

Sharp Mountain Restoration Project

The City of Pottsville was awarded a Growing Greener Grant in the amount of \$350,000 to address very serious and dangerous subsidences on the Sharp Mountain in the city. Sharp Mountain is actively subsidizing and poses a very serious public health and safety hazard.

Sharp Mountain was subject to extensive anthracite underground mining through the early to mid-1900s. The geology of this area consists of very steeply dipping rock units. The mining methods used on these nearly vertically dipping coal veins have created a potential for dangerous subsidence. In recent years major subsidences have occurred due to the abandoned underground mines. These subsidences or cropfalls as they are commonly known, are nearly vertical features with a potential to collapse several hundred feet depending on the extent of the mining. Since they are collapses, there is very little and in most cases, no available material on site to fill the holes. The cropfalls pose a public safety hazard due to the close proximity of the residential areas. The actively subsidizing features are over 1000 feet long and 80 feet deep. The cropfalls extend much of the two-mile length of Sharp Mountain in Pottsville. These voids collect rainwater which ultimately leaches and causes acid mine drainage to both the west and east branches of the Schuylkill River. In 1999, a series of subsidences opened and swallowed a frequently traveled dirt road. Those holes were declared an emergency and backfilled by the Office of Surface Mining using dirt and rock. In less than 2 years the holes once again subsided. These holes are now the focus of the demonstration project

The multi-phased Sharp Mountain Restoration project will ultimately reclaim over 340 acres of abandoned mine land. An initial test/pilot scale project on the order of a few acres is needed due to the unique nature of the cropfall features. The project, which is currently underway, reuses several materials to bridge the voids and backfill the subsidences. The holes have been prepared and excavated to expose solid, competent rock, and there are 3 distinct holes that will be filled using slightly different techniques.

(1) Reject concrete panels (sound barriers) will be placed on the floor of the holes. Steel trusses will be fabricated and placed above the panels to act as an infrastructure. A grout mixture consisting of CFB (circulating fluidized bed) coal ash from Northampton Generating Co. and CKD (cement kiln dust) from Keystone Cement Co. will be used to fill the lower half of the hole covering the trusses. The remainder of the hole will be filled with coal ash from PPL which will serve as a bulk fill. The area will be covered with topsoil and revegetated.

(2) Similar to hole number 1, the panels will be placed in the bottom of the hole. Reject (recycled) rebar will be used instead of steel trusses. The grout mixture, bulk fill and topsoil will be added as in hole 1.

(3) The lower portion of the hole will be filled with the grout mixture and the remainder of the hole will be fill with just coal ash. A soil cover will be added. No panels or steel will be included.

This project is made possible through the cooperation and donations of numerous material providers.

Schuylkill Products, Inc – providing concrete panels

Northampton Generating Co. – providing high alkaline, CFB coal ash used in the grout mixture. They are also providing the mixing and transportation of the grout material

Keystone Cement Co.- providing cement kiln dust from their Nazareth Quarry. The CKD is mixed with the Northampton CFB ash in the grout mixture

PPL – contributing large quantities of coal ash and transportation from their Montour plant.

Haines & Kibblehouse – providing and transporting reject rebar

Glasgow, Inc- providing and transporting reject rebar

Quandel Concrete – providing a staging area for the grout mixture and placing the mixture into cement trucks

Office of Surface Mining – providing safety fencing and backfilling of holes adjacent to the project area

The project includes the expertise, funding and cooperation of several individuals, businesses and agencies.

Growing Greener – providing the funding for the project

City of Pottsville – project sponsor administering the grant

Eco Maintenance Organization, Inc. – primary consultants on the project

Dr. Barry Scheetz, PSU Materials Research Laboratory – providing expertise and testing of the grout mixture.

Alfred Benesch & Co. – project review and oversight

DEP – project supervision, expertise and oversight of materials handling

Miller Brothers Construction, Inc. – primary construction contractor