

Improved Methods for Acid Base Accounting Utilizing Geospatial Modeling. Michael DiMatteo(1), and Mark Gaylord(2), ((1)Pennsylvania Department of Environmental Protection, (2)Dynamic Graphics, Inc.).

Abstract: A comparison between the traditional mass averaging Acid Base Accounting (ABA) procedure and a geospatial ABA method is applied to a mine site in Fayette County, Pennsylvania. The traditional method for determining mass-weighted or volume-weighted acid base accounting (ABA) typically uses Thiessen polygons and straight line interpolation to determine an area of influence for each overburden drill hole on a mine site. The traditional ABA method has been used to characterize overburden in terms of net neutralization potential (NNP) and to define the location of toxic strata. Recent developments in geospatial modeling, available as part of the Office of Surface Mining's TIPS system, allows significant improvement in the estimated property distribution, estimated concentration and mass and/or volume calculations. A geospatial approach, which includes better representation of topographic variability and incorporates stratigraphic and geologic structural features in a model, results in improved volumetric calculations, and ultimately, in a more precise site characterization. Improved site characterization provides the basis for integrating material handling and alkaline addition plans into an overall mine plan.

Additional Key Words: geospatial modeling, acid base accounting, alkaline addition, material handling