Kitzmiller Coal Waste Stablilization
and
Acid Mine Drainage Treatment Project

Kitzmiller, Garrett County, Maryland

Submitted by:

STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
BUREAU OF MINES
Abandoned Mine Lands Section
160 South Water Street
Frostburg, Maryland 21532

Kendl P. Philbrick - Secretary, Maryland Department of the Environment
John E. Carey - Director, Maryland Bureau of Mines
Michael P. Garner - Chief, Abandoned Mine Lands Section

DATE: February 25, 2005

CONSTRUCTION START: October, 2002

CONSTRUCTION COMPLETION: November, 2003

CONSTRUCTION COST: $1,775,566.00

CONSTRUCTION CONTRACTOR: A.L.L. Construction, Inc., Mount Storm, WV

PROJECT ENGINEER: Bradley V. Nee
Maryland Bureau of Mines
Abandoned Mine Lands Section

PROJECT ADMINISTRATOR: Mike Garner
Maryland Bureau of Mines
Abandoned Mine Land Section

CONTRACTING AGENCY: Maryland Department of General Services
Boyd K. Rutherford, Secretary
Baltimore, Maryland

FUNDED BY: The Abandoned Mine Reclamation Fund administered by the U.S Department of the Interior, Office of Surface Mining

PROJECT NARATIVE

SITE HISTORY

Mining operations at the Hamill Deep Mine facility were conducted from 1908 to 1940. The Hamill Mine was located on the Maryland side of the Potomac River just outside the city limits of Kitzmiller, Maryland. The mine consisted of two drift entries working in the lower Kittanning coal seam. Coal was mined by pick and shovel and hauled to the surface by mules. Once on the surface, the coal was loaded into one of two aerial tramway buckets having a capacity of two tons. The loaded tram bucket was then transported along a 900 foot suspended aerial cable across the Potomac River to a tipple where it was loaded onto the Western Maryland Railroad. As the loaded bucket was pulled down the aerial tramway by gravity the empty bucket was hoisted up to the mine mouth and the process repeated. Ventilation was provided by a 15 horsepower 12 foot diameter Crawford and McCrimmor fan. Drainage from the mine was handled by gravity ditches and pumping.

THE PROBLEM

When mining activities ceased in 1940, the site was abandoned with no reclamation leaving many health, safety and environmental hazards behind. After over 60 years of neglect, mining equipment, facilities and several deep mine portals were in a state of deterioration and collapse posing a hazard to local residents. Approximately 110,000 cubic yards of coal waste were dumped alongside of the Potomac River resulting in two large, very steep, unstable and unrevegetated refuse piles. Acid run-off and erosion from these piles caused adverse environmental impacts to the surrounding area and the North Branch of the Potomac River. Recent high flows in the Potomac River had undermined the toe of the refuse pile causing several large slides sending thousands of cubic yards of coal waste directly into the Potomac River with the potential of a catastrophic refuse slide blocking the North Branch of the Potomac River resulting in additional flooding of the Town of Kitzmiller. Additionally, the site had become a convenient dumping site for residential waste attracting insects and rodents. To reduce this problem, the garbage was burned in place igniting the largest of the two coal waste piles. The burning coal refuse then started several brush fires in the surrounding woods, as well as venting noxious fumes into the air affecting local residents and users of the Potomac River. Approximately 80 gallons per minute of acid mine drainage was discharging from the abandoned mine portals flowing uncontrolled over the site affecting a natural drainway between the two refuse piles and degrading the water quality and aquatic biota of the North Branch of the Potomac River. Mine drainage from the site has a pH ranging from 3.0 to 3.5 along with dissolved metals, such as iron, aluminum, manganese and magnesium.

PROJECT DESIGN

The project was designed by Highland Engineering and Surveying, Inc. of Oakland, Maryland. The design contract was awarded on December 8, 1999 and completed on January 31, 2002 at a cost of $100,537.50. The design required evaluation of several coal waste disposal alternatives, including on-site disposal, off-site disposal in nearby abandoned surface mine pits, reprocessing of waste for coal recovery, and transportation to the Mount Storm Cogen Plant for use in electric generation. Based on coal recovery analysis and costs of transportation, it was determined that on-site disposal in an engineered fill was the most cost-effective method of reclamation. The innovative design provided for the use of a sealed limestone channel to pre-treat and transport acid mine drainage from the mine portals to an existing water powered doser. Also included in the sealed channel was a water reservoir used to provide a constant water source for powering the doser. Consideration was also given to the use of water from the North Branch of the Potomac River for quenching of burning coal refuse and the collection of quenching water, for reuse and treatment before returning it to the River. The designer was also responsible for obtaining all necessary federal, State and local permits needed for the proposed design.

PROJECT CONSTRUCTION

Construction of the Kitzmiller Coal Waste Stabilization and Acid Mine Drainage Treatment System was completed during the Fall of 2002. A competitive sealed bid procurement method was utilized. The contract was awarded to the successful low bidder A.L.L. Construction, Inc. of Mt. Storm, West Virginia.

Project construction took 13 months to complete and included the following activities:

1) The backfilling of two concrete faced-up mine portals with Class II (24”) stone.

2) Installation of an acid mine drainage (AMD) collection and transport system to direct AMD to the treatment channel.

3) Construction of 1445 LF of sealed limestone channel to pre-treat AMD and direct it to an existing lime doser for final treatment.

4) Installation of a temporary Class III (36”) rip-rap work platform/stream diversion along toe of refuse piles to allow removal of refuse and prevent sedimentation of the Potomac River.

5) The excavation, spreading and extinguishing of 20,000 cubic yards of burning coal waste. Once out, waste material is compacted in lifts to form the disposal area.

6) The excavation, transportation and final placement of 90,000 cubic yards of unstable coal refuse material.

7) The topsoiling of engineered coal refuse disposal site with 6 inches of soil.

8) The armorment of 1150 linear feet of the banks of the Potomac River, by removing the Class III rip-rap work platform and placing it along the final toe slope.

9) The collection and legal disposal of all trash and abandoned mine equipment within the project limits.

10) The revegetation of disturbed areas with trees and grasses.

SUMMARY OF BENEFITS

-- The elimination of safety hazards associated with deteriorated mining equipment and portals through demolition and sealing.

-- The collection of approximately 80 gpm of 3 pH acid mine drainage and treatment to a 7 pH water before releasing into the Potomac River.

-- The prevention of additional brush fires by extinguishing burning coal refuse.

-- The reduction of coal waste sediment entering the Potomac River by site stabilization and streambank armorment.

-- The elimination of noxious fumes generated by burning coal waste.

-- The revegetation of 8.5 acres of barren coal waste by planting of grasses and trees.

-- The restoration of the scenic view shed of the North Branch of the Potomac River, an American Heritage River.