



Technical Assistance Services *for Communities*

Summary of “Bonita Peak Mining District Remedial Investigation: 2017 Ground Water Scope for Sunnyside Mine Pool Study Area” – August 2017

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Summary of “Bonita Peak Mining District Remedial Investigation: 2017 Ground Water Scope for Sunnyside Mine Pool Study Area”

Introduction

The Bonita Peak Planning Group, composed of stakeholders from the town of Silverton and San Juan County, requested the U.S. Environmental Protection Agency’s (EPA’s) Technical Assistance Services for Communities (TASC) program to conduct a technical review of the Bonita Peak Mining District Remedial Investigation: 2017 Ground Water Scope for Sunnyside Mine Pool Study Area (Groundwater Scope).

The Groundwater Scope was completed by a consulting company, CDM Smith, on behalf of EPA, with the goal of understanding the information needed to assess mining impacts on groundwater in the Sunnyside Mine Pool Study Area behind the American Tunnel Bulkhead and nearby mines. The Groundwater Scope describes investigations that will help EPA understand the impacts of the water flowing from mine pools on fish and organisms living in creeks.

This TASC document summarizes the findings of the report in plain language and identifies areas where the community could consider following up with EPA, noted in “TASC Comment” boxes. This is not an EPA document. Independent consultants from EPA’s TASC program, including technical advisors and hydrogeology expert Dr. William Sanford, produced this document. The contents do not necessarily reflect the policies, actions or positions of EPA.

Data Gaps

Identifying and addressing data gaps will be important for the remedial investigation and cleanup process. EPA is collecting water from mine adits, but not currently monitoring groundwater in and between mine pools. To fill this gap, wells and data loggers will be installed and measurements of water flow and quality will be taken in mine pools, along faults, in fracture zones and in mine workings.

Proposed Data Collection

EPA proposes to install groundwater wells to monitor conditions. The first set of wells will be focused on bulkheads and sources of chemicals in the Sunnyside Mine and faults between the American Tunnel and Gold King and Red and Bonita Mines. Wells will be installed at American Tunnel behind Bulkheads 2 and 3, Sunnyside Mine, Mogul-Brenneman Tunnel, Gold Prince/Sunnyside Extension Tunnel, Terry Tunnel and Bonita Fault. Well data will also be used to understand if water from the Sunnyside Mine flows into groundwater and the connection between the American Tunnel and Gold King and Red and Bonita Mines and from Terry Tunnel to the Eureka basin. General locations are shown in Figure 1.

TASC Comments:

Pressure head is a measurement of the pressure of water in an aquifer. Groundwater flows from high to low hydraulic head. When the hydraulic head is high enough, groundwater will flow to the surface. Electronic pressure transducers are used to measure the pressure head by measuring the pressure on a sensor placed in a well. Telemetry systems collect and send data wirelessly to a computer at another location.

The community could ask for more details on the type and installation of the pressure transducers. Factors that will affect the quality of data include how often the unit is calibrated and maintained, a contingency plan in case the equipment fails (e.g., duplicate units), equipment corrosion due to water quality, power supply capacity, effects of rapid changes in temperature and adjustments for temperature.

Specific types of monitoring include:

Portal monitoring: EPA currently monitors the amount and quality of water coming from portals, or the opening to the mine or adits, in the study area. With more frequent monitoring, EPA could measure the effects of seasonal changes in precipitation and of bulkhead management by installing equipment such as pressure transducers with telemetry systems to continuously and remotely monitor groundwater. Portals to be monitored include American Tunnel, Red and Bonita Mine, Natalie/Occidental Mine, Adit 268-21, Adams Mine, Mogul Mine, Black Hawk Mine and Terry Tunnel.

Non-portal monitoring: EPA will monitor water flow and quality in seeps and springs at Cement Creek and Eureka Gulch. Flow gauges and chemical tracers could be used to determine how water moves between the Sunnyside Mine Pool and nearby creeks.

Bulkhead condition and safety: EPA will evaluate the condition and safety of the bulkheads at American Tunnel (Bulkhead 3), Terry Tunnel (Bulkhead 2), Ransom Tunnel, Sunburst Mine and Koehler Tunnel. Wells and pressure monitors will likely be installed at Mogul Mine, Terry Tunnel, Gold Prince Mine and American Tunnel outer bulkheads.

Groundwater use: Groundwater use will be assessed by asking residents and recreational users if they drink from springs or wells in the area. If people are drinking water that exceeds Colorado Domestic Water Supply Human Health Standards, bottled water will be provided until a solution is reached.

TASC Comments:

The community could ask for more information on the strategy for conducting the groundwater use survey and the role of the community in reaching groundwater users. Considering that recreational users are seasonal, surveys will be dependent on visitation to the area. The community could also ask what chemicals are being looked at for drinking water standards and the types of samples being collected from wells used for drinking water. The full list of standards is available starting on page 284 of the following document:
https://www.colorado.gov/pacific/sites/default/files/11_2015%2805%29.pdf

Hydrologic balance input: EPA will study the amount of water going into and out of mine pools, including data from high elevation weather stations near Eureka Gulch and snow surveys near Lake Emma.

Mine workings characterization: EPA will review historical information on the volume of minerals mined and details on faults and fractures to determine how much water could be stored in mine workings and how long water would stay there. EPA will also research the acid-generation characteristics of the area's minerals.

Background water quality: EPA will analyze background water quality in areas with different geology and varied levels of mining impacts to compare naturally occurring minerals to those released during and after mining and processing. The beginning of this work is the springs and seeps study.

TASC Comments:

The community could ask for a detailed map of each feature being monitored and the type of monitoring that will occur. A visual tool like this might be helpful in making connections to where and how water is moving and understanding the gaps. This could be helpful for reaching a broader audience of people who may prefer visual information.

The community could also ask for details on the next steps. Each component will likely require a detailed workplan. At this time, insufficient detail was available for TASC to fully evaluate the proposed work. The community could also ask for a summary or diagram of how various projects at the site are related. For instance, the Groundwater Scope and the Bulkhead Closure Evaluation for Red and Bonita Mine discuss similar monitoring activities but the reports do not reference each other.

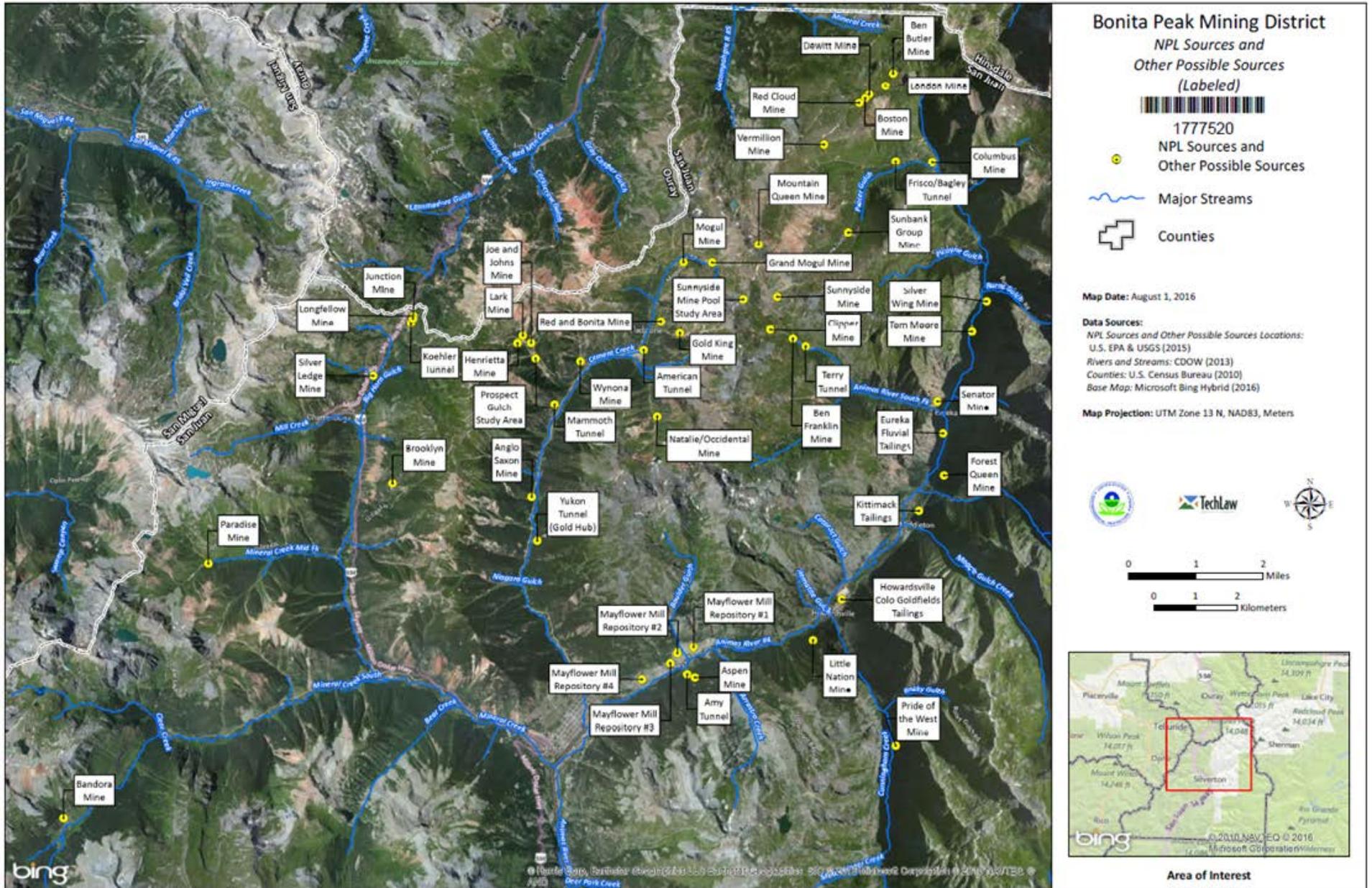


Figure 1 This Bonita Peak mine locations map is available as a separate document (semspub.epa.gov/src/document/08/1777520).

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