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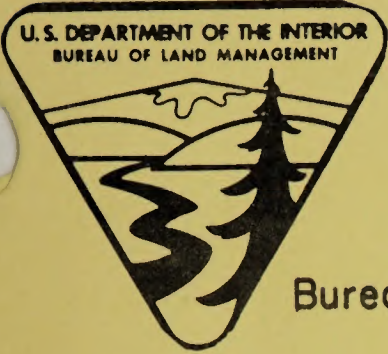
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TECHNICAL NOTE

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Bureau of Land Management U.S. DEPARTMENT OF THE INTERIOR

Subjects: Acid Mine Drainage, Strip Mine, Control
 Acid Mine Water, Strip Mine, Control
 Water Pollution, Acid Mine Drainage, Control
 Coal, Surface (Strip) Mining, Reclamation
 Reclamation, Coal, Strip Mine

Reference: Case History No. 4-8, Coal Industry Advisory Committee
 to ORSANCO.

Data: Case history attached.

Please send any additional references on this subject or other minerals subjects to DSC (D-310). If the complete article or publication is needed, DSC (D-310) will attempt to obtain a copy or a loan for you.



TECHNICAL NOTE

Bureau of Land Management, U.S. DEPARTMENT OF THE INTERIOR

Land Use Planning Study Area
Area Map, Study Area, District
Land Use Planning Study Area, District
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Case History No. 101, District Agency, Land Use Planning
at [Location]

Case History No. 101, District Agency, Land Use Planning

Please refer to additional references on this subject or other
related matters to the [Location] in the [Location] section of the
[Location] report. The [Location] will attempt to obtain a copy of a
copy of the [Location].

FURROW GRADING TO ENHANCE RECLAMATION,
REDUCE RUNOFF, AND CONTROL POLLUTION



Furrow Graded Surface



Year Old Seedling of
Birdsfoot Trefoil

MINING METHOD: Surface Mining

LOCATION: Tuscarawas County, Ohio--No. 5 Coal Seam

RESULT ACHIEVED: As a result of furrow grading on toxic strip mine spoil, infiltration was increased, runoff was greatly reduced, and leaching of toxic salts to the interior of the spoil banks was increased. Plant survival and growth in the ravines, where leaching had removed much of the toxic material, was increased.

DESCRIPTION: As the overburden of the No. 5 coal seam, in this part of Ohio, contains excessive amounts of acid-forming refuse, segregation and burial of this material is not possible. Several acres of the resulting very acidic spoil were graded resulting in a surface having large contour furrows (3 feet high--4 feet between peaks), during the winter of 1962-1963. Analyses of composite surface samples (6 inch depth) indicated a pH range of 3.1 to 3.8 and up to 4600 lbs/acre of soluble salts. Species used in reclamation during the spring of 1963 included autumn olive, tall and medium purple willow, memorial rose, Lespedezas (bicolor natob, japonica, rush, Daurica), blackwell switch-grass, orchard grass, alsike clover, birdsfoot trefoil, silver buffalo-berry, European black alder, false indigo, tartarian honeysuckle, and black locust.

The seedlings were planted either in the ravines or on the lower half of the slope. The seed, while spread over the entire surface, was carried into the ravines. Excellent survival, growth, and germination occurred. Later analyses of spoil samples collected from the ravine versus the ridge sites revealed up to twelve times the amount of soluble salts in the ridge spoil as in the ravine spoil. Test data of pH and the metallic ions indicated significant differences due to leaching since most of the water collected in the ravines, and thus percolated into the interior of the spoil bank.

(over)

Furrow grading increases the success of reclamation, increases the leaching rate of toxic substances detrimental to plant growth, greatly reduces acid runoff and thus reduces or eliminates stream pollution.

For further information contact:

CIAC Coal Mine Drainage Library
Bituminous Coal Research, Inc.
350 Hochberg Road
Monroeville, Pennsylvania
Telephone: 412, 327-1600

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