

CAG Meeting Summary
Bonita Peak Community Advisory Group
January 18, 2024, 6:30—8:15 PM
Via Computer Conferencing and In Person
at Silverton Town Hall
1360 Greene St.

In attendance: Chara Ragland, Sara Burch, Anthony Edwards, Ty Churchwell, Parker Newby, Russ Anderson, Terry Morris, David Palmer, Emily Thorn, Peter Butler, Susan Livenick (online), Charlie Smith, Jason Fast (online)

In room: Kirstin Brown, Mark Rudolph, Lisa Merrill, Joy Jenkins, Scott Fetchenheir, Jill, James, Tom, Julie Babcock, Jason King (CO AG Office), Melissa Smeins, Charlie Sinch, Scott Roberts,

Introductions and Announcements

Ty announced that Good Samaritan legislation for cleaning up abandoned mines passed out of committee in the Senate with no dissenting votes. Congratulations to Ty and TU. The bill has 28 bipartisan sponsors, most from western states. It's taken eight years to get this legislation through. The first version of a Good Samaritan legislation was introduced in 1995.

The State Attorney General's office has collected about \$7 million in Natural Resources Damages under CERCLA related to the Gold King spill and historic mining in the upper Animas Basin from potential responsible parties. About \$5 million came from EPA. The state will soon be soliciting grant requests for part of this money to be used in the Animas River Basin within Colorado. The timeline is not set yet. The funds are intended to offset damages from historic mining. They can be used for protecting water quality, improving river function, improving fisheries, improving instream recreational activities, *etc.* Grants will require a 50% match of the grant amount requested. If you have questions, contact Peter.

Kirsten Brown announced that the Rocky Mountain Mining and Reclamation Conference will be held in Leadville this year, May 22-24. A call for abstracts is out. Check it out on the MSI website.

Meg Broughton with EPA announced that EPA has lowered the soil screening levels for lead in their guidance, mostly to protect children's health. It was 400 ppm, and now it's 200 ppm from single source and 100 ppm from multiple sources. If soils are above these screening levels, EPA will conduct further study to determine if actions may be necessary. It may mean EPA goes back to some sites that have already been

remediated. Lisa asks about why the change happened. There was no particular event. It's just been 30 years since the policy was updated.

Comparison of Water Quality at A72 When Sunnyside Was Treating, Recent Years with EPA Treating and When There Was No Treatment, Pre-Gold King – Particularly Regarding Changes in Hardness Which Drives Many Metal Standards.

Peter compared water quality at A72 for different time periods when various levels of treatment were employed at Gladstone. The time periods were: 1999-2003 when Sunnyside treated all of Cement Creek at low flow and treated the American Tunnel year round (600 gpm) – the deepest bulkhead was in place, and there was almost no flow from Gold King or Red & Bonita; 2010-2014 when there was no treatment at Gladstone and the Gold King or Red & Bonita were the biggest sources; and 2017-2021 when EPA has been treating the Gold King only.

The data shows that zinc concentrations were lowest during the first time period, the highest during the second, and in between during the third. Also, treatment at Gladstone had the biggest impact during low flow and very little impact during high flow.

It was also noted that between the first period and the second, substantial remediation occurred in Mineral Creek, especially the bulkheading the Koehler Tunnel, which reduced zinc concentrations in Mineral Creek by 70%. The confluence of Mineral Creek and the Animas River is upstream of A72.

Charlie notes that three of the 1999-2003 years were below average in terms of flow, and the 2017-2021 had multiple low years, only one high, and 2010-2014 had closer to average streamflow.

Peter turns to total iron concentrations. When Sunnyside was treating, they apparently removed quite a bit of iron compared to the other two time periods. There was also a sizeable reduction of total aluminum, although the aluminum data from the first time period is pretty sparse. Both iron and aluminum may impact aquatic life downstream of Silverton, but because much of it is considered natural, zinc has been the main focus of cleanup efforts. Iron smothers the stream substrate, and aluminum is toxic to aquatic life, especially at lower pH.

Zinc and iron standards and EPA's aluminum criteria are all exceeded below Silverton (so is the pH standard), but the exceedances of the aluminum criteria are much greater than the zinc standard. Joy says it will be hard to meet TVS for all metals at A72 even with treatment and that aluminum is important. We focus on zinc because the majority is thought to come from mining sites, and much of the aluminum and iron does not.

Next, Peter discussed the role of hardness. The toxicity of many metals, including zinc, is dependent on hardness. The lower the hardness, the more toxic the metal concentration. The hardness in 2017-2021 is higher than other two time periods. It

could be related to the treatment at Gladstone by EPA, but it's not entirely clear. Sunnyside treated with quicklime and a slaker to hydrate. EPA uses hydrated lime (CaO₂). So, if the current treatment at Gladstone is adding hardness, putting in a more efficient process at Gladstone, may decrease hardness and make zinc more toxic. Purposely increasing hardness would do the opposite. Increasing hardness would also lessen aluminum toxicity but not iron. Joy says this is something to look at more closely.

Takeaways: Treatment at Gladstone makes a difference during low flow. Treatment might reduce iron and aluminum more than initially thought. Hardness is a factor to pay attention to.

Terry asks about treating low flow because that may not necessarily be when the highest toxicity to fish occurs. Peter says the highest toxicity (not the highest concentrations) happens during spring runoff. He does not believe that zinc TVS can be met all the way down at Cascade during runoff. Peter says that ice flows and avalanches block the river in the winter, causing temporary pooling. Iron and aluminum may drop out along the banks of the river. Then when the river first rises, there is a high slug of these two metals that gets picked up.

Terry asks if we are getting into the weeds too much to fine tune things for metals reduction? Treating winter flows helped fish. But if you only have one treatment plant, do you need to dial it up in April? Joy questions if there is a discrete fix. Peter says if you take out iron and aluminum in low flow, maybe you won't get the deposits from blockages.

Joy says that hardness and toxicity can be a factor in the type of treatment you choose. Lime treatment adds hardness and should be considered with how you treat. Charlie says you could add lime after treatment. Ty asks if there are similar issues at other sites? Joy responds yes, that is why lime is used so widely. The spring flush is also seen at other sites. They see mobilized metals at the beginning of snowmelt. Also, it is good to look at in terms of how sampling can affect the picture of what you have.

Charlie asks if polymer affects hardness and pH? Joy does not think that is as critical because of such low amounts that are added.

Looking at Water Quality Upstream and Downstream of the Mayflower Tailings at Two Gages.

Peter presented instream water quality in the river stretch from the Howardsville gage to A68 gage in Silverton. This stretch includes the Mayflower tailings. A68 is on the Animas River, above the confluence with Cement Creek. Monthly samples have been collected there since the early 1990's. Monthly samples have been collected at the Howardsville gage since 2014.

Every year zinc concentrations reach a high peak at A68 in early spring – March-April. The peaks were significantly higher in the mid-1990's. In the late 1990's and early 2000's Sunnyside removed tailings from a number of locations – Eureka, Howardsville, and the bench below the Mayflower tailings and hauled the material to the Mayflower Tailings Pond #4. ARSG also did some remediation work upstream. Currently, the spring peak concentrations are a lot lower. Overall zinc concentrations have dropped year-round significantly since the 1990's and even since 2007-2011. It's not clear what has caused the more recent drop.

Zinc concentrations at A68 are still double the zinc chronic TVS throughout the year and four times higher in the spring. Peter calculated a modified hazard quotient by taking the 85th percentile of the monthly concentrations and dividing the value by TVS calculated by using the average monthly hardness. The highest hazard quotients were in April, May, and June, which corresponds to the timeframe of the highest hazard quotients downstream in the canyon. The highest zinc concentrations are in January and February, but the most toxic levels are the spring values due to lower hardness. Peter thinks this is the driver for high hazard quotients downstream, rather than Cement Creek. You don't see this spring spike in Cement Creek.

Peter shows a comparison of zinc concentrations and loads from data collected several times a week in March -April in 2014. Zinc concentrations are up to five times higher at A68 in late March than at the Howardsville gage. The amount of loading coming into the river between these two gages jumps up to over 200 lbs/day of zinc in mid-April. During lower flow, the load coming in is only about 70 lbs/day. In June, the loading is high at A68, but it is almost all from upstream of the Howardsville gage. At Gladstone, there is only about 200 lbs/day of zinc loading from the major mine drainages in the area. Sampling must be done before May in the Mayflower stretch, or the early spring spikes will be missed.

Kirsten suggests to EPA doing the Mayflower and Howardsville data sampling earlier than currently planned. Joy asks about concentrations since 2014 and if the big peak pattern is still there? Peter does not know since there is only one sample taken each month whereas the 2014 data was from multiple samples taken in a month. The high peak is only over a 9-day period.

Scott asks about how this would look if you plotted the hydrograph. Peter says it is starting to rise in March, even though not shown here. Scott suggests you could pay attention to the hydrograph to see when the high concentrations start to occur.

Kirsten asks Lisa how the snow on the Mayflower ponds and above looked when she was sampling in the spring in 2014. She remembers that most of the snow was gone. Lisa comments that every single month, the water temperature at Howardsville is significantly higher than at A68. Howardsville gets sunshine before it comes into the canyon.

Kirsten comments it would be a good idea to sample the river from when the tailings are covered with snow to after it has melted. Peter says you can also look at the automated Sunnyside pictures taken on top of the tailings ponds to see when the snowpack disappeared in previous years. Kirsten suggests a game camera to also document the snow cover. Joy says they have good amount of data to address the remedy. Peter says EPA still need to determine if it is coming from tailings. There are 30 monitoring wells that EPA will be sampling in the spring. They will also be sampling the river.

Discussion Regarding CAG's Meeting Frequency and Use of Informal Workgroups.

All of Peter's Powerpoints are online. Dave has done a lot of data formatting and expressed interest in doing more with the data. Peter will put some of the spreadsheets on the website in the future.

The Zoom account the CAG has been using is Peter's, so the CAG will need to figure out another option for future meetings. Emily has a Microsoft Teams account we could use. Ty will discuss with Emily.

Joy discusses the OU2 conceptual site model (CSM). The week of Feb 5, EPA would like to introduce the model to a workgroup of CAG members. Then they'd like to go over it with the big group. They would like to know who would be in the smaller group. Peter suggests that we let whoever wants to jump in do so. Chara suggests that they set the meeting and see who can join that is interested and available. Jessica says the Feb 5 call would be a primer for the draft, and EPA would be reviewing at the same time. EPA will send out a couple of times in a doodle poll, and CAG members can respond they are available. There will be a larger discussion at the Feb 22 CAG meeting. The CAG can email our questions prior for EPA to consider.

Administrative Items

- ✓ Meeting Summaries – Peter thanks Chara and Dave for their notes. Chara motions to approve both summaries. Russ seconds. All in favor.
- ✓ CAG Discussion Time – Tuesday, January 23rd. 6:30. Peter is asking Ty to send out a Zoom to do that. Russ will chair until we choose someone new.
- ✓ Long-Range Schedule – CAG Meeting February 22.
- ✓ Election of CAG Officers for 2024 – Chara suggests we put that in the discussion time. All seem to agree.
- ✓ Future Agenda Items? *Macroinvertebrate Data, Remedial Actions for Gladstone and Howardsville, etc.*

8:25 PM

Adjourn