UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
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Ref: 8SEM-EMR

ACTION MEMORANDUM

SUBJECT: Request for Approval and Funding for a Time Critical Removal Action and continued Consistency Exemptions from the $2-million Ceiling and 12-month Performance Statutory Limits at the Gold King Mine Site, Bonita Peak Mining District Superfund Site, San Juan County, Colorado

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THRU: Kerry Guy, Supervisor
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TO: Ben Bielenberg, Acting Director
Superfund and Emergency Management Division

Site ID# A8M5

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the removal action and Consistency Exemptions from the $2-million Ceiling and 12-month Performance Statutory Limits described herein for the Gold King Mine located within the Bonita Peak Mining District Site in San Juan County, Colorado. This time-critical removal action (TCRA) involves the extension of the portal shed to minimize the risk of rock and avalanche debris from hindering the access to the flow control structure for maintenance and inspections. Conditions existing at the Site present a threat to public health or welfare

or the environment and meet the criteria for initiating a removal action under 40 CFR 300.415(b)(2) of the National Contingency Plan (NCP).

This removal action involves no nationally significant or precedent-setting issues. This time-critical removal action will not establish any precedent for how future response actions will be taken and will not commit the US Environmental Protection Agency (EPA) to a course of action that could have a significant impact on future responses or resources.

II. SITE CONDITIONS AND BACKGROUND

Site Name:	Gold King Mine Portal Shed Extension
Superfund Site ID (SSID):	A8M5
Operable Unit (OU):	OU03
NRC Case Number:	
CERCLIS Number:	CON000802497
Site Location:	San Juan County, Colorado
Lat/Long:	37.894712, -107.638595
Potentially Responsible Party (PRP):	
NPL Status:	Listed on the NPL, September 2016
Removal Start Date:	TBD FY23/4Q

A. Site Description

1. Removal Site Evaluation

The TCRA area is located about 9 miles north of Silverton, Colorado within the BPMD Superfund Site. The TCRA area consists of the Gold King Mine Level 7 new and old adits as well as necessary support areas in and around Gladstone. On August 5, 2015, while EPA was conducting an investigation of the Gold King Mine adit, 3 million gallons of mine influenced water (MIW) was unexpectedly released from the mine. The MIW first entered the North Fork of Cement Creek, then the main stem of Cement Creek, then the Animas and San Juan Rivers.

The listing of the BPMD Site on the National Priorities List (NPL) became effective on September 9, 2016. The Gold King Mine and the IWTP, where EPA currently treats the adit discharge, are within the BPMD Site.

The Gold King Mine is one of numerous inactive underground mining operations in the BPMD Site upstream of Silverton, Colorado in the volcanic terrain of the San Juan Mountains. The district contains some 400 abandoned or inactive mine sites. Much of the area near Silverton, within the Upper Animas River watershed, historically was mined for gold and silver. The Gold King Mine was primarily a gold mine and operated until the 1920s. Multiple portals to other abandoned mines, near the TCRA area, were closed with bulkheads. Some

of these actions led to increased flow from the new Level 7 adit of the Gold King Mine.

The Gold King Mine is located along the North Fork of Cement Creek, a tributary to the Upper Animas River. It and many other inactive or abandoned mines in the mining district continue to discharge MIW from adits into streams. The Animas River and many of its tributaries, including Cement Creek, carry elevated concentrations of hazardous substances (heavy metals) due to both MIW, specifically acid mine drainage (AMD) generated from mining activities and from naturally mineralized sources.

The objective of this TCRA is to extend the portal shed to minimize the risk of rock and avalanche debris from hindering access to the flow control structure in Level 7 adit of the Gold King for maintenance, inspections or other activities necessary to the Remedial Action.

2. Physical Location

The Gold King Mine (37.894712°N / 107.638595°W) is located in San Juan County, Colorado, approximately 9 miles north of the town of Silverton (Figure 1). It is located in the southeast quarter of Section 16, Township 42 North, Range 7 West on the U.S. Geological Survey (USGS) Ironton 7.5-Minute Topographic Quadrangle (CDM Smith 2016). The Level 7 portal elevation is 11,438 feet using the North American Vertical Datum of 1988 (NAVD88). Road access is via County Road (CR) 110 from the town of Silverton to the abandoned town site of Gladstone and CR51 north and east to the Gold King Mine. The site lies near the North Fork of Cement Creek (North Fork) on a south-facing mountainside slope with a steep (approximately 60 percent) grade. The mine is accessible during non-snow months of the year, typically late June through early October.

3. Site Characteristics

Watersheds within the San Juan Mountains contain some 400 abandoned or inactive mines, where large- to small-scale mining operations occurred.

Surface Water

The Animas River watershed extends from the mountainous terrain above Silverton, Colorado, south into the San Juan River in Northern New Mexico. The three major tributaries that flow into the Animas River at Silverton include Cement Creek, Mineral Creek, and the Upper Animas River. Cement Creek and the Upper Animas River are the receiving waters for the Gold King Mine adit MIW discharge.

Site Geology and Hydrogeology

Years of mining and the installation of bulkheads has significantly influenced groundwater elevations within the BPMD Superfund Site. Historically, groundwater flowed along fractures and faults, with minimal leakage through bedrock, likely due to low primary permeability. Underground mining changes the groundwater flow paths. Bedrock groundwater that once followed natural fractures instead follows the new path of least resistance, the networks of tunnels in the underground mine workings. Thus, drainage and haulage tunnels form preferential flow paths for bedrock groundwater, leading to AMD formation when water and air interact with mineralized source areas within the underground workings.

According to EPA's Environmental Justice (EJ) Screening and Mapping Tool for this Site, the data does not indicate potential areas of EJ concern at or near the Site.

4. Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant, or Contaminant

The original Emergency Response taken in 2015 presented an engineered flow control structure solution to control and direct the AMD releasing from the mine. AMD contains sulfuric acid and heavy metals which are hazardous substances. This drainage from the Gold King adit predates the 2015 emergency response. The portal area was stablized during the past removal action along with the installation of the flow control structure. Deterioration of the shotcrete around the portal area is now evident. Loose surface material and typical high snow accumulation in the portal vicinity, put the portal in danger of being blocked by rock, mud, or snow slide debris. A blockage of the portal shed would impede maintenance, inspections and other activities related to the collection and conveyance of AMD to the interim water treatment plant at the Gladstone area, increasing the likelihood of another uncontrolled release from the mine. The EPA Region 8 Remedial Team has determined that an engineered portal shed extension will secure access and will improve the operational efficacy of the flow control structure. .

CERCLA hazardous substances from the list at 40 CFR 302.4 identified for this TCRA are beryllium, cadmium, copper, lead, manganese, silver, and zinc. The other COPECs identified from the draft Baseline Ecological Risk Assessment are pollutants and contaminants as defined in 40 CFR 300.5.

The source of hazardous substances, pollutants and contaminants is the discharging AMD from the Gold King Mine adit. AMD is metal-bearing, acidic water that is generated when mining activities expose pyrite to water and oxygen.

5. NPL Status

The Gold King Mine is within the Bonita Peak Mining District Superfund Site, which was listed on the National Priorities List on September 9, 2016.

6. Maps, Pictures, Other Geographic Representations

A map of the Site is available in Attachment 1. Relevant Site photos are available in Attachment 2 of this document and in the administrative record.

B. Other Actions to Date

1. Previous Actions

Previous EPA response action activities conducted at the Gold King Mine adit are described below:

1/2017 A Non-Time Critical Removal Action (NTCRA) to collect acid mine water flowing from the Gold King adit for treatment at the Gladstone Interim Water Treatment Plant (IWTP) for 3 years.

7/2017 A Time Critical Removal Action (TCRA) to install a flow control structure in the Gold King Mine Level 7 "new" adit, construction of a horizontal drain from the new adit to the level 7 "old adit and construct an earthen stabilization berm in front of the collapsed portal of the old adit.

10/2019 An Action Memo Amendment to the NTCRA to increase funding in order to support operations at the IWTP for an additional 7 years.

2. Current Actions

There are two current removal activities taking place at the Gold King Mine. Work identified in the July 2017 AM is not complete and is still funding the maintenance of the adit drainage to the IWTP. The October 2019 AM is also not complete and is still funding the operations of the IWTP. There are on-going Remedial investigations and inspections across Bonita Peak Mining District Site that also include the Gold King Mine.

C. State and Local Authorities' Role

1. State and Local Actions to date

State and local authorities have provided assistance but are not anticipated to contribute to this removal action.

2. Potential for Continued State/Local Response

While state and local entities continue to play a vital consultation role in this removal action, the EPA is uniquely positioned with the capability to respond with the appropriate resources.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions at the Site present a threat to public health and the environment and meet the criteria for initiating a removal action under 40 CFR 300.415(b)(2) of the NCP.

EPA considered all the factors described in 40 CFR 300.415(b)(2) of the NCP and determined that the following factors were to be addressed at the Site.

(v) "Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released; "

Rock, mud and snow slides could cause a blockage to the portal, resulting in damage or deferred maintenance or inspections, that pose a threat of a release. Without access to the flow control structure for scheduled inspections, it is likely that signs of failure would be missed, and a release of hazardous substances is possible.

(vii) "The availability of other appropriate federal or state response mechanisms to respond to the release;"

No other federal or state response mechanism is available to respond to the releases described above.

(viii) "Other situations or factors that may pose threats to public health of welfare of the United States or the environment."

The shotcrete installed during the response was a temporary installation while engineering and design and construction of a permanent portal shed was completed. This shotcrete is failing in places around the portal, indicating the need for a long term solution. Extending the portal shed to protect the long term access will ensure necessary inspections and maintenance can be conducted on the Flow Control structure and conveyance lines.

IV. EXEMPTIONS FROM STATATORY LIMITS

A consistency exemption was requested as part of the January 12, 2017 Action Memorandum "because the proposed action (continuing water treatment) would exceed the $2 million ceiling" limitation as well as the 12-month performance limit. The basis for this exemption was based on the need to treat water at the on-site treatment plant over a three-year period to allow CERCLA investigations and engineering analyses to proceed regarding further response actions addressing water treatment for the Gold King Mine. While this TCRA does not individually exceed the 12-month or $2- million criteria by itself, the

original removal is on-going and continues to meet the previously approved exemption criteria.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed Action Description

EPA will extend the portal shed to permanent specifications developed by a Professional Engineer. Once completed the portal will no longer be in danger of being blocked by rock, mud, or snow slide debris. A blockage of the portal shed could cause further problems as maintenance, inspections and other activities related to the remedial design could not be completed.

2. Contribution to Remedial Performance

This removal action has been requested by the EPA Remedial program to further remedial goals at the Site.

3. Engineering Evaluation/Cost Analysis (EE/CA)

An EE/CA is not required for a time-critical removal action.

4. Applicable or Relevant and Appropriate Requirements (ARARs)

This Action Memorandum addresses the proposed time-critical removal action at the Gold King Mine on the Bonita Peak Site. Removal actions conducted under CERCLA are required, to the extent practicable considering the exigencies of the situation, to attain ARARs. In determining whether compliance with an ARAR is practicable, the lead agency may consider appropriate factors, including the urgency of the situation and the scope of the removal action to be conducted. A table containing potential Site-specific ARARs is provided as Attachment 3 to this Action Memorandum.

5. Project Schedule

This removal action is proposed to start in Summer of 2023. It is anticipated that on Site activities will take approximately two weeks. Completion is expected by December 31, 2023.

B. Estimated Costs*

	Estimated Costs
ERRS contractor	$ 220,000
START contractor	$70,000

SUBTOTAL	$ 290,000
Contingency costs (20% of subtotal)	$ 58,000
Estimated Removal Project Ceiling	**$ 348,000**
Previous BPMD Total Project Ceiling (10/15/2019)	$26,783,000
TOTAL BPMD REMOVAL ACTIONS' CEILING (OU00)	$27,131,000

*EPA direct and indirect costs, although cost recoverable, do not count toward the Removal Ceiling for this removal action. Liable parties may be held financially responsible for costs incurred by the EPA as set forth in Section 107 of CERCLA

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

A delay in action or no action at this Site would increase the actual or potential threats to the public health and/or the environment.

VII. OUTSTANDING POLICY ISSUES

None

VIII. ENFORCEMENT

A separate Enforcement Addendum has been prepared providing a confidential summary of current and potential future enforcement activities.

IX. RECOMMENDATIONS

This decision document represents the selected removal action for the Gold King Mine within the Bonita Peak Mining District Site in San Juan County, Colorado developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the removal action.

Conditions at the Site meet the NCP section 300.415(b)(2) criteria for a removal action, and Consistency Exemptions from the $2-million Ceiling and 12-month Performance Statutory Limits. I recommend your approval of the proposed removal action. The total removal project ceiling, if approved, will be $348,000; this amount will be funded from the Bonita Peak Mining District Special Account.

APPROVE

BEN BIELENBERG Digitally signed by BEN BIELENBERG Date: 2023.06.22 17:19:51 -06'00'

Ben Bielenberg
Acting Director
Superfund and Emergency Management Division

Date

DISAPPROVE

_____ _____

Ben Bielenberg Date
Acting Director
Superfund and Emergency Management Division

Attachments:

Attachment 1: Site Map
Attachment 2: Site Photos
Attachment 3: Applicable or Relevant and Appropriate Requirements (ARARs)

Attachment 1
Site Map

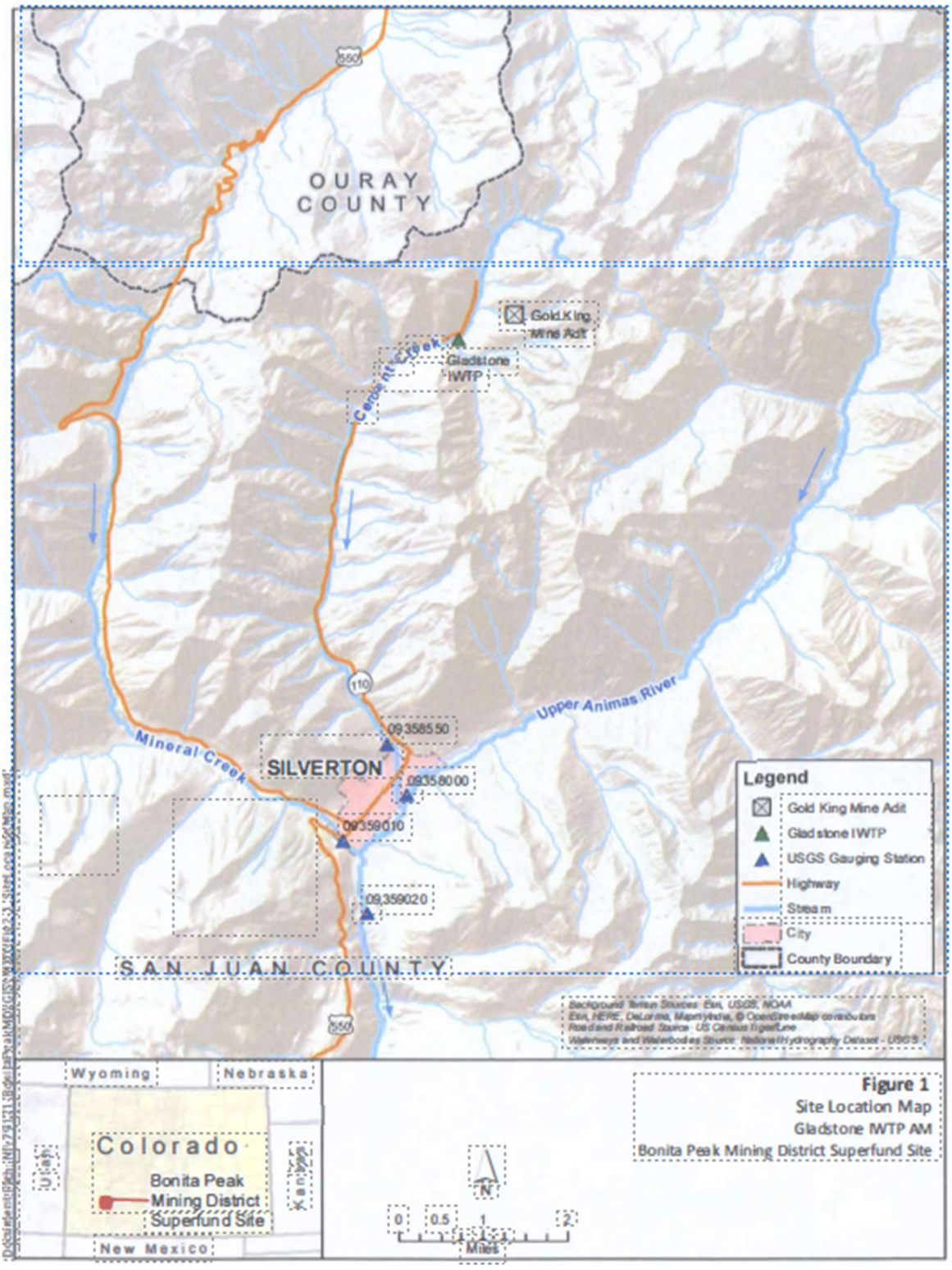

Figure 1
Site Location Map
Gladstone IWTP AM
Bonita Peak Mining District Superfund Site

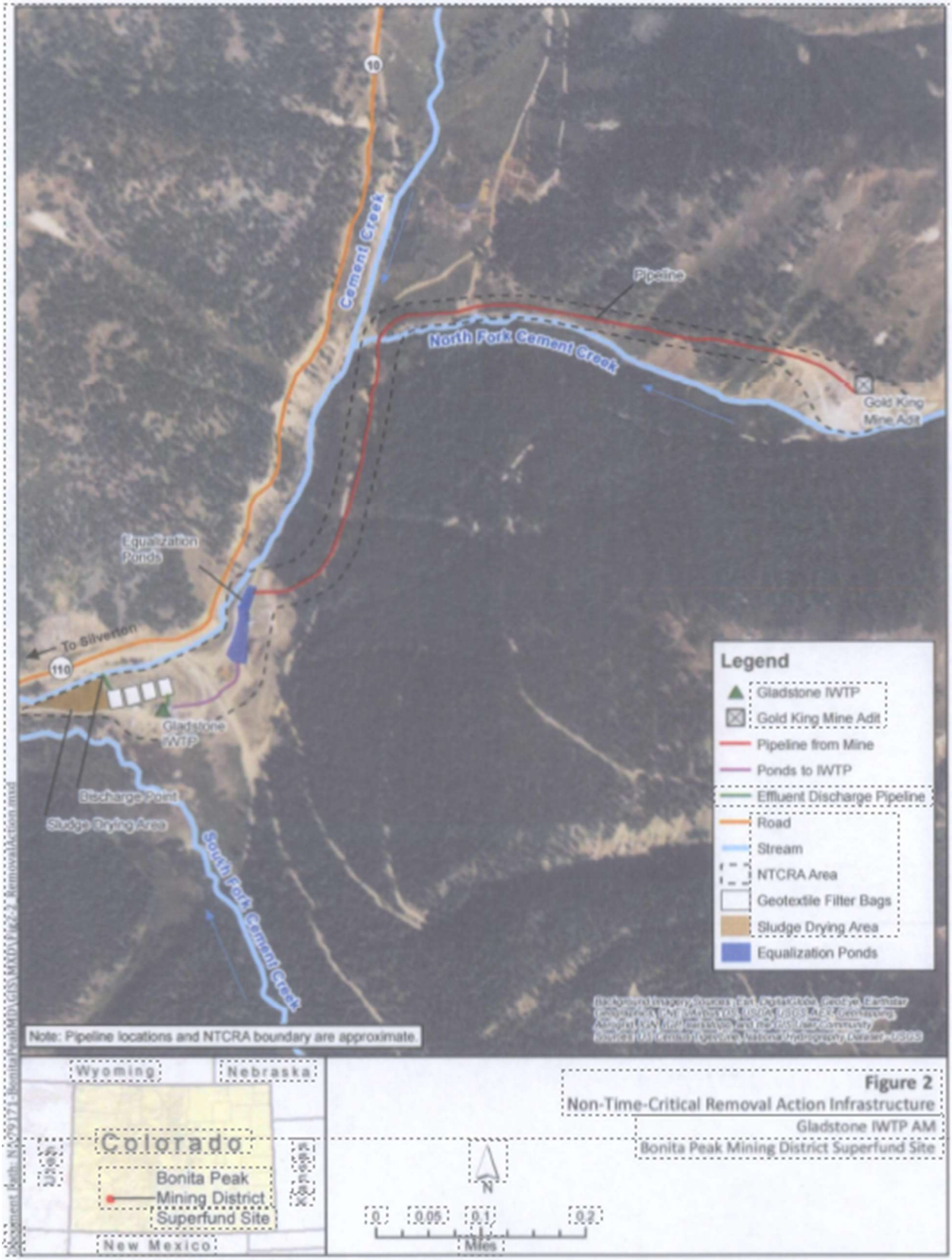

Figure 2
Non-Time-Critical Removal Action Infrastructure
Gladstone IWTP AM
Bonita Peak Mining District Superfund Site

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Attachment 2
Site Photos

GK Photograph 3: Image of the shotcrete on the walls of the portal.	

PHOTO 4

DATE TAKEN: 08/30/2022

LOCATION:

Gold King Portal

COMMENTS:

Spalling and failure of shotcrete to the right of the portal structure.

PHOTO 3

DATE TAKEN: 08/30/2022

LOCATION:

Gold King Portal

COMMENTS:

Erosion of material behind shotcrete and failure of some shotcrete to the left of the portal structure.

Attachment 3
ARARs

A ARARs request to CDPHE was submitted on 5/15/2023 and no response was received. The table below was modified from the Red and Bonita Mine Discharge Action Memorandum.

Location	Requirements	Prerequisite	Citation(s)
State Location-Specific ARARs			
Relevant wildlife habitat	Prohibits willfully damaging or destroying any wildlife den or nest, or their eggs, or harassing any wildlife. "Harass" means to unlawfully endanger, worry, impede, annoy, pursue, disturb, molest, rally, concentrate, harry, chase, drive, herd, or torment wildlife. *See* C.R.S. § 33-1-102(24) (Definitions)	Performing response activities in relevant wildlife habitat.	Colorado Wildlife Enforcement and Penalties Act, Colorado Revised Statutes (CRS) § 33-6-128
Relevant wildlife habitat	Prohibits harassment, taking or possession of nongame species and subspecies, including threatened or endangered wildlife, with limited exceptions. The designations of species as endangered, threatened, or a nongame species, are made pursuant to 2 C.C.R. 406-10:1002-4. This regulation incorporates definitions of terms found in the Colorado Wildlife Enforcement and Penalties Act, C.R.S. § 33-1-102.	Performing response activities in relevant wildlife habitat.	Colorado Non-game, Endangered, or Threatened Species Act, CRS §§ 33-2-104(3) and Colorado Wildlife Commission Regulations, 2 Code of Colorado Regulations (CCR) 406-10:1002-1004 4(Protected Species)
Excavating mine waste; constructing drainage channels.	Acid forming or toxic producing mined materials must be handled and disposed in a manner that will control unsightliness and protect the surface and groundwater drainage system from pollution.	Reclaiming mined lands.	MLRB Regulations, Rule 3.1.5(5), (10)
Conducting activities generating dust.	Establishes regulations concerning fugitive emissions from construction activities, storage and stockpiling activities, haul trucks, and tailings ponds	Conducting activities generating dust.	Colorado Fugitive Dust Control Plan/Opacity, Regulation No. 1, 5 CCR 1001-3(III)(D)(2)(b),(h) (Particulate Matter – Construction Activities), pursuant to Colorado Air Pollution Prevention and Control Act, CRS § 25-7-101 *et seq.*

Location	Requirements	Prerequisite	Citation(s)
Federal Location-Specific ARARs			

Gold King Level 7 Portal	This statute and implementing regulations provide that federal activities not jeopardize the continued existence of any threatened or endangered species. 16 U.S.C. 1536(a) of the Endangered Species Act (ESA) requires consultation with the U.S. Fish and Wildlife Service to identify the possible presence of protected species and mitigate potential impacts on such species. Substantive compliance with the ESA means that the lead agency must identify whether a threatened or endangered species, or its critical habitat, will be affected by a proposed response action. If so, the agency must avoid the action or take appropriate mitigation measures so that the action does not affect the species or its critical habitat. If, at any point, the conclusion is reached that endangered species are not present or will not be affected, no further action is required.	Actions that may negatively impact the species and their habitat.	Endangered Species Act 16 U.S.C. § 1536, and Implementing Regulations 50 CFR §§ 17.21, 17.31, 17.61, 17.71, 17.82