

Energy, Minerals and Natural Resources Department (EMNRD) funding received for uranium legacy cleanup.

EMNRD's Mining and Minerals Division (MMD) received \$86,000 from the state's Mining Act Penalty Fund in FY10 and \$200,000.00 from the Bureau of Land Management (BLM) for uranium mine assessments in FY11 of which MMD used \$82,762.06, paid to INTERA Geosciences and Engineering to conduct geo-environmental site assessments on selected abandoned uranium mines throughout New Mexico (see below). The remaining BLM uranium funding for FY12 is \$117,237.94. MMD also received \$1,073,000.00 from BLM in FY 11 and FY12 for the Grants Mineral Belt of which MMD used \$51,328.20, paid to Golder and Associates for engineering design work.

BLM decided that the primary focus for using the remaining grant monies will be to remediate abandoned legacy uranium mines (LUMs) on BLM land south of Ambrosia Lake in McKinley County. It is likely that construction of abandoned uranium mine projects will take place at the Spencer Mine in the fall of 2014 and in the Poison Canyon area during the spring of 2015.

MMD had two contracts in place with professional service providers to address legacy uranium mines: one with Golder and Associates (EMNRD-MMD-08-521-0620000000-0307) and the other with INTERA Geosciences and Engineering (EMNRD-MMD-10-521-0640-0107).

The Golder contract, in the amount of \$300,000.00, started in late May of FY08. MMD expended \$296,838.44. The contract expired on 5/19/2012. MMD awarded this contract, using federal Surface Mining Control and Reclamation Act (SMCRA) abandoned mine land (AML) funds, to conduct more detailed assessments and design work at seven mines in Poison Canyon near Grants on state, federal and private lands. These mines included locations where previous SMCRA work had occurred and where initial assessments were conducted. This site is also a key concern of BLM, on whose lands the legacy uranium mines are located. This project identified areas at each site where additional reclamation work is most needed. Preliminary designs and environmental assessments for reclamation work were prepared.

INTERA contract funding of \$200,000 was obtained from SMCRA AML grant monies and \$82,762.06 from the 2009 appropriation from the state Mining Act Penalty Fund. MMD awarded a contract to conduct additional assessments at mines not covered by previous projects. These mines are located across New Mexico, including the Grants Mineral Belt. The contract expired on 12/31/2010. These assessments aided MMD in understanding the scope of the legacy uranium mining issue in New Mexico and in setting preliminary reclamation priorities.

Based on the above funding and resulting data, a Geographic Information Systems (GIS) Prioritization Model was developed by MMD to examine possible means of ranking the abandoned uranium mines thus far assessed. This potential decision-making model was improved upon as subsequent assessments were completed. Each assessment included: site mapping including identification of coordinates of important features throughout the entire site; photographic documentation including photographing all aspects of site; radiological survey including general inspection comparing local background conditions to areas around the LUM

site; plant community describing vegetation at the site including general life form description of vegetation; soils describing general condition of soils in wildlife-sighted area or evidence of wildlife in the area; land use including current apparent land use; off-site impacts including any readily apparent potential or occurring off-site impacts; topographic features including identification and mapping of roads and water courses; and a summary of any hydro-geologic data that may exist about the site.

Synopsis of report abstract is as follows: "...ESRI ArcGIS Spatial Analyst was used to build a model to prioritize legacy or abandoned uranium mines for remedial action. Mines were ranked by potential risk exposure to populations. Model inputs included the mine locations and proximity to dwellings/urban areas, domestic wells and watercourses, counts of open mine hazards, presence of high radiation readings, and area of mine-related surface disturbance. Model development began as a pilot project (n=38 sites) where 45% of the sites were found in the San Mateo Creek watershed. Two additional models evolved to analyze a greater number of sites throughout the state, one with more emphasis on proximity to urban area and waterways (n=137) and the other with the addition of field data (n=92)..."

As funds become available, our programs will benefit from a priority list of sites that could be visited for more detailed inventory or the implementation of reclamation work. Currently, none of these sites has been reclaimed or remediated; only site assessments and site prioritization have been accomplished with the funding made available.