Coal Mine Remediation Methods, Closure Technologies

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AMD Pathways in Typical Coal Mine Settings

- Colluvium / Weathered Bedrock
- Underground Mine
- Consolidated Rock
- Tailings
- Artesian Mine Shaft
- Perennial Stream
- Underground Mine
- Spoil
- Underground Mine
- Colluvium / Weathered Bedrock
- Consolidated Rock
Treatment Methods

- Direct acid neutralization methods
- Indirect treatment
- Engineered barriers/covers
Georges Creek Stream Sealing Project
Ocean Coal Refuse Stabilization Project
Vindex Coal Waste Stabilization Project
Glotfelty - Before Reclamation
Glotfelty Reclamation Plan

Collection Ditch: 120' x 5', 99 tons of sandstone
ALD: 120' x 30', 770 tons of limestone
Oxidation Pond: 90' x 90'
Wetland: approx 1/4 acre
SAPS: 90' x 140', 1083 tons of limestone
Wetland 2: approx 2 acres

# - Water Quality Sample Location
Post-Construction
Constructed Wetland, Alabama
Open Limestone Channel
Freshwater Limestone Leach bed
Results of Limestone Leach beds
pH was 4.2; now 7.1
Steel Slag
Steel Slag Leach Bed

Conditions: No Iron, Aluminum or Manganese
Steel Slag Leachbed at McCarty Highwall site
Weir 11 discharge on Casselman River, 1995
Effect of Reclamation on AMD Formation

Spoil

Seasonal Recharge

Seasonal Recharge

AMD

Highwall

Pit Lake

Unmined Coal Seam

Pit Floor

Good Water

Limestone Foundation Drain

Resloped Spoil

Unmined Coal Seam

Pit Floor
Limestone Foundation Drain
Weir 11 discharge, 1996
Limestone Leachbed
Acmar, AL Site Prior to Reclamation
Diagram of Treatment System at Acmar, AL
Limestone Leach Bed

1433 Tons
of 2” to 4” LS

Limestone Leach Bed

Impervious Liner

Inflow ->

Dam

Discharge ->
Acmar Internal Leachbed
Catchment pond below steel slag capped refuse pile in compliance
Steel Slag cap on Refuse Pile
FBC Ash being delivered to pit floor
Lime Dosing Systems

Boxholm

Aquafix

Pumpkonsult
Return of Life
TREE SURVIVAL ON A MOUNTAINTOP SURFACE MINE IN WEST VIRGINIA
Samples Mine Complex
Second Year Growth, Samples Mine
Acid Lake: Gorbi Mine, Singrauli, U.P.