Unmanned Aerial Vehicle (UAV) Survey for Year-End Mining Reclamation Estimation

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Abstract: Mine operators routinely take stock of their mining assets at the end of the year for reserve estimation and financial reporting. The timing of this activity can be very challenging. Data must be compiled as close to year-end as possible to ensure accurate reporting and forecasting for budget models. In addition to calculating stockpile volumes, future reclamation activity must be evaluated for Asset Retirement Obligations (ARO) and budget estimations. These data are typically captured through aerial or terrestrial survey to obtain high resolution aerial photography and topographic information. The advent of Unmanned Aerial Vehicle (UAV) technology has created another means for capturing this information and offers advantages over traditional survey methods. UAVs can be deployed at mine sites with minimal setup, short flight times, and quick turnaround of topographic data for volumetric calculations. This presentation will provide an overview of the hardware and software tools, mapping products, and data processing techniques for determining ARO metrics. A case study of UAV survey work completed for several mining sites in Somerset County, Pennsylvania will be presented, which will highlight project successes and considerations for future improvement.

Additional Key Words: Drone, Topography, Mapping, Stockpile, Volumetric

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