

Questa Mine Regulatory Process (Superfund) Overview

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Abstract

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) or “Superfund” cleanup process at the Questa Mine Site (Site) began in 1999 when the United States Environmental Protection Agency (EPA) identified possible past releases of hazardous substances. On September 27, 2001, MolyCorp, Inc. (now Chevron Mining Inc.) and EPA signed an Administrative Order on Consent (AOC) to conduct a Remedial Investigation/Feasibility Study (RI/FS) for the Site. The RI/FS and existing state and federal permits required numerous investigations and studies. The Final RI/FS was completed in 2009 and in December 2010, EPA issued its Record of Decision (ROD) for the Site. The next step in the Superfund process will be for Chevron to work with federal and state agencies to prepare a Statement of Work (SOW) for the cleanup. Pursuant to the SOW, Chevron will complete preparation and implementation of plans for applying the Site remedies. In the case of the Questa Site, the remediation and reclamation will take at least twenty-five years.

Introduction

In order to fully understand the complexities of the Superfund process at an operating mine it is necessary to provide an overview of the operational and regulatory histories of the mine as well as the Superfund process itself. CERCLA was enacted by the U.S. Congress in 1980, and amended in 1986 (Superfund Amendments and Reauthorization Act or SARA), and was designed to provide a mechanism for the cleanup of sites contaminated with hazardous substances at inactive hazardous waste disposal sites, many of which were abandoned and orphaned. In many cases there were no federal, state, or local regulatory agencies that had jurisdiction or sufficient resources to perform the necessary investigation and work required to clean up the site.

Operational History

Operations at the Questa Mine began in 1919 when the Molybdenum Corporation of America (MolyCorp) started a small underground mine in Questa, New Mexico. From 1919 until 1958 mining was conducted by conventional underground methods. By 1954 the underground workings extended over 35 miles on 14 production levels. Large-scale open pit mining began in 1965, continued through 1983 and resulted in the formation of nine large overburden (waste rock) piles. The rock piles are estimated to contain approximately 328 million tons of excavated waste rock and cumulatively cover an area totaling approximately 750 acres. The rock piles range in height from 600 to 1600 feet, each containing varying volumes of material. In 1983, surface mining operations ceased and the operation continued as an underground mine utilizing the block-caving method. This practice continues to this day. In 2005, Chevron Corporation acquired MolyCorp through a corporate merger with the Union Oil Company of California (Unocal). Unocal had owned MolyCorp since 1977 (URS 2009a).

State Regulatory History

Until the late 1990s, hard rock mining operations were mostly unregulated by New Mexico. On December 31, 1998, the New Mexico Mining and Minerals Division (MMD) issued a mining permit for the Questa Mine to conduct mining and reclamation operations pursuant to the New Mexico Mining

Act, NMSA 1978. In 2001 and 2002, MMD issued permit revisions to incorporate closeout plans for the tailing facility and mine site. The closeout plans specify the reclamation methods to be used and the activities to be performed that will allow for the reestablishment of a self-sustaining ecosystem following closure in a manner that will complement the approved post-mining land use (USEPA, 2010).

During this same period, the New Mexico Environment Department (NMED) issued several ground water discharge permits to the Questa Mine. These permits were issued pursuant to the New Mexico Water Quality Act, NMSA 1978, and the New Mexico Water Quality Control Commission Regulations, 20 NMAC Chapter 6, Part 2. The discharge permits include conditions to prevent and control discharges of contaminants from the mine site and tailing facility into ground water and surface water. The purpose of these discharge permits is to protect all ground water at the mine having an existing concentration of 10,000 mg/L or less of total dissolved solids (TDS) for present and reasonably foreseeable future use as domestic and agricultural water supply and to protect those segments of surface water which are increasing in volume because of ground water inflow (USEPA, 2010). The mine is permitted to discharge water subject to certain conditions established in the permits. Compliance with the permits is accomplished through ongoing monitoring and reporting.

Federal NPDES Permits

In 1977 the EPA started regulating discharges from the Questa Mine facility to Surface Waters of the United States through a National Pollutant Discharge Elimination System (NPDES) permit as required by the Clean Water Act. To comply with the requirements of this permit, numerous seepage interception and ground water withdrawal systems were constructed to prevent uncontrolled discharges to the Red River. These systems are operated and maintained to this day. In 1992 the EPA issued the mine a Multi Sector General Permit for storm water discharges. One of the requirements of this permit is the implementation of a Storm Water Pollution Prevention Plan (SWPPP). The control measures established in the SWPPP include preventing mine property storm water discharges to surface water and managing storm water runoff that could or has come into contact with mining related areas. Compliance with the NPDES permits is assured through monitoring and reporting.

CERCLA

CERCLA Regulatory History

The Superfund cleanup process began at the Questa Mine in 1999 when EPA provided notice of possible releases of hazardous substances. This time period coincides with the issuance of the MMD and NMED permits. Once identified, Questa was entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), EPA's computerized inventory of potential hazardous substance release sites. EPA then began the evaluation process to determine the potential for a release of hazardous substances from the Site and the magnitude and nature of the cleanup that would be required to respond to that release <http://www.epa.gov/superfund/cleanup/npl.htm>. Some sites in CERCLIS that EPA considers to be the most serious are proposed for listing to the National Priorities List (NPL). EPA evaluates sites using its Hazard Ranking System to assess the potential of sites to pose a threat to human health or the environment. Sites exceeding a particular numerical score are considered for inclusion on the NPL. In the case of Questa EPA began the process for listing in 1999 but postponed final listing. In March 2011 the Site was re-proposed for listing; to date, the NPL listing has not been finalized.

Remedial Investigation/Feasibility Study

On September 27, 2001, Molycorp, Inc. (now Chevron Mining Inc.) and EPA signed an Administrative Order on Consent (AOC) to conduct a Remedial Investigation/Feasibility Study (RI/FS) for the Site. The RI/FS determines the nature and extent of contamination, assesses the treatability of site contamination and evaluates the potential performance and cost of alternative treatment technologies. This analysis is driven by the potential risks posed by a site to human health and the environment. From 2001 to 2009 there were dozens of studies and investigations, thousands of water and soil samples, and hundreds of man-hours invested to support the Remedial Investigation (RI) and the existing state and NPDES permits, all under the direction and oversight of EPA MMD, and NMED (Ferland, 2011). A list of key regulatory documents includes:

1. Baseline Human Health Risk Assessment (HHRA) performed by EPA. The HHRA evaluated the potential impacts to public health, welfare, or the environment that may exist from the release or threatened release of contaminants.
2. Baseline Ecological Risk Assessment (BERA) performed by EPA. The BERA evaluated the potential adverse effects on living organisms from the release or threatened release of contaminants.
3. Public health assessment conducted by the Agency for Toxic Substances and Disease Registry (ATSDR). The ATSDR reviewed available environmental data, potential exposure scenarios, and community health concerns to determine whether adverse health effects were possible.
4. Questa Baseline and Pre-Mining Ground Water Quality Investigation performed by the United States Geological Survey (USGS). Twenty-seven reports were prepared by USGS scientists and focused on the geological, hydrological, and geochemical characteristics of the Red River Valley (URS, 2009a).
5. Questa Rock Pile Weathering and Stability Project was undertaken by dozens of individuals from numerous universities and organizations. More than 60 individual Decision and Reliability Analysis (DRA) documents were produced. This information will provide a basis for future evaluations of long-term weathering and slope stability of the Questa rock piles (ADTI, 2009).

All of the work conducted as part of the RI process is evaluated by EPA and used to evaluate alternative remedial actions that are used to compile the Feasibility Study (FS). In the case of Questa, the Final FS Report was submitted on November 16, 2009. The report identified five areas of concern and evaluated 23 alternative remedial actions (URS, 2009b).

Record of Decision and Consent Decree

In December 2010, EPA issued its Record of Decision (ROD) for the Questa Site. The ROD explains which cleanup alternatives have been chosen by EPA, how they are to be implemented, and an estimated range of costs for implementation of the cleanup remedies. The Questa ROD identified five Areas of Concern: Mine Site (which encompasses the rock piles), Tailing Facility, Mill, Red River Riparian, and Eagle Rock Lake. Chevron will work with EPA and the U.S. Department of Justice (DOJ) to develop a Statement of Work (SOW) that will outline in detail the actual work that will be conducted by Chevron. Once the SOW has been finalized it will be incorporated into a Consent Decree (CD) that will be entered in federal district court (Ferland, 2011).

Remedial Design/Remedial Action

Pursuant to the SOW in the CD, Chevron will complete a Remedial Design/Remedial Action (RD/RA) plan that will provide the details for applying and implementing the Site remedies. Not only will the RD/RA plan need to consider the requirements set forth in the CD, it will also need to consider the

obligations contained in the existing MMD, NMED and NPDES permits. Although the bulk of the remediation and reclamation will occur during the RD/RA phase, some interim reclamation activities have already been conducted outside the CERCLA process. Two such activities associated with the rock piles are:

1. Goathill North Waste Rock Pile Interim Stability Mitigation. The Goathill North Rock Pile was constructed in the upper Goathill Gulch characterized by hydrothermal alteration scar materials and an underlying historic landslide. Movement of the waste rock pile foundation associated with the initial development of an active landslide occurred between 1969 and 1973 and continued for more than 30 years. After a lengthy, yet rewarding, stakeholder engagement process, interim mitigation was conducted from 2004 to 2005. This mitigation consisted of a balanced cut and fill regrade of approximately one million cubic yards of waste rock to achieve slopes of between 2H:1V to 3H:1V. This rock pile was also the site of many of the investigations conducted during the Questa Rock Pile Weathering and Stability Project.
2. Failure Modes Analysis (FMA) for the Roadside Rock Piles. In 2005, an FMA was conducted to identify potential failure modes during a near term or operational period (20 years) for the Roadside Rock Piles and identify consequences of failure and possible mitigation activities. An eleven member team representing the Questa Mine, their consultants, and various stakeholder groups, including both MMD and NMED, participated in the analysis (Norwest, 2001). It is Chevron's hope that this type of risk-based approach will be followed by EPA during the remedial design for all the rock piles at the Questa Mine.

Going Forward

The Superfund process is one that takes time and patience by all parties; private, regulatory, and community. In the case of Questa, the process has been ongoing for over ten years and the remediation and reclamation will take at least twenty-five years more with long term maintenance work likely continuing in perpetuity. Added to the Superfund process has been, and will be, the requirements of existing state and federal regulations and permits. Chevron's first priority as it implements the work is to do so in a manner that protects the safety of workers and the public. Chevron will implement the remedies while providing the utmost consideration for the environment and the health of all individuals.

References

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