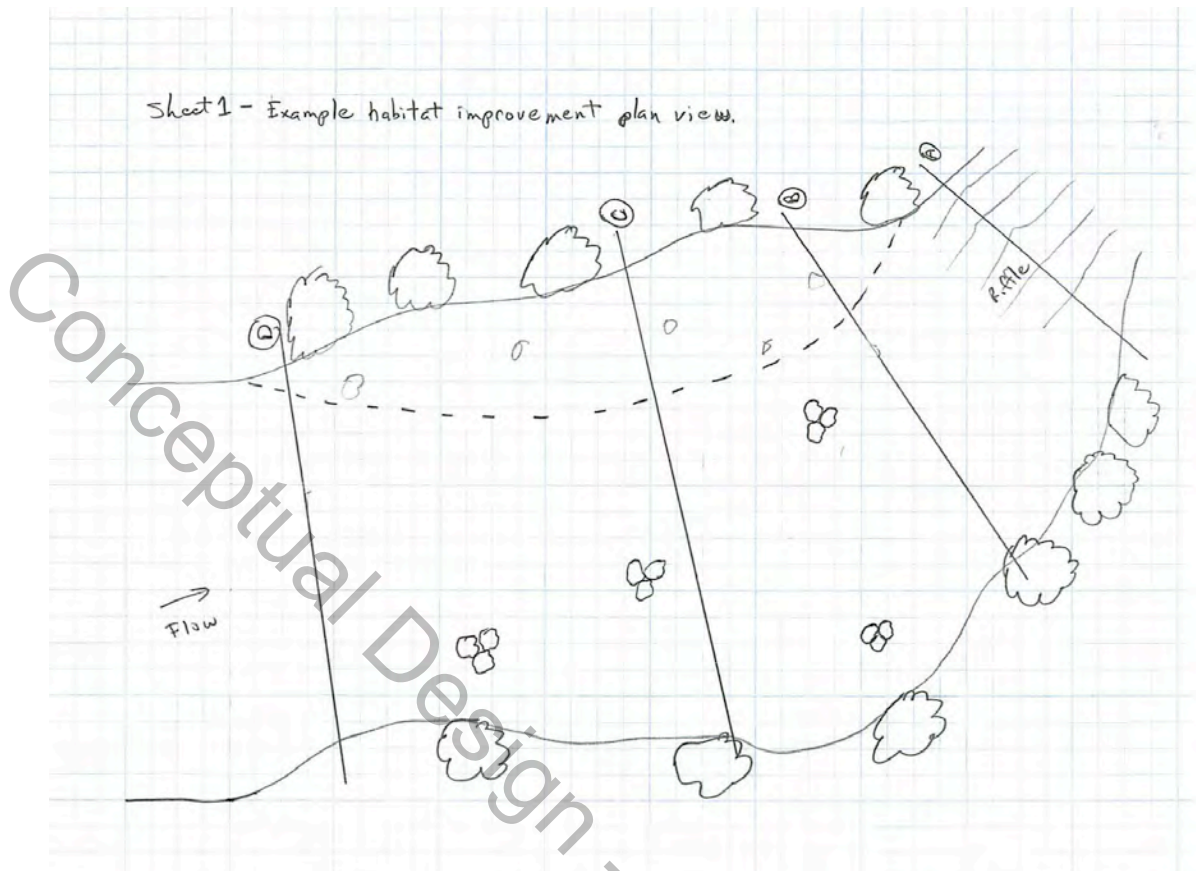


Figure 5. Example habitat improvement plan view in wider stream section. Dotted line represents edge of constructed point bar at low flow.

Sheet 2 - Example habitat improvement - cross section view. Solid line = existing grade, dotted line = future

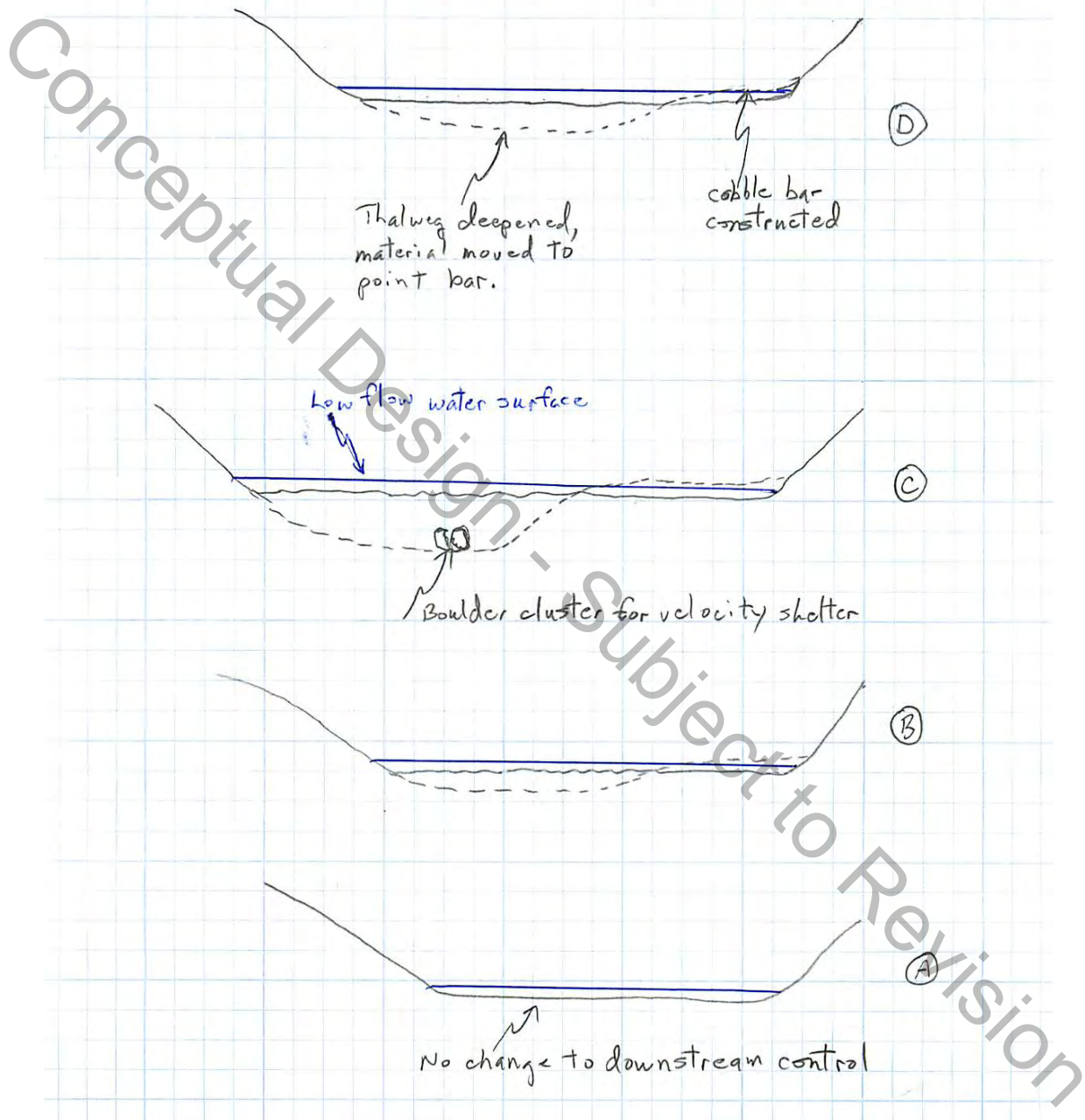
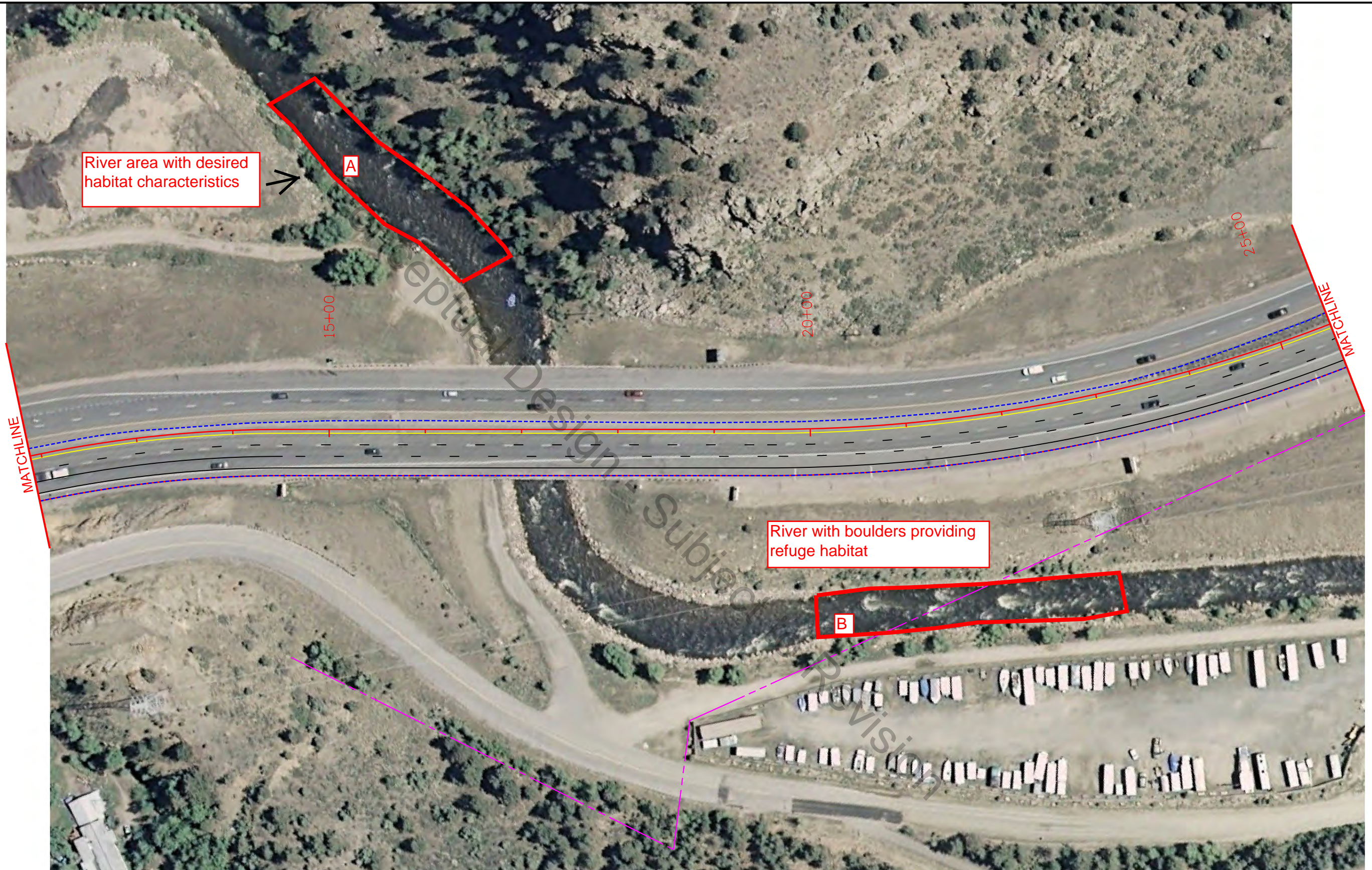


Figure 6. Example of cross sections in habitat improvement sites. Dotted line represents future bed profile and point bar construction.





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File Name:	DES_PL02.dgn
Horiz. Scale:	1:100
Vert. Scale:	
Unit Information:	English
Unit Leader Initials:	
<b>ATKINS</b>	4601 DTC Boulevard, Suite 700 Denver, CO 80237 Phone: (303) 221-7275 Fax: (303) 221-7276

LEGEND	
	Proposed Disturbance Limits
	Right-of-Way

<b>PRELIMINARY</b> SUBJECT TO REVISION	
<b>CONCEPT PACKAGE 2</b>	
Subset Sheets: Plan	Sheet Number: 2

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Potential habitat improvement areas

C

D

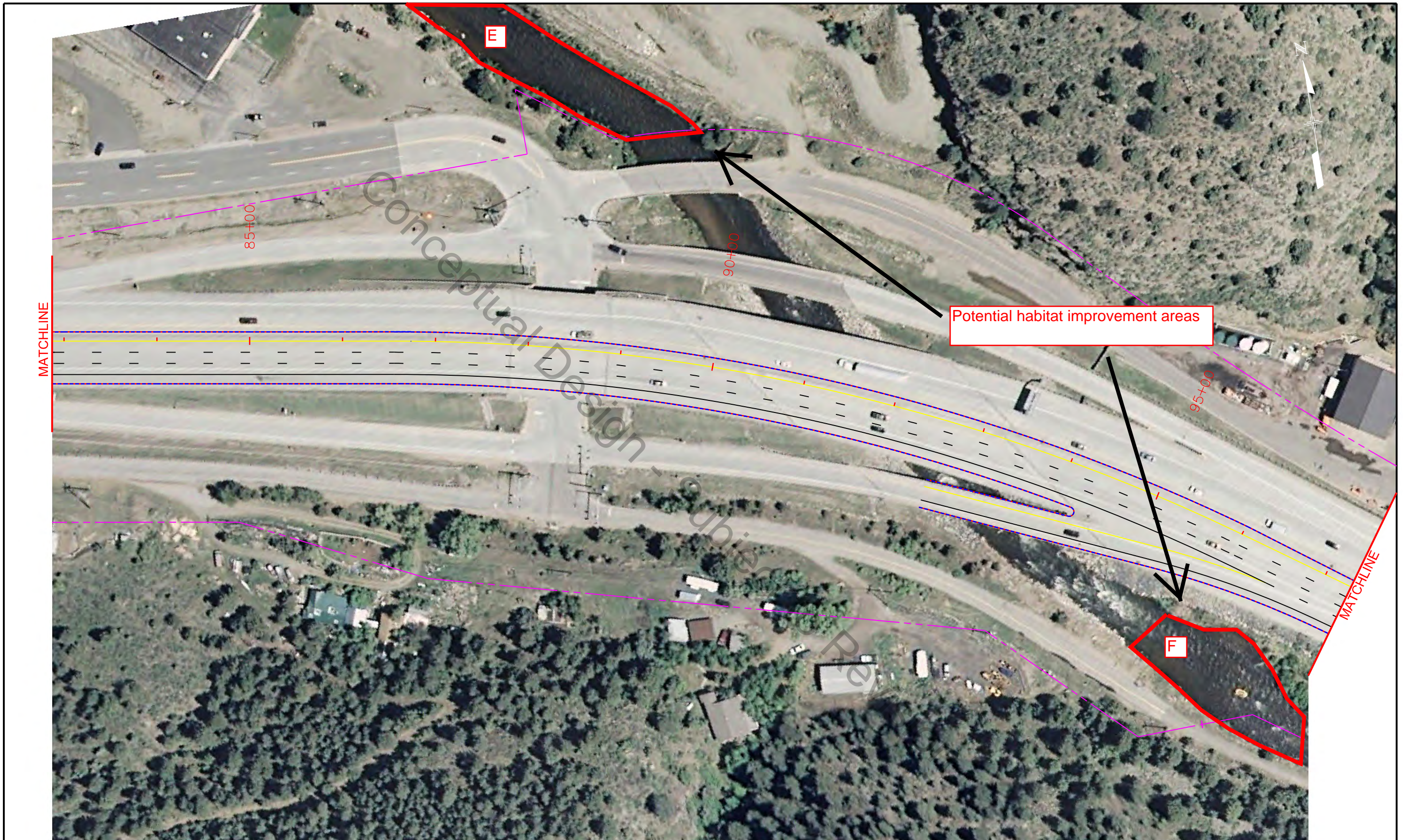
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File Name:	DES_PL04.dgn
Horiz. Scale:	1:100
Unit Information:	English
Unit Leader Initials:	
<b>ATKINS</b>	4601 DTC Boulevard, Suite 700 Denver, CO 80237 Phone: (303) 221-7275 Fax: (303) 221-7276

LEGEND	
-----	Proposed Disturbance Limits
-----	Right-of-Way

<b>PRELIMINARY</b> SUBJECT TO REVISION	
<b>CONCEPT PACKAGE 2</b>	
Subset Sheets: Plan	Sheet Number: 4

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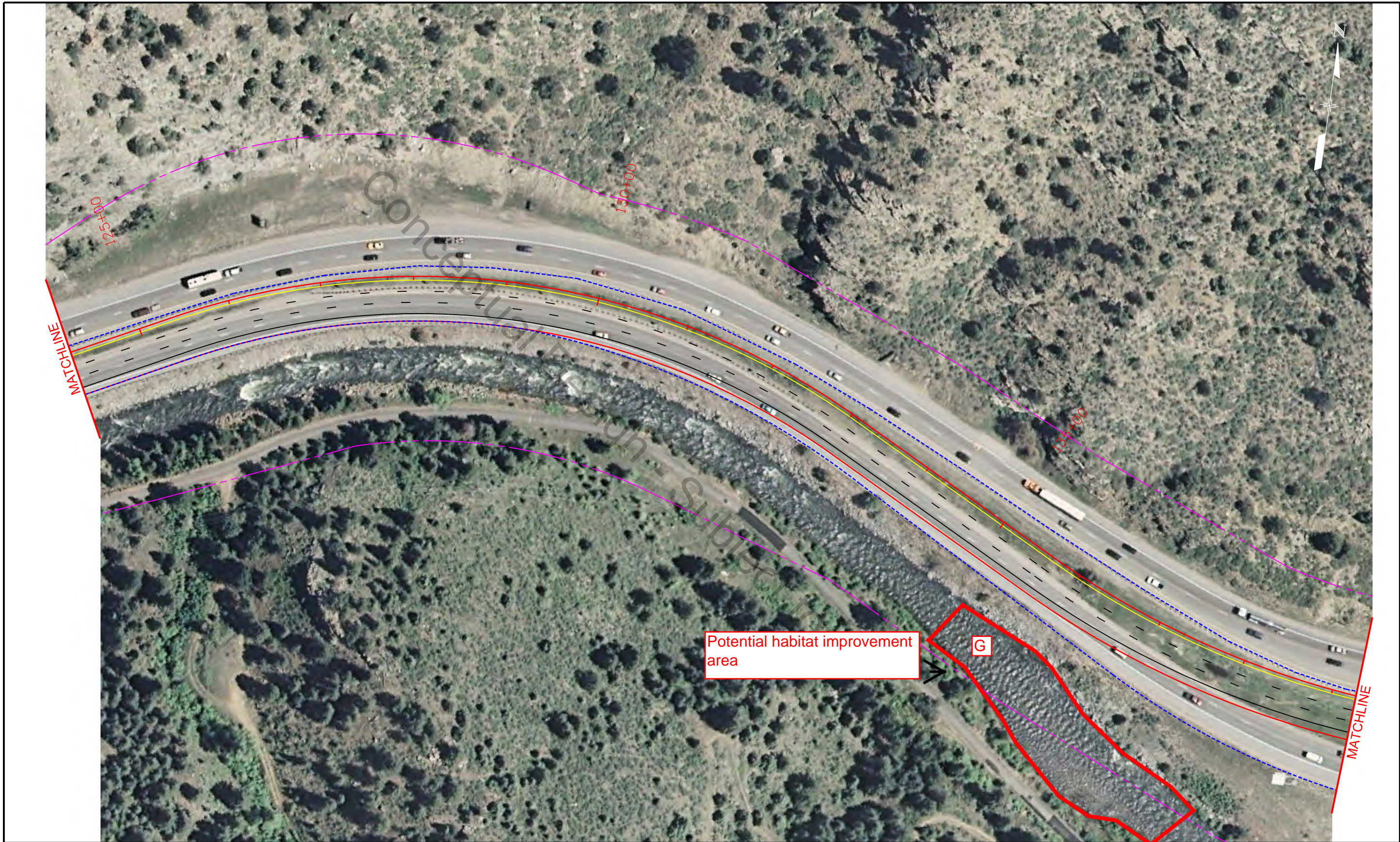
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Print Date:	9/16/2011
File Name:	DES_PL07.dgn
Horiz. Scale:	1:100
Vert. Scale:	
Unit Information:	English
Unit Leader Initials:	
<b>ATKINS</b>	4601 DTC Boulevard, Suite 700 Denver, CO 80237 Phone: (303) 221-7275 Fax: (303) 221-7276

LEGEND	
<span style="color: blue;">- - - - -</span>	Proposed Disturbance Limits
<span style="color: purple;">- - - - -</span>	Right-of-Way

<b>PRELIMINARY</b> SUBJECT TO REVISION	
<b>CONCEPT PACKAGE 2</b>	
Subset Sheets: Plan	Sheet Number: 7





2/12/14 2:00:54 PM S:\Tranproj\100023583\Design\Drawings\DES\_PL10.dgn

Print Date:	9/16/2011
File Name:	DES_PL10.dgn
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Vert. Scale:	
Unit Information:	English
Unit Leader Initials:	
<b>ATKINS</b>	4601 DTC Boulevard, Suite 700 Denver, CO 80237 Phone: (303) 221-7275 Fax: (303) 221-7276

LEGEND	
<span style="color: blue;">---</span>	Proposed Disturbance Limits
<span style="color: magenta;">---</span>	Right-of-Way

<b>PRELIMINARY</b> SUBJECT TO REVISION	
<b>CONCEPT PACKAGE 2</b>	
Subset Sheets: Plan	Sheet Number: 10

Potential habitat improvement area

**G**