

ATTACHMENT II-G

SURFACE WATER HYDROLOGY

Surface runoff from the proposed RJR Mining Company, Inc. - Bunt Mine drains into Cunningham Creek and Turkey Creek. Cunningham Creek drains into Turkey Creek. Turkey Creek drains into the Locust Fork of the Black Warrior River. This mine site lies in subwatershed 110 of hydrologic unit code 03160111 as defined by the USDA Soil Conservation Service. Locust Fork is publicly owned, perennial and is classified as "Fish & Wildlife" by Chapter 335-6-11 "Water Use Classifications For Interstate and Intrastate Waters" as taken from the Water Quality Program at ADEM. According to Chapter 335-6-10 of the same reference, the best usage of this classification is fishing, the propagation of fish, aquatic life, and wildlife, and any other usage except utilization as a supply for drinking or food processing, or for swimming and water contact sports.

Four sediment basins are proposed for this facility. Basin 001P will drain into Turkey Creek while basins 002P, 003P, and 004P will drain into Cunningham Creek. These sediment basins are permitted under ADEM NPDES Permit Number AL00@@@@@. All sediment basins are proposed as temporary. All basins are proposed as temporary.

Baseline surface water quality and quantity for Cunningham Creek and Turkey Creek will be characterized in this report by samples taken at Surface Water Monitoring Sites RJRBSW-1 (downstream) and P3691SW1 (upstream) on Turkey Creek, and Surface Water Monitoring Sites RJRBSW-2 (downstream) and RJRBSW-3 (upstream) on Cunningham Creek. The locations of all four Surface Water Monitoring Sites are shown on the attached Mine Site Location Map. Downstream Surface Water Monitoring Site RJRBSW-1 on Turkey Creek was monitored as baseline information for this proposed permit and has been sampled on five occasions by the PERC Engineering Laboratory between the dates 04-07-11 and 08-16-11. Upstream Surface Water Monitoring Site P3691SW1 on Turkey Creek has been monitored as both performance monitoring for the RJR - Majestic Mine (ASMC permit number P-3691 and called SW-1) and for baseline information for this proposed permit application. P3691SW1 was sampled on 14 occasions by the PERC Engineering Laboratory between the dates 01-12-09 and 08-15-11. Downstream Surface Water Monitoring Sites RJRBSW-2 on Cunningham Creek was monitored as baseline information for this proposed permit and has been sampled on five occasions by the PERC Engineering Laboratory between the dates 04-07-11 and 08-16-11. Upstream Surface Water Monitoring Site RJRBSW-3 on Cunningham Creek has been monitored as baseline information for this proposed permit and has been sampled on five occasions by the PERC Engineering Laboratory between the dates 04-07-11 and 08-16-11. All surface water samples collected by the

PERC Engineering Laboratory were taken by the 'grab' method. Flowrate measurements collected by the PERC Engineering Laboratory were taken according to ASTM D3858 "Standard Practice for Open Channel Flow Measurement of Water by Velocity - Area Method" or other equally valid methods. All samples analyzed by the PERC Engineering Laboratory are according to ASTM standards. Parameters tested on all occasions include pH, total iron, total manganese, total suspended solids, specific conductance, sulfates, acidity, and alkalinity. See attached results of this analysis.

All parameters mentioned above were plotted vs. stream flow (in CFSM) to characterize water quality in the receiving streams at different flowrates prior to mining by RJR Mining Company, Inc. at this proposed facility. Baseline conditions at the 7Q2, Average, and 2 yr. flowrates are given in the Determination of the Probable Hydrologic Consequences (Attachment II-H).

Downstream Surface Water Monitoring Site RJRBSW-1 on Turkey Creek receives runoff from approximately 80.9 square miles. Slope conditions within this large watershed range from slight to severe. Elevations range from approximately 355 ft. MSL at the monitoring site to approximately 1,375 ft. at the drainage divide. The pre-mine landuse within this watershed is approximately 70.24 percent forest, 14.65 percent pasture or other open spaces, 13.10 percent urban or residential areas, and 2.01 percent previously

mined as shown from area quadrangles and updated utilizing ASMC records.

A topsoil variance is not proposed for this facility.

Classification of all soils on a soil-type specific basis within such large watersheds would be prohibitive, therefore, the "Hydrologic Assessment, Eastern Coal Province Area 23, Alabama" was utilized in obtaining the dominant soil associations for these watersheds. The dominant group is the Montevallo-Enders-Townley Association.

MONTEVALLO SERIES:

In the Montevallo series are shallow and very shallow, excessively drained soils formed from weathered shale. The soils are on narrow, sloping ridgetops and on moderately steep or steep hillsides of the Southern Appalachian Plateau. The following describes a representative profile:

0 to 6 inches, yellowish-brown shaly silt loam.

6 to 22 inches, yellowish-brown shaly silty clay loam; 75 to 90 percent fragments of shale.

22 inches +, light olive-brown, highly fractured, level, thin-bedded, fissile shale.

The texture of the underlying material ranges from loam to silty clay loam, and in most places it is yellowish brown. Fragments of shale make up 50 to 90

percent of the profile. These soils are very strongly acid, and their natural fertility and content of organic matter are low. Water enters these soils at a moderate to slow rate; it moves at a moderate to rapid rate through the profile. The root zone is shallow, and the available moisture capacity is very low.

ENDERS SERIES:

Soils of the Enders series are moderately deep and deep, well drained, and gently sloping to moderately steep. They formed in material weathered from interbedded shale and sandstone. These soils are on ridgetops on the Southern Appalachian Plateau and are also on some of the side slopes. The following describes a representative profile:

0 to 5 inches: brown, very friable loam.

5 to 40 inches: red, firm silty clay; has some yellowish-brown mottles in lower part; blocky structure

40 to 52 inches: mottled red and brown, firm silty clay

52 inches + : level-bedded shale

These soils are very strongly acid. Their content of organic matter and their natural fertility are low. Crops grown on these soils make good response to lime and fertilizer. Water enters the soils readily and moves through the profile at a moderate to slow rate. The available moisture capacity is moderate to low. The root zone is moderately deep.

TOWNLEY SERIES:

In the Townley series are shallow and moderately deep, well-drained soils of the Southern Appalachian Plateau. The soils are gently sloping and are on ridgetops and moderately steep side slopes. The following describes a representative profile:

0 to 5 inches, brown loam.

5 to 20 inches, red silty clay mottled with brown in the lower part.

20 to 26 inches, brown silty clay with red and brown mottles.

26 inches + , level-bedded shale.

These soils are very strongly acid, and their natural fertility and content of organic matter are low. Infiltration and permeability are moderate to slow. The available moisture capacity is low; plants may be damaged by lack of water during even a short period of drought. The root zone is shallow.