

Abatement of Abandoned Coal Mine Hazards Beneath a Rural Road¹

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Abstract: On March 22, 2018, the State of Wyoming was contacted by a resident about several subsidences emerging on Terry Road, which serves as an access to a private residence as well as other commercial ventures. Underground coal mining at the site may have begun as early as the 1880s and ceased in 1940 with no mapping available and no potentially responsible party identified. Tetra Tech visited the site on March 27 and identified two subsidences directly impacting Terry Road as well as other subsidence features in adjacent pastureland. An investigation work plan was approved by the Wyoming Department of Environmental Quality, Abandoned Mine Lands Division (AML). The subsurface investigation was completed in April and May. Eighty-one boreholes were drilled across the site accompanied by downhole laser scanning to develop a three-dimensional model of the underground workings. The mine workings included two primary tunnel alignments with dimensions approximately 6 meters wide and 3 meters high as well as several spurs in every direction. Remediation options were presented to AML and excavation and backfill was selected as the remedy. Earthwork construction began on October 22 and included excavations up to 18 meters deep. Over 23,000 cubic meters of soil and rock were excavated and replaced in compacted lifts. Tetra Tech provided construction oversight during construction which terminated January 4, 2019. Additional support included periodic unmanned aerial vehicle (drone) surveying and imagery plus RTK surveying at the conclusion of the project to reestablish roads and fence lines.

Additional Key Words: downhole laser scanning, underground 3D mapping, subsurface investigation, drone, remediation construction.

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3. Work reported here was conducted near Sheridan, WY.