

# ACIDIC MINESPOIL RECLAMATION WITH ALKALINE BIOSOLIDS<sup>1</sup>

by

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**Abstract.** The effectiveness of an alkaline stabilized biosolids product, N-Viro Soil (NVS), was studied at a wild animal preserve in Cumberland, OH. The preserve occupies land that was strip mined for high-sulfur coal. While most of the land has been conventionally reclaimed, several highly acidic "hot spots" remain. Two of these "hot spots" were studied through concurrent field, greenhouse, and laboratory projects. In April 1995, NVS was applied at rates ranging from 0-960 mt/ha (wet wt.) to plots at the two sites. The plots were seeded using a standard reclamation mix and soil samples were analyzed for chemical characteristics before and after application and also in 1996 and 1997. Soil pH increased from 3.5 to about 11 in the amended plots and soil EC values increased from 2.0 mmho/cm to a maximum of 6.0 mmho/cm in the amended plots immediately after application. Soil Cu and Zn concentrations also increased in the NVS amended plots, but this did not affect plant germination or growth. By the summer of 1996, soil pH values had decreased to 7.3 - 8.7 and EC values decreased to 0.34 - 1.36 mmho/cm to the amended plots. Soil samples were collected in September 1995 for physical analyses. N-Viro Soil improved the moisture retention and water conductivity properties of the spoil. The plots were monitored for growth during the summer of 1995 and plant biomass and soil samples were taken in 1996 and 1997 for trace element and nutrient analysis. NVS did not significantly increase trace element concentrations in the biomass. The addition of NVS to acid mine spoil improves the chemical and physical properties of the spoil material thus aiding vegetative establishment and growth. NVS improves the chemical nature of the spoil by increasing pH and providing micro and macronutrients and improves the physical properties of the spoil with the addition of organic matter.

Additional Key Words: reclamation, alkaline stabilized biosolids

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