

# Meeting Notes



**Project:** I-70 Floyd Hill to Veterans Memorial Tunnels NEPA and 30% Design  
**Meeting:** 21912 Floyd Hill SWEEP #2  
**Date:** October 25, 2018  
**Location:** CDOT Golden Region 1, Lookout Mountain

Summary of Action Items	Responsibility
1. Complete wetlands functional assessment.	Atkins
2. Set up meeting with CDOT Maintenance to determine existing vehicles and dimensions, maintenance activities and requests, traction sand application rates.	Atkins
3. Discuss BMP locations with CDOT Maintenance.	CDOT
4. Confirm that CDOT maintenance is aware of fire suppression emergency vault and procedures for closing the valve.	CDOT
5. Confirm BMP ponds will drain within 24 hours as required (to mitigate against standing water).	Atkins
6. Determine and map groundwater elevations to aid in impact analysis and design.	Atkins
7. Review as-builts and incorporate existing BMP locations into proposed design as applicable.	Atkins
8. Evaluate impacts of snow plowing over creek locations and consider opportunities to reduce snow from entering creek directly.	Atkins
9. Note that the curve modifications reduce the potential for truck overtopping and hazardous spills and need for sand oil separators. This note should be incorporated into the sediment control design and hazmat section of the EA and technical report.	Atkins
10. Provide project update to the Upper Clear Creek Watershed Association.	CDOT
11. Show wetland areas in roll plots for future meetings.	Atkins
12. Provide total impervious area and the capture volume of the BMPs.	Atkins

## Summary of Discussion

The SWEEP Issue Task Force meeting #2 followed the attached agenda and presentation followed by a roll plot discussion of specific sediment control recommendations. Attendees are indicated in the sign-in sheet. *Green* notes indicate notes and discussions after the meeting.

## 1. Introductions

### 2. Issues and Actions from SWEEP Meeting No. 1

- a) Water Quality Concerns Raised Previously
  - i) Creek geology and moving the Creek
  - ii) Sediment generated with moving the Creek and associated turbidity
  - iii) Wetland complex at Beaver Brook
  - iv) Methodology for Environmental Assessment
    - a) Project location is outside of a MS4 Permit area
    - b) Concern with Magnesium Chloride (MgCl) and other salts that cannot be captured; monitoring shows an overall increase in chlorides in the Creek
- b) Status of Action Items from Meeting No. 1
  - i) Complete wetland investigations
    - a) Wetland delineation completed
    - b) Wetland functional assessment will be completed
    - c) Potential fen wetlands tested in the Beaver Brook area; while soil testing (conducted by Colorado State University (CSU) laboratory per USACE standards) showed organic soils, the testing did not support fen designation
  - ii) Confirm maintenance use of traction sand
    - a) Maintenance continues to use sand, especially on Floyd Hill due to steep grades. *After the SWEEP meeting, Maintenance confirmed that they no longer use sand east of the Veterans Memorial Tunnels (VMT) (even for traction) and only use Ice Slicer*
    - b) Warmer winters leads to less application of sand; sand is weather dependent
    - c) Design team intends to meet with Maintenance to document application rates *After the SWEEP meeting, Maintenance confirmed the application rate for sand is zero (the SCAP assumptions are too high)*
  - iii) Concern about effects of chlorides from deicers entering the Creek
    - a) Sand is more natural and preferred (Jim Ford) since the Black Hawk treatment plant can filter out the sand
    - b) There are no readily available BMPs to capture chlorides
    - c) CDOT continues to do research on deicers
    - d) Need to continue coordination with Black Hawk regarding potential effects of chlorides on town water supply (intake located within the project area)

### 3. Proposed Action Updates: Design proposes moving approximately 1,000 feet of the Creek between VMT and Hidden Valley approximately 50 feet to the south. In this reach:

- a) Highly channelized; no spawning habitat per CPW
- b) EA needs to evaluate impacts to fishing and rafting; these may be in conflict
- c) Creek modifications could provide opportunity for enhancements
- d) 404 permitting could not rely on restoration NWP as the primary purpose is for transportation
- e) SWEEP ITF is interested in reviewing and providing input to the tunnel and creek realignment designs as these elements are advanced

#### 4. Water Resources Updates

- a) Wetlands and waters of the U.S.
  - i) Field delineations conducted for most of study area. In cases where properties were inaccessible (right of entry not granted), an advanced desktop review was conducted for properties.
  - ii) Organic material was identified within two wetland complexes at the top of Floyd Hill: High-quality wetlands; however, not classified as fen wetlands based on CSU lab results—7% Total Organic Compound (TOC) versus the 12% TOC required to classify as fen.
  - iii) Wetlands and waters of the U.S. are associated with Clear Creek and Beaver Brook
- b) Streams and Riparian Areas
  - i) CPW monitored fish populations in the stretch of Clear Creek east of the VMT from 2012 to 2017 (associated with the Twin Tunnels project commitments)
    - a) No spawning areas in the area east of the improved section (after the bend at the doghouse rail bridge): Mostly resulting from channelization (the channelized section is favorable to rafting)
  - ii) Boreal toads are not present in the project area to Mandy or Chase's knowledge. *After the meeting, Mandy consulted with the wildlife discipline lead and confirmed that boreal toad habitat has been mapped by CPW, and the eastern edge of suitable habitat is about 10 miles west of the Floyd Hill Project study area.*
  - iii) Channelization of Clear Creek is a challenge for stream health as channelization increases stream erosion, transports more sediment, accelerates velocity of the water, and reduces vegetation along the stream bank resulting in poor habitat.
    - a) Gary Frey provided input to the factors needed to assess stream health and habitat potential, such as water quality, flow, and stream structure, such as sinuosity and presence of pools, shelters, and barriers.
  - iv) Sedimentation
    - a) Sediment enters streams in the Project area from erosion generated from offsite sources and rock/landslides, winter maintenance of the highway, and mining influences, including metal runoff from mill sites
    - b) Upper Clear Creek Watershed Association has water quality information for reference. The Upper Clear Creek Watershed Association would also be interested in a project update. CDOT provides updates at their regularly scheduled meetings – the next scheduled CDOT update is in January.
  - v) Response to hazmat spills has not yet been determined or coordinated with the state Fire Marshall. No determination has been made whether Hazmat vehicles will be allowed through the proposed tunnel or need to detour around on the frontage road. Additional discussion and coordination to occur in later design phases.
  - vi) Stream enhancements must consider rafting, fishing, and water recreation, including access to minimize impacts to channel health and function
- c) Winter Maintenance
  - i) SWEEP group would prefer the use of sands instead of salt

- ii) Plowing practices and associated snow storage need to be considered and incorporated into the design

## 5. Sediment Control

### a) SCAP Recommendations

- i) The SCAP is a planning-level document that provides a menu and identification of potential BMPs that could be incorporated into future I-70 projects in the Clear Creek watershed, as appropriate
- ii) Within the Floyd Hill Project Area, numerous BMPs are identified (as described later in the meeting)

### b) Project Approach and BMP Recommendations

The design team developed a venn diagram to illustrate the three overlapping considerations in developing sediment control facilities: engineering, maintenance, and environmental. Each of these factors is important to ensuring feasible facilities that can be maintained and integrated into the landscape into the future.

#### i) Engineering: Feasibility, efficiency, size and cost:

##### a) Effectiveness is most important feature of a BMP

- (a) Holly Huyck indicated that a facility that works may not be aesthetically pleasing, but is preferable to one that does not work as well but looks nice.

##### (b) Need to capture sediment and drain properly

- (i) The basin design at the east end of the Lawson bridge does not drain, and standing water has attracted mosquitos.
- (ii) Jo Ann Sorenson receives annual reports on the sediment basins from the EB PPSL project that show the structures are not capturing sediment. Need to design them so that they work. *Based on discussions with Maintenance after the meeting, the lack of sediment may also be due to the lack of sand use in the area.*

#### ii) Maintenance

- a) Maintenance of sediment control facilities is critical to their long-term effectiveness
- b) Maintenance prefers fewer facilities that can be safely accessed within existing environments
- c) Ideally maintenance would occur on an annual schedule (i.e., the facilities are large enough to hold a full season of sediment)

#### iii) Environmental: Natural looking, effective

- a) BMP location and sizing should consider resiliency; proposed location should not be too close to Clear Creek. If they are within the 100-year floodplain, they need to be designed to withstand flooding impacts
- b) It was recommended that grass not be planted adjacent to the roadway because it attracts wildlife closer to the roadway and may increase wildlife vehicle collisions

### c) BMP Menu Overview: SCAP proposed versus Floyd Hill Conceptual Proposed BMP Design

- i) Based on a review of the various criteria within the engineering, maintenance, and environmental categories, the design team has proposed two primary BMP types (basins and swales) that best balance the needs.

- ii) Sediment Basins:
  - a) 27 shown in the SCAP
  - b) 12 Proposed with the Project design
- iii) Roadside Swales
  - a) Proposed with the Project due to limited right-of-way and trying to limit the Project's disturbed area.
  - b) The swales will provide some treatment of runoff prior to being discharged into Clear Creek
- iv) Loading Dock Traps:
  - a) 3 shown in the SCAP
  - b) 1 proposed with the Project because there is no room for a sediment basin in that area.
  - c) The location is not in a highly visible area based on the current proposed design and the design will ensure that it is as minimally visible as possible
- v) Inlet Sediment Traps:
  - a) 26 in the SCAP
  - b) None proposed for the Project
  - c) Dangerous and difficult to maintain because Maintenance has to do lane closures at night to clean them
  - d) Not effective because they are not maintained

**6. Open Discussion: Walk through roll plot: See notes on attached roll plot pdf**

- a) Jo Ann Sorensen noted that the sediment basin installed at the east end of the EB PPSL project holds water and generates mosquito larvae. Josh Giovannetti believes it's because the BMP is not working correctly. Note that the WB PPSL project will be fixing the Lawson sediment basin.
- b) Loading dock trap at the east end of the VMT is for spills, materials used during fires in the tunnels, and sediment capture; this one needs to be noted and maintained in the design
- c) Recommended communication and hand off; provide a map of BMPs to:
  - i) Maintenance
  - ii) Fire response
- d) Design considerations/review:
  - i) Station 1022+00: Capture area (tunnel to bridge) sediment basin is just upstream of the intake: Proposed design must not impact or modify the existing water intake for the Black Hawk water treatment facility
  - ii) Permanent Water Quality (PWQ) Outlet Structure must have a well screen to mitigate clogging and ensure better performance
    - a) May need to modify existing PWQ feature from Central City and treat some of I-70
      - (a) Approximate location is north of the highway and may be in between I-70 and Central City Pkwy to the west of the treatment plant
      - (b) Need to coordinate with Central City because this location is one of their PWQ features
    - b) Tunnel hazmat containment will be taken care of in future phases of design

- c) Existing pond east of the proposed loading dock is filled with water (is not functioning properly)
- d) Acquire groundwater information at all proposed sediment basin locations in future phases of the project
- iii) Three informal ponds just west of U.S. Highway 6 (US 6); Atkins to investigate further. *After the SWEEP meeting, Atkins reviewed as-builts and conducted field investigations to locate these informal ponds; however, the review and field investigation could not identify these ponds. As a result, the "three informal ponds" will not be considered in design.*
- iv) Step/tier ditches: Coordinate design to ensure that CDOT Maintenance vehicles are accommodated
- v) Clean outs: Adhere to CDOT criteria for manhole spacing
- vi) Possibility to have a PWQ facility east of US 6 where the rafters currently pull out of the Creek; however, there's a concern that trying to make something work within the site constraints will remove efficiency of a small PWQ facility.
- vii) Wildlife crossing: One large one at the top of Floyd Hill on the east end of the project and will add separated benches whenever the opportunity arises under bridges to allow for better crossings such as at the US 6 interchange
- viii) Coordinate future development work at east end of the project
- ix) Review as-builts and incorporate existing conditions into the proposed design
- x) West end by the bridges:
  - a) Shoulder width is 6 ft inside and 10 ft outside
  - b) Storage cannot occur on bridges; lanes and medians must be clear for vehicle access
  - c) Specific areas for snow storage not included in the design but can consider snow capture options for specific areas such as bridges and over the Greenway/creek
  - d) Ensure that snow does not get plowed onto the Greenway and limit use of the recreational area
- xi) Sand Oil Separators: Concerns with spills from overturned trucks going into Clear Creek
  - a) Just east of the VMT, trucks frequently overturn; Proposed improvements will smooth that curve out, which should help with trucks overturning
  - b) Provide verbiage that indicates the design smooths out curves, which reduces the potential for track overtopping and spills. As a result, sand oil separators are not anticipated. This should occur within sediment control design and hazmat section of the environmental documents.
  - c) Considering providing an Incident Management Plan in future phases of the project

Floyd Hill - SWEEP Meeting # 2

10/25/2018

Name	Organization	Email
Holly Hrydek	Clear Creek Watershed Foundation	hhrydek@flourish
E. Fran Aumann	EPA	geocensus@group.com. aumann.erman@epa.gov
Lisa Lloyd	EPA NEPA	lloyd.lisa@epa.gov
Gary Furey	Coastal Unlimited	gbfurey@msu.com
Josh Giovannetti	CDOT	josh.giovannetti@state.co.us
Lauren Boyle	CDOT	Lauren.Boyle@state.co.us
Becky Pierce	CDOT HQ	rebecca.pierce@state...
Mandy Whorton	Peak Consulting	mandy.whorton@peak.consult...
Stephanie Gibson	FHWA	Stephanie.gibso@dot.gov
Fred. Rottenhagen	Clear Creek Co.	fraltrhagen@co.clear-creek.co.us
Jim Ford	City of Black Hawk	jford@cityofblackhawk.org
Anthony Pisano	Atkins	Anthony.Pisano@atkinsglobal.com
Angelle Greer	USACE	angelle.v.greer@usace.army.mil
Chase Taylor	Piñon Env.	Taylor@pinon-env.com
Jordan Love	Atkins	Jordan.Love@atkinsglobal.com
Vanessa Henderson	CDOT	vanessa.henderson@state.co.us
Tammy Eggers	Atkins	tammy.eggers@atkinsglobal.com

Floyd Hill - SWEEP Meeting # 2

10/25/2018

Name	Organization	Email
Holly Hrydek	Clear Creek Watershed Foundation	hhrydek@flourish
E. Fran Aumann	EPA	geocensus@group.com. aumann.erman@epa.gov
Lisa Lloyd	EPA NEPA	lloyd.lisa@epa.gov
Gary Furey	Coastal Unlimited	gbfurey@msu.com
Josh Giovannetti	CDOT	josh.giovannetti@state.co.us
Lauren Boyle	CDOT	Lauren.Boyle@state.co.us
Becky Pierce	CDOT HQ	rebecca.pierce@state...
Mandy Whorton	Peak Consulting	mandy.whorton@peak.consult...
Stephanie Gibson	FHWA	Stephanie.gibso@dot.gov
Fred. Rottenhagen	Clear Creek Co.	fraltrhagen@co.clear-creek.co.us
Jim Ford	City of Black Hawk	jford@cityofblackhawk.org
Anthony Pisano	Atkins	Anthony.Pisano@atkinsglobal.com
Angelle Greer	USACE	angelle.v.greer@usace.army.mil
Chase Taylor	Piñon Env.	Taylor@pinon-env.com
Jordan Love	Atkins	Jordan.Love@atkinsglobal.com
Vanessa Henderson	CDOT	vanessa.henderson@state.co.us
Tammy Eggers	Atkins	tammy.eggers@atkinsglobal.com



# I-70 Floyd Hill to Veterans Memorial Tunnels

**ATKINS**

**SWEEP Meeting #2**

October 25, 2018



## I-70 Floyd Hill to Veterans Memorial Tunnels

# Agenda

---

- Welcome / Introductions
- Issues from SWEEP #1 Meeting
  - Committee Concerns
  - Action Items
- Proposed Action Updates
- Water Resources Updates
  - Wetlands and Waters of the US
  - Streams and Riparian Areas
  - Winter Maintenance
- Sediment Control
  - SCAP Recommendations
  - Project Approach and BMP Recommendations
- Next Steps & Review of Action Items



# Initial Stakeholder Concerns

---

- Water quality
  - Traction sand, magnesium chloride, and erosion
  - I-70 and frontage road maintenance
  - Fish and riparian habitat
- Creek geology and moving the creek
- Wetland complex at Beaver Brook
- Methodology for environmental assessment



## I-70 Floyd Hill to Veterans Memorial Tunnels

# Action Item Review

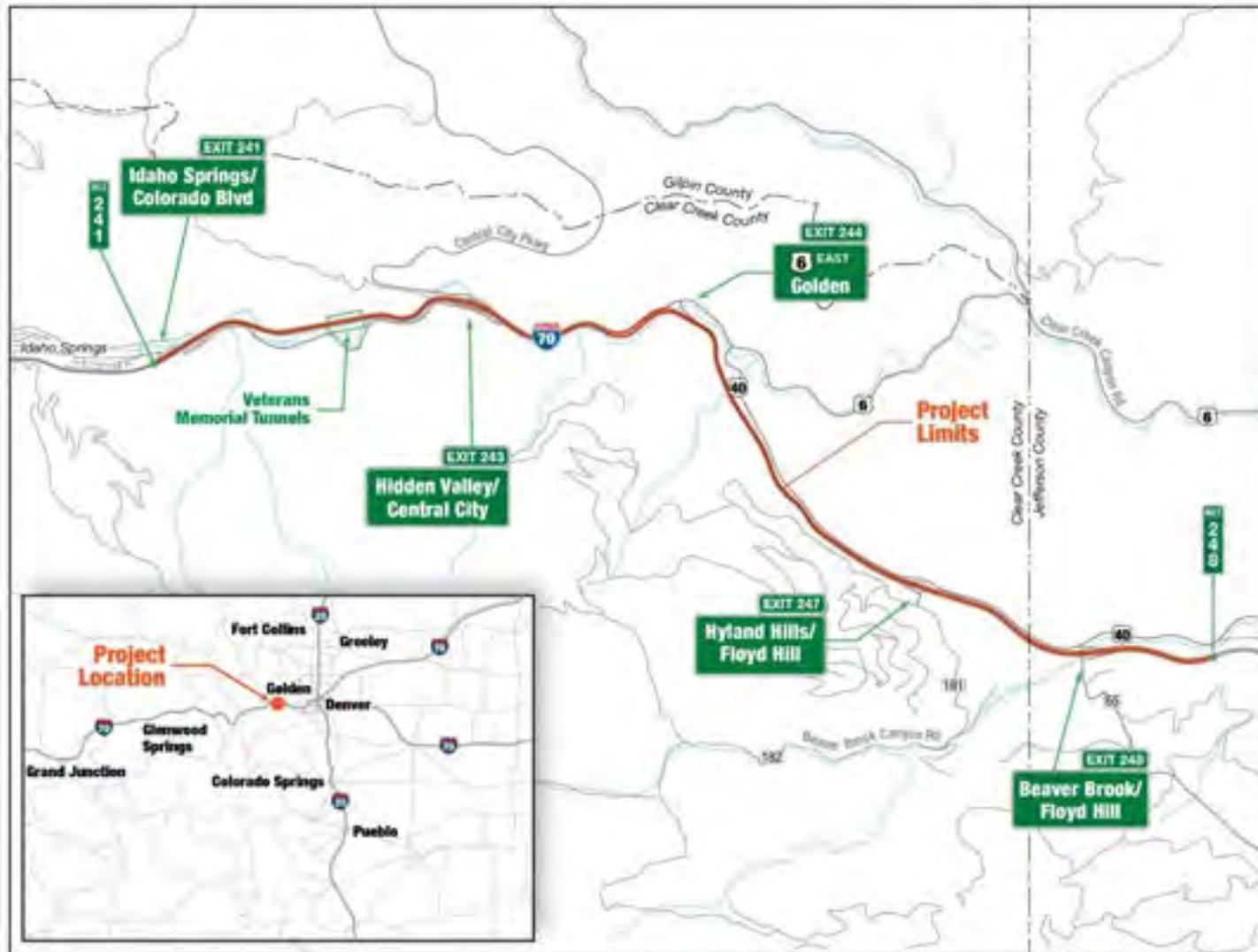
---

Action Items from April 2018 Meeting	Status
1. Obtain information/figure on wetland area preserved by development approval near Floyd Hill/CR 65	Provided by Fred Rollenhagen (CCC).
2. Follow up to see if there are site specific locations that may still be using sand for treatment	CDOT maintenance confirmed that sand is used in spot locations to supplement chloride deicing when traction is an issue (such as on grades).



# I-70 Floyd Hill to Veterans Memorial Tunnels

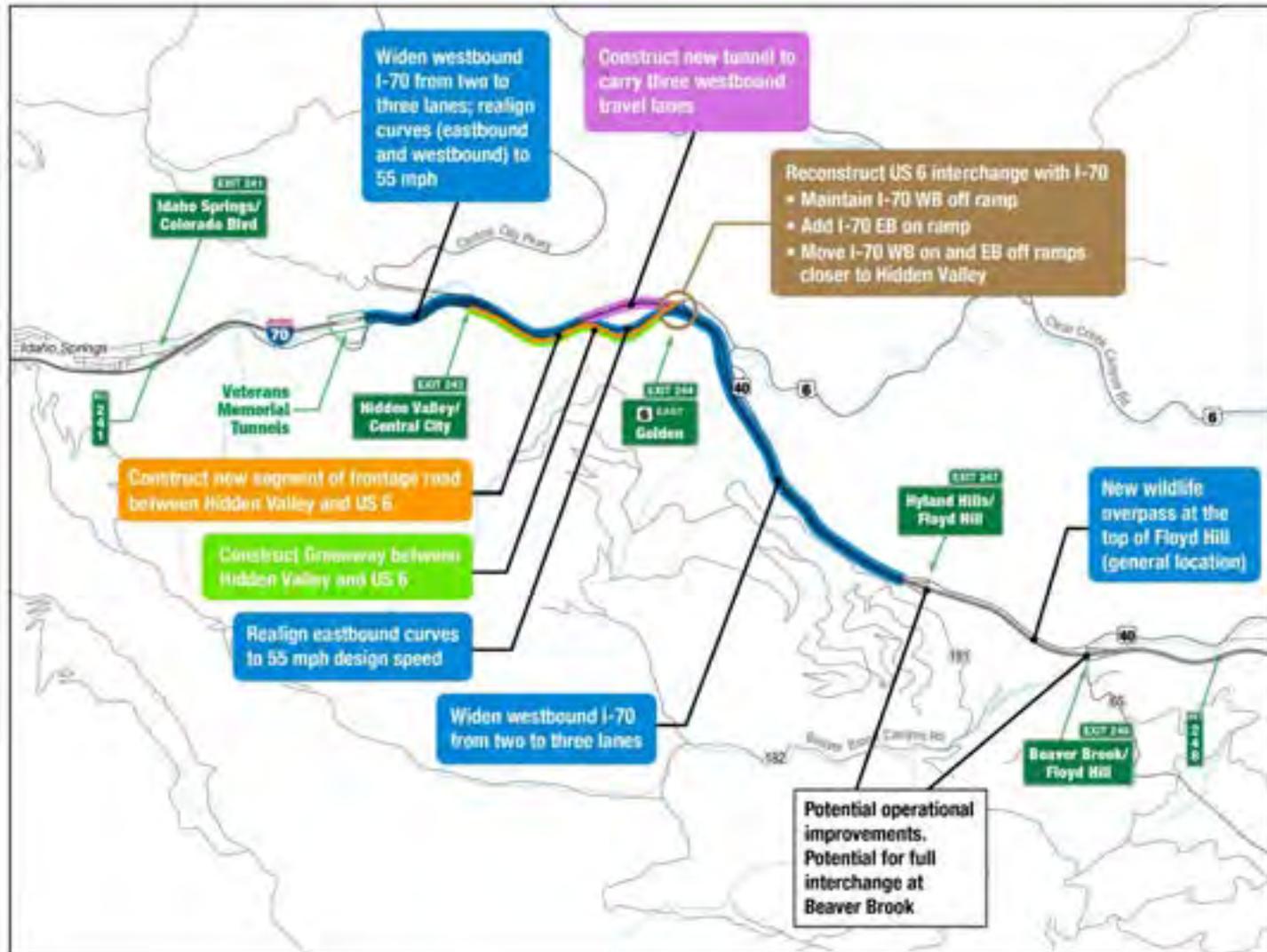
## Project Area





# I-70 Floyd Hill to Veterans Memorial Tunnels

## Proposed Action



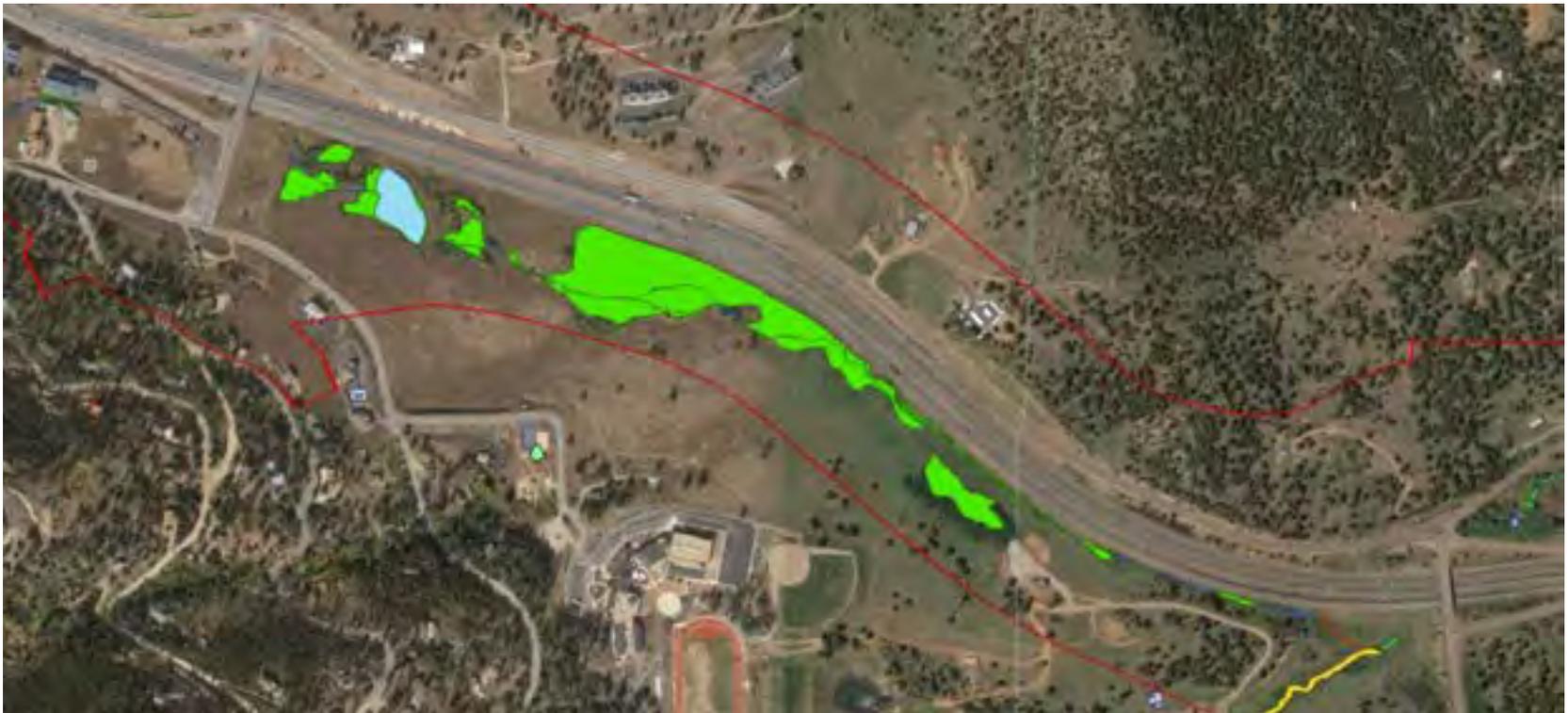


## I-70 Floyd Hill to Veterans Memorial Tunnels

# Wetlands and Waters of the US

---

- WUS Delineations completed
- Additional characterization of wetlands at Beaver Brook
- Organic soils presented possibility of fen wetlands





## I-70 Floyd Hill to Veterans Memorial Tunnels

# Fen Wetland Testing

- Testing by Colorado State University following US Army Corps of Engineers protocol
  - August 21, 2018 sampling
  - Two week testing period
- Methods
  - Measure Total Organic Carbon
    - Fen wetlands minimum 12% TOC
    - Classified as histisol soils
  - Tested Samples Twice
- Results
  - Histic epipedon soils
  - TOC content around 7%
  - Not fen wetland





## Streams and Riparian Areas

---

- Riparian areas limited due to channelization
- Sedimentation from erosion and winter maintenance (sand) negatively affects fish habitat
- Fish populations
  - Colorado Parks and Wildlife has been monitoring fish east of the Veterans Memorial Tunnels
  - No redds or spawning habitat in the project area due to channelization and rafting
  - No genetically pure greenback cutthroat trout in this stretch of Clear Creek



## Other Stream Considerations

---

- Rafting, fishing, and water recreation (including access)
- Stream health (channelization and highway encroachment)
- Hazmat spills and response
- Mining (mineral) influences



# Maintenance

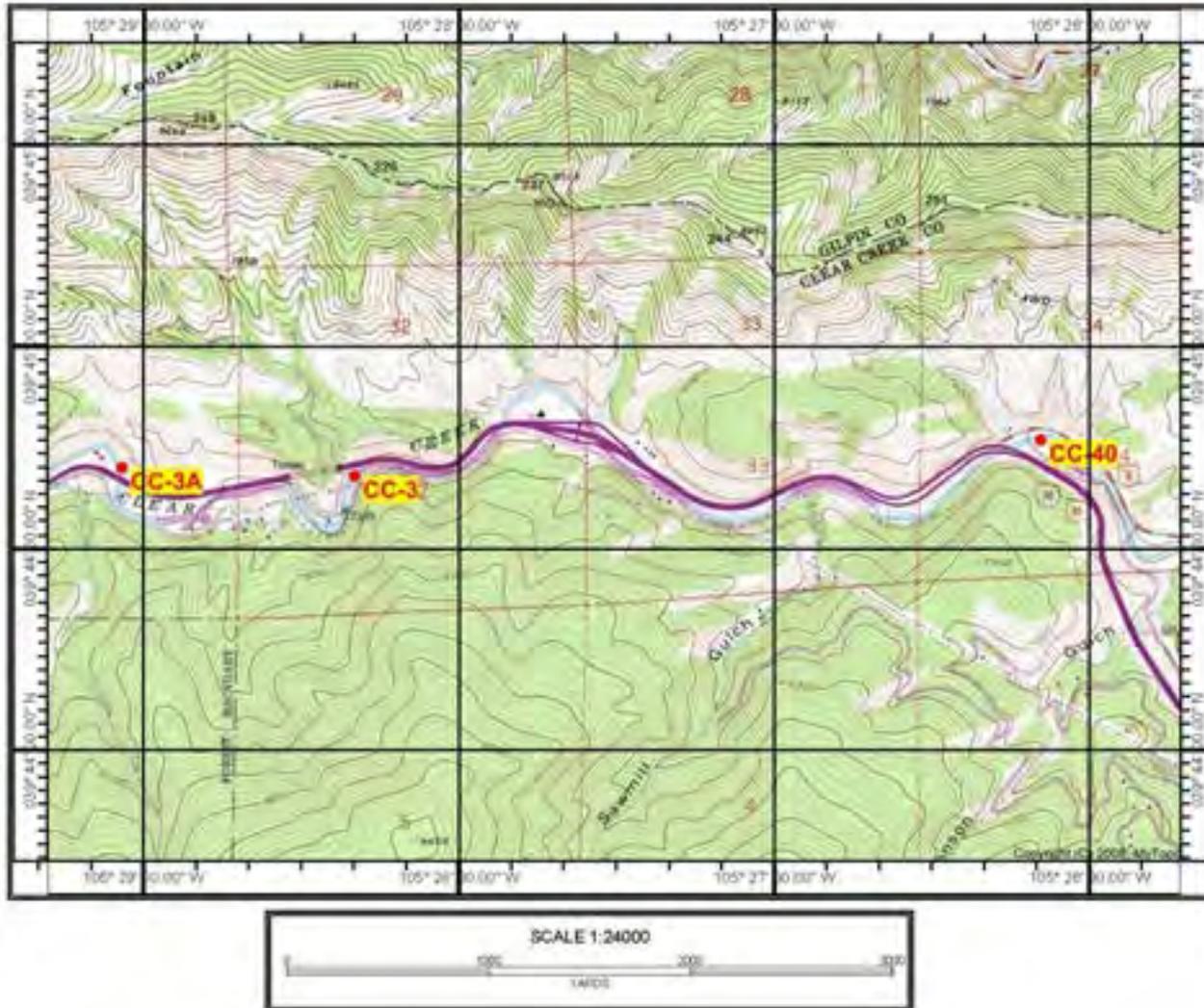
---

- CDOT maintenance activities
  - De-icing (chlorides)
  - Traction sand
  - Snow plowing and storage
- Sediment capture (sand) is well understood
- CDOT continues to conduct research on deicing and chlorides



# I-70 Floyd Hill to Veterans Memorial Tunnels

## CDOT Water Quality Monitoring





SCAP Considerations

# SEDIMENT CONTROL



## Sediment Control

---

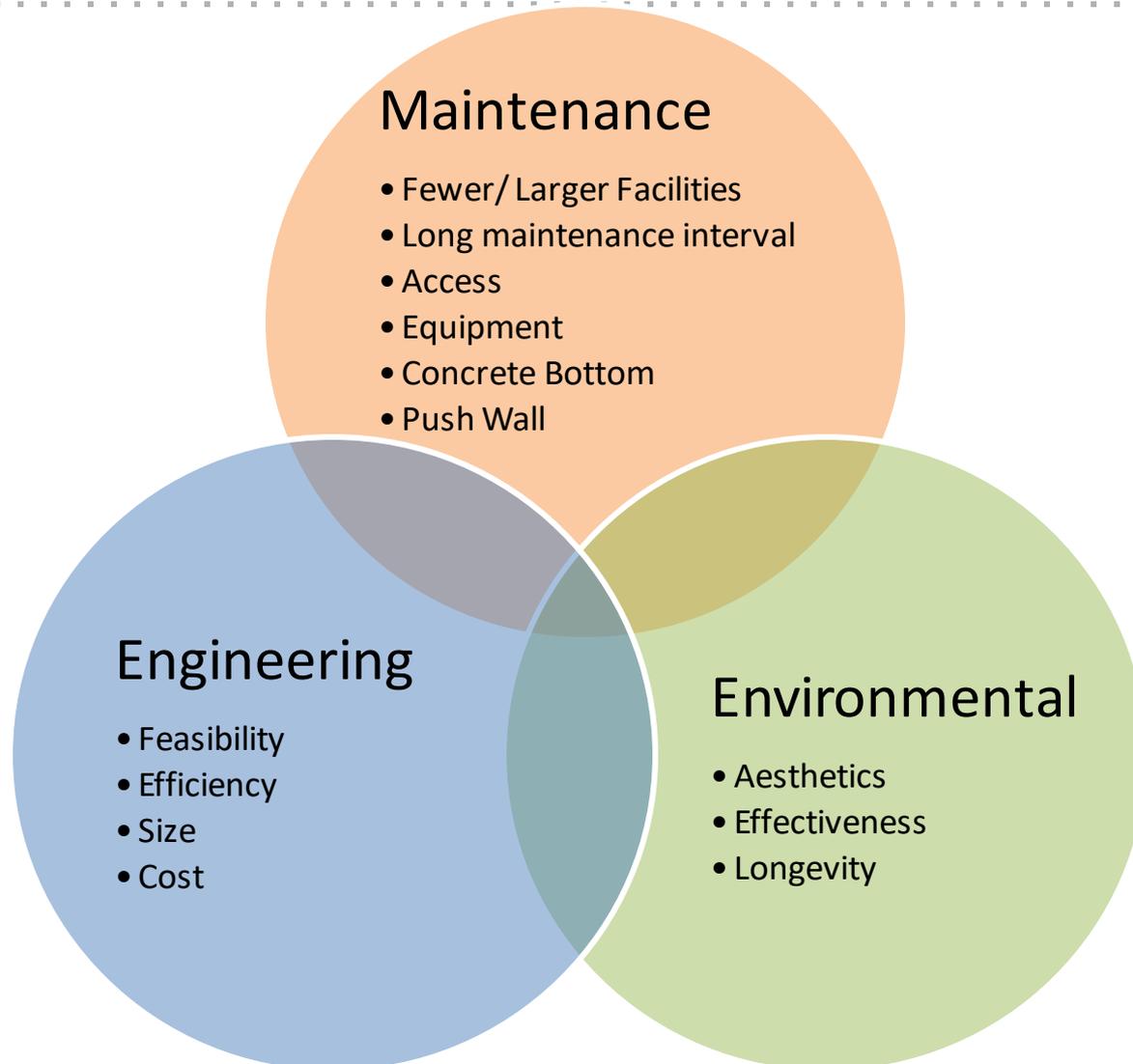
- Clear Creek Sediment Control Action Plan (SCAP) is a tool to better manage roadway traction sand and other highway-related sediment sources that can adversely impact Clear Creek
  - Provides a BMP menu to improve water quality
  - BMP details developed during preliminary design

From SCAP: "It is well documented that total phosphorus and total metals associated with sediment can also be controlled with adequate BMPs. Dissolved salts related to I-70 cannot be easily mitigated by conventional sediment control BMPs. However, retention of salt-laden runoff in control structures will also reduce direct salt loading to Clear Creek."



# Sediment Control

---





# Environmental Considerations

---

Aesthetics

The facility should not be identifiable from the highway or surrounding areas. It should look like a natural part of the environment.

Effectiveness

The facility needs to be able to capture and store traction sand and other contaminants of concern.

Longevity

Any constructed facility should be designed for a long life span.



# Maintenance Considerations

---

Fewer/Larger Facilities

Easier to maintain fewer facilities.

Long Maintenance Interval

The annual maintenance window for the corridor is limited to the summer months and must be shared with all roadway and facilities assigned to the Crew.

Access

The sediment capture system must be located so that it can be easily reached by maintenance equipment. Maintenance of Traffic should also be considered.

Equipment

Does CDOT have the required equipment to maintain a facility?

Concrete Bottom

Facilitates cleaning by providing a defined bottom. Easy to clean with a front loader or skidsteer.

Push Wall

Provides boundaries to help push sediment and debris into the bucket.



# Engineering Considerations

---

Feasibility

Can we capture and convey runoff to the facility?

Efficiency

The facility needs to be able to capture and store traction sand and other contaminants of concern that are routed to it.

Size

Can it fit and be maintained within the project limits?

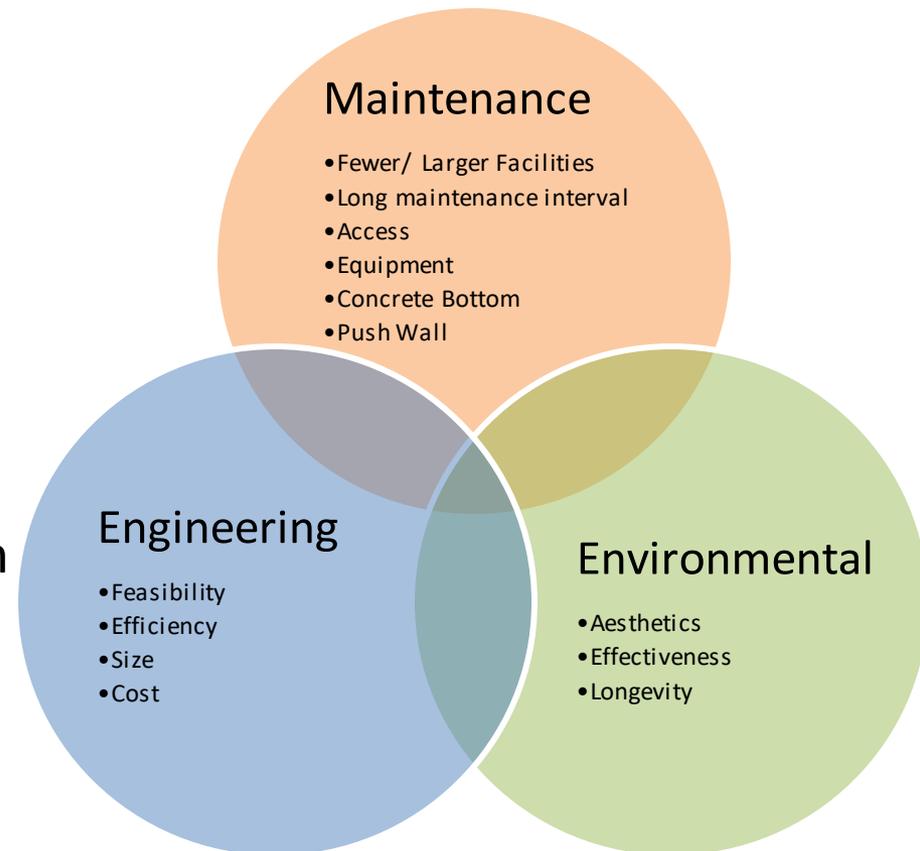
Cost

Is it economical to construct and to maintain?



# SCAP BMP Menu

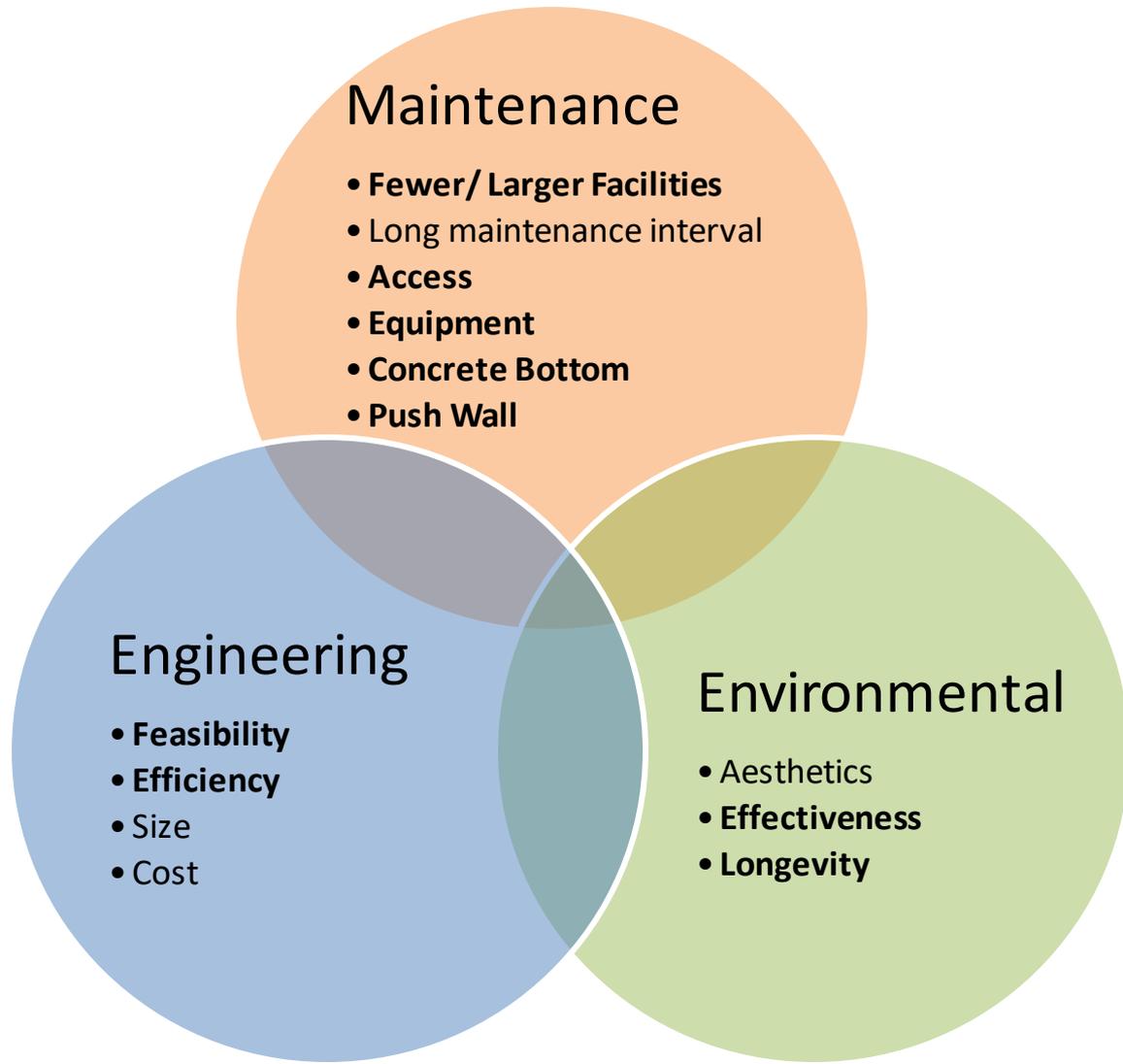
- Roadway Swale
- Curb & Gutter, Concrete Fan
- Filter Strip
- Bench Trap
- Sediment Basin
- Loading Dock Trap
- Inlet Sediment Trap
- Snow Storage Area
- Drainage Rundown
- Slope Stabilization & Revegetation
- Clean Water Diversions
- Underground Vault
- Sand/Oil Separator





# Sediment Ponds

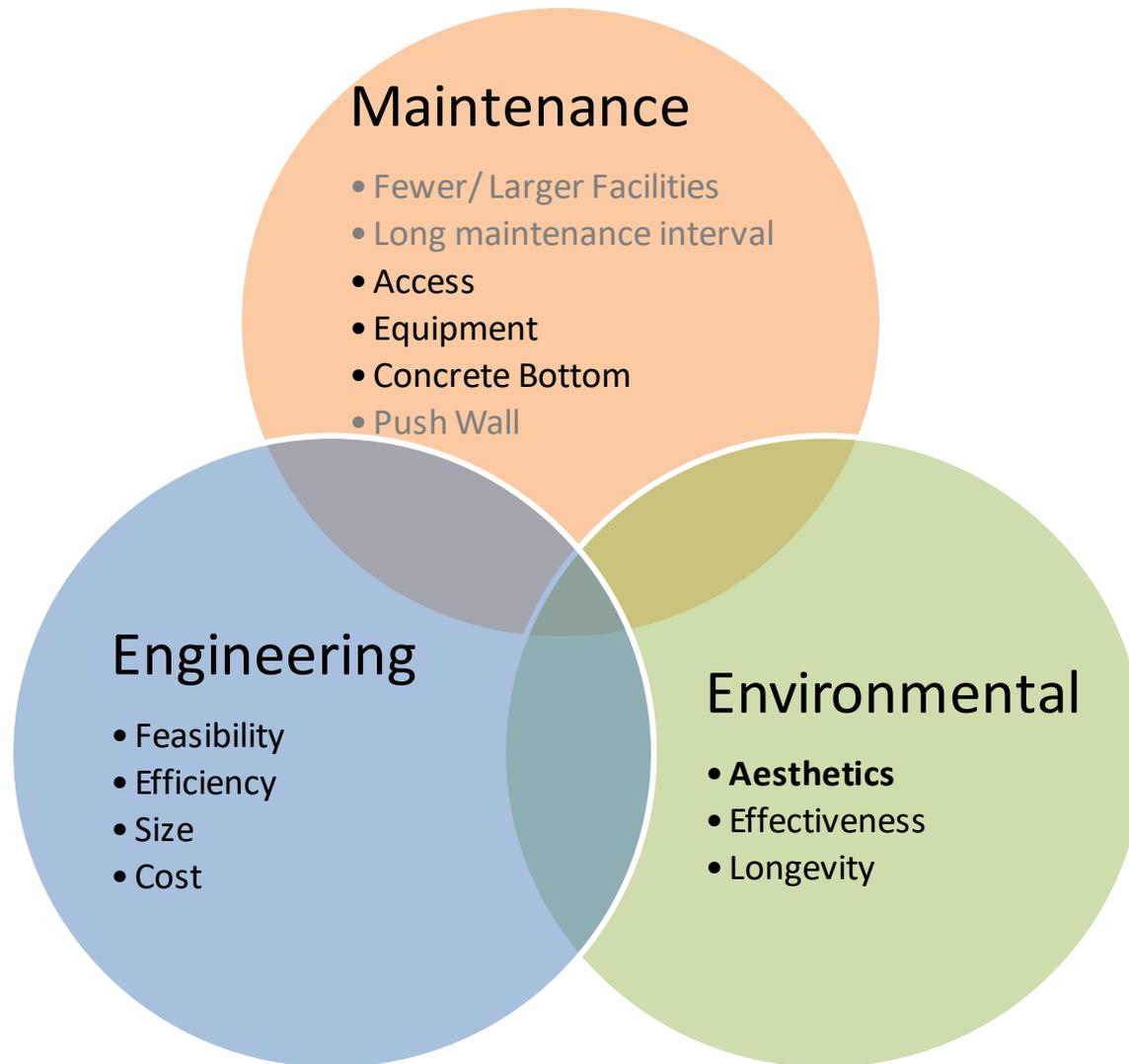
---





# Roadside Swale

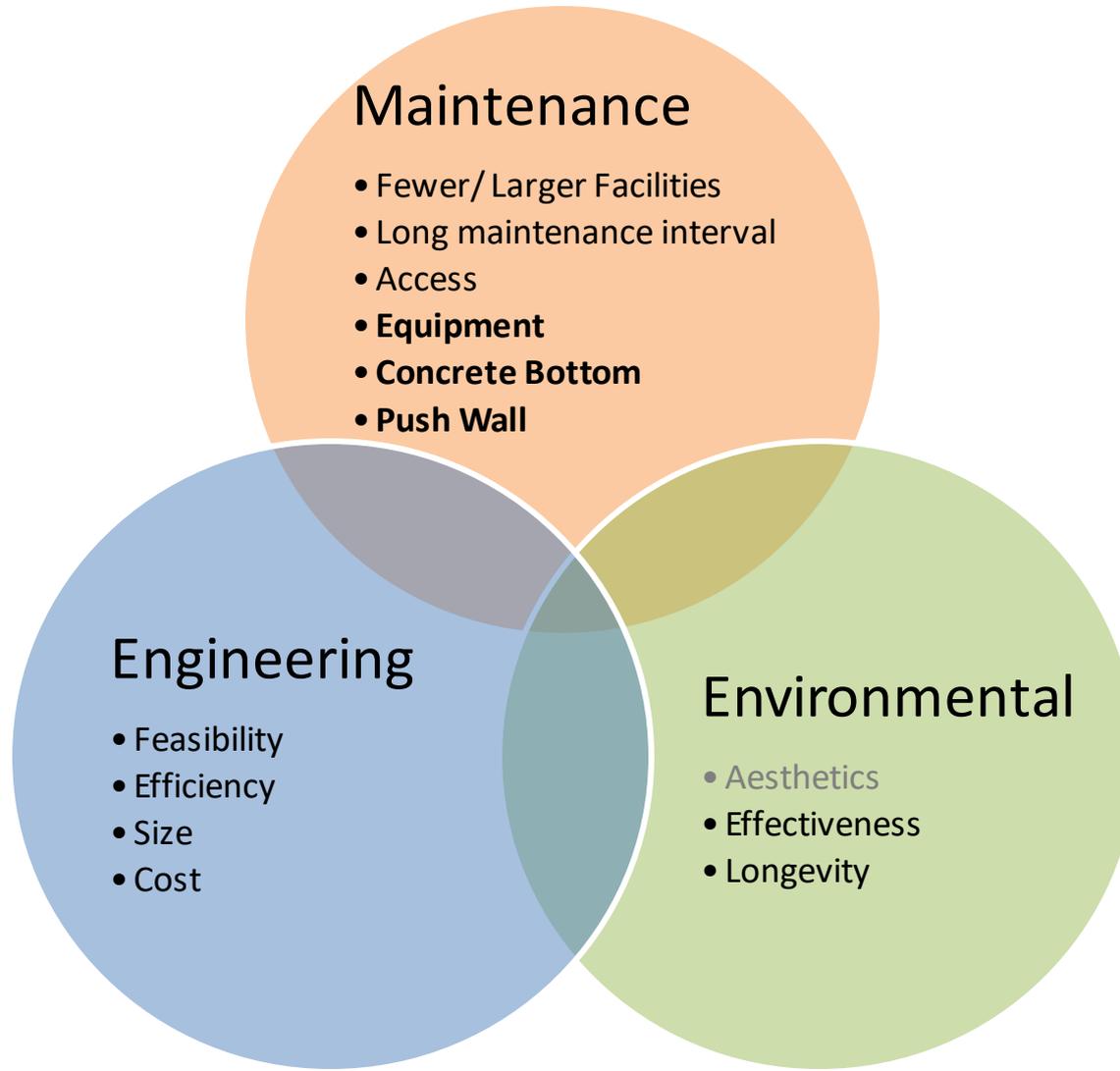
---





# Loading Dock Trap

---





# SCAP Recommended Sediment Control





# I-70 Floyd Hill to Veterans Memorial Tunnels

## Proposed Sediment Control





## I-70 Floyd Hill to Veterans Memorial Tunnels

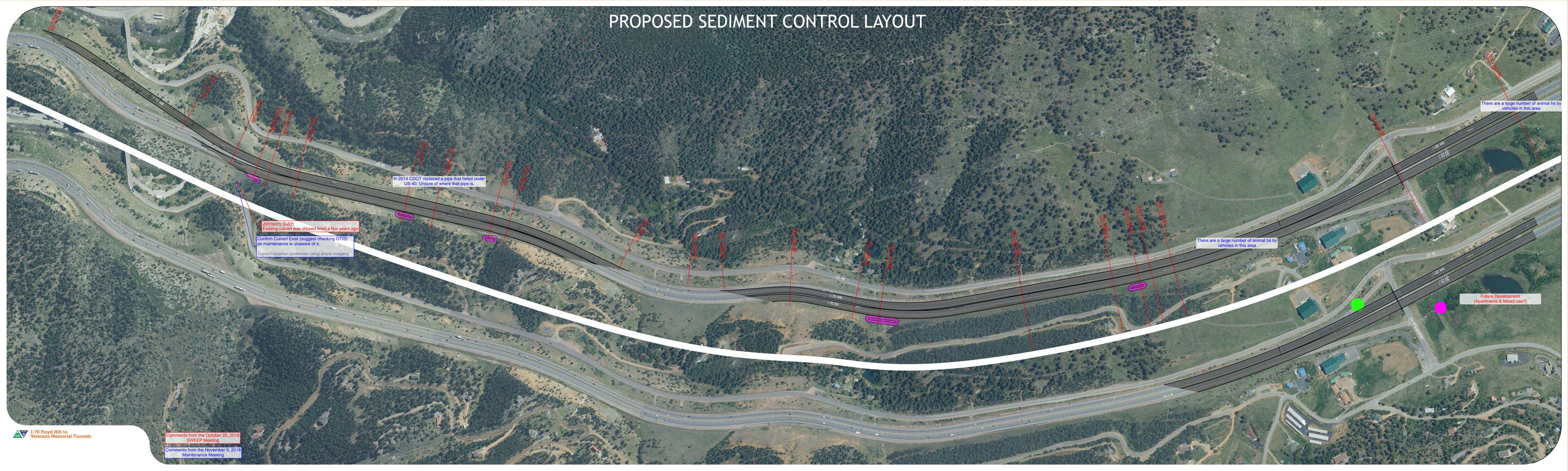
# Discussion, Questions, and Action Items

---





# PROPOSED SEDIMENT CONTROL LAYOUT



Johnsons Gulch  
Existing culvert was slipped lined a few years ago  
Confirm Culvert Exist (suggest checking OTIS)  
as maintenance is unaware of it.  
Culvert location confirmed using drone imagery.

In 2014 CDOT replaced a pipe that failed under  
US-40. Unsure of where that pipe is.

There are a large number of animal hit by  
vehicles in this area

There are a large number of animal hit by  
vehicles in this area

Future Development  
(Apartments & Mixed use?)