



2020 YEAR IN REVIEW AND PLAN FOR 2021

Bonita Peak Mining District

U.S. Environmental Protection Agency

December 2020



OBJECTIVES

- Communicate BPMD Superfund work completed in 2020
- Provide an overview of planned 2021 work
- Discuss ways to get/stay involved in the BPMD Superfund process



2020 WORK COMPLETED



2020 BPMD ACTIVITIES

2020 Planning and Management activities:

- Site Management Plan (SMP)
- Terrestrial risk assessment
- OU1 RI Work Plan
- Sitewide repository
- Data Management
- Community Involvement

Response actions

- 2019 IROD construction activities
- Red & Bonita Bulkhead Test
- IWTP upgrades



SITE MANAGEMENT PLAN

- This Adaptive Management Site Management Plan (AM SMP) was developed as part of a pilot study conducted by EPA to demonstrate how Adaptive Management (AM) can be implemented at a large complex mining site.
 - This AM SMP provides a framework for decision-making, documentation, planning, and prioritization of activities within the BPMD Superfund Site.
 - The SMP was finalized late Nov. 2020 and will be made available on the EPA website.

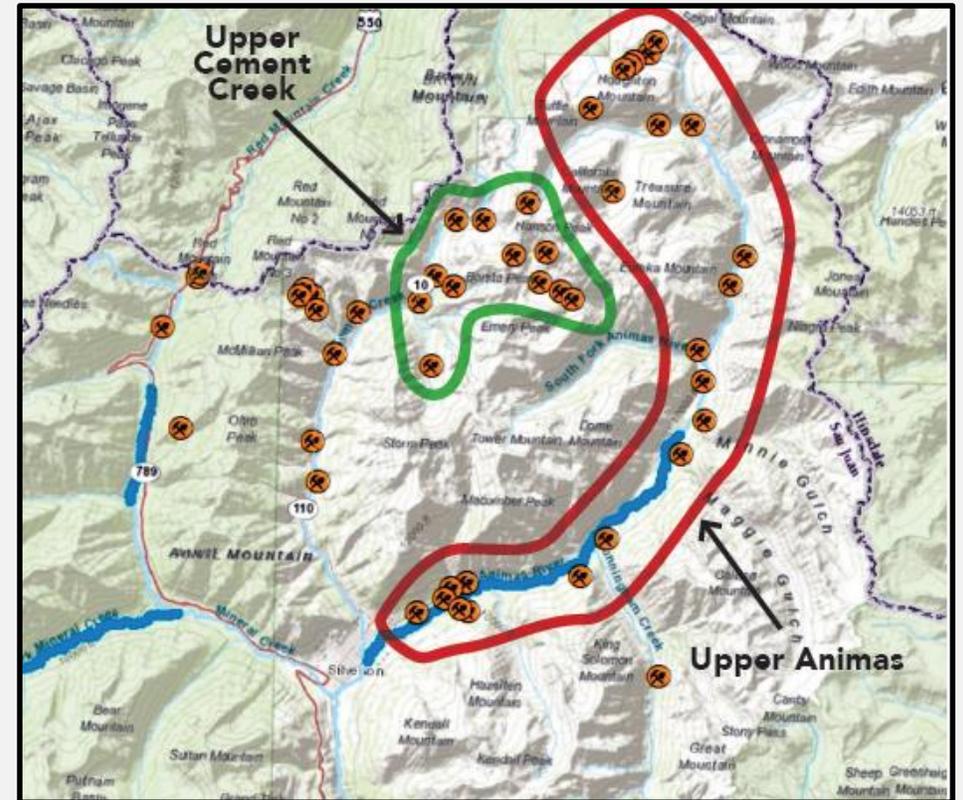
EPA Site Goals

- 1 → Improve water quality with focus on mine drainage
- 2 → Stabilize source areas with a focus on solid media
- 3 → Minimize unplanned releases



SITE STRATEGY

- Selected strategy focuses on the Bonita Peak groundwater system and Upper Animas mine drainages
 - RI/FS and bulkheading of mine drainages connected to groundwater system (OU3)
 - RI/FS of Upper Animas source areas
- Site Management Plan actions will take place concurrently with ongoing work at the BPMD Site
 - Gladstone IWTP
 - Sitewide repository
 - Work pursuant to 2019 IROD



Upper Cement Creek and Upper Animas source areas of focus for selected site strategy



RISK ASSESSMENT

- Terrestrial Baseline Ecological Risk Assessment (BERA)
 - Finalized in fall 2020
 - Document and fact sheet will be posted to EPA website



OU1 REMEDIAL INVESTIGATION

- Upper Animas OU1 Focus Area
- Focusing on Upper Animas portion of OU1 pursuant to site strategy (Priority Reach 1 and 2 first)
- Continued development of data gap reports; 1st quarter 2021
- Development of a workplan is underway; 1st quarter 2021
 - Outline of investigation priorities and anticipated sequencing of FFS/IRODS/RODS
 - Investigation details discussed in 2021 planned activities
- Project loading tool updating to include additional metals (Zn, Cd, Mn, Pb, Al). Loading tool used to identify loads by reach to help prioritize RI workplan



REMEDIAL INVESTIGATION

- Ongoing multiyear characterization of nature and extent of contamination across the site and determination of contaminant transport processes
 - MSI collected baseline winter data at draining mine adits and instream gages; HTR
 - 2019 Update to S&S Report
 - Ongoing Water Balance Report – End of 2020



MSI conducting winter sampling



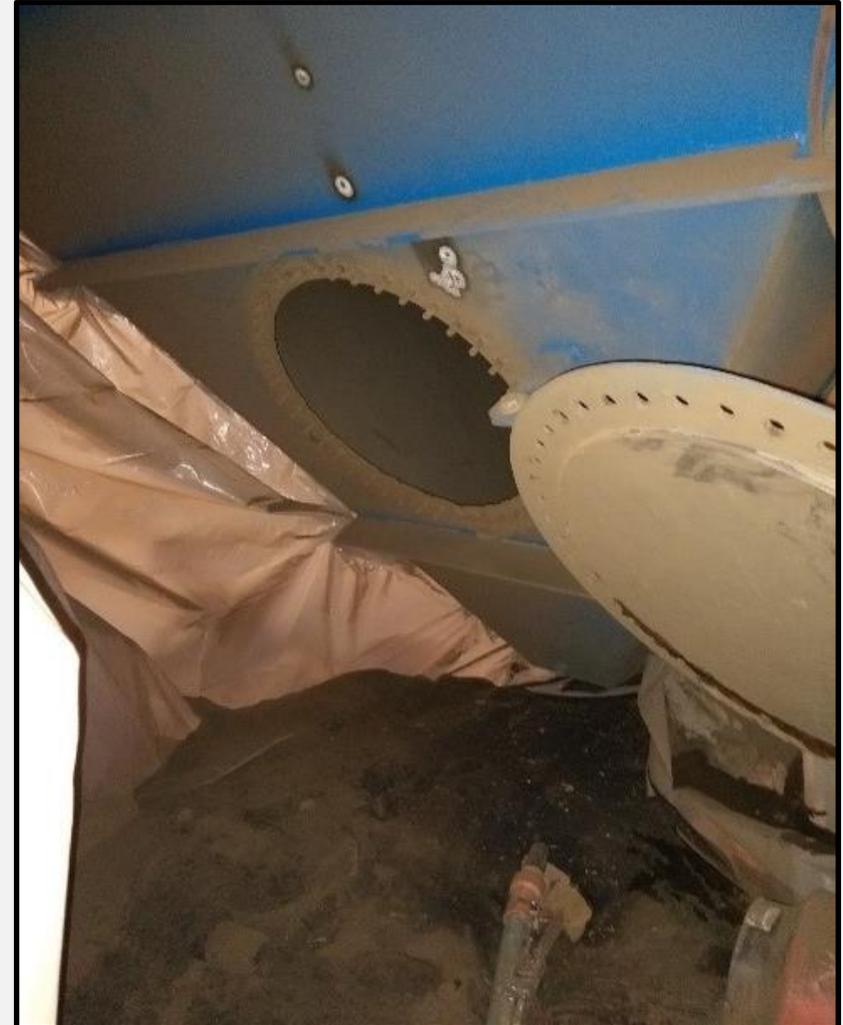
RED & BONITA BULKHEAD TEST

- Red and Bonita Mine Bulkhead Test
 - Head test: (Jul – Oct 2020)
 - Conducted at 50 and 200 feet of hydraulic head for bulkhead performance
 - Sampled nearby seeps and springs, Cement Creek, and draining mines
 - Drawdown treated at the IWTP
 - Will help improve understanding of groundwater levels and movement in OU3
 - Sample and Analysis Report to be completed end of 2020; Interpretative Report to be completed 1st quarter 2021



RESPONSE ACTIONS

- Response actions pursuant to 2019 IROD
- Ongoing IWTP operations
- Wildfire response procedures



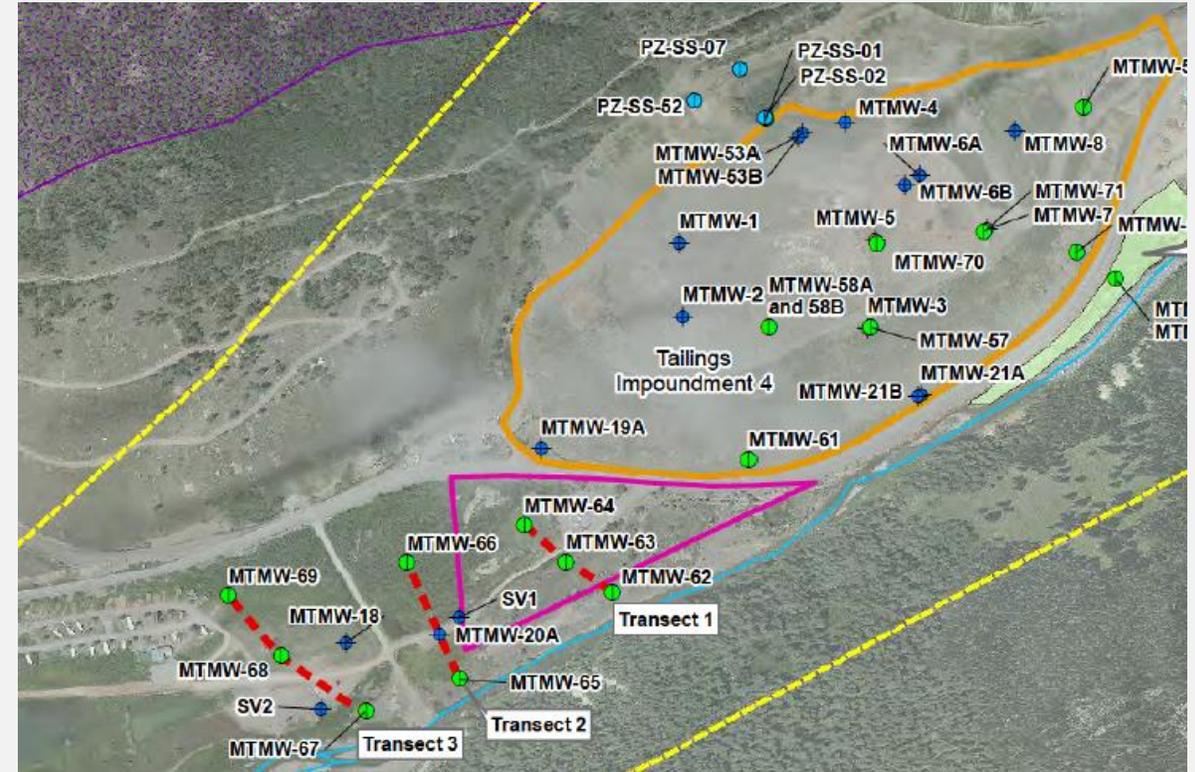
2019 IROD INTERIM REMEDIAL ACTIONS

- Remedial actions pursuant to the 2019 IROD
 - Natalie/Occidental Mine
 - Reroute mine drainage around waste rock pile
 - Koehler, Junction, Longfellow Mines
 - Culvert
 - Pond sediment removal (ongoing)



MAYFLOWER REMEDIAL INVESTIGATION

- SGC installed 20 additional wells, most targeting TP-4 and Floodplain areas below TP-4.
- Other areas of investigation included Seep 6150 area, slough that inflows at 7690, Industrial Park Area, Polar Star Tailings and porewater sampling.
- Results of samples from 2020 activities are expected to be compiled in Winter/Spring 2021.



Green dots indicate planned well location for 2020 installation.

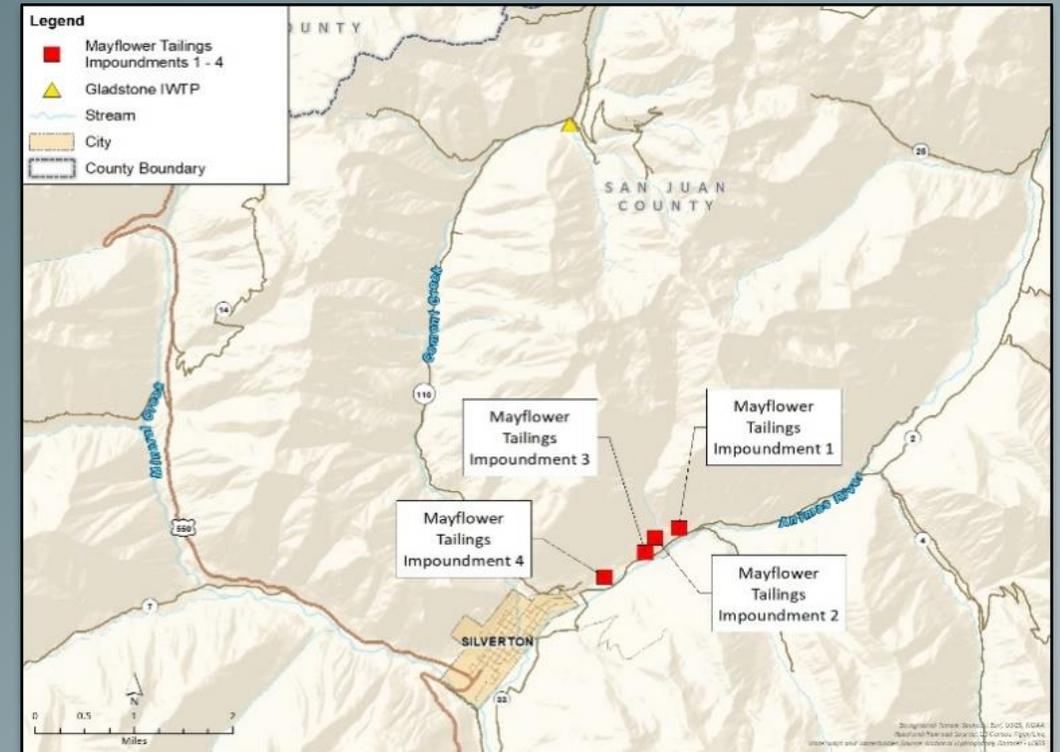


SITEWIDE REPOSITORY

- Completed Sitewide Repository Focused Feasibility Study
 - Preferred Alternative was a phased implementation approach using Impoundments 1, 2, and 4
 - Public Comment Period in July/August 2020.
 - Based on public comment, remedial approach is now to initially use Impoundment 4.
 - Currently working on sitewide repository IROD

Goal

Manage IWTP sludge and mining wastes as EPA implements future remediation activities.



DATA MANAGEMENT AND ACCESS

- Streamlined the consent for access (CFA) process
 - Approximately 50 forms signed in 2020
- Conducted cultural resources surveys
 - Three source areas and seven well drilling areas
- BPMD story map and WQX development underway
 - Story map is a user-friendly public interface
 - Both tools allow users to review, analyze, or download data



INNOVATIVE TECHNOLOGIES

- Dewatering sludge at Gladstone treatment plant
- Brown Bear
- Pilot testing for in-situ stabilization at Amy/Aspen



Brown Bear Corp. sludge tractor with auger



COMMUNITY INVOLVEMENT

- Digging Deeper series
 - 2019 year in review and plan for 2020
 - Sitewide repository proposed plan
- Fact Sheets
 - Terrestrial BERA
 - Red and Bonita Mine head test
 - Site Management Plan
 - Sitewide repository
 - Actions pursuant to 2019 IROD



STATE OF COLORADO 2020



COLORADO

**Hazardous Materials
& Waste Management Division**

Department of Public Health & Environment



COLORADO

**Division of Reclamation,
Mining and Safety**

Department of Natural Resources

- Dispersed campgrounds
 - Additional sampling to implement 2019 IROD actions at campgrounds 4 and 7
- Health and Safety Training
 - With EPA assistance, completed free 8-hour and 40-Hour OSHA Health and Safety Trainings
- Ben Butler Mine
 - Safety closure work including rock amendments and backfill with amended waste rock to close open stopes



US FOREST SERVICE 2020



- Brooklyn Mine
 - Work pursuant to 2019 IROD to implement run on controls and divert surface water away from waste rock piles
 - Safeguarding the Level One highwall
 - Debris removal
- USFS Mineral Creek sample data provided to EPA and Rocky Mountain Research Station



BUREAU OF LAND MANAGEMENT 2020



- Maintenance at Mayday Mine adjacent to CR 110A in the Cement Creek watershed
- Maintenance at Forest Queen Mine and Lewis Lake
- Maintenance at Wynona Mine



QUESTIONS?

PLANNED 2021 WORK



EPA 2021 PRIORITY ACTIVITIES

- **Focus on implementation of 2021 annual task list**
 - 5-year strategic plan
 - HHRA ethnographic study
 - Sitewide repository design
 - Upper Animas RI sampling
 - OU3 well drilling
 - Continue 2019 IROD work
 - Possible bulkhead assessment at Silver Wing

Continue actions:

IWTP operations

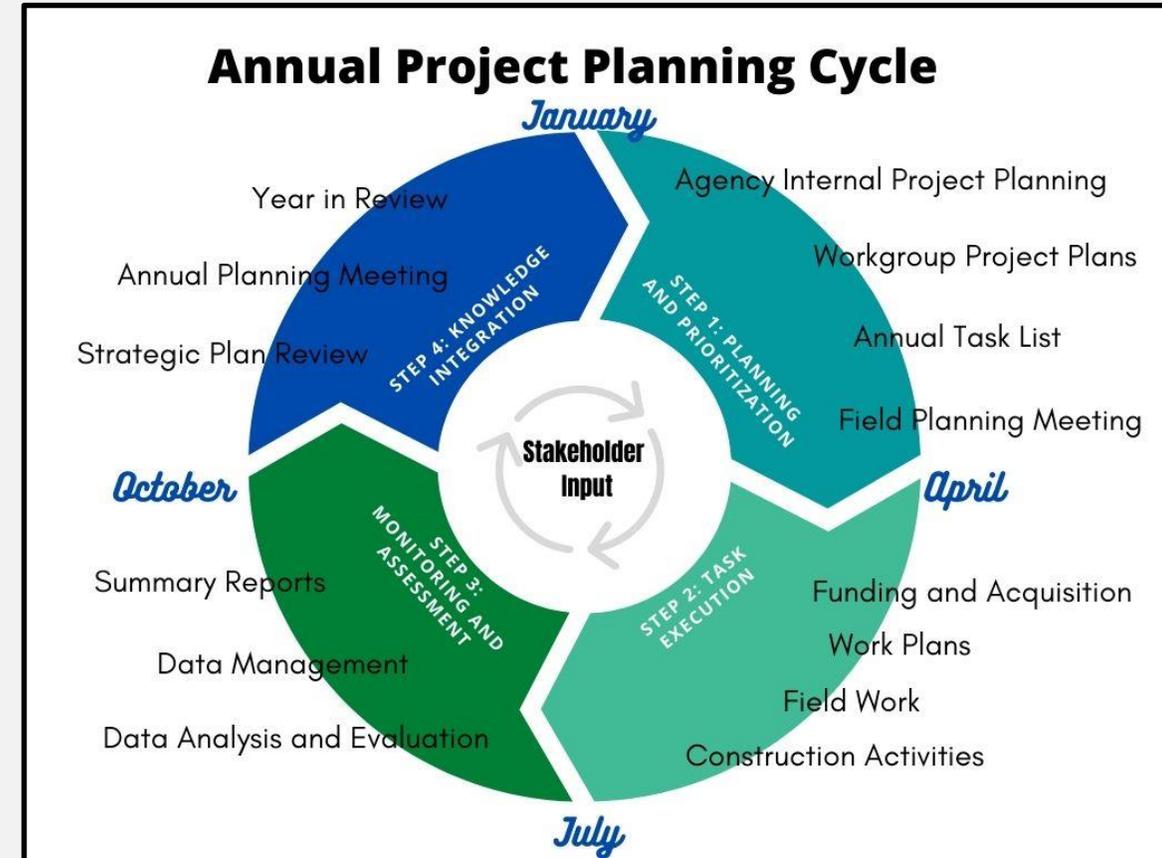
Data management/Access

Community Involvement



SITE MANAGEMENT

- Developing 2021 annual task list for CAG/PG review
 - Tasks anticipated for completion by interagency BPMD team in 2021
- Concurrent development of a 5-year strategic plan for CAG/PG review
 - Documents what work the interagency BPMD team anticipates completing in the next 5 years in accordance with site strategy and sitewide goals



PLANNED REMEDIAL INVESTIGATIONS

- Continue long-term sampling
- Finalize sitewide RI work plan
- RI data collection at Eureka, Howardsville, and Kittimac
- Potential treatability study (e.g. greenhouse study)
- Develop background and stormwater strategies
- Human health risk assessment addendum – anticipated fall 2021



Kittimac



PLANNED REMEDIAL INVESTIGATIONS

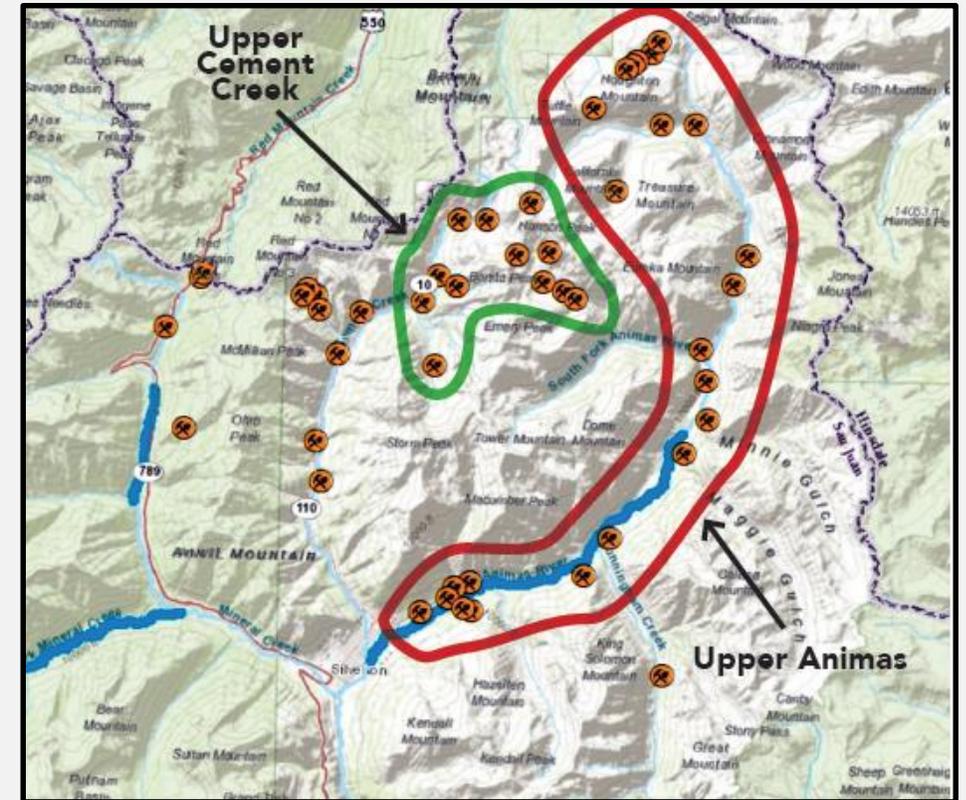
	Reach	Rationale
1	Fluvial tailings reach – generally Eureka to Howardsville Placer Gulch Tailings and Sunbank Group Mine	Directly in Priority Reach 2, high loading, tailings source-area type, multiple seasons of groundwater monitoring needed Placer Gulch Tailings – synergy in tailings mapping skills and heavy equipment mobilization
2	Frisco/Bagley to Animas Forks Animas Forks to Eureka	High reach loads, high uncertainty of mining-related source contributions versus background
3	California Gulch to headwaters Burrows Creek	High to medium reach loads with background component
4	Eureka Gulch Other mines outside of geographic reaches	Medium to insignificant reach loads Could include other mines any year, as resources allow/as convenient

Background and Goals 2 and 3 throughout and in parallel.



OU3 GROUNDWATER SYSTEM

- Planned actions:
 - Install groundwater well at the Gold Prince Mine
 - Install weather stations
 - Conduct infiltration and seepage studies
 - Continue monitoring seeps, springs, and draining adits
- Goal is to understand:
 - How groundwater moves through mine workings
 - How groundwater impacts surface water
 - What remedies would be effective at achieving goals



Upper Cement Creek Focus Area



PLANNED RESPONSE ACTIONS

- Work pursuant to 2019 IROD for summer–fall 2021:
 - Koehler Mine
 - Continue pond desludging and capping
 - Terry Tunnel
 - Open portal, bulkhead inspection, improve adit conveyance

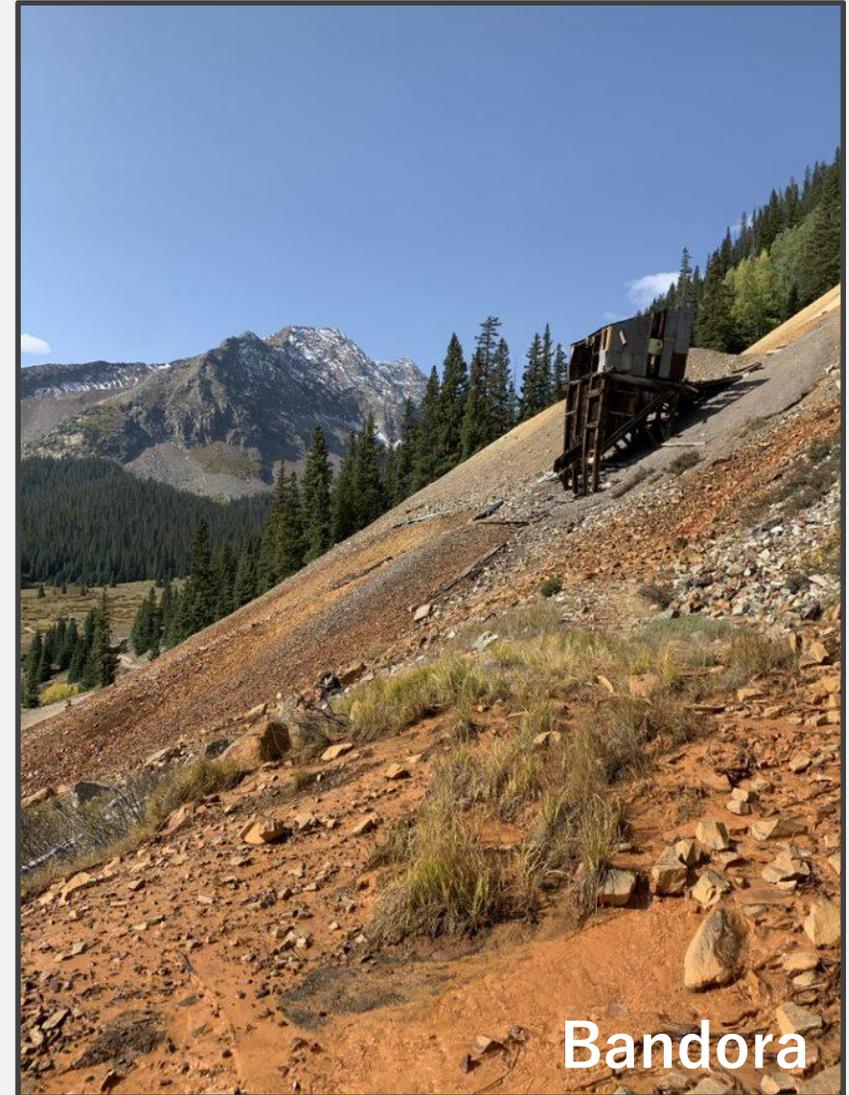


Sludge pond at Koehler



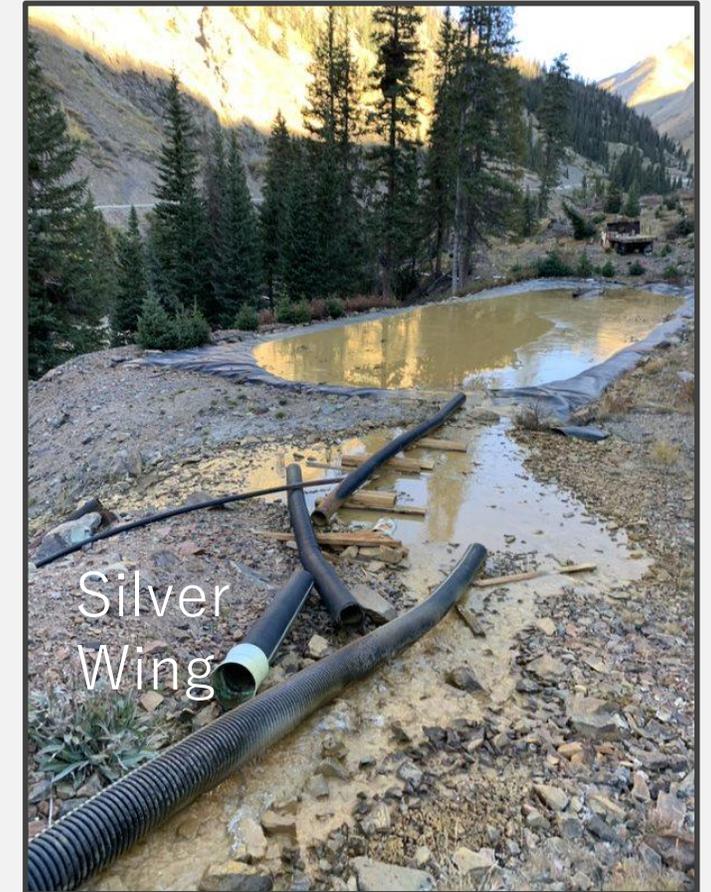
PLANNED RESPONSE ACTIONS CONTINUED

- Work pursuant to 2019 IROD for summer–fall 2021:
 - Yukon Tunnel
 - Open collapsing portal, stormwater diversion
 - Bandora Mine
 - Install well into collapsed adit, open adit, establish road access, improve drainage



PLANNED RESPONSE ACTIONS CONTINUED

- Work planned pursuant to 2019 IROD for summer–fall 2021:
 - Silver Wing Mine
 - Access road, BH assessment, pond evaluation.
 - London Mine (AOC)
 - Anglo Saxon Mine
 - Excavate portal ponds, divert adit drainage around waste rock, protect historic cribbing wall.
 - Ben Butler Mine
 - Mammoth Tunnel
 - Maintain effectiveness of portal pond system, divert adit drainage around waste rock, collaborate with BLM.



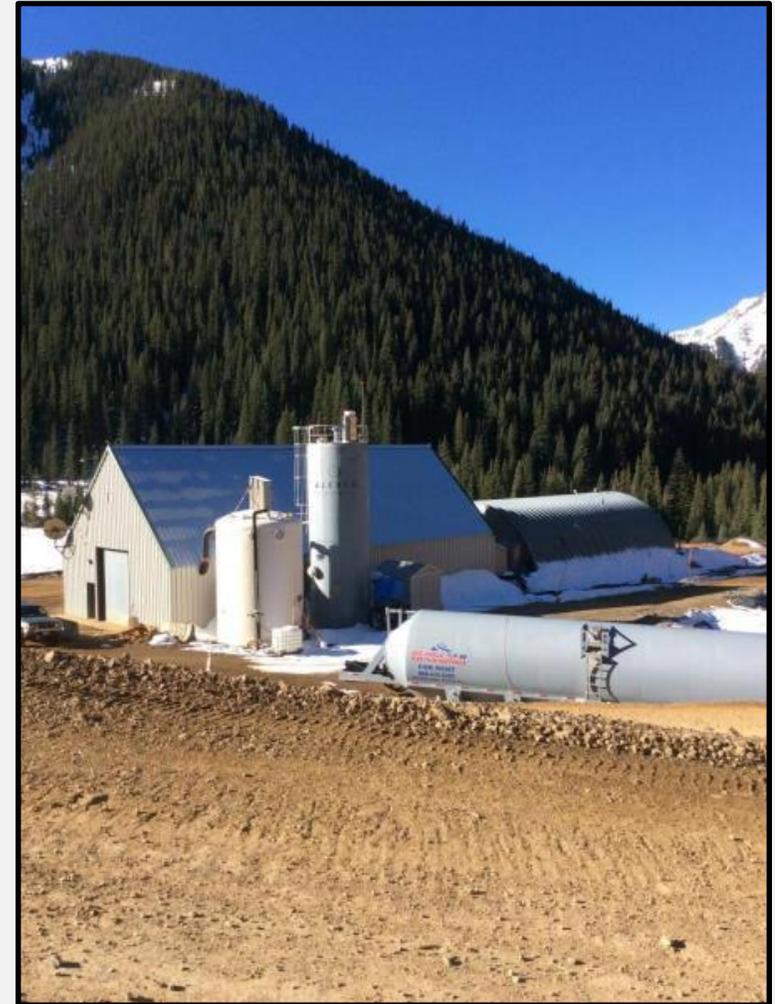
MAYFLOWER (OU2)/ SITEWIDE REPOSITORY

- Mayflower (OU2) RI work by SGC to continue in 2021
 - Continue evaluation of nature and extent of known source areas and fate and transport of contaminants.
 - Sampling newly installed wells during important times throughout the water year.
 - Other work, yet to be defined, to build on findings from 2020 work
 - Data Interpretation Report for 2020 work is expected this Winter/Spring.
- Repository Design Work
 - Will complete preliminary design this winter/spring.
 - Full design of initial phase to be completed Fall 2021.



INTERIM WATER TREATMENT PLANT

- IWTP operation and maintenance
 - Ongoing
 - Planned conveyance and maintenance work in spring – fall 2021
 - Transition operation contract from EPA Removal program to US Army Corps
- Complete the remedial action annual report – fall 2021



Gladstone IWTP



DATA MANAGEMENT AND ACCESS

- Development of WQX and BPMD story map currently underway with tentative roll out in spring – summer 2021
- EPA will continue working with property owners to acquire access through the streamlined CFA process



STATE OF COLORADO 2021



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**Hazardous Materials
& Waste Management Division**

Department of Public Health & Environment



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Mining and Safety**

Department of Natural Resources

- Work at campgrounds 4 and 7 pursuant to 2019 IROD
- Sitewide SIC ordinance
- RI/FS for Amy and Aspen Mines
- Data collection for all 48 source areas to inform Sitewide Goals 2 and 3
- Continue underground assistance and sampling
- Support cultural resources assessments
- Develop 2022 work plans for 2019 work at Grand Mogul, Tom Moore, Vermillion, and Frisco Bagley Mines



US FOREST SERVICE 2021



- Mineral Creek watershed assessment
- Brooklyn mine IRA work planned for Summer 2021 and 2022



BUREAU OF LAND MANAGEMENT 2021



- Coordinate 2019 IROD work at Mammoth, Vermillion, and Grand Mogul with EPA and DRMS
- Characterization and background study of the drainage above Red Cloud which feeds into OU1 RI
- Possible - Operation and maintenance at Prospect Gulch dependent upon 2021 budget approval
 - May include: Regrading, adit pipe at Lark Repository, and tunnel inspections
- Possible - Operation and maintenance at Forest Queen dependent upon 2021 budget approval



STAKEHOLDER ENGAGEMENT OPTIONS



GET INVOLVED!

- BPMD Community Advisory Group (CAG) – monthly meetings
- Digging Deeper series – public meetings
- Newsletters updates and/or fact sheets
 - Story map
 - Sitewide repository design
 - Sitewide background and stormwater strategies
 - Sitewide RI work plan
 - Groundwater system field activities
 - 2019 IROD work
 - DRMS report for Sitewide Goals 2 and 3

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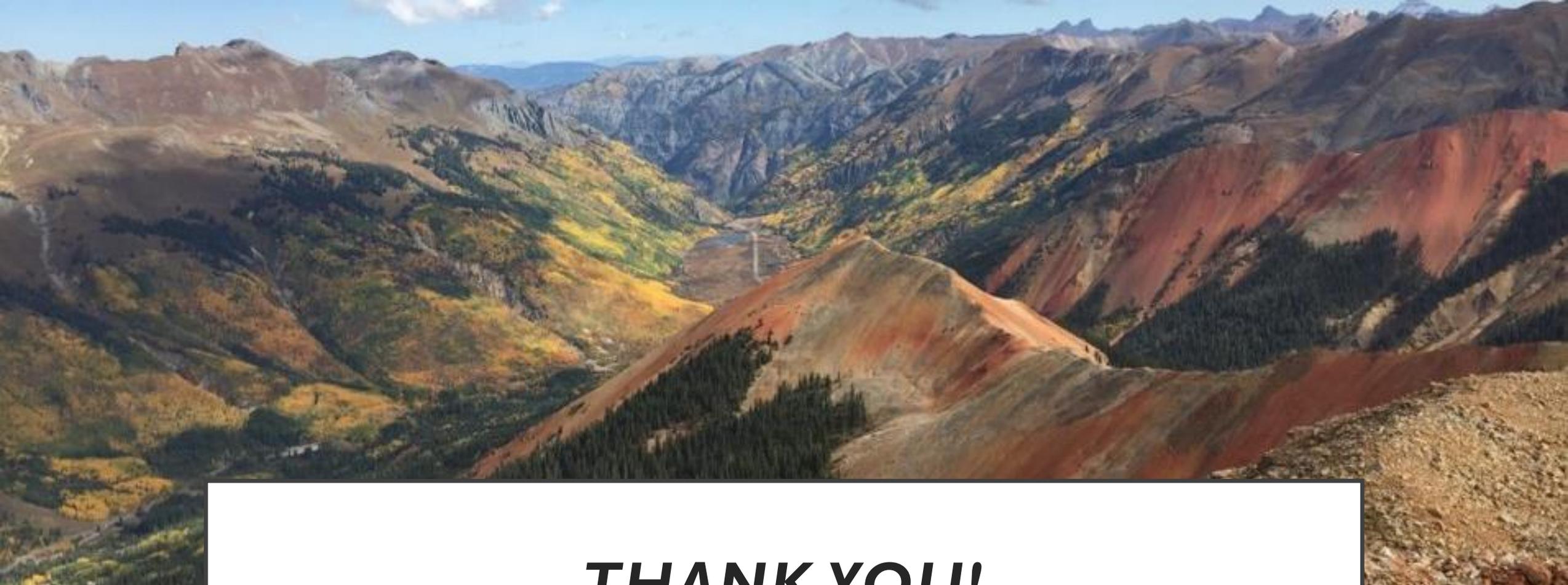
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BPMD Superfund Site Website

<http://epa.gov/superfund/bonita-peak>



QUESTIONS?



THANK YOU!

www.epa.gov/superfund/bonita-peak

