



MEETING NOTES

PROJECT:	23982-23929 I-70 West Vail Pass Safety and Operations Improvements
PURPOSE:	SWEEP ITF #4 Meeting
DATE HELD:	May 24, 2021
LOCATION:	Online Google Meet Meeting
ATTENDING:	John Kronholm, Project Manager, CDOT Region 3 Karen Berdoulay, Resident Engineer, CDOT Region 3 Matt Figgs, CDOT Region 3 Cinnamon Levi-Fiinn, CDOT Paula Durkin, CDOT Jen Klaetsch, CDOT Cinnamon Levi-Flynn, CDOT Region 3 Tripp Minges, CDOT Melvin Woody, US Forest Service Kristin Salamek, CDOT USFWS Liaison Danielle Neumann/DNR/CPW Billy Bunch, EPA Region 8 Matt Hubner, EPA Region 8 Pete Wadden, Town of Vail Len Wright, Ph.D., ERWSD Jen Bradtmueller, Kiewit Holly Huyck, Pinyon Environmental Randal Lapsley, R S & H Jake Maybeck, R S & H Mary Jo Vobejda, Jacobs Jim Clarke, Jacobs Pat Hickey, Jacobs Loretta LaRiviere, Jacobs
COPIES:	Attendees

SUMMARY OF DISCUSSION:

1. Introductions & Meeting Purpose

- a. Karen introduced the attendees at today's meeting.
- b. Mary Jo noted this is the second SWEEP Meeting we have had since the design began and we anticipate two more meetings. She then reviewed the agenda for the meeting:
 - Work in Progress
 - Sediment Control Action Plan (SCAP) and Maintenance Manual outline refinements
 - Revised schedule
 - Site visit discussion
 - SCAP results: Status of Black Gore and Gore Creeks
 - Maintenance Questionnaire results: Lessons Learned
 - Proposed Control Measures and the Map Book
 - Discussion and questions on SCAP and Maintenance Manual sections
 - Next Steps

2. Project Progress



- a. Mary Jo gave a brief recap of the project's progress:
 - Construction Package 1 90% design has been completed and is under fix up
 - The TT has been meeting monthly to review the project progress
 - Design on the recreation trail, the roadway alignment, and the bridge design is progressing
 - EA re-evaluation for Construction Package 1 has been completed
 - ITF groups are proceeding on schedule
 - The ALIVE ITF has reviewed the preliminary location and sizes of crossings
 - The 106/Aesthetic ITF has reviewed the sections of the Aesthetic Guidelines related to the Construction Package 1 design. The ITF will review the remaining chapters at their next meeting on June 28th.
 - Emergency Services ITF has meet once and now will be closely coordinating with the contractor on the traffic management layout for the upcoming construction

3. SWEEP Progress Since Last ITF

- a. Mary Jo reviewed the work that Holly and her team have been working on:
 - SCAP and Maintenance Manual outline refinements
 - Completed and compiled Maintenance personnel questionnaires
 - SCAP development related to watershed, history, and status
 - Lessons Learned about sediment control measures
 - Ongoing coordination with wildlife crossings, Recreation Trail alignment, roadway alignment and drainage
- b. Jim reviewed the progress on the wetlands:
 - i. He said they have had several meetings with the Corps Grand Junction office about the project. More recently they have been focused on the 404 permitting for the first construction package which includes the redesign of the Lower Truck Escape Ramp and ITS improvements. This construction package will have both permanent and temporary wetland impacts, however they will be fairly minor considering the scale of the project.
 - ii. For the purpose of our Corps permitting we assume the wetland impacts are jurisdictional until we do a field review. We are hoping to do a full wetlands delineation later this week. The EA only required a preliminary delineation which was fairly conservative so when we do the field review those numbers will probably go down a little.
 - iii. The .18 acres of impacts identified in the EA will require a Nationwide Maintenance Permit which doesn't technically require preconstruction notification, but we did send a courtesy PCN to the grand Junction office.
 - iv. The ITS improvements will have some temporary wetland impacts to roadside ditches and we will mitigate for those in place.
 - v. We are doing some installation of groundwater monitoring wells to get a better sense for potential onsite mitigation opportunities and that work is slated for later on this summer. When we are up there this week Pat will be taking a look at some of the potential mitigation sites, many which were identified as part of the EA.

- vi. After the wetlands delineation we will have a better sense of our project impact and we will be developing our mitigation plan. We will know our impacts and have the results from the groundwater monitoring and be able to determine our mitigation plan. At the SWEEP meeting in the fall we will be able to present our ideas and concepts to you for feedback.

4. Refinement of the SCAP

- a. Holly said as we started developing the SCAP, we realized we wanted it to have a consistent level of detail for the whole corridor, not just the INFRA project. Because the rest of the project is not under design yet, we decided to make the SCAP more of a master plan for the Corridor. This is a little different from the original SCAP, so we just wanted you to be aware of it. What we are going to talk about today is the clarification of the intent and goals of the SCAP. We will focus on a forward-looking document for EA Outline emphasizes pre-design planning. We will not include decision trees or tables, but they will be part of designer guidance for future projects.
- b. A Map Book for Zone 1 has been added as an appendix. The Map Book will have general location, types, and sand capture volumes for all of the Corridor.
- c. The goal of the SCAP is to provide guidance for designers to control enough sediment to improve conditions sufficiently to delist Black Gore Creek for 303(d) impairment for sediment and aquatic life. This delisting is based on the Water Quality Control Commission regulations and policies.

5. Revised SCAP Outline

- a. Holly explained the revised SCAP outline is a lot shorter than the previous one. The focus will now be on Appendix A, the Table of Existing and Proposed Control Measures & Appendix B, the SCAP Map Book. The chapters and Appendices are:

- Executive Summary
- Introduction and Purpose
- Watershed Description
- History and Status of the Watershed and SCAP Efforts
- Approach to Control Measure Design Analysis for Sediment Control
- Proposed Control Measures
- CDOT Maintenance Program: Summary from Maintenance Manual
- Opportunities for Future Partnerships
- Summary and Recommendations

- Appendix A: Table of Existing and Proposed Control Measures

- Appendix B: SCAP Map Book

- Appendix C: EA Mitigation Requirements

- Appendix D: Lessons Learned from other SCAPs

- Appendix E: Monitoring on Black Gore Creek

6. Refinement of the Maintenance Manual Outline

- a. Holly noted the Maintenance Manual will focus on Control Measures. We were going to have a map that would only show the completed control measures, but the new Map Book for the Corridor will show both the existing and proposed control measures. Maintenance will also use the CDOT Maintenance Tracking system.



The revised Maintenance Manual outline is:

- Introduction and Background
- Proposed Control Measures
- Maintenance of Sediment Control Measures
- Standard Operating Procedures for Roadway Safety
- Documentation and reporting
- Appendix A. Maintenance Questionnaire

7. Revised SCAP Schedule

- a. Holly said we will be distributing the SCAP draft sections 2-7 and the Maintenance Manual draft sections 1 & 2 for your review before the next SWEEP ITF meeting scheduled in August.
- b. Holly said after the August meeting we will be working on the SCAP Executive Summary, Section 8 Partnerships, and Section 9 the Summary and Conclusion Opportunities; and the Maintenance Manual Section 3: Maintenance of Control Measures, Section 4: Safety SOP and Section 5: Recommendations.
- c. The final draft of the Map Book and remaining sections of the SCAP and Maintenance Manual will be distributed before the final ITF meeting.

8. Site Visit

- a. Holly said there are two commitments in the EA to conduct site visits:
 - i. The first commitment is: *As part of the SCAP update during final design, conduct site visits with the SWEEP ITF, CDOT Maintenance, and wetland and wildlife specialists to identify specific opportunities and constraints relating to specific areas of concern and opportunities for enhancement.*

Zone 1 is 0-30 feet from edge of pavement plus any areas that are under maintenance control and includes the sediment ponds and the wildlife fence.
 - ii. And the second commitment is: *As part of the SCAP update during final design, identify additional water quality improvement projects that are outside the scope of the I-70 West Vail Pass Auxiliary Lanes project in Zones 2 and 3..* This would include the partnerships.
- b. Karen clarified she did look at the EA commitments. One was to discuss the partnerships in Zone 2 & 3 and the other was getting stakeholder buyoff on the opportunities and constraints during final design.

Karen said it's just a preference of whether you prefer to do a site visit when we're in final design and we're doing a final check to make sure we picked the right sediment control feature and location, or do you prefer to do it later this year with the preliminary map book as we are get your feedback on the type of proposed control measures throughout the Corridor? We could wait until next year for the site visit, but it would be June or July when the snow has cleared. Since we won't finalize the SCAP until late 2021/very early 2022, it would probably be best to have some type of site visit this year in late summer or early fall. We would still have the remaining ITF meetings because we still need feedback on other pieces.



Danielle said she would like a site visit and would prefer to have a comprehensive look and then, if necessary, as projects get rolled out we could schedule another site visit. She would like to include their water specialist and aquatic biologist. Melvin said he thinks it would be good to get the Forest Service hydrologist included in the site visit to see what your plan is once you have that ready to look at.

The group agreed that it would work to do the earlier more comprehensive, but less detailed site visit this fall and then sometime next year have another site visit for those who are interested in seeing the final design.

Holly said they will work to get at least portions of the map book out for you to review prior to the site visit in the fall. She would like the site visit to include valley pans on the eastbound (to minimize erosion on the fill slope), areas of particular sensitivity, and some areas where “polishing wetlands” just below sediment control measures could replace the function of existing “stormwater wetlands” that are fed by roadway runoff.

9. Watershed Description

- a. Holly reviewed the topo map from the 2002 SCAP which shows the major tributaries to Black Gore Creek and Gore Creek above East Vail. Analyses from the US Forest Service, Eagle River Water & Sanitation District, Eagle River Watershed Council, and the Water Quality Control Division all indicate the health of Black Gore Creek is improving for both sediment and aquatic life but has not yet reached the goal of fully attaining.

10. History and Status of the Watershed and SCAP Efforts

- a. Holly reviewed the history of the SCAP efforts in the Corridor and set a baseline of where we’ve been and where we are going.
 - 1986-1998: Studies of sediment sources begin on Black Gore Creek
 - 1999: First meeting of Black Gore Steering Committee
 - 2000: ERWSD and CDOT wetland mitigations begin including pebble counts monitoring. CDOT TC sets up annual funding for sediment clean-up on Black Gore Creek and Straight Creek
 - 2001: Macroinvertebrate and chemical sampling by CDPHE; CDOT starts sampling/monitoring for PEIS; Sand shed completed at the top of Vail Pass; The SCAP was started
 - 2002: SCAP completed; Black Gore Creek was listed for sediment impairment
 - 2003-2007: 60 sediment basins/Type D inlets installed; 17,000 feet shoulder and ditch paving; sediment removal began; draft Total Maximum Daily Loads (TDML) submitted by USFS but has not been implemented yet
 - 2009: The focus shifted to removing sediment. In 2009 26,400 tons of sediment was removed from the “Basin of Last Resort” which is located above the confluence with Gore Creek. It was put in during the original construction of I-70 over Vail Pass to capture construction related sediment, but it has remained and has obviously captured a lot of sediment over the years that has not continued on into Gore Creek. At this point CDOT has been not only maintaining control measures upstream of that but also cleaning that out so there was less potential for the sediment passing into Gore Creek



- Since 2012 CDOT has been repairing or replacing several drainage culverts that have fallen apart because to minimize the sediment not just from the sanding but also some erosion. Other work being done includes adding snow storage; installing Type D inlets and rundowns; emergency truck ramp improvements; ongoing monitoring and sediment removal.

11. Control Measures

- a. Holly noted that control measure construction over the past twenty years has cost \$7.2 million and maintenance of the control measures has cost \$2.7 million. Almost \$10 million has been invested in minimizing and containing sediment that passes along Black Gore Creek and preventing it from passing into Gore Creek.
- b. Holly said approximately 2/3 of the sediment basins have been created. There are more above MP 185 because that area gets more sanding.
- c. Type D inlets have more than twice as many above MP 185 as below.
- d. There are a total of 133 control measures that have been put in place over the past 20 years. That equals 2/3 sediment basins; almost 1/3 of Type D inlets and the paved shoulders; 10% of snow storage areas; and about 40% of cleanwater bypasses.
- e. The auxiliary lane widening includes a lot of widening of shoulders that will provide additional but informal snow storage.

12. Sand and Salt Usage

- a. Holly noted there has always been a concern about how much sand is put down each year. In the 2002 SCAP, the assumption was 15,000 tons per year, and we have been reducing that amount steadily. Between 2014 and 2020, the average was 6,066 tons – a huge decrease in volume. The amount of liquid deicers have definitely increased. The estimated average of sand cleanup per year over the past 20 years has been about 100%. It's a little lower in the past few years but part of that has been due to construction-related limitations.

In contrast, Straight Creek from the Eisenhower/Johnson Tunnels to Dillon, the TMDL required at least 25% of sand be cleaned up each year. Black Gore is a tighter valley, the highway is closer to the creek than at Straight Creek and getting close to an average of 100% is really good.

13. Current 303(d) Status of Black Gore Creek and Gore Creeks

- a. Holly noted that based on one sample collected in 2018 by the Water Quality Control Division Upper Black Gore Creek is attaining for sediment but impaired for arsenic and aquatic life. The much larger number of samples taken by Eagle River Water and Sanitation District has not been included in the WQCD assessments yet.
- b. Lower Black Creek is still impaired for sediment, but the impairment missed by about 2% as opposed to 10% years earlier. Even though it is still impaired it is improving, and aquatic life is attaining.
- c. Mainstream Gore Creek it is similar to Black Gore in that is attaining for sediment but not for arsenic or aquatic life. Arsenic is high throughout Colorado. The Water Quality Control Division is waiting for some EPA results to decide if arsenic is really an issue.

- d. Black Gore Creek is recovering. The percent of fines are decreasing including what the Water Quality Control Commission regulations of less than 2 mm and the US Forest Service definition of less than 6 mm. CDOT plans to continue to construct and maintain sediment control measures.

14. Design Analysis – Maintenance Questionnaire Responses

- a. Holly said the questionnaire focused on the types of sediment control measures maintenance people prefer to maintain. This is important because control measures are only as good as what will be maintained. We interviewed maintenance staff from Region 3 and from headquarters but really looked at what the West Vail Pass patrols preferred:
 - Small ponds near the highway that can be easily accessed
 - Large ponds away from the highway, but accessible from the recreation path
 - More paved shoulders with more sweeping required, but fewer ponds

Less preferred:

- More paved shoulders that drain to fewer, larger ponds
- Lots of Type D inlets, which have to be cleaned more often and clog very easily
- Large sediment ponds away from the highway, but accessible

Holly said the reasons Type D's are less preferred are because they hold only 18 CY, which can fill up very quickly, and they take a lot of time to clean. Region 3 has a vac truck just for that purpose, but the maintenance people said it's a lot more efficient to go into a sediment pond with a loader and take out much more material in less time than what we do with the Type D's.

1. Jake said the reason we're leaning toward Type D's is to minimize the impact on the shoulders since we can grade close to the roadway with that type. If we don't use a Type D we're going to have the straight pipe inlet with a trash rack or something similar which will lower which will require more grading to the approaches to the inlet.

Karen clarified that these are the "Modified" Type D inlets that capture sediment with a screen, not regular ones. Regular ones can be used at culvert inlets, particularly below sediment control measures. It's the Modified Type D's they have to clean out with a vac truck. With any of these sediment control features, the designers will figure out what is the best fit in certain areas. In areas like the Narrows where we may not have the space for a larger paved structure, we may have to install the Modified Type D with the series of inlets to be able to collect more sand before they overflow.

Jake said Type D inlets are often times going to be the best choice in certain locations so we can still do that if we minimize and avoid them where we can. Karen agreed they're the smallest footprint sediment control features.

Karen said the interviews provided great information that will help to determine where we can avoid the ones they don't prefer and put in the ones they prefer but there may be areas where we have to use the less preferred type.

- b. Holly reviewed other things learned from the questionnaire responses. She noted these are general ideas, which will need to be applied in different ways at specific locations.



- Provide safe and equipment-rated access to all Control Measures. There's no point in putting in a great big control measure sediment pond if you're heavy equipment can't reach it.
- The "sweet spot" for ponds near the highway is 30 - 60 feet off the pavement edge and that is because they reach them from the highway but they do not have to close a lane if the ponds are 30 feet away, 30 feet is around where snow is thrown when the plows are plowing. 30 feet is also a good way to catch a lot of material.
- They prefer riprap outlets rather than screened or metered outlets clog easily. The screens are a challenge to pull out because they weigh 50-100 pounds so pulling them out can be interesting.
- Use Type D special inlets sparingly and prefer to put in series so the last one, the one that is actually connected to a culvert clogs less quickly.
- Delineate sediment ponds sides, outlets, and inlets clearly. One of the issues with the soft sided ponds they don't know where to stop digging to the sides or down of how far back they should start digging..
- CDOT needs to provide more training, communication, and coaching.

15. Lessons Learned from Straight Creek

- a. Holly said Straight Creek has been active for sediment control for about 10 years longer than Black Gore Creek. Straight Creek is now in attainment for sediment, but it took 30 plus years. So, the fact that we are 20 years in and are getting there but not there yet shouldn't be discouraging. Lessons learned include:
 - Coordination and communication are key
 - It takes many small "bites" and several large ones
 - As we noted before, most of the sediment control basins were put in over about 4-5 years and then a few more were added over time. So those large bites are good but small ones can always help. A good example of is the work that was done in 2017 (I think) in the east Vail area.
 - Learn what works or not so we can improve the control measures at each step. When maintenance tells us that certain access doesn't work or something, that's when we say we have to figure out a better way to do this.
 - Regular cleaning and maintenance of control measures is critical and requires a lot of resources
 - Long-term monitoring is important to assess stream health. The monitoring that various groups are doing is important as it helps us to make sure we're continuing on the right track.
 - All Control Measures should be accessible for maintenance and equipment and allow for fully loaded equipment to exit. There is a sediment pond on Straight Creek that doesn't have a road to it, so it has filled up over the years.
 - Access should not create lane closures or long trips between the sediment basin and dump trucks. To access the ponds takes a lot of resources and they take time to set them up.
 - Cleaning sediment basins should not require new, specialized equipment.

- Basins should be sized for maintenance equipment. The loaders that are used to take out sediment have gotten wider over the years which means that the basins need to be wider too. They should be sized to hold at least one year of sediment.
- Some outlet structures are set in the middle of a pond and maintenance workers have to wade out into the water or balance on top of narrow concrete to pull out and clean the screens. Keeping the outlet structures on the sides or ends of the basins makes clean out much easier.
- Some infiltration is helpful, so that the basin is less likely to not hold water. On Vail Pass there is a lot of seep so some basins are going to stay wet but that is because water is seeping in constantly and not necessarily because the basin is not draining properly.

16. Control Measure Categories

- a. Holly explained we have added a Control Measures category to the 2021 SCAP titled "Prevention" and have added Coir Logs. Coir logs are kind of like erosion logs but they are a lot sturdier and they could be used to wrap around areas where sediment has accumulated and to help with stabilizing and revegetating the sediment so erosion will not go into adjacent streams. A good example of that is in windrows that are below bridges where sediment has accumulated over time.
 - b. Holly said for the Treatment Control Measures we are proposing to have the option of "polishing wetlands." These would be small wetlands located below sediment basin outlets and would polish fines get through the outlets. The original 2002 SCAP suggested that the basins on average would capture 80% of the sediment going in. We haven't tried to prove that, but the polishing wetlands would be useful where they can be fit in to capture more fines.
1. Melvin said you were talking about the two new control measures, the coir rope and adding some polishing of wetlands below some of the sediment basins. Is your thought to catch the fine sediments not being caught by the ponds? And would you be trying to use existing ones, or would they be new?

Holly said they would be put in where possible, there is enough water so it actually would support wetland vegetation, and especially above any place that is particularly sensitive.

Holly said some of the existing areas that were mapped as wetlands have the vegetation but not necessarily the right soils. An example for a polishing wetland would be a place where the culvert outlet at the creek impacts riverine wetlands. If we are trying to keep sediment from going in the wetlands below then maybe up top would be a good treatment place.

Patrick said polishing wetlands is good terminology for this control measure. The idea is to provide a secondary water quality treatment feature that would be constructed just below the more engineered facility and it would provide a little more trapping of fine sediments that may get through the sediment basin and will probably help with trapping and containing other pollutants that may run off.

The other component is a lot of the impacts of the project will impact what we were calling "stormwater wetlands" or water quality wetlands, incidental wetlands that result from roadside drainage. Those do provide some function ecologically and they provide mainly water quality treatment. By providing small wetland areas



immediately downstream of a basin we can help to replace some of that function if the stormwater wetlands are shrunk or removed.

2. Melvin said he was curious--given the way the valley bottom is structured and the expansion of the extra lane it seems that there is a limit of space for all of this.

Pat said it is a huge limiting factor and doesn't think we are quite at the point yet where we have figured out where these features fit. As Holly indicated, it will only be where we have room to do so.

17. Map Book Example

- a. Holly explained the example of the map book from Rabbit Ears Pass shows the level of detail we want to provide in the SCAP map book. Based on a 1" to 200 scale, there will be about 27 to 30 11"x17" sheets which is about double what was in the 2002 SCAP.

18. Next Steps for SWEEP

- a. Holly reviewed the next steps:
 - i. Continue developing the SCAP sections and send drafts before the next meetings. We are aiming for a number of chapters to be done in time for August and then we will continue coordinating with roadway, bridge, drainage, recreation trail and wildlife crossings
 - ii. Continue development of the Maintenance Manual
 - iii. Continue coordination with the roadway, bridge, drainage, and recreational trail
 - iv. Wetlands delineation as Jim had discussed
 - v. Interviews with Vail Valley agencies regarding cooperative projects
 - vi. Submit the final SCAP and Maintenance Manual in late Fall 2021 in order to fulfill the commitment that the SCAP be completed prior to having any new impervious surface along the Pass.
 - vii. We will also include doing the field trip in the fall—likely September.