



United States Environmental Protection Agency  
Region 8 Emergency Response Unit  
Denver, CO



**Report:** Camp Bird Removal Objectives and Estimated Costs

**Date:** 12/06/2016

**Site Name:** Camp Bird Mine

**Site ID:** A8H9

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**Website:** <https://epaossc.org/campbird>

**Notice:** Preliminary Information

**Category:** Site Description

**Last Updated:** 11/17/2016

The Camp Bird is a famous gold mine located near Ouray, CO. A large amount of mine waste is located at the entrance to the mine's Level 14. Three water bodies run in direct contact to this mine waste: Sneffels Creek, Imogene Creek and Canyon Creek (which is formed by the confluence of Sneffels and Imogene Creeks).

*Aerial View of the Camp Bird Mine at the Entrance to Level 14 in 2002<sup>1</sup>*



<sup>1</sup> Source: Mining History Association, <http://www.mininghistoryassociation.org/CampBird.htm>.

**Notice:** Preliminary Information

**Category:** Removal Site Evaluation

**Last Updated:** 12/06/2016

EPA response personnel have visited the site during a variety of stream flow regimes. Mine waste containing heavy metals is being actively eroded into Sneffels Creek, Imogene Creek and Canyon Creek. There is a potential that this erosion may dramatically increase due to increased runoff, streamflow and/or the mass failure of existing slopes. Although some areas at the site are included in an existing mining permit with the State of Colorado, the mine is in bankruptcy and is not being maintained.

Circumstances at the Site meet the requirements for a removal action under Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

*Contaminated Material Entering Canyon Creek at the Camp Bird Mine*



**Notice:** Preliminary Information

**Category:** Removal Action Objectives

**Last Updated:** 12/06/2016

EPA's On Scene Coordinator has established the following minimum objectives for a removal action at the Camp Bird Mine Site. These objectives may change if new land use patterns or additional information changes the On Scene Coordinator's assessment of threats to public health and/or the environment.

**1. Stabilize the slopes of the existing tailings deposits.**

The area to the north of both Sneffels Creek and Canyon Creek is a large tailings deposit. This area is included in an existing mining permit with the State of Colorado but the property is in bankruptcy and the area is not being maintained. The slopes of this tailings deposit are not well covered and are showing signs of instability. These slopes are depicted in Area 1 of the attached diagram.

The slope of the tailings deposit along Sneffels Creek upstream of its confluence with Canyon Creek shall be regraded to pull the toe back away from the creek. Sneffels Creek shall be restored to accommodate flood events.

All slopes in Area 1 shall be stabilized with erosion fabric that is keyed in at the top and bottom. This erosion fabric will be covered with large rip rap at the base of the slopes along the creeks and smaller rip rap towards the top. Much of this rip rap material may be harvested from Level 3 of the Camp Bird Mine workings. *An acceptable alternative approach to the slopes in Area 1 would be to completely regrade them to support the application of topsoil and/or compost and revegetation.*

**2. Remove the downstream mine waste deposit.**

The waste deposit that is furthest downstream on the south side of Canyon Creek is uncovered and bisected by a side drainage which is actively eroding the deposit. This area is not included in the existing mining permit with the State of Colorado. This area is depicted as Area 2 in the attached diagram.

The waste deposit east of the side drainage shall be removed and consolidated with the waste on the west side of the side drainage. The disturbed area shall be amended with topsoil and/or compost and revegetated. Erosion control features shall be constructed and the side drainage shall be stabilized with rip rap. This rip rap material may be harvested from Level 3 of the Camp Bird Mine workings.

**3. Regrade and stabilize the mine waste deposits.**

The large waste deposits south of Canyon Creek and between Imogene Creek and the side drainage (see Objective #2) are uncovered and immediately adjacent to all three drainages. This area is not included in the existing mining permit with the State of Colorado. This area is depicted as Area 3 in the attached diagram.

The waste deposits in Area 3 shall be excavated back away from Imogene Creek, Canyon Creek and the side drainage. The choke point in Canyon Creek shall be removed, the banks of the drainages shall be armored with rip rap and the drainages shall be restored with vegetation and erosion control features to accommodate flood events.

The waste deposits shall be regraded. Regraded slopes should not exceed a 3:1 gradient. Waste material shall be consolidated upland away from the creeks. Erosion control features shall be installed across the entire area. Uncovered areas shall be amended with topsoil and/or compost and revegetated.



Areas of Interest at the Camp Bird Site



**Notice:** Preliminary Information

**Category:** Removal Action Cost Estimates

**Last Updated:** 12/06/2016

<b>Item</b>	<b>Description</b>	<b>Cost</b>
Labor, Travel, Per Diem and Lodging	EPA On Scene Coordinator, Contracted Project Manager, Field Accountant, Foreman, Equipment Operators, Truck Drivers and Laborers	\$875,000
Equipment Rentals, Freight and Fuel	80,000lb Bulldozer, 50,000lb Bulldozer, 80,000lb Excavators, Off Road Water Truck, Off Road Dump Trucks, 40,000lb Wheel Loader, Stake-bed, Pick Ups, Office Trailer, Conex Storage Box and Toilet Rentals	\$645,000
Cover Material	Compost and/or topsoil (delivered to bottom of the Camp Bird Road), erosion fabric, seed and other miscellaneous supplies and services.	\$950,000
Analytical	Personal air monitoring	\$1,000
	<b>Total</b>	<b>\$2,471,000</b>