

Contract No.: B2532533
Technology: Surface Seismic Reflection
Contractor: LM Gochioco & Associates

Summary of technology:

The surface seismic reflection method uses geophone receivers and seismic sources from the ground surface. The distance to old mine workings is calculated by using the recorded two-way travel time for the seismic energy to propagate from the surface down to the target horizon and reflect back to the geophones. The geophones were set at equally spaced intervals and were installed by clearing the ground of loose material and pushing the geophone spike into the ground. For this project, the seismic source was created by a "seisgun," which consisted of a pipe with a 12-gauge shotgun shell attached to one end. The loaded end of the gun was lowered into a 10 to 12 inch deep hole. A rod was then inserted through the pipe to contact the shotgun shell. The other end of the rod extended above the top of the pipe. The shot was fired by sharply striking the end of the rod with a hammer. The seismic response data was recorded with a Geometrics Geode system and a laptop computer.

Stated limitations of technology:

None stated.

Field demonstration results:

Field Demonstration Conditions	Goal of Demonstration	Results of Demonstration
Mixture of open fields and dense woods with medium to steep slopes, three lines of geophones	Locate old mine entries filled with water at an approximate depth of 250 to 270 feet	Successfully detected old mine workings and boundary between areas of solid coal and voids (old mine works)