DIRECT SEEDING OF ANTHRACITE REFUSE USING COAL FLY ASH AS A MAJOR SOIL AMENDMENT [1]

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Abstract. The Pennsylvania Power and Light Company (PP&L) used fly ash as a major soil amendment to prepare a 10-acre anthracite refuse site for direct seeding. Results were monitored for four years. Details of the project and results of the first three years of monitoring were published in 1988 by Buck and Houston in the Proceedings of the Mine Drainage and Surface Mine Reclamation Conference (Vol. II, US Dept, of Interior Bur. of Mines IC 9184); this updates that presentation to include monitoring data collected in October 1988. The site is located at Harwood, near Hazleton, PA. Soil treatments were designed after evaluating the chemistry of laboratory mixtures of anthracite refuse and amendments. Fly ash treated and soil-covered control plot areas were seeded in September 1984. Fly ash amendment (200 tons/acre) improved the physical and chemical characteristics of the anthracite refuse by increasing the plant available water-holding capacity, shifting the USDA textural class of the refuse from sandy loam to silt loam and improving the pH and fertility of the coal refuse materials. Excellent erosion control and partial release of the revegetation performance bond were achieved in the establishment year. Vegetation response in fly ash-amended coal refuse areas was comparable to that in the soil-covered control plot. Monitoring through 1988 has shown that vegetation vigor has not decreased with time. Plant tissue analyses conducted in 1987 suggested normal uptake of nutrients and trace elements from fly ash-amended coal refuse materials, with the exception that uptake of Mo and Se were high. The pH and fertility of the growing medium remained acceptable four years after the fly-ash, limestone and fertilizer treatment.

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