



**DEPARTMENT OF THE ARMY**  
U.S. ARMY CORPS OF ENGINEERS  
RISK MANAGEMENT CENTER  
12596 WEST BAYAUD AVE., SUITE 400  
LAKEWOOD, CO 80228

REPLY TO  
ATTENTION OF

CEIWR-RMC

8 September 2015

MEMORANDUM FOR Chief, Engineering and Construction, U.S. Army Corps of Engineers, ATTN: Robert Bank, CECW-CE, 441 G St NW, Washington, D.C., 20314

SUBJECT: 3 September 2015 Gold King Mine, CO Travel Report

1. The Department of the Interior, Bureau of Reclamation has been asked by the EPA to do an independent assessment of:

- a. The cause of the mine waste water release on 5 August 2015;
- b. A review of the actions currently being taken by the EPA;
- c. Lessons learned from the incident; and
- d. A summary of industry practice regarding opening abandoned and flooded mines.

2. The USGS and USACE have been asked by EPA to review the Bureau of Reclamation's report.

3. On 3 September 2015, Mr. Nathan Snorteland (RMC) accompanied Mr. Michael Gobra (USBR), Dr. David Gillette (USBR), Mr. Chris Gemperline (USBR) and Mr. Randall Jibson (USGS) north of Silverton, CO to visit the Gold King Mine and the surrounding area. The investigation team visited with Hays Griswold, who is EPA's on-scene coordinator, and several members of the EPA response team. The investigation team also met with various individuals from the Harrison Western Construction Company, who is EPA's contractor on the site.

4. The investigation team visited the Gold King Mine tunnel and several settling ponds associated with the mine. The team also visited the Red and Bonita mine settling ponds and a new settling pond complex being constructed downstream of the Gold King, Red and Bonita, and American Tunnel outfalls. The team examined videos, photos, and reviewed mine maps for the Gold King Mine and Sunnyside Mine and regional geology maps.

5. Mr. Griswold generally described the events leading up to the mine waste water release. The following is from notes taken during the meeting:

a. The Gold King Mine portal was partially open in 2007, 2009, and 2014. During the previous 8 years, the flows from the portal ranged from 70 to 200 gallons per minute. In 2014, Mr. Griswold and representatives from the State of Colorado visually inspected the tunnel entrance and noted that approximately 5 feet of water was ponded behind the blockage near the tunnel entrance. At that time, the group determined there was too much water to treat or contain, so they loosely placed material at the mine entrance to keep people from trying to enter the mine. EPA also placed two collector pipes downstream of the tunnel entrance to capture and channel flows exiting from the plugged mine tunnel entrance. The pipes did not extend through the plug.

b. The EPA and State of Colorado were more concerned with the adjacent Red and Bonita Mine, as the discharge from that mine tunnel was significantly higher and the EPA felt that the Red and Bonita Mine posed more of a threat than Gold King Mine. In 2013, the EPA drilled a hole into the top of the Red and Bonita Mine, discovered water up near the crown of the tunnel, and pumped the water from the tunnel out into several settling ponds constructed downslope from the mine entrance.

c. The EPA was preparing to investigate the Gold King Mine on August 5, 2015 by removing the fill placed above the mine entrance. They excavated to the top of the mine entrance denoted by the mine timbers that used to form the roof of the entrance. Once they were done excavating, a small amount of seepage was noticed near the top of the mine entrance. Soon, a small clear spring shot up approximately 2' from the pile of debris near the mine entrance. This spring soon changed to a steady flow, which increased dramatically over the next few minutes. The entire seepage change happened within 5 minutes. EPA has a series of time/date stamped photos that documents this sequence of events.

d. Discharge from the mine continues to flow at approximately 600 gallons per minute, which is more than three times higher than before the portal collapse. It is not yet safe to enter the portal, but it appears that several areas behind the face of the portal collapsed.

e. The EPA constructed several new settling ponds to handle the discharge from Gold King. Some water is being pumped to settling ponds downslope from the Red and Bonita Mine. The EPA is currently working to construct a more robust settling pond near the American portal before winter sets in. Most of the existing settling pond system would be destroyed by Spring runoff.

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6. The Bureau of Reclamation is currently preparing a report for review by USGS and USACE. The draft report will be submitted to the reviewers by 25 September 2015.

7. For further information, please contact me at 303-963-4573.

A handwritten signature in black ink, appearing to read 'Nathan J. Snorteland', written in a cursive style.

Ecls

NATHAN J. SNORTELAND  
Director  
Risk Management Center

CF:

Deputy Chief, Engineering and Construction (Rizzeri)  
Geotechnical CoP Lead (Olsen)  
Bureau of Reclamation (Gobla)

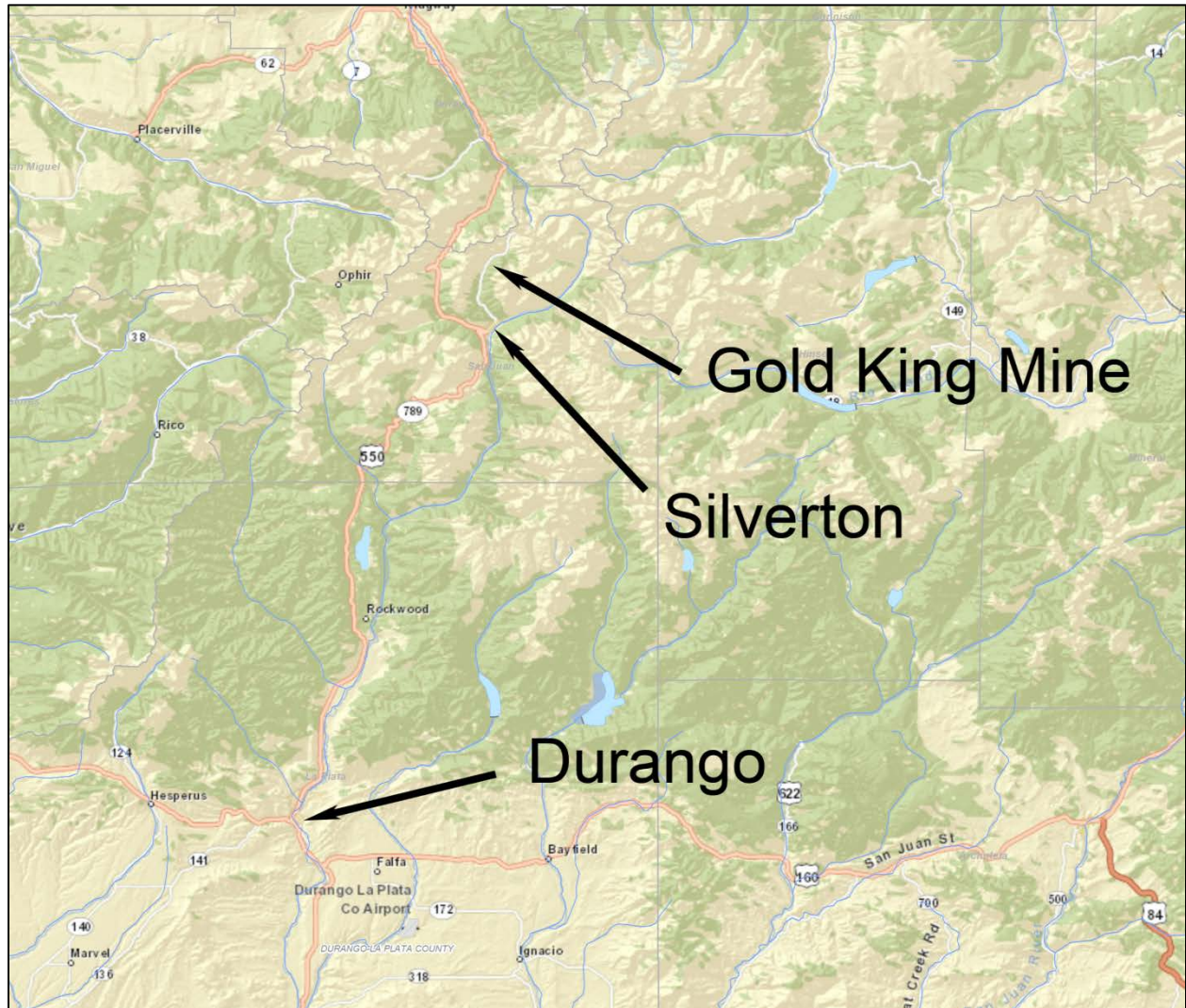


Figure 1 - Location of the Gold King Mine in Southwestern Colorado



Figure 2 - Aerial View of the Gold King Mine Area



Figure 3 - Photo of the mine portal and the erosion caused by the mine waste water release



Figure 4 - Photo looking up near the Gold King Mine portal (off screen left), showing the discharge from the mine as of 3 September and a new settling pond.



Figure 5 - Photo of the old and new Gold King Mine portals



Figure 6 - Current discharge from Gold King Mine



Figure 7 - Photo showing Cement Creek and the new settling pond complex

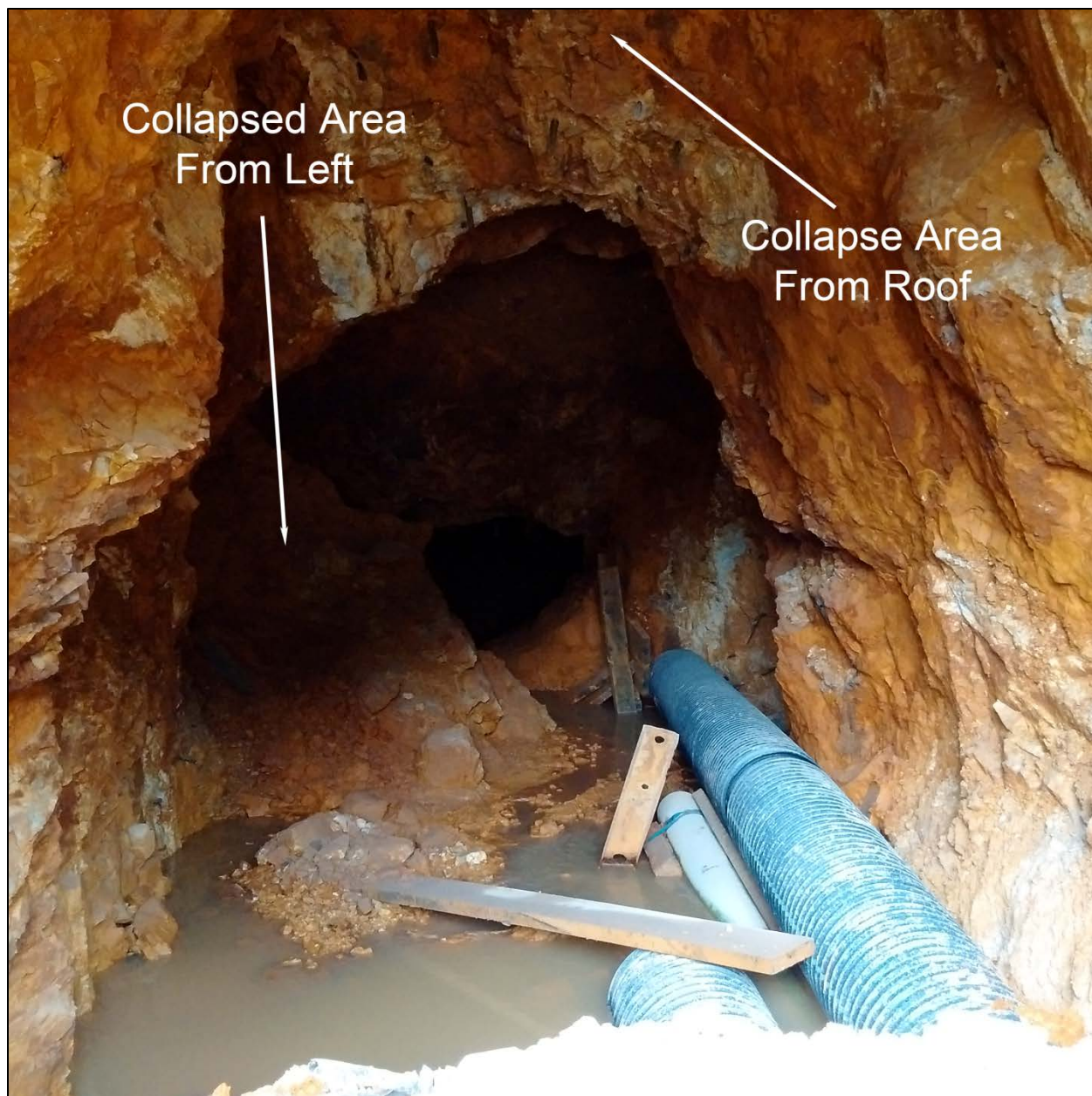


Figure 8 - Photo looking into Gold King Mine. Note portions of the tunnel have collapsed from the left and from the roof





**Figure 9 - Photo showing the Red and Bonita Mine portal. Some discharge from Gold King is now being piped over to the settling ponds beneath Red and Bonita.**



**Figure 10 - Photo of the discharge coming out of the American portal of the Sunnyside Mine**