

December 2008 Update

Central City/Clear Creek Superfund Site
Idaho Springs, Colorado
(Review Date 9/30/04)

Highlights Since the 2004 Five-Year Review

- Chase Gulch #2 Mine Waste Pile reclaimed – September 2005
- Drainage collected and treated at Argo Treatment Plant – March 2006
- Operable Unit (OU) 4 Remedial Design underway
- OU3 ROD Amendment finalized-September 2006
- Remedial action began in September 2006.

Brief Site History: Clear Creek/Central City Superfund Site is located on the east slope of Colorado's Front Range, approximately 30 miles west of Denver. The site is transected by the Colorado Mineral Belt, rich in minerals, and as a result the area has been heavily mined, beginning with the discovery of placer gold in Idaho Springs in 1859 and followed quickly by the first lode discovery in Gregory Gulch.

Historic mining caused modern era problems. Placer mining resulted in the removal of stream substrate and the relocation of stream channels. Mine tunnels continue to drain acidic and metal laden water. Mine waste and mill tailings piles were left unprotected throughout the watershed. Metals including iron, zinc, copper, cadmium, manganese, lead and arsenic entered into Clear Creek and its tributaries and negatively impacted the ecology of the river.

Modern urbanization has also impacted Clear Creek. Nearby towns have encroached on the creek. The construction has caused significant channelization of Clear Creek and created runoff of vehicle waste, traction sand and chemical deicer from the roadway. The legalization of gaming in the area has increased traffic, impacted the North Fork of Clear Creek and led to the removal of steeply sloped hillsides to allow casino development.

The site was added to the NPL in September 1983. Over the next several years the EPA initiated remedial investigations and feasibility studies and three removal actions at the site. There were originally three designated operable units: OU1 to address treatment of acid mine drainage from five mine tunnels; OU2 for remediation of mine tailings and waste rock in the immediate proximity of the five discharging tunnels; and OU3 for control of surge events from the Argo Tunnel. In 1988, EPA transferred the lead role for the site to the Colorado Department of Public Health and Environment (CDPHE). CDPHE initiated additional studies and expanded OU3 to address the mine tunnels

previously investigated, several mine waste piles, and potential drinking water impacts. OU4 was added to address contaminated surface water, ground water and sediment from mine waste piles in the North Fork basin.

Cleanup Activities Completed: The following cleanup activities have been completed.

- April 1998: the Argo Water Treatment Plant completed
- From 1993 to 2005: More than a dozen priority waste rock and tailings piles stabilized or removed
- November 2005: Argo Water Treatment Plant converted from sodium hydroxide to hydrated lime for greater cost efficiency
- March 2006: Virginia Canyon groundwater and Big Five Tunnel mine drainage collected and conveyed to the Argo Water Treatment Plant

Current Status: A ROD for OU4 was signed 9/29/04 for the cleanup of the North Fork of Clear Creek and its tributaries. The ROD provides for collection, conveyance and active treatment of the Gregory Incline discharge and groundwater in Gregory Gulch; collection, conveyance and passive treatment of the National Tunnel discharge; and sediment control through the removal and/or capping, stabilization and run-on controls of priority waste piles. An amendment to the OU3 and OU4 RODs was signed 9/25/06 to add an additional remedial component, an on-site mine waste repository, to the previously selected remedy. OU4 remedial design is underway. Remedial action began in 2006.

Summary of Protectiveness: A determination of the protectiveness of the remedies cannot be made because site actions are not complete. A determination of protectiveness will be obtained by completing a comprehensive sampling of Clear Creek once the remedy is complete and operational. In the interim, exposure pathways that could result in unacceptable risks to human health are being controlled. The site remedies that have been completed remain protective.

Issues Impacting Protectiveness: A few issues that do not immediately impact the protectiveness of the remedy were noted. The following table summarizes the status of the follow-up actions addressing these issues.

**Central City/Clear Creek Superfund Site
Five-Year Review Update Table
(Review Date 9/30/04)**

Issue	Recommendations/ Follow-up	Follow-up Actions (Status/ Due Date)	Status of Follow-up Actions 12/08	Resp. Party
1) Lack of Operations and Management records	Develop a database to record the responsible parties for O&M at each site and to track required O&M performance	12/2005	- Completed - Inspection report prepared annually	EPA and CDPHE
2) Lack of Institutional Controls record-keeping	Evaluate IC effectiveness where waste was left in place. Implement ICs as necessary. Develop a database to consolidate the information.	3/2005	On going. Tracking system under development. Colorado environmental covenant law applies to post-2001 remedial decisions	EPA and CDPHE
3) Big Five adit discharge still under interim waiver	Final decision needs to be made.	9/2005	- Completed - Drainage collected and treated at Argo Water Treatment Plant March 2006	EPA and CDPHE
4) Argo waste pile not capped	Prepare an Explanation of Significant Differences (ESD) to reflect changes made to Argo waste pile remedy.	6/2005	-Completed- Remedial action completed August 2005	CDPHE

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5) Repository not included in decision documents	Document in an ESD to OU3 ROD decision to pursue a local repository.	9/2005	-Completed- ROD amendment finalized September 2006	CDPHE
6) OU3 work not complete	Complete outstanding remedial actions identified in the OU3 ROD	On-going	All OU3 work complete except the Quartz Hill waste pile. Remedial design complete for the Quartz Hill Pile.	CDPHE
7) OU4 work not complete	Complete the remedial actions identified in the newly completed OU4 ROD.	On-going	Remedial design underway. Remedial action began in 2006..	CDPHE