



Colorado Department of Public Health and Environment

# UPDATE FACT SHEET

## CENTRAL CITY/CLEAR CREEK SUPERFUND SITE

August 2010



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### Introduction

The Clear Creek/Central City Superfund site is located in Clear Creek and Gilpin counties, approximately 30 miles west of Denver. The 400-square-mile study area extends from the Continental Divide east to Golden. The Colorado Department of Public Health and Environment and the U.S. Environmental Protection Agency have assessed potential impacts to human health and the environment from mine waste piles and tunnel discharges. Because mine waste is scattered throughout the watershed, cleanup goals focused on improving water quality.

Environmental issues addressed by these projects include metals contamination in the waters of Clear Creek, particularly the North Fork, and management of mine tailings, waste rock and tunnel drainage to prevent further contamination of the creek.

Contaminants of Concern (COCs) for aquatic life include zinc, copper, cadmium and manganese. These metals are found in surface water and primarily affect trout and aquatic insects, as well as adjacent habitat.

The COCs for humans are arsenic and lead. Health risks could result from long-term drinking of ground water with high concentrations of these metals, incidental ingestion of tailings and waste rock and inhalation of airborne dust.

### History

Gold was discovered near Idaho Springs in 1859, and in the Black Hawk/Central City area in 1860. For the next 20 years, the Black Hawk/Central City area was the leading mining center in Colorado with the construction of

mills to process the gold and silver found through placer and hard rock mining. The decline of mining in the area began with the silver crash in the 1890s and the rise of mining in Leadville. However, mining continued to be an important industry in Clear Creek and Gilpin counties from the turn of the century until approximately 1950. Since 1950, mining in the area has been limited, with only a handful of mines currently operating.

The site was placed on the list of Superfund sites in September 1983. Since that time, the Department, EPA and the local community have worked to clean up heavy metal contamination resulting from decades of hard rock mining in the area. The Department and EPA have developed cleanup plans to deal with the worst sources of contamination within the Clear Creek watershed.

In 1992, limited stakes gaming began in Central City and Black Hawk, leading to some land use changes. While these changes have the potential to increase the direct human exposure to mine wastes, many mine waste cleanup projects were implemented as property developed.

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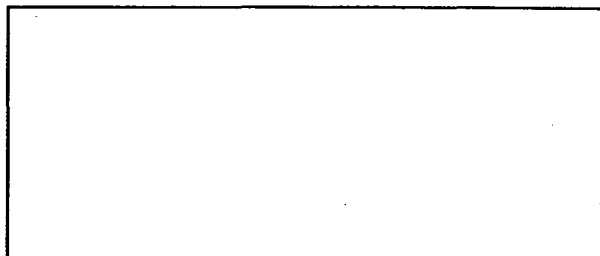
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## New Repository Cell Gets Green Light

# Operable Unit 4 Phase 3 to Finish this Fall

Most Operable Unit (OU) 4, Phase 3 remedial actions were complete by this summer, including removal of waste rock piles to the Church Place Repository, in-place closures of mine waste piles and repairs at the Pittsburgh Waste Rock Pile. The contractor was McCollum's Excavating, LLC of Black Hawk, which also worked on OU 4, Phase 2.

Construction of a new cell at the Church Placer Repository will be completed this fall. The cell will accommodate an additional 37,000 cubic yards of mine-related waste. The town of Black Hawk, the Clear Creek Watershed Foundation, the Colorado Department of Transportation (CDOT), the Colorado Division of Reclamation, Mining and Safety (DRMS) and the Upper Clear Creek Watershed Foundation all have expressed interest in relocating mining-related waste to the new cell.



*Revegetation of the interim cover began last fall and was completed this spring. Thanks to a wet growing season, the vegetation was well established by mid-summer.*

Ten thousand cubic yards of capacity remain in the existing cells, to be filled with tailings removed during a highway-straightening project involving State Highway 119 outside of Black Hawk. CDOT advertised for bidders in late August, and work on the multi-year project is expected to commence by this November.

## EPA Completes Virginia Canyon Removal Action

An EPA removal action addressed five major and a few secondary waste rock piles located along the Two Brothers mine road in Virginia Canyon, halfway between Central City and Idaho Springs this summer. The piles were excavated and consolidated at the Rio Grande waste dump.

Work began with the Williams and Rio Grande waste piles, where waste rock in the immediate vicinity of the drainage were excavated and consolidated at the Rio Grande waste dump. Waste rock piles from the Diamond Joe, Lower Clarrisa and Trio also were removed and hauled to the Rio Grande waste dump.

The remaining waste pile and the excavation area was re-contoured and armored to control future precipitation run-off from the area. Grouted rip rap channels run through the area where the waste rock pile

was located at the Williams, along the road of the Rio Grande, and along the base of the Trio mine waste pile to help prevent erosion, stabilize piles and contain run-off. This work and the removal of a few secondary mine waste piles was completed in August.

Although run-off from Virginia Canyon into Clear Creek generally is minimal, the water often reaches flood level during heavy rainstorms and post-winter snow melt/run-off events. This water severely undercuts and erodes the various mine waste piles located in Virginia Canyon.

Based on concerns expressed during the 2009 Five-Year Review, this removal action addresses the threat of waste rock eroding into Virginia Canyon Gulch and greatly reduces the contaminant loading to Clear Creek.

# Operable Unit Four Remedy Status Report

The Colorado Department of Public Health and Environment (CDPHE), in coordination with the U.S. Environmental Protection Agency (EPA), began implementing the OU 4, or "North Fork," remedy in 2006. OU 4 is the North Fork of the Clear Creek drainage basin and associated sources of metals contamination. Remedy components in the OU 4 Record of Decision (ROD) included:

- Treatment of Gregory Incline and National Tunnel discharges
- Collection and treatment of drainage/ground water in Gregory Gulch
- Sediment-control measures involving waste pile removal/capping and sediment-reduction measures in Russell, Willis and Nevada gulches, and along the North Fork

The OU 4 goals are to:

- Improve water quality in the North Fork of Clear Creek and its tributaries to support a brown trout population
- Reduce the North Fork's impact on water quality in the main stem of Clear Creek to meet water objectives between the main stem's confluence with the North Fork and the city of Golden

A status report on different elements of the OU 4 remedy appears below.

## Russell, Willis and Nevada Gulch Sediment Control Projects

Sediment-control measures and mine-waste remediation in Russell, Willis, and Nevada Gulches were implemented over three phases during 2006-2010. Twenty waste rock or tailings piles projects were implemented. Actions included removal to the Church Placer Repository, in-place capping, and erosion controls such as run-on/run-off controls and revegetation. The Colorado Division of Reclamation Mining and Safety closed four mine adits located at these mine waste piles under an inter-agency agreement with the Colorado Department of Public Health and Environment.

Additional sediment-control measures included construction of sediment-retention basins in Russell and Nevada gulches and drop structures and check dams in Russell and Willis gulches.

## Water Treatment Project

The water treatment plant is entering the design phase, with construction anticipated in 2012. Golder Associates of Lakewood has been selected as design engineer. Golder designed the Summitville water treatment plant, and has the operations contract for both Sum-

mitville and the Argo Tunnel water treatment plants.

CDPHE and CDOT have finalized an inter-agency agreement to locate the plant in the State Highway 119 right of way outside of Black Hawk. CDPHE will hire a contractor to build a pipeline to convey water to the plant. The department originally had planned to construct the pipeline as a joint project with CDOT, but scheduling challenges required the change in approach. CDPHE will continue to coordinate with CDOT. Bid advertisements are expected to be published in early November.

## Church Placer Repository Project

CDPHE acquired 28.6 acres of the Church Placer claim on Oct. 30, 2008 for the repository and reclamation of the property. The site is impacted by historic mining and a former heap leach operation.

Construction activities included significant regrading and construction of water management features, implemented in 2008 and 2009 using a local earth moving contractor. Approximately 26,000 cubic yards of waste rock and tailings were consolidated in the repository from Russell, Willis and Nevada gulches. Ten

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## OU 4 Remedy Status Report ...continued from previous page

thousand cubic yards of residual capacity remain.

An estimated 5,000 to 15,000 cubic yards of North Fork Main Stem mine waste will be removed from the channel and riparian zones and consolidated in the repository next summer.

CDPHE will operate and maintain the repository once the Superfund response action is complete and revegetation is successful. CDPHE will inspect and maintain the repository to ensure that erosion does not expose mine-related waste. The department has stockpiled materials to address erosion, replace cover material, provide interim cover for waste and final vegetative cover.

Many remedy components, including the repository, are subject to EPA's Superfund Five-Year Review process to ensure continued protectiveness. The repository will be fenced, gated and locked to prevent trespass. The property is subject to deed restrictions requested by Gilpin County.

The Repository ROD Amendment anticipated that the repository may accept mining-related materials from local, non-profit voluntary projects. Mine wastes accepted at the repository will have been generated and deposited solely within Clear Creek or Gilpin Counties as encompassed by the Superfund Study area and approved by CDPHE and EPA. CDPHE and EPA are developing a strategy for managing and prioritizing requests and determining how long the repository may remain open. Future funding constraints may be a limiting factor.

## Coordination with CDOT

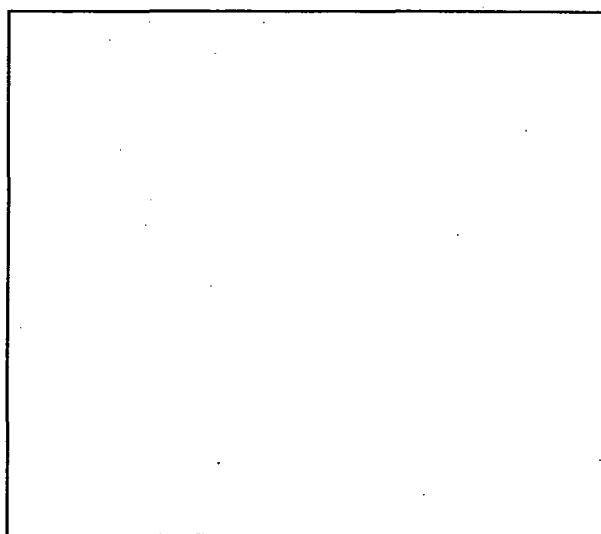
The State Highway (SH) 119 corridor between US 6 and Black Hawk parallels the North Clear Creek main stem, which is impacted by historic mining. The overlapping projects create opportunities for the agencies to cut costs and achieve efficiencies through cooperation.

CDPHE, CDOT and EPA entered into a memorandum of understanding on Jan. 11,

2008, to coordinate efforts. This memorandum was followed by an Aug. 6, 2009 interagency agreement between CDPHE and CDOT.

Benefits of agency coordination include:

- CDPHE is utilizing rock from the CDOT SH 119 curve-straightening project for mine waste pile caps, saving both agencies money and promoting "green remediation" through materials reuse.
- CDOT will allow CDPHE to install a mine drainage pipeline during SH 119 construction, minimizing CDPHE and EPA costs and CDOT impacts.
- CDOT will provide an area within its right-of-way for CDPHE to build its mine drainage treatment system, saving CDPHE and EPA the cost of land acquisition in a location where suitable property is highly limited.
- Partnering with CDOT allows the EPA and CDPHE to remove contamination on the North Fork in concert with stream stabilization and habitat development.
- The Church Place Repository is used to relocate metals-contaminated mill tailings from the banks of the North Fork, improving the economics of the highway project.



*Carpe diem convolutomo pianissimo quando forte, mais bulimia con cosi fan tutte. Ipso facto dolorem kronos meticalae.*

## Documents Added to the Website since July 2009

- Mine waste remediation and sediment control for Operable Unit 4: Poster, July 2009
- Improving water quality in the North Fork of Clear Creek: Poster, July 2009
- Fourth Five Year Review Report: September 2009
- Community Involvement Plan Update: September 2009
- Amendment to the Operable Unit 4 ROD: April 2010

To view documents, please see:  
[www.cdphe.state.co.us/hm/ClearCreek/index.htm](http://www.cdphe.state.co.us/hm/ClearCreek/index.htm)

### WE VALUE YOUR FEEDBACK

1. How clear and understandable are our fact sheets and other mailings?
2. Are we providing the information you needed and in a timely manner?
3. What other information can we provide that would help you?

Please take a few minutes to telephone, e-mail or mail your response and any address changes to:

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**On the Web:**  
[www.cdphe.state.co.us/hm/ClearCreek/index.htm](http://www.cdphe.state.co.us/hm/ClearCreek/index.htm)  
[www.epa.gov/region08/superfund/co/ccclearcreek](http://www.epa.gov/region08/superfund/co/ccclearcreek)

**View Documents at:**  
Gilpin County Court House  
203 Eureka Street  
Central City, CO 80427



Colorado Department  
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