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## Introduction

The Red Devil Mine Site (RDM) is an abandoned mercury mine and ore processing facility located on public lands managed by the U.S. Department of Interior Bureau of Land Management (BLM) (see Figure 1-1). Tailings generated by historical mining and ore processing operations dominate the central area of the site and have been identified as the primary source of mercury, arsenic, and antimony being released to the environment (BLM 2013). In some areas, the tailings also contained fuel released from large storage tanks while the mine was in operation; these tanks were subsequently addressed under a previous removal action. Tailings are migrating into the Kuskokwim River via Red Devil Creek.

The BLM is applying the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process at RDM in coordination with the Alaska Department of Environmental Conservation (ADEC), U.S. Environmental Protection Agency (EPA) Region 10, the Alaska Department of Health and Social Services (DHSS), the Alaska Department of Fish and Game (ADF&G), and the Alaska Department of Natural Resources (ADNR). Recognizing the significance of tailings migrating away from the source area, BLM is planning an early action at RDM to minimize future migration. The early action is being performed on a non-time-critical basis. The early action approach is consistent with CERCLA guidance, including sections of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) applicable to removal actions (40 Code of Federal Regulations [CFR] Section 300.415). Section 300.415(b)(4)(i) of the NCP requires that an Engineering Evaluation/Cost Analysis (EE/CA) be completed for all non-time-critical removal actions. The regulations for the contaminated site cleanup promulgated by the State of Alaska also provided a framework for the EE/CA evaluation process. This EE/CA documents BLM's plans for an early action intended to minimize transport of tailings to the Kuskokwim River.

BLM tasked Ecology and Environment, Inc., (E & E) to prepare this EE/CA for the RDM site in southwest Alaska. E & E has prepared this report on behalf of the BLM under Delivery Order Number L09PD02160 under General Services Administration Contract Number 10F-0161J.

An EE/CA is an analysis of removal action alternatives selected for a site. The EE/CA identifies the objectives of the early removal action and documents analysis of each alternative for effectiveness, implementability, and cost. This EE/CA also summarizes the nature and extent of contamination and potential

risks posed by the contaminants to human and ecological receptors. The EPA document, *Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA* (EPA 1993), was used in the preparation of this document.

This EE/CA is organized into the following sections:

- Section 1 - Introduction
- Section 2 - Site Characterization: Summarizes site characterization results from the Remedial Investigation (RI) report, including the site description and background, previous investigation and removal actions at the site, a summary of analytical data for the site, a discussion of the source, nature, and extent of contamination, and details about the streamlined risk evaluation
- Section 3 - Early Action Scope, Goals, and Objectives
- Section 4 - Early Action Alternatives
- Section 5 - Individual Analysis of Individual Early Action Alternatives
- Section 6 - Comparative Analysis of Early Action Alternatives.
- Section 7 - Recommended Early Action Alternative
- Section 8 - References