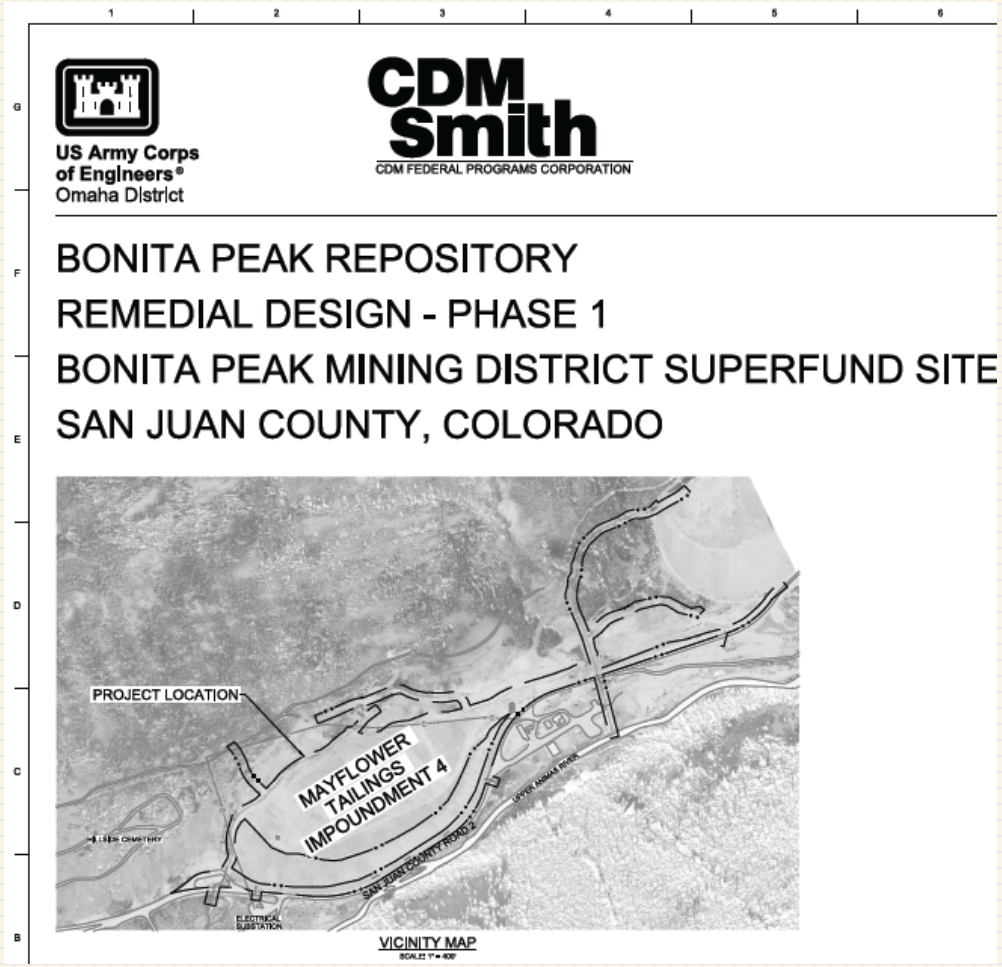
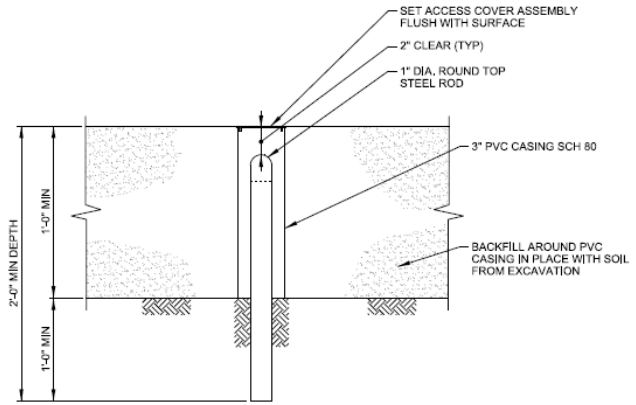


Bonita Peak Repository Phase I Construction

US EPA | REGION 8



D8 DETAIL: SOIL SETTLEMENT MONITORING POINT (SMP)
SCALE: NTS

Agenda

- Purpose of Bonita Peak Repository (BPR)
- Roles & Responsibilities
- Discussion of Design
- Schedule Highlights
- Continuing Community Engagement

Bonita Peak Repository Phase I Construction

Purpose

THE BPR FACILITY IS TO BE USED TO MANAGE SITE-DERIVED MINE WASTES AND pH-STABILIZED WATER TREATMENT SLUDGE

Roles and Responsibilities

- Lead agency
- Responsible for successful completion of project
- Community Involvement Point of Contact for project

EPA

- Management of HGL contract
- Major role in oversight and quality assurance and safety

USACE

- Designer of Record
- Reviews construction plans
- Provides design asst. if changes needed

CDM Smith

- Construct the repository safely and efficiently
- Manage specialized subcontractors

HydroGeoLogic

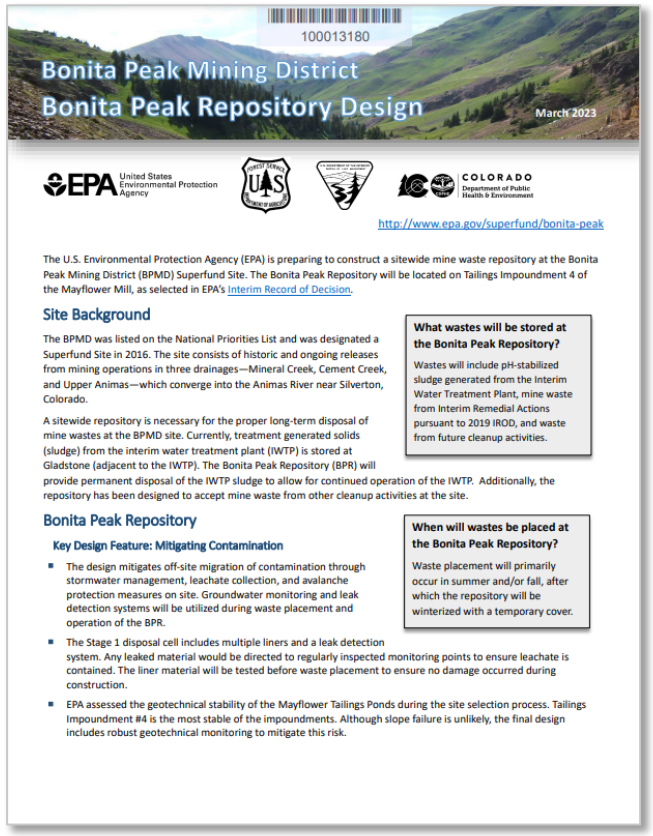
- Partner with HGL to execute construction of the repository

ER LLC

- Provide feedback on project from state perspective
- Take over O&M when remedial action is complete

CDPHE

Discussion of Design



100013180

Bonita Peak Mining District

Bonita Peak Repository Design

March 2023

EPA United States Environmental Protection Agency

COLORADO Department of Public Health & Environment

http://www.epa.gov/superfund/bonita-peak

The U.S. Environmental Protection Agency (EPA) is preparing to construct a sitewide mine waste repository at the Bonita Peak Mining District (BPMD) Superfund Site. The Bonita Peak Repository will be located on Tailings Impoundment 4 of the Mayflower Mill, as selected in EPA's Interim Record of Decision.

Site Background

The BPMD was listed on the National Priorities List and was designated a Superfund Site in 2016. The site consists of historic and ongoing releases from mining operations in three drainages—Mineral Creek, Cement Creek, and Upper Animas—which converge into the Animas River near Silverton, Colorado.

A sitewide repository is necessary for the proper long-term disposal of mine wastes at the BPMD site. Currently, treatment generated solids (sludge) from the interim water treatment plant (IWTP) is stored at Gladstone (adjacent to the IWTP). The Bonita Peak Repository (BPR) will provide permanent disposal of the IWTP sludge to allow for continued operation of the IWTP. Additionally, the repository has been designed to accept mine waste from other cleanup activities at the site.

What wastes will be stored at the Bonita Peak Repository?

Wastes will include pH-stabilized sludge generated from the Interim Water Treatment Plant, mine waste from Interim Remedial Actions pursuant to 2019 IROD, and waste from future cleanup activities.

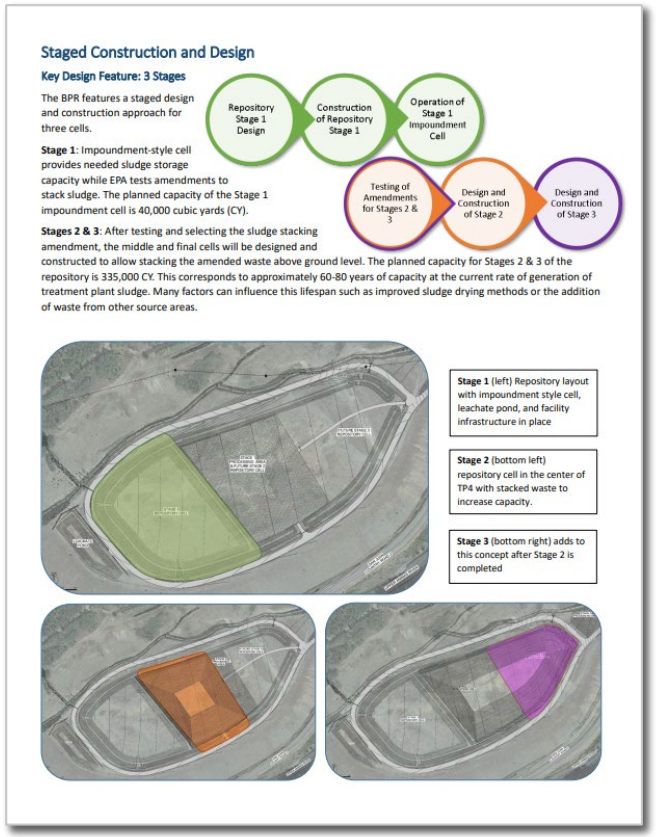
Bonita Peak Repository

Key Design Feature: Mitigating Contamination

- The design mitigates off-site migration of contamination through stormwater management, leachate collection, and avalanche protection measures on site. Groundwater monitoring and leak detection systems will be utilized during waste placement and operation of the BPR.
- The Stage 1 disposal cell includes multiple liners and a leak detection system. Any leaked material would be directed to regularly inspected monitoring points to ensure leachate is contained. The liner material will be tested before waste placement to ensure no damage occurred during construction.
- EPA assessed the geotechnical stability of the Mayflower Tailings Ponds during the site selection process. Tailings Impoundment #4 is the most stable of the impoundments. Although slope failure is unlikely, the final design includes robust geotechnical monitoring to mitigate this risk.

When will wastes be placed at the Bonita Peak Repository?

Waste placement will primarily occur in summer and/or fall, after which the repository will be winterized with a temporary cover.



Staged Construction and Design

Key Design Feature: 3 Stages

The BPR features a staged design and construction approach for three cells.

Repository Stage 1 Design → Construction of Repository Stage 1 → Operation of Stage 1 Impoundment Cell → Testing of Amendments for Stages 2 & 3 → Design and Construction of Stage 2 → Design and Construction of Stage 3

Stage 1: Impoundment-style cell provides needed sludge storage capacity while EPA tests amendments to stack sludge. The planned capacity of the Stage 1 impoundment cell is 40,000 cubic yards (CY).

Stages 2 & 3: After testing and selecting the sludge stacking amendment, the middle and final cells will be designed and constructed to allow stacking the amended waste above ground level. The planned capacity for Stages 2 & 3 of the repository is 335,000 CY. This corresponds to approximately 60-80 years of capacity at the current rate of generation of treatment plant sludge. Many factors can influence this lifespan such as improved sludge drying methods or the addition of waste from other source areas.

Stage 1 (left) Repository layout with impoundment style cell, leachate pond, and facility infrastructure in place

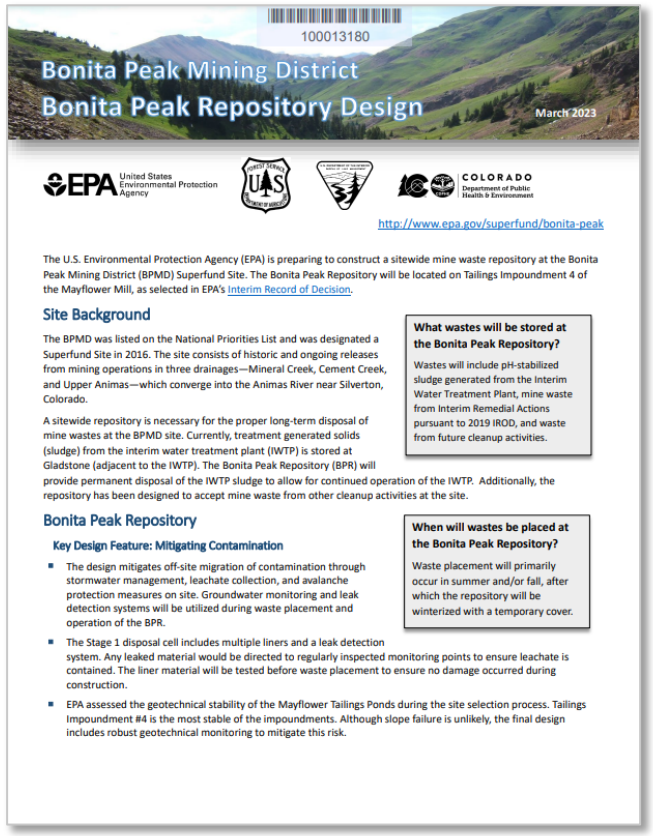
Stage 2 (bottom left) repository cell in the center of TP4 with stacked waste to increase capacity.

Stage 3 (bottom right) adds to this concept after Stage 2 is completed

[Link](#) to Design Fact Sheet

- ✓ Incorporate stakeholder input to design
- ✓ Repository Final Design (May 2022)
- ✓ Bring contractors on board (Winter 2023)
- **Grade site and build stage 1 (Summer 2023)**
- Transfer backlog of IWTP waste to BPR (Summer 2024)
- Begin testing amendments to stabilize/stack material (2024-25)

Discussion of Design


100013180

Bonita Peak Mining District

Bonita Peak Repository Design

March 2023

EPA United States Environmental Protection Agency

COLORADO Department of Public Health & Environment

http://www.epa.gov/superfund/bonita-peak

The U.S. Environmental Protection Agency (EPA) is preparing to construct a sitewide mine waste repository at the Bonita Peak Mining District (BPMD) Superfund Site. The Bonita Peak Repository will be located on Tailings Impoundment 4 of the Mayflower Mill, as selected in EPA's Interim Record of Decision.

Site Background

The BPMD was listed on the National Priorities List and was designated a Superfund Site in 2016. The site consists of historic and ongoing releases from mining operations in three drainages—Mineral Creek, Cement Creek, and Upper Animas—which converge into the Animas River near Silverton, Colorado.

A sitewide repository is necessary for the proper long-term disposal of mine wastes at the BPMD site. Currently, treatment generated solids (sludge) from the interim water treatment plant (IWTP) is stored at Gladstone (adjacent to the IWTP). The Bonita Peak Repository (BPR) will provide permanent disposal of the IWTP sludge to allow for continued operation of the IWTP. Additionally, the repository has been designed to accept mine waste from other cleanup activities at the site.

What wastes will be stored at the Bonita Peak Repository?

Wastes will include pH-stabilized sludge generated from the Interim Water Treatment Plant, mine waste from Interim Remedial Actions pursuant to 2019 IROD, and waste from future cleanup activities.

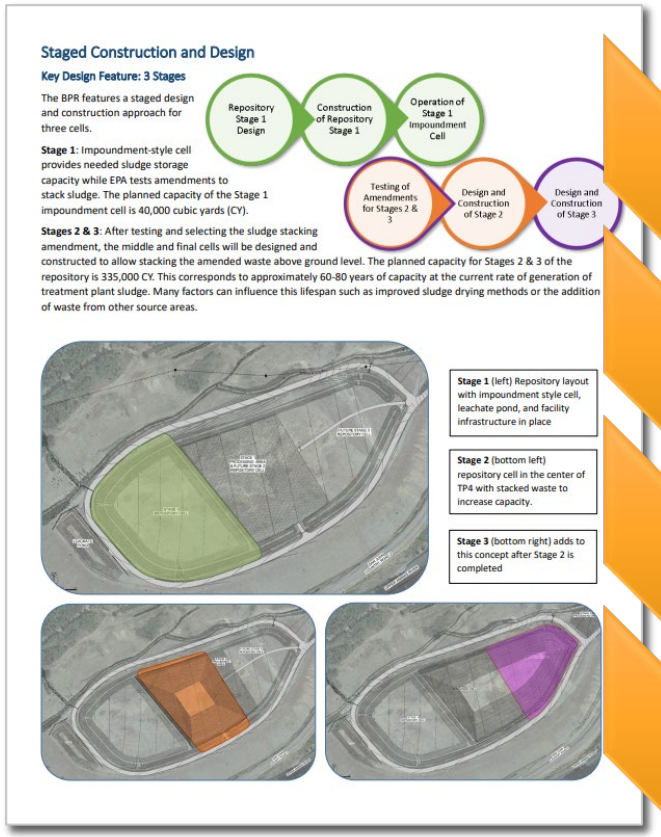
Bonita Peak Repository

Key Design Feature: Mitigating Contamination

- The design mitigates off-site migration of contamination through stormwater management, leachate collection, and avalanche protection measures on site. Groundwater monitoring and leak detection systems will be utilized during waste placement and operation of the BPR.
- The Stage 1 disposal cell includes multiple liners and a leak detection system. Any leaked material would be directed to regularly inspected monitoring points to ensure leachate is contained. The liner material will be tested before waste placement to ensure no damage occurred during construction.
- EPA assessed the geotechnical stability of the Mayflower Tailings Ponds during the site selection process. Tailings Impoundment #4 is the most stable of the impoundments. Although slope failure is unlikely, the final design includes robust geotechnical monitoring to mitigate this risk.

When will wastes be placed at the Bonita Peak Repository?

Waste placement will primarily occur in summer and/or fall, after which the repository will be winterized with a temporary cover.


Staged Construction and Design

Key Design Feature: 3 Stages

The BPR features a staged design and construction approach for three cells.

Repository Stage 1 Design → Construction of Repository Stage 1 → Operation of Stage 1 Impoundment Cell → Testing of Amendments for Stages 2 & 3 → Design and Construction of Stage 2 → Design and Construction of Stage 3

Stage 1: Impoundment-style cell provides needed sludge storage capacity while EPA tests amendments to stack sludge. The planned capacity of the Stage 1 impoundment cell is 40,000 cubic yards (CY).

Stages 2 & 3: After testing and selecting the sludge stacking amendment, the middle and final cells will be designed and constructed to allow stacking the amended waste above ground level. The planned capacity for Stages 2 & 3 of the repository is 335,000 CY. This corresponds to approximately 60-80 years of capacity at the current rate of generation of treatment plant sludge. Many factors can influence this lifespan such as improved sludge drying methods or the addition of waste from other source areas.

Stage 1 (left) Repository layout with impoundment style cell, leachate pond, and facility infrastructure in place

Stage 2 (bottom left) repository cell in the center of TP4 with stacked waste to increase capacity.

Stage 3 (bottom right) adds to this concept after Stage 2 is completed

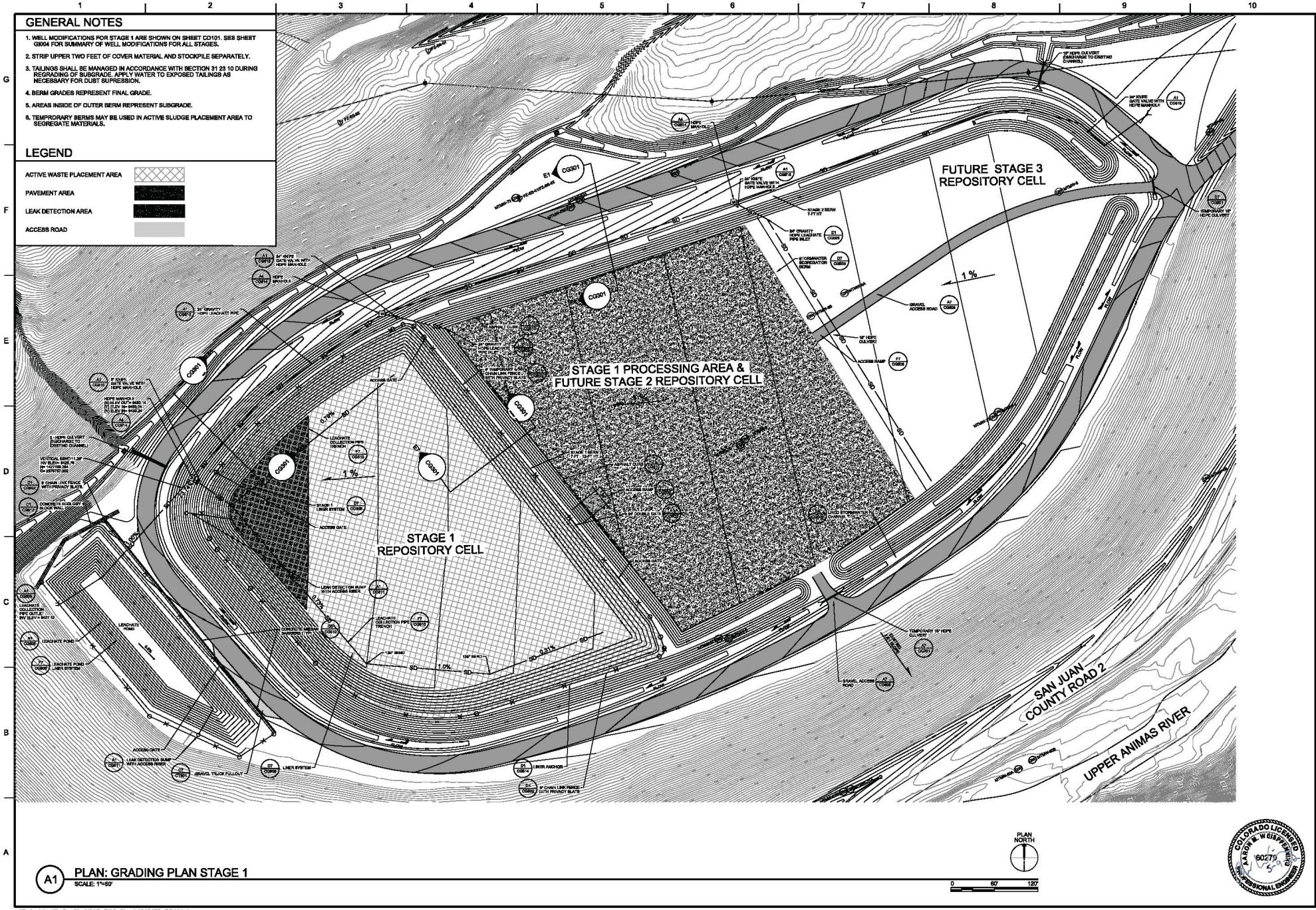
- **Location:** Mayflower Tailings Impoundment 4
- Max capacity, minimum disturbance

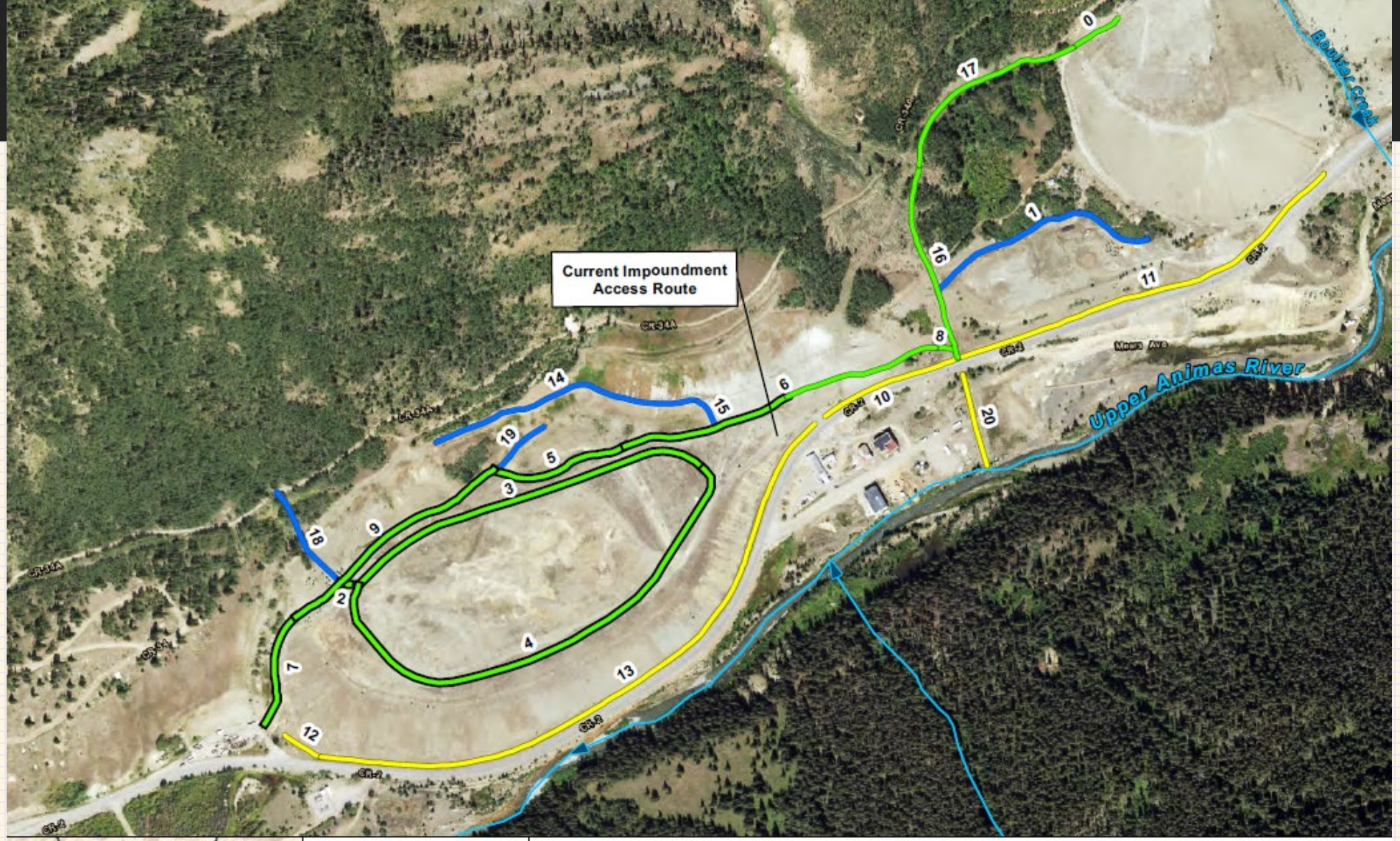
- Community input influenced the **phased design** approach
- Future phases include 2 & 3 (landfill-style impoundments)

- **Habitat:** Minimal fencing to allow elk passage and continued use throughout winter
- Fence remains around leachate pond and active cells

- **Water Quality:** protected through leachate collection, stormwater management improvements, leak detection, and groundwater monitoring

Link to Design Fact Sheet


GENERAL NOTES
1. WELL MODIFICATIONS FOR STAGE 1 ARE SHOWN ON SHEET CG101. SEE SHEET GI004 FOR SUMMARY OF WELL MODIFICATIONS FOR ALL STAGES.
2. STRIP UPPER TWO FEET OF COVER MATERIAL AND STOCKPILE SEPARATELY.
3. TAILINGS SHALL BE MANAGED IN ACCORDANCE WITH SECTION 31 23 10 DURING REGRADING OF SUBGRADE. APPLY WATER TO EXPOSED TAILINGS AS NECESSARY FOR DUST SUPRESSION.
4. BERM GRADES REPRESENT FINAL GRADE.
5. AREAS INSIDE OF OUTER BERM REPRESENT SUBGRADE.
6. TEMPRORARY BERMS MAY BE USED IN ACTIVE SLUDGE PLACEMENT AREA TO SEGREGATE MATERIALS.
LEGEND
ACTIVE WASTE PLACEMENT AREA
PAVEMENT AREA
LEAK DETECTION AREA
ACCESS ROAD
FUTURE STAGE 3 REPOSITORY CELL
STAGE 1 PROCESSING AREA & FUTURE STAGE 2 REPOSITORY CELL
STAGE 1 REPOSITORY CELL
SAN JUAN COUNTY ROAD 2
UPPER ANIMAS RIVER
LEACHATE POND
LEACHATE POND LINER SYSTEM
GRAVEL TRUCK FULLOUT
LINER SYSTEM
LINER ANCHOR
8' CHAIN LINK FENCE WITH PRIVACY SLATS
GRAVEL ACCESS ROAD
ACCESS RAMP
TEMPORARY 15" HDPE CULVERT
PLAN NORTH
0 60' 120'
A1 PLAN: GRADING PLAN STAGE 1
SCALE: 1"=60'
US Army Corps of Engineers®
DESIGNED BY: C. GABEL
DRAWN BY: B. LEE
CHECKED BY: A. WEISPENNING
SUBMITTED BY: CDM SMITH
ISSUE DATE: MAY 2022
SOLICITATION NO.:
CONTRACT NO.: W912BF-18-D-3008
TASK NO.: 10095
SIZE: ANSI D
FILE NAME: 213478_CG101.dgn
U.S. ARMY CORPS OF ENGINEERS OMAHA DISTRICT 1616 CAPITOL AVE # 3300 OMAHA, NE 68102
CDM Smith
BONITA PEAK REPOSITORY REMEDIAL DESIGN - PHASE 1 BONITA PEAK MINING DISTRICT SUPERFUND SITE SAN JUAN COUNTY COLORADO
GRADING PLAN STAGE 1
SHEET ID CG101
COLORADO LICENSED AARON M. WEISPENNING 60279 PROFESSIONAL ENGINEER
..\Projects\untitled\untitledCAD_BIM_Sheets\213478_CG101.dgn
4:35:54 PM 5/9/2022 PD: AEC_pdf.pltcfg DS: AEC_Screen.dscript
FINAL SUBMITTAL



N

0 100 200 400

Feet

Background Terrain: NAIP 2019
Road and Railroad Source: US Census Tiger/Line
Waterways and Waterbodies Source: National Hydrography Dataset - USGS
Monitoring Wells and Piezometers: CDM

Channel Type

- Facility Drainage (Unlined)
- Facility Drainage (Lined)
- Roadside Ditch
- Swale
- River (with Flow Direction)

Figure 4-1
Proposed Channel Templates

Bonita Peak Mining District Superfund Site
San Juan County, CO
Bonita Peak Repository - Design Analysis Report

CDM Smith

Material Needs

Import

Borrow

Material	Yards^3
Pipe and culvert bedding	650
Channel bedding for rip rap	6,200
Channel aggregate (roadside)	2,400
Rip rap (6, 9, 15 in.)	8,500
Linear protection layer	1,200
Leachate drainage layer (CDOT 4)	7,600
Aggregate base	4,000
Aggregate surface	140
Avalanche and headwall base course	100
Boulders	30
Total needed	**30,820 CY**

Geotechnical Monitoring

SMPs and DMPs

- **Surface Monitoring Points (S)**
- **Deformation Monitoring Points (D)**

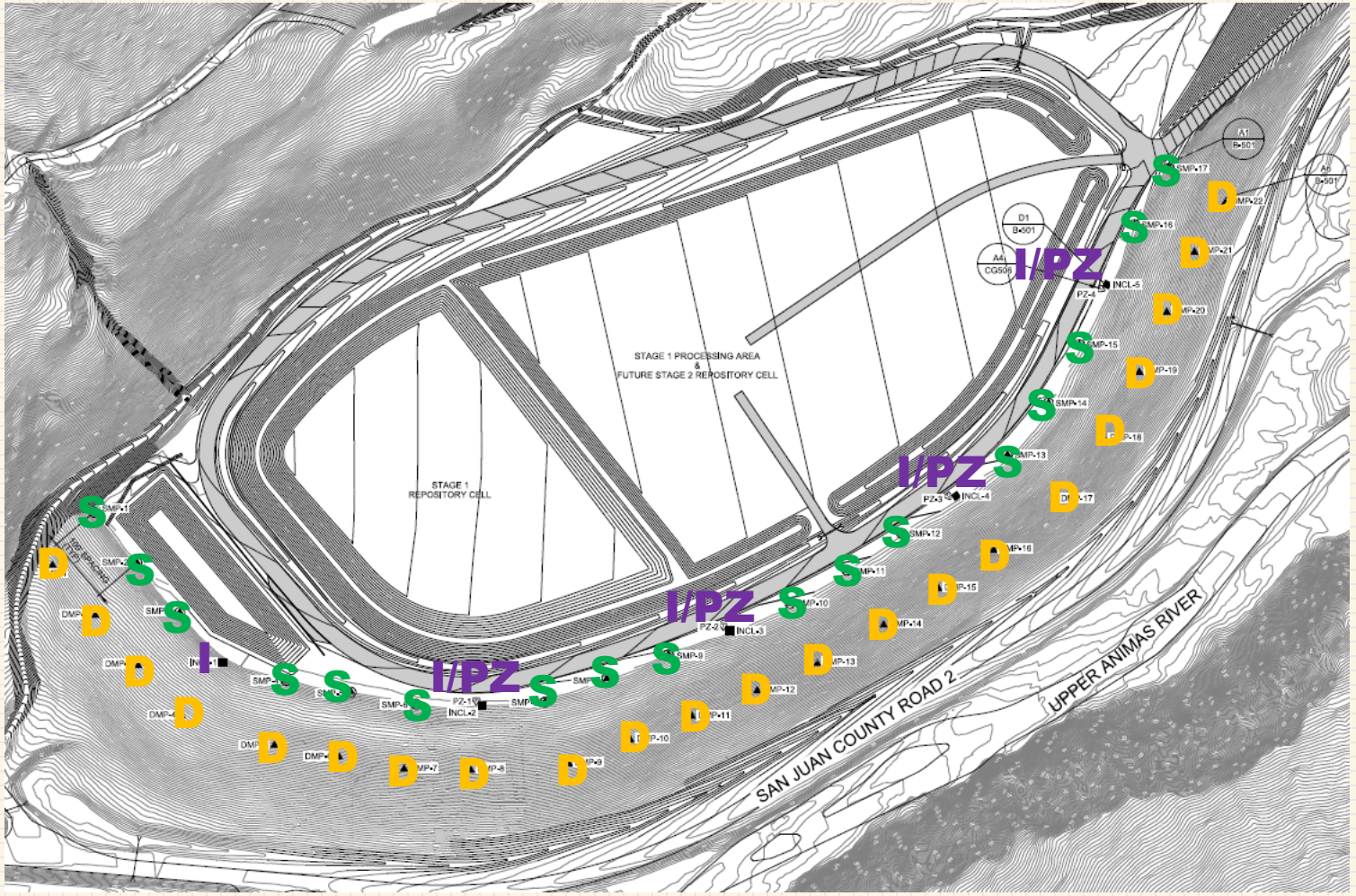
Steel rods driven into the ground with clearly marked survey on top

Inclinometers (I)

- **PVC casing grouted in place with instrumentation for monitoring slope changes**

Piezometers (PZ)

- **Groundwater observation wells**



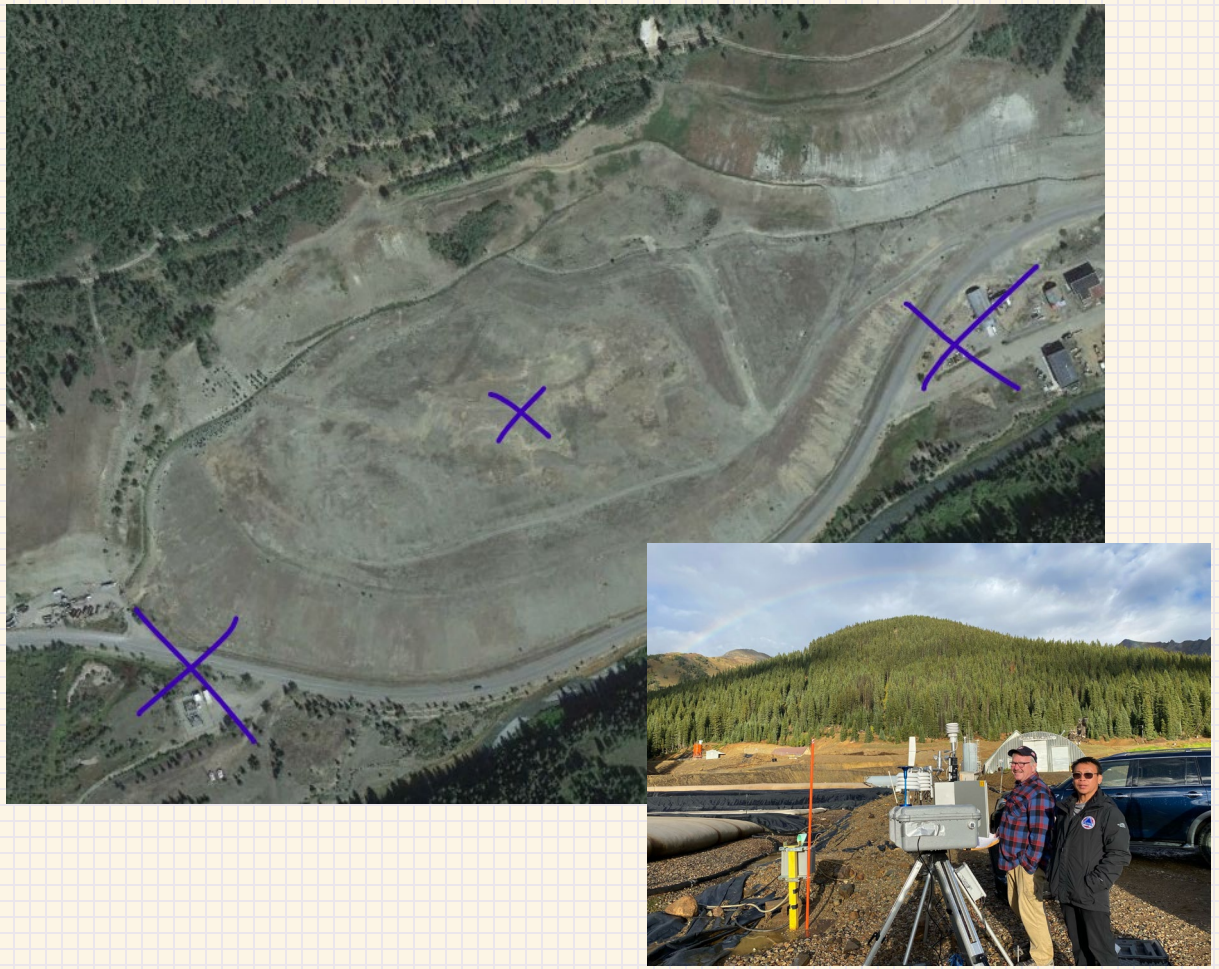
Environmental Response Team (ERT) Air Monitoring

DustTrack Deployment

- **ERT to deploy 3 devices to monitor dust near BPR**
  - Downhill, uphill, and on top
  - Real-time data sent to EPA

Worker monitoring

- **HGL to monitor worker exposure**
  - regulates exposure over entire shift, not just high-dust activities
  - particularly important during movement of tails



Schedule Highlights

Soft start to set up facilities between May 15 - May 26

Geotechnical monitoring points to be installed throughout May/early June

Environmental Response Team air monitoring to begin prior to excavation during week of May 23

Subgrade preparation may start as early as June 5

Continuing Community Involvement

- Understand preferences of community for hauling (times of day, etc)
- Local contractor list was provided to HGL
- Repository Construction Fact Sheet in progress
- On May 10th, EPA will meet with local officials in San Juan County (afternoon) and host a public availability session from 6:00-7:00 pm
- EPA, USACE, CDPHE, and HGL will maintain open communication with stakeholders throughout project
  - Updates through PG and CAG meetings
  - Monthly newsletters
  - Project Communication SOP

Resources

- Bonita Peak Mining District Sitewide Repository Proposal Plan Fact Sheet, July 2020.
- Proposed Plan for Bonita Peak Repository, July 2020.
- Interim Record of Decision for Bonita Peak Repository, April 2021.
- Technical Considerations Report, Remedial Design Bonita Peak Repository Interim Remedial Action Phase 1, April 2021.
- Remedial Design, Bonita Peak Repository, Phase 1 Design Analysis Report, May 2022
    - Appendix H: Drawings
    - Appendix I: Specifications

Contacts

Meg Broughton,
Community Involvement Coordinator
Broughton.Meg@epa.gov
(303) 312-6139

Athena Jones,
Remedial Project Manager
Jones.Athena@epa.gov
(720) 926-2015