Meeting Summary
Bonita Peak Mining District Community Advisory Group
May 20, 2025, 5:30 - 7:07 pm
Via Computer Conferencing and In Person
at Santa Rita Treatment Plant
Durango, CO

CAG Members attending: Chara Ragland, Ty Churchwell, Parker Newby, Jason Fast, Susan Livenick, Chris Hill, Helen Mary Johnson and David Palmer. Online: Emily Thorn, Anthony Edwards and Ken Balleweg

Also in attendance: Kirstin Brown (DRMS), Mark Rudolph (CDPHE), David Gonzalez (FLC), Peter Butler, Ethan Ash and James Livenick. Online: Mark Boula (NMED), Tom Schillaci, Linda Figuero and David Heinze.

EPA attendees: Ashlin Brooks, Jessica Duggan and Athena Jones. Online: Joy Jenkins

Introductions and Announcements
Introductions were made around the meeting room and some of the online participants were identified.

Chara announced there will be a celebration of life for Bill Simon on May 29, 2025 at 10:30 am at the Kendall Mountain Community Center in Silverton, CO.

Chara announced that Brian Devine is leaving his La Plata County and CAG representative positions and is going to work at the City of Durango.

Presentations
Helen Mary introduced Dr. David Gonzalez, professor and chair of the geosciences department at Fort Lewis College in Durango, CO. Dr. Gonzalez gave the following powerpoint presentation.

The Geologic Context for Mineralization in the Western San Juan Mountains, Colorado - Dr. David Gonzalez
The presentation contained 108 slides. Some highlights are listed below.

Note: the powerpoint presentation is provided in CAG documents.

Geologic formations in the western San Juan Mountains are an 1800-million-year (Ma) record of Earth history:

1800-1400 Ma: Subduction and tectonic growth of the North American continent. Island arc systems to the west and plutonic systems developed Proterozoic crust, followed by metamorphism and deformation, and subsequent erosion by marine-river systems. Some of these ancient rocks are exposed in western Colorado.

500-320 Ma: Oceans migrate in from the west; marine systems are dominant with sandstone and limestone rocks deposited in western Colorado. Volcanic arcs and subduction are on the west coast.

320-270 Ma: Africa collides with North America = Pangaea. Volcanic arc-back arc basins are still on west coast. Western US uplifted and then seas leave the area as mountains form. The Ancestral Rockies form highlands that are eroded and sediments fill adjacent basins with thick successions of alluvial material. Western Colorado sediments change from limestone-evaporites to dominant river deposits of sandstone-mudstones, with some areas of dunes and swamps.

250-150 Ma: Pangaea breaks up, continental arcs are prominent on the west coast and the Sierra Nevada Mountains form. Deserts expand in the west, continental seas migrate in and retreat, then river-lake systems develop. The Ancestral Rockies are eroded and new highlands form in Nevada and western Utah (Sevier Orogeny). Sandstone-mudstone continental deposits dominate in western Colorado. The end of this period has distinct fluvial deposits with volcanic debris: Morrison Formation = uranium and dinosaurs.

130-75 Ma: Volcanic arc on west coast = many volcanoes. Thick marine and continental deposits form in California and southern Arizona as a seaway encroached from the north. Marine sand and mud dominate sedimentary deposits in western Colorado. Seaway retreats leaving river plains and swamps = coal.

80-45 Ma: Laramide Orogeny mountain-building forms Rocky Mountains, with basins forming that are filled with huge lakes. In southwestern Colorado intrusive laccoliths form mountains (Rico, La Plata, Ute); some mineralization in skarns formed by thermal metamorphism and Au-Ag telluride veins.

35-0.6 Ma: Renewed uplift and extensive volcanism (calderas) in the area. Magma provides heat, volatiles (fluids and gases), and metals for mineralization by chemical interactions with older host rocks. Mineralization is enhanced in pathways such as fractures, breccia zones and bedding planes as part of ore-fluid systems.

The role of older rocks in mineralization of the western San Juan Mountains:

- Faults and fractures created in previous tectonic events = fluid avenues in later events
- Ancient crust and mantle are major source of magmas and metals
- Older sedimentary rocks available for chemical reactions with migrating fluids
- Mineralization is focused along existing fractures and faults in older wall rock
- Many minerals, including sulfur-containing minerals, generate reactive acids
- Gold, silver, galena, chalcopyrite are common ore minerals

Alteration origins can be a guide to mineralization:

- Late or post-magmatic fluids (deuteric)

- Hydrothermal fluids
- Weathering and alteration
- Different stages, chemical processes, products, zones, patterns are indicative of the wide variability of alteration

In the western San Juan Mountains alteration includes:

- Region-wide propylitic alteration = green rocks = acid buffering
- High temperature = low pH around mineralized zones
- Sulfide minerals + water + oxygen create mostly oxide and hydroxides = generate acid and release metals into mineralization

Takeaways:

- Geologic events before 75 Ma played a major role in the history of mineralization
  - older rocks were a source of metals
  - older sedimentary rocks (limestone, sandstone) were host rocks suitable for chemical reactions with fluids
  - pathways were provided by faults, fractures, breccia zones and bedding planes
  - reactive rocks were available for chemical reactions (acid generating)
- Major periods of mineralization took place after 32 Ma and were tied to magmatic events and fractures

Repository Construction Update – Athena Jones, EPA

Bonita Peak Repository

The contract has not been awarded yet.

Athena will share the contractor contact information and the mobilization date by the end of July.

Athena provided a refresher on the remaining construction actions still to complete:

- Stormwater infrastructure (channels) – one under the road requires a 36" pipe, so will need to redirect traffic
- Cover Cell 2 with asphalt, it is a smaller area
- Cell 3 cover materials - will need about 20K tons to cover 1 to 2 feet depending on the location. Material to come from Montrose, may be some from Animas area
- Leachate pond fence
- Cut and survey wells drilled earlier
- Trench a drain under the access ramp
- Drainage for cells 2 and 3 - need to dry before construction can start

Parker asked if the water was being sampled.

Jessica replied yes, the water is being sampled.

Athena summarized the planned operation to transport and place the sludge waste from Gladstone to Repository Cell 1.

Chara asked if Cell 1 will be covered.

Athena stated that it will instead be graded and compacted to shed water.

Parker mentioned that Cell 2 has standing water.

Athena said it will be pumped off to Cell 1, and a culvert with a valve will be installed.

Peter asked if there is a liner under Cell 1.
Athena stated that Cell 1 has two liners in accordance with RCRA regulations, with a leak detection system.
Susan asked if operations can transport as much sludge waste as Gladstone generates.
Athena said they can transport up to 5,600 yards/year, and can amend the work plan so it is safe to transport, and then amend again to cap the cell.
Several participants conducted a quick discussion on sludge treatment options.

Administrative Items
Chara announced that EPA and the county will host an EPA and contractor meet and greet opportunity at Kendall Mountain Community Center on June 26, 2025.
Anthony noted that the county will provide food and beverages, with some food dishes provided by local residents. Contact Anthony if you wish to attend and provide a dish.
Joy commented that other agencies will also be there – CDPHE, BLM, USFS.

Chara announced the CAG will have a discussion in June to decide on a BPMD tour date.
She also announced that the next CAG meeting will be on July 15, 2025 at 5:30 pm at the Santa Rita Facility.

7:15 pm **Adjourn**