OVERVIEW OF THE RAILROAD BED TIME-CRITICAL REMOVAL ACTION SILVER BOW CREEK/BUTTE AREA SUPERFUND SITE, BUTTE, MONTANA[1]

R.R. Alexander[2]

Abstract. Integral to the large-scale mining in Butte, Montana, was a railroad network to service, support, and supply the mining activities. The first railroad arrived in Butte in the early 1880s, as a world-class copper industry was being established. A shortage of efficient smelter capacity led copper baron Marcus Daly to seek development of new smelting facilities 40 kilometers away in Anaconda. Ore from Butte was subsequently transported via rail to smelters in Anaconda for nearly 100 years. In the early 1980s, the Butte area was designated as a Superfund site by EPA. Residential action levels for the site set by EPA for arsenic and lead are 250 mg/kg and 1,200 mg/kg, respectively.

The purpose of the Railroad Bed Time-Critical Removal Action (RRTCRA) is to address elevated concentrations of metals associated with railroad beds within the site. Elevated concentrations of arsenic and lead in railroad beds are due to the use of mining-related waste materials for subgrade soil or ballast and/or from spillage from rail cars during transport of ore or ore concentrates. About 3/4 of the approximately 300 samples collected exceeded the arsenic action level, leaving only small segments of more than 20,000 meters of rail line untouched during this removal action. Construction was implemented in 2001 and is expected to be completed by the end of 2003.

The RRTCRA is expected to reduce human health risk in Butte and environmental risks to Silver Bow Creek. Standard construction techniques are being employed, focusing on providing barriers to waste materials for environmental separation and to reduce erosion along rail embankments, and implementing improvements to the storm water drainage system. Barriers include the use of soil covers, rock covers, and geotextile materials (e.g., cellular confinement). Storm water improvements include emplacement of a new 60-inch storm water main and other significant water routing improvements to the Butte storm water drainage system, including properly-sized ditches, culverts, and retention ponds. Soil removal and other improvements have been made to residential properties along active and inactive rail lines. Waste rock and other contaminated materials located within the 100-year floodplain were removed and a waste repository which may be part of a future dedicated development was constructed. The project is highlighted by a new historic preservation trail constructed on 7 kilometers of former rail line from the community of Rocker, passing by Montana Tech, and ending at the Kelley Mine Yard in upper Butte.

---

[1]Paper was presented at the 2003 National Meeting of the American Society of Mining and Reclamation at The 9th Billings Land Reclamation Symposium, Billings, MT, June 3-6, 2003. Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.

[2] Robert R. Alexander, CDM Federal Programs Corp., Helena, MT 59601.