STATE OF ALABAMA
SURFACE MINING COMMISSION

Page 1 of 28

Permit Number:P- 4002

License Number:L- 0880

PERMIT TO ENGAGE IN SURFACE COAL MINING OPERATIONS

Pursuant to **The Alabama Surface Mining Control and Reclamation Act of 1981**, as amended, **ALA. Code** Section 9-16-70 et. seq. (1975) a permit to engage in Surface Coal Mining Operations in the State of Alabama is hereby granted to:

Eaton Resources, LLC
16241 B & L Road
Cottondale, AL 35453

Such operations are restricted to 842 acres as defined on the permit map and located in:

*See attachment for legal description

This permit is subject to suspension or revocation upon violation of any of the following conditions:

1. The permittee shall conduct Surface Coal Mining and Reclamation Operations in accordance with the plans, provisions and schedules in the permit application.

2. The permittee shall conduct operations in a manner to prevent damage or harm to the environment and public health and safety and shall notify ASMC and the public in accordance with ASMC Rule 880-X-8K-.16 of any condition which threatens the environment or public health and safety.

STATE OF ALABAMA
SURFACE MINING COMMISSION

Page 1 of 29

Permit Number:P- 4032

License Number:L- 0880

PERMIT TO ENGAGE IN SURFACE COAL MINING OPERATIONS

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Such operations are restricted to 842 acres as defined on the permit map and located in:

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This permit is subject to suspension or revocation upon violation of any of the following conditions:

1. The permittee shall conduct Surface Coal Mining and Reclamation Operations in accordance with the plans, provisions and schedules in the permit application.

2. The permittee shall conduct operations in a manner to prevent damage or harm to the environment and public health and safety and shall notify ASMC and the public in accordance with ASMC Rule 880-X-8K-.10 of any condition which threatens the environment or public health and safety.

CONDITIONS TO BE PLACED ON PERMIT P-4002-63-28-S PAGE #1

3. Surface coal mining operations are restricted to those areas for which sufficient bond has been posted with ASMC. On the date of issuance of this permit, bond was posted only for increment 2 consisting of 53 & 2 acres as defined on the permit map. Increment 2 & 6 will be mined first after bond is posted.

4. No mining disturbance is to occur on any part of the permit on which legal "right of entry" has not been obtained. When such rights are "pending" the applicant shall submit acceptable evidence, to the Director, that such rights have been obtained according to ASMC Regulation 880-X-8D-.07.

5. No disturbance is to occur on any properties on which land use comments from legal owners of record are "pending" prior to the applicant providing acceptable comments.

6. No disturbance is to occur in the 300' setback area to any occupied dwelling prior to the applicant providing acceptable evidence to ASMC of its having secured a waiver of each subject area signed by the owner of the dwelling.

7. No mining disturbance shall occur within the 100' setback of any public road or the relocation of any public road prior to the applicant providing acceptable evidence, to the Director, of its having secured approval for a waiver from the appropriate jurisdictional authority and specific written waiver from ASMC.

8. The permittee shall notify the ASMC and seek consultation with the US Fish and Wildlife Service if:

a. The permit is modified in any way that causes an effect on species or Critical Habitat listed under the Endangered Species Act of 1973.

b. New information reveals the operation may affect Federally protected species or designated Critical Habitat in a manner or extent not previously considered or

c. A new species is listed, or Critical Habitat is designated under the Endangered Species Act that may be affected by the operation.

9. The permittee shall contact the ASMC and consult with the Alabama Historic Preservation Officer if the permit is modified or if previously unknown archaeological or historic resources are discovered on the permit area. Upon discovery of previously unknown artifacts or archaeological features the permittee shall cease operations until the Alabama Historic Preservation Officer approves resumption of operations.

10. The permittee may only conduct tree removal between October 15 and March 31.

CONDITIONS TO BE PLACED ON PERMIT P-4002-63-28-S PAGE #2

11. If tree removal from the potential summer roosting habitat is necessary outside October 15 through March 31 timeframe an Indiana Bat and Northern Long-Eared Bat presence/absence survey must be conducted, and the U.S. Fish & Wildlife Service approval must be submitted to ASMC prior to tree removal.

12. The permittee must submit to ASMC a USACE approved permit prior to conducting any mining activities in waters of the U.S.

13. In Increment 1, the Utley 4 seam of the Utley Coal Group is present and is shown to be highly acidic. At this time, the thickness of the Utley 4 is not sufficient to be mined. Should the separation interval change, and the chemical characteristics remain the same so the Utley 4 seam is to be mined, a special handling plan must be followed. At such a time, the special handling plan outlined in the Probable Hydrologic Consequences part 2.) Acid-Forming or Toxic-Forming Materials will be reviewed with current data to for viability.

DATE ISSUED: **March 17, 2023**

EFFECTIVE DATE: **March 17, 2023**

EXPIRATION DATE: **March 17, 2028**

Kathy H. Love

Kathy H. Love, Director

FINDINGS TO BE PLACED ON PERMIT NO.: P-4002-63-28-S PAGE 1

The ASMC, acting by and through its Director, hereby finds, on the basis of information set forth in the application or from information otherwise available, that --

1. The permit application is complete and accurate, and the applicant has complied with all requirements of the Act and the regulatory program.

2. The applicant has demonstrated that reclamation as required by the Act and the regulatory program can be accomplished under the reclamation plan contained in the permit application.

3. The proposed permit area is:
   (a) Not within an area under study or administrative proceedings under a petition, filed pursuant to Chapter 880-X-7 to have an area designated as unsuitable for surface coal mining operations.

   (b) Not within an area designated as unsuitable for mining pursuant to Chapter 880-X-7 or subject to the prohibitions or limitations of Section 880-X-7B.-06 and Section 880-X-7B-.07 of this chapter; or

4. For mining operations where the private mineral estate to be mined has been severed from the private surface estate, the applicant has submitted to the Regulatory Authority the documentation required under Section 880-X-8D.07 and Section 880-X-8G-.07 of this chapter.

5. The Regulatory Authority has made an assessment of the probable cumulative impacts of all anticipated coal mining on the hydrologic balance in the cumulative impact area and has determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

6. The applicant has demonstrated that any existing structure will comply with Section 880-X-2B-.01, and the applicable performance standards of Chapter 3 or 10.

7. The applicant has paid all reclamation fees from previous and existing operations as required by 30 C.F.R., Subchapter R.

8. The applicant has satisfied the applicable requirements of Subchapter 880-X-8J.

FINDINGS TO BE PLACED ON PERMIT NO.: P-4002-63-28-S PAGE 2

9. The applicant has, if applicable, satisfied the requirements for approval of a long-term, intensive agricultural, postmining land use, in accordance with the requirements of 880-X-l0C-.58(4) and 880-X-10D-.52(4).

10. The operation will not affect the continued existence of endangered or threatened species or result in destruction or adverse modification of their critical habitats, as determined under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.).

11. The Regulatory Authority has considered the effect of the proposed permitting action on properties listed or eligible for listing on the National Register of Historic Places. This finding is supported in part by inclusion of appropriate permit conditions or changes in the operation plan protecting historic resources, or a documented decision that the Regulatory Authority has determined that no additional protection measures are necessary.

12. For a proposed remining operation where the applicant intends to reclaim in accordance with the requirements of Section 880-X-l0C-.56 or 880-X-10D.-49, the site of the operation is a previously mined area as defined in Section 880-X-2A-.06.

13. Surface coal mining and reclamation operations will not adversely affect a cemetery.

14. After application approval but prior to issue of permit, ASMC reconsidered its approval, based on the compliance review required by Section 880-X-8K-.10(2)(a) in light of any new information submitted under 880-X-8D-.05(8).

15. The applicant has submitted the performance bond or other equivalent guarantee required under Chapter 880-X-9 of the ASMC Rules prior to the issuance of the permit.

16. For mining operations where a waiver is granted from the 100' setback from a public road according to 880-X-7B-.07, the interests of the public and affected landowners have been protected.

17. The Regulatory Authority has taken into account the effect of the proposed permitting action on properties listed or eligible for listing on the National Register of Historic Places (NRHP). MRS Consultants, LLC conducted a Phase I Cultural Resource Survey on December 8-22, 2021 for approximately 1,019 acres in Tuscaloosa County, Alabama. As a result of these investigations, two archaeological sites were discovered within the survey area. Designated as sites 1Tul167 and 1Tul168. Both sites consists of small, unknown aboriginal lithic scatters that are largely disturbed and moderately to severely eroded. None of these sites are considered eligible for the NRHP and no further work is recommended. Based on these findings, MRS recommends clearance of the proposed Eaton Resources, LLC, Eaton Mine in Tuscaloosa County, Alabama. The proposed undertaking should have no effect upon any significant historic properties for direct or indirect effect. By a letter dated February 15, 2022 the Alabama Historic Commission (AHC) Re: AHC 22-0342, upon review of the cultural resource assessment conducted for the above referenced project, determined that the project activities will have no effect on cultural resources eligible for or listed on the NRHP including archaeological sites 1Tul167 and 1Tul168. Therefore AHC concurs with the proposed project activities. This finding is supported in part by inclusion of appropriate permit conditions or changes in the operation plan protecting historic resources or a documented decision that the Regulatory Authority has determined that no additional protection measures are necessary. Concerns for unknown resources, which might be discovered during mining, have been made conditions of the permit.

18. In a letter dated February 8, 2022 the Alabama Department of Conservation and Natural Resources (ADCNR) states that a biological survey be conducted by trained professionals to ensure that no sensitive species are jeopardized by the development activities. The closest sensitive species are recorded as occurring approximately 1.2 miles from the subject site. In a habitat assessment performed by Dan Spaulding in November 2021, no habitat found for the listed, threatened and endangered species and that no evidence was found or observed for the presence or possible presence of the species with the exception of potential summer roosting habitat for the Indiana bat (*Myotis sodalis)* and Northern Long-eared (NLEB) bat (*Myotis septentrionalis)*. By comments dated January 4, 2022 the US Fish and Wildlife Service (FWS) acknowledges the permittee has stated that tree removal is only to occur between October 15 and March 31, therefore FWS concurs that no impacts to the Indiana bat and/or NLEB are anticipated as a result of your proposed project. No other federally listed species/critical habitat are known to occur in the project area. The Alabama Surface Mining Commission finds that the proposed operation will not jeopardize the continued existence of endangered or threatened species or critical habitat thereof.

19. The proposed permit area is:

    a. Not within an area under study or administrative proceedings under a petition, filed pursuant to Chapter 880-X-7 to have an area designated as unsuitable for surface coal mining operations.
    b. Not within an area designated as unsuitable for mining pursuant to Chapter 880-X-7 or subject to the prohibitions or limitations of Section 880-X-7B-.06 and Section 880-X-7B.-07 of this chapter.

20. Mining disturbance is only allowed within Increments No. 2 and No. 6 as shown on the WOTUS Certification Map. A certification has been submitted stating there are no waters of the U.S. within Increments No. 2 and No. 6.

21. The permittee does not have authorization to discharge dredged and/or fill material into waters of the U. S. that are subject to Federal jurisdiction. If the permittee intends to work in areas under Federal jurisdiction, a DA authorization must be obtained prior to any discharge into waters of the U. S., including wetlands.

22. In Increment 1, the Utley 4 seam of the Utley Coal Group is present and is shown to be highly acidic. At this time, the thickness of the Utley 4 is not sufficient to be mined. Should the separation interval change, and the chemical characteristics remain the same so the Utley 4 seam is to be mined, a special handling plan must be followed. At such a time, the special handling plan outlined in the Probable Hydrologic Consequences part 2.) Acid-Forming or Toxic-Forming Materials will be reviewed with current data to for viability.

DATE: March 15, 2023

Mark A. Woodley

Mark A. Woodley
Permit Manager

cc: I & E, Permit File

MEMORANDUM
TO:

Office of Surface Mining Reclamation and Enforcement

Alabama Department of Environmental Management

Alabama Historic Preservation Officer

The District Engineer
U.S. Corps of Engineers

Alabama Department of Labor
Division of Safety & Inspection

BLM - District Office

State of Alabama
Abandoned Mine Land Reclamation

Tuscaloosa County Commission

U.S. Fish & Wildlife Service

Mr. Keith Guyse, Fish & Game Division

FROM: KATHY H. LOVE, DIRECTOR

RE: **PERMANENT PROGRAM PERMIT FOR:**

Permit P-4002-63-28-S (Eaton Mine No. 1) Eaton Resources, LLC

Pursuant to the Alabama Surface Mining Commission Regulation 880-X-8K-.12(2), we are hereby notifying you of the issuance of the above permit.

You may also view a copy of this permit at our web address of:

http://surface-mining.alabama.gov/PermitDecisions.html

Enclosed for your information and file is a copy of the permit which shows the legal description of the mine site.

/mw

Attachment A

LEGAL DESCRIPTION
P-4002-63-28-S

NW/NW, SW/NW, SE/NW, NW/SW, SW/SW - SECTION 3, T21S, R7W; NE/NE, NW/NE, SW/NE, SE/NE,SE/NW, SW/NW, NW/SW, NE/SW, SW/SW, NE/SE, NW/SE, SE/SE - SECTION 4, T21S, R7W; SE/NE,NE/SE, NW/SE, SW/SE, SE/SE, SE/SW - SECTION 5, T21S, R7W; NE/NE, NW/NE, SE/NE, SW/NE, NE/NW, SW/NW, SE/NW - SECTION 8, T21S, R7W; NW/NW, SW/NW - SECTION 9, T21S, R7W; all in Tuscaloosa County. Alabama

Cumulative Hydrologic Impact Assessment
Eaton Resources, LLC
Eaton Mine No. 1
ASMC Permit P-4002

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Eaton Resources, LLC
Eaton Mine No. 1
ASMC Permit No. P-4002
NPDES Permit No. AL0084453
12-DIGIT HUC 031601120502 Coal Creek – Upper Hurricane Creek

As required under Federal Public Law 95-87, Section 510(b)(3), the Alabama Surface Mining Commission (ASMC) must find in writing the following proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The applicant must submit a determination of probable hydrologic consequences of mining and reclamation operations in Part II.H of the permit application for areas both on and off the mine site. This determination will allow the ASMC to assess probable cumulative impacts of all anticipated mining activities on the surface and ground water hydrology of the permit and adjacent areas as stated in Federal Public Law 95-87, Section 507(b)(11) and ASMC Admin. Code r. 880-X-8E-.06(1)(g). The following assessment and findings are intended to fulfill the above stated requirements.

I. GENERAL INFORMATION

The proposed Eaton Resources, LLC Eaton Mine No. 1 (ASMC Permit No. P- 4002) is for a surface coal mining operation encompassing 842 acres including mining acres and haul/access roads, impoundments, stockpiles, equipment storage areas and diversion ditches.

The proposed mine site is located in part of Sections 3, 4, 5, 8 and 9 of Township 21 South, Range 7 West, Tuscaloosa County, Alabama of the Brookwood U.S.G.S. 7.5 minute quadrangle.

The permit is located approximately 4 miles north, northwest of Interstate 20 at Mercedes Drive, just south of the North Fork of Hurricane Creek and east of the Brookwood Parkway. Map No. 1 shows the location of Eaton Resources Mine No. 1 as well as the adjacent and nearby permits.

A. Geology of the Warrior Coal Basin

The Pottsville Formation of Early and Middle Pennsylvanian age in Alabama is divided into four fields: the Warrior, Cahaba, Coosa and Plateau fields. All fields were once connected by an unbroken area of coal measures, however separation occurred as a result of folding, faulting and erosion of uplifted areas.

The Warrior coal field is a gently folded or flat-lying area classified as the Cumberland Plateau. It lies in a large, gentle monoclinal structure that extends west into central Mississippi. The regional dip is towards the southwest. This regional southwest dip is interrupted by two anticlines (the Blue Creek anticline and the Sequatchie anticline) and three synclines or basins (the Blue Creek basin, Coalburg syncline and Warrior syncline).

The Warrior field has numerous normal faults that trend north and northwest up to 4 miles in length with up to 200 ft. of displacement (Geology of Coal Resources of the Coal-Bearing Rocks of Alabama, Alabama Geological Survey Bulletin 1182-B).

During the beginning of the Pennsylvanian subperiod (approximately 320 million years ago), most of Alabama was still part of a shallow, warm ocean basin. The transgressions and regressions of the seas led to the rhythmic cycle of sandstone, underclay, coal beds, and shale with zones of marine and brackish water fossils that rest on the basal resistant conglomerate orthoquartzite of the Boyles Sandstone Formation. This sequence immediately repeats itself with similar rocks (marine shale, sandstone or clay, coal seam, freshwater shale and sandstone). This appears to show the rise of sea level, depositing marine sediments, then the falling of sea level allowing the coal producing forests to grow. This was followed by an influx of river deposited sands and muds, which would rapidly accumulate plant material. Then, the sea would rise again repeating the process.

At the end of the Pennsylvanian, the uplift of the region left the coal bearing ecosystem behind. During this period of uplift, no new sediments could be deposited for at least 200 million years. The gap in time between the Pennsylvanian deposition and the Cretaceous deposition resulted in an unconformity that allows for surface coal mining to exist in the Alabama coal fields.

B. Historical and Active Coal Mines

There is currently one coal mine within the vicinity of Eaton Mine No. 1 that has an active ASMC permit. The Warrior Met Coal Mining, LLC. No. 5 Mine (ASMC P-3256) is an underground mining operation that is currently active. It was issued in 1983 and currently consists of 1270 acres. The Blue Creek coal seam is the only seam being mined.

II. CUMULATIVE IMPACT AREA

The Cumulative Impact Area (CIA) is that area, including the permit area, within which impacts resulting from the proposed operation may interact with the hydrologic impacts of all other past, current and anticipated coal mining on the surface and groundwater systems.

The CIA for surface water for Permit P- 4002 has been defined as the area that encompasses both the proposed mining operation, as well as the Warrior Met Coal Mining, LLC No. 5 Mine (ASMC P-3256), the Warrior Met Coal Mining, LLC East Brookwood Mine (ASMC P-3852) and the Shannon, LLC Shannon Mine (ASMC P-3859 – this permit is only a haul road). These permits are in Coal Creek – Upper Hurricane Creek 12-digit HUC. This includes the North Fork of Hurricane Creek, Jimy Creek, Weldon Creek , and a portion of Hurricane Creek

These mining operations are shown on Map No. 1 and additional informational is shown in Table 1. The 12-digit HUC watershed where the permits are located and the CIA are shown in Map No. 2.

The CIA for groundwater for this permit is limited to the proposed permit. The CIA has been selected based upon the ASMC's assessment of the possible hydrologic impacts, which may occur as a result of mining operations. The subsurface hydrologic components considered in this assessment include all significant water-bearing units in, and within the vicinity of, the proposed permit and adjacent area. Other areas of proposed, future mining are not known at this time; however, no cumulative impacts to groundwater are expected due to the limited areal extent of the vaquifer system as well as years of groundwater monitoring in the area showing little impact. Groundwater occurs in openings along fractures and bedding planes generally in a sandstone unit within 250 to 350 ft. of the surface. This area contains numerous faults which caused horst and graben features, leading to uplifted fault blocks (horsts) that determined surface mining to underground mining operations within the CIA.

A. Geologic/Hydrogeologic Information

i. Geology

The proposed P-4002 permit area is located in the Warrior Basin of the Appalachian Plateaus Physiographic Province. The area is underlain by the Coker and Pottsville Formation, and pre-Pennsylvanian rocks. The Pottsville Formation contains coal beds and is overlain by the Coker Formation. The Pottsville Formation consists of alternating beds of gray sandstone, conglomerate, siltstone, and shale with beds of coal and underclay. The formation is thick in this area, approximately 4,500 feet. Except for the conglomeritic sandstone at the base of the formation, few lithologic horizons can be correlated regionally. (Hydrologic Assessment, Eastern Coal Province Area 23, Alabama USGS Water-Resources Investigations Open-File Report 80-683).

The Coker Formation unconformably overlies the Pottsville Formation in the area. The Coker Formation consists of unconsolidated sand, gravel and clay with prominent sand and gravel beds at or near the base of the formation. Strata generally trend northwest and generally dip southwest 30 to 40 ft/mi. The maximum thickness of the Coker Formation is 475 feet, however most surface coal mining that requires the removal of the Coker Formation has occurred where the thickness of the Coker is considerably less than 100 feet. (Hydrologic Assessment, Eastern Coal Province Area 23, Alabama).

Due to the faulting in the area, both the Brookwood and Utley coal groups are present. Mining will occur on the Upper Brookwood, Lower Brookwood, Milldale and Carter coal seams of the Brookwood Group and the Utley 1, Utley 2, Utley 3 and potentially Utley 4 coal seams of the Utley group.

Potentially Acid- and Toxic-Forming Materials

Three drill holes were used to describe the lithology for the area. OB-1 , OB-3 and OB-3 were drilled site specific to Eaton Mine No. 1. Drill cuttings were taken every 5 ft. or change in lithology to at least 5 feet below the coal seam for analysis of potentially acid- and toxic-forming properties. For these samples, overburden analyses were conducted

including paste pH, total sulfur, maximum potential acidity and neutralization potential in order to obtain the acid base account of the overburden. Potentially acid- and toxic-forming materials are those that exhibit a pH of less than 4.0 standard units (s.u.) or a deficiency in calcium carbonate equivalent of at least 0 tons per 1,000 tons of material (T/KT).

ii. Surface Water

The proposed permit area is located in the Warrior River Basin and is drained by unnamed tributaries to the North Fork of Hurricane Creek. According to mywaterway.epa.gov, the HUC 12 for the Coal Creek – Upper Hurricane Creek watershed is 031601120502 which contains three waterbodies: Hurricane Creek, Little Hurricane Creek and the North Fork of Hurricane Creek. The latest report from Alabama Department of Environmental Management classifies does not include these waterways on the ADEM 303(d) list.

Four surface water monitoring sites were used for baseline collection for this permit. Surface water monitoring station SW-2 is located downstream on North Fork of Hurricane Creek and drains approximately 6900 acres (10.78 square miles). Approximately 842 acres will be disturbed by mining at this water monitoring site. Surface monitoring site SW-1 is located upstream of the mining operation on the North Fork of Hurricane Creek. The upstream drainage areas of Weldon Creek and Jimy Creek, which flow into the North Fork of Hurricane Creek upstream of the Eaton Mine No. 1, have been affected by extensive pre-law mining. Due to the impacts of the previous mining operations in the watersheds of Weldon and Jimy Creek, two additional surface water sampling sites were established to document the inflow quality to the North Fork of Hurricane Creek. To characterize the existing quality and quantity of water within the North Fork of Hurricane Creek, baseline data were obtained and submitted in the permit application. Baseline data is shown in Table 2 at the end of this assessment.

The Warrior Met Coal Mining, LLC Mine No. 5, (ASMC P-3256) has a downstream surface water site on the North Fork of Hurricane Creek (site 475-008). This site was used for historical water data quality and is shown in Table 3 at the end of this assessment.

Additional metals data was analyzed during baseline collection on all four surface water monitoring sites. The data for low flow and high flow were reported in the application. This data is shown in Table 4 at the end of this assessment.

The Alabama Department of Environmental Management has classified the North Fork of Hurricane Creek as "Fish and Wildlife." According to ADEM Admin. Code r. 335-6-11-.01(2), "Use classifications apply water quality criteria adopted for particular uses based on existing utilization, uses reasonably expected in the future, and those uses not now possible because of correctable pollution but which could be made if the effects of

pollution were controlled or eliminated. Of necessity, the assignment of use classifications must take into consideration the physical capability of waters to meet certain uses."

ADEM Admin. Code r. 335-6-11-.01(5) states "...Those segments which are not included by name will be considered to be acceptable for a 'Fish and Wildlife' classification unless it can be demonstrated that such a generalizations is inappropriate in specific instances."

During mining, three sediment control structures will be used under Alabama Department of Environmental Management NPDES Permit Number AL0084453. The purpose of sediment basins is to allow sediment to settle and not discharge into receiving streams. These sediment basins are proposed as temporary impoundments and will be removed in accordance with the operations plan of the permit.

iii. Groundwater

According to the "Geohydrology and Susceptibility of Major Aquifers to Surface Contamination in Alabama, Area 6" by the U.S. Geological Survey, Water-Resources Investigations Report 87-4113, "the Pottsville Formation consists chiefly of sandstone, conglomerate, siltstone, and shale with beds of coal and underclay. Water in the Pottsville aquifers occur under confined conditions due to sharp contrast in permeability within the aquifer. Groundwater usually occurs at depths of less than 200 feet in secondary features such as openings along fractures and bedding planes. Only small amounts of groundwater suitable for domestic use are available in the weathered deposits. The quantity of water available to wells throughout the aquifer depends on the size and extent of the water-bearing openings." Large water supplies are generally not available from the Pottsville Formation and no municipal wells tap the Pottsville Formation within the study area.

Rocks in the aquifer are tightly cemented and have little primary porosity and permeability. They contain water in secondary features and solutioning is not an effective agent for the enhancement of secondary features due to its silicic lithology (as compared to carbonate aquifers in the area). Due to the folded and faulted geologic structure, the Pottsville Formation is not continuous from one area to another. Groundwater movement between aquifers is restricted due the confining beds, and movement within the aquifer generally is from hills and highland areas to streams and other areas of natural discharge.

The Coker Formation consists of a basal nonmarine zone of gravel, marine sand and clay. A clay zone is usually present at the top of the Coker Formation. In areas where the Coker Formation is less than 100 feet thick, only the basal beds remain. Also, the Coker Formation is not used extensively downdip where shallower aquifers are available.

According to the Hydrologic Assessment, Eastern Coal Province Area 23, Alabama by

the US Geological Survey Water-Resources Investigations Open-File Report 80-683, rain is the source of groundwater in the area. Annual rainfall averages 55 – 56 inches per year, which nearly 5 percent of recharges the ground water reservoirs. Also according to the Hydrologic Assessment, Eastern Coal Province Area 23, ground water movement generally is to the southwest. The Coker Formation dips toward the southwest about 30 feet per mile and the water moves through the more permeable lower part which contains sand and gravel beds and overlies the Pottsville Formation.

Little is known about recharge and ground water movement in the Pottsville Formation. However, according to the permit application, the main direction of water is down dip to the southeast along the bedding planes. Water may move in other directions based on topographic features of the area or fracture systems in the formation. It is also mentioned that because of the perched water tables and irregular lensing properties of the Pottsville Formation that water levels are unpredictable and areal correlations are only possible within short distances.

Ground water in the Pottsville Formation occurs in sandstone beds and in fractures and bedding planes. The openings are small, and yield to wells range from less than 10 gal/min to as much as 50 gal/min. The depth to water is generally less than 30 feet in stream valleys and more than 50 feet in hills and ridges.

Domestic Wells

A well inventory of the permit area shows four residences within a one-half mile of the permit area. Of the four residences, two are abandoned and the others utilize the local municipal water system (Brookwood Water Authority).

Company Installed Wells

Three groundwater wells were installed by Eaton Resources, LLC for baseline analysis. All three groundwater monitoring wells were drilled to below the lowest coal seam to be mined at their location. Baseline groundwater data is shown in Table 5 at the end of this assessment.

Coal Processing Waste

Coal processing waste (gob and slurry) will not be generated or disposed of at the site.

B. Material Damages

With respect to the CHIA, material damage to the hydrologic balance means the changes to the hydrologic balance caused by surface mining and reclamation operations to the extent that these changes would significantly affect present and potential uses as designated by the regulatory authority. This includes the hydrologic impact that results from the cumulation of flows from all coal mining sites in a cumulative impact area. Examples of material damage are permanent destruction of a major regional aquifer; temporary

contamination of an aquifer in use that cannot be mitigated; and solute contributions to streams above receiving stream standards.

A CHIA is based on the best currently available data and is a prediction of mining-related impacts to the hydrologic balance. Permittees (and permit applicants) are required to monitor water quality and quantity. Exceeding material damage thresholds might also cause significant reduction of the capability of an area to support aquatic life, livestock and wildlife communities.

III. FINDINGS

Based on the information presented above, the following findings have been made relative to the proposed permit area.

A. Historical Coal Mines

With regards to the historical surface mines in, and within the vicinity of, the proposed site, the possible cumulative effect of the previous mining along with the proposed operations on surface and groundwater quality/quantity will be discussed in detail in the following Surface Water and Groundwater sections.

B. Potentially Acid- and Toxic-Forming Materials

Laboratory analyses of the bedrock overlying the Brookwood Coal Group and Utley Coal Group show a positive acid-base account. As stated earlier, potentially acid- and toxic-forming materials are those that exhibit a pH of less than 4.0 s. u. or a deficiency in calcium carbonate equivalent of at least 0.0 tons per 1,000 tons of material (T/KT). The overburden analysis submitted for consideration of this operation include an acid base account of +1581 tons $CaCO_3$/1,000 tons overburden from the three overburden drill holes.

Should the Utley 4 coal seam in Increment I become marketable, there is a Special Handling Plan in place. This includes the top 10 feet of material above the Utley 4 coal seam to be segregated and loaded on trucks separately. It will then be spoiled in layers in previously mined areas of the permit at a minimum of 20 feet above the pit bottom. The additional material to be placed in this interval will be material above the acidic strata above the Utley Group (which contain neutralization potential).

C. Surface Water

Based on laboratory analysis of the samples collected at surface water sites SW-1 and SW-2, upstream and downstream on the North Fork of Hurricane Creek, the significant contribution of conductivity, total suspended solids, iron, manganese, sulfates and acidity come from areas that discharge to Weldon and Jimy Creek. Weldon and Jimy Creek were sampled for baseline in order to determine if the increase in constituents came from pre-law mining or other disturbances upstream of the proposed permit area. The results of the

baseline sampling and analysis show that the increase in these constituents do come from flow from both Weldon and Jimy Creeks. The results of these analysis are in Table 2 .

The ADEM approved NPDES permit has included aluminum and turbidity monitoring for the sediment basins currently proposed for the P- 4002 permit.

Changes in the quantity and quality of the waters in the streams draining the site are expected to be minimal due to the proposed mining activities. During mining, runoff from the disturbed areas will be diverted into sediment basins that have been designed to retain the runoff to allow sediment to settle out prior to discharging. Effluent from the sediment basins will be monitored by the permittee in accordance with NPDES permit requirements issued by ADEM. The effluent may be chemically treated, if necessary, in accordance with the NPDES permit. The basins will be monitored quarterly through final bond release in order to characterize and document any effects the mining may have on the surface water hydrologic balance. The basins are proposed as a temporary water impoundment and will be removed in accordance with approved plans.

Post-Mining water quality and quantity estimates provided by the applicant are based on several factors:

1. Baseline surface water quality
2. Estimated impact during mining
3. Size of the permit area compared to the size of the watershed
4. Amount of previous mining within the watershed

According to the permit application, this mine site is expected to have a negligible increase in base flow, average flows, and peak flow rates relative to the baseline conditions. The NPDES maximum and average limitations set forth by ADEM for this mine site are as follows: pH limit is between 6.0 – 8.5 s.u., TSS maximum limit is 70 mg/L and the average is 35 mg/L, Fe maximum limit is 6.0 mg/L and the average is 3.0 mg/L, the Mn maximum limit is 4.0 mg/l with the average being 2.0 mg/L. The high flow post-mine prediction shows manganese exceedance for post mining water quality. However, the post-mining high flow value is from an exceptional flow value, causing the exceedance. The amount of water predicted is immense and also could not pull such manganese values out of any spoil due to negligible contact time (all flow would be overland flow). The post-mining quality and quantity estimates are shown in Table 6 at the end of this assessment.

Potentially acid- and toxic-forming materials will undergo relatively quick burial that will minimize exposure of the materials with the atmosphere; thus lessening the potential for Acid Mine Drainage (AMD) to develop. This, along with the sediment basins, vegetation of the disturbed areas and erosion control practices, should serve to lessen impacts to the streams and surface water bodies. Should any increase in mineralization occur in the surface waters as a result of the mining operations, it is anticipated the levels will diminish and return to pre-mining concentrations once mining and reclamation activities are complete.

D. Ground Water

The proposed operations are not expected to have a permanent adverse impact on the overall quality of the ground water at the site or surroundings. Any communication between groundwater is difficult if not impossible due to the faulting in the area. According to the permit application as well as published reports, groundwater (regional) movement is in the southeast direction. While small scale folding influences groundwater within the permit area and adjacent areas, there are three faults within the permit area that control groundwater movement.

Baseline analysis shows a neutral to slightly acidic pH, low iron and very slightly elevated manganese levels. Low sulfate values indicate no disturbance to the strata in the well locations, which is from the non-connectivity of any aquifer system both large scale and small scale due to faulting within the area. A groundwater waiver for this permit has been approved.

IV. CONCLUSION

The assessment of probable cumulative impacts of the Eaton Resources, LLC Eaton Mine No. 1 (P- 4002) finds the proposed operations have been designed to prevent material damage to the hydrologic balance outside the proposed permit area.

Table 1
ASMC Permitted Mining Operations in the Cumulative Impact Area

Permit No.	Permittee	Permit Name	Issuance Date	Expiration Date	Acres*	Permit Status	Current Activities	Coal Seams
P-3256	Warrior Met Coal Mining, LLC	Mine No. 5	3/03/1983	3/01/2023	1270	Active	Active Underground	Blue Creek
P-3852	Warrior Met Coal Mining, LLC	East Brookwood Mine	12/08/2005	12/06/2025	399	Active	Active, non producing	Brookwood, Johnson (Carter), Milldale
P-3859	Shannon, LLC	Shannon Mine	11/02/2004	10/30/2024	1134	Active	Permitted area in CHIA is a haul road	New Castle, Blue Creek, Jagger

*ASMC permitted acres at the time the CHIA was prepared

Table 2
Ranges/Averages of Surface-Water Quality/Quantity
Stream Points
Eaton Resources, LLC P-4002

	SW-1 North Fork of Hurricane Creek	SW-2 North Fork of Hurricane Creek	SW-3 Weldon Creek	SW-4 Jimy Creek
Flow (cfs)	1.93 – 9.18 (5.18)	80.71– 178.85 (133.24)	2.73 – 18.85 (12.75)	1.66 – 5.87 (3.93)
pH (s.u.)	6.97 – 7.61	6.55 – 7.61	6.24 – 7.36	6.09 – 7.34
SpC (µmhos/cm)	67 – 209 (132.93)	725 – 1230 (1049.40)	660 - 1540 (1191.93)	290 – 1244 (766.73)
TSS (mg/L)	8 – 30 (15.60)	26 – 98 (52.27)	20 – 103 (54.00)	21 - 75 (35.73)
Fe (mg/L)	0.09 – 0.58 (0.36)	0.76 – 1.21 (0.98)	1.06 – 4.07 (2.73)	0.98 – 3.26 (1.94)
Mn (mg/L)	0.34 – 1.45 (1.10)	6.35 – 10.76 (7.00)	4.66 – 13.76 (9.71)	4.44 – 9.12 (6.39)
SO4 (mg/L)	2 – 30 (13.87)	768 – 1356 (1058.20)	280 – 550 (381.47)	300 – 468 (364.07)
Acidity (mg/L)	2 – 15 (9.33)	10 – 30 (18.67)	8 – 19 (12.73)	9 – 19 (14.27)
Alkalinity (mg/L)	14 – 76 (32.67)	21 – 64 (36.80)	24 – 88 (46.73)	22 – 71 (38.07)

Average values are set in parentheses.
Averages calculated as geometric means.

Table 3
North Fork of Hurricane Creek (site 475-008)
Historical Data

Date	Flow	Flow	pH	TSS	Cond	SO4	Acid	Alk	Fe	Mn
	MGD	cfs	s.u.	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L
10/30/2014	6.912	10.69519	7.6	7	2179	1368			0.16	4.69
1/28/2015	28.8	44.56328	7.1	12	522	216			1.31	3.57
4/10/2015	36	55.7041	6.5	272	408	203			23.43	4.69
7/20/2015	2.88	4.456328	7.6	2	779	285	4	25	0.2	4.66
10/8/2015	1.44	2.228164	7.8	3	1407	763	8	59	0.05	7.17
1/13/2016	10.8	16.71123	7.4	9	968	318	6	32	1.36	5.51
4/27/2016	8.64	13.36898	8.1	1	1295	682	6	77	0.69	5.2
7/29/2016	2.16	3.342246	8.1	1	2414	932	3	165	0.11	4.71
10/24/2016	1.08	1.671123	8.2	1	2492	1625	6	257	0.08	3.82
1/30/2017	2.088	3.230838	7.8	4	1327	591	13	76	1.11	5.27
4/27/2017	3.038	4.700807	7.5	6	1176	434	4	79	0.65	4.11
8/10/2017	7.57	11.71333	7.2	4	983	442	7	52	0.58	3.98
11/20/2017	7.36	11.38839	8.12	6	1726	372	23	36	2.82	3.92
2/14/2018	15.84	24.5098	6.96	3	289	88	5	14	0.37	0.11
4/12/2018	11.74	18.16573	7.31	3	1098	407	6	60	0.65	3.22
9/14/2018	0.4944	0.765003	8.03	15	1439	448	8	59	2.63	0.43
12/12/2018	0.4924	0.761908	7.24	7	725	275	8	15	1.22	3
2/6/2019	13.18	20.39389	6.87	8	1011	416	7	56	1.33	4.28
4/25/2019	6.956	10.76327	7.45	8	1203	513	5	70	0.92	4.88
8/15/2019	4.944	7.65003	8.12	6	2097	623	8	194	0.14	4.95
11/12/2019	7.914	12.24562	7.23	7	1531	835	27	110	1.15	6.63
5/18/2020	13.84	21.41513	6.62	9	1383	691	6	87	1.47	8.45
7/13/2020	6.956	10.76327	7.04	8	1384	642	9	94	0.48	6.67
10/10/2020	8.237	12.74541	6.54	6	1348	575	4	117	0.79	6.08
12/10/2020	8.237	12.74541	6.54	6	1348	575	4	117	0.79	6.08
1/29/2021	15.82	24.47886	7.67	12	610	195	3	43	1.24	3.11
4/29/2021	7.95	12.30132	7.81	11	1181	479	3	97	0.8	4.66
8/25/2021	10.38	16.06135	6.92	7	1332	645	2	14	0.68	5.49
11/29/2021	11.87	18.36688	6.79	6	1352	609	2	110	0.33	6.29

Date	Flow	Flow	pH	TSS	Cond	SO4	Acid	Alk	Fe	Mn
	MGD	cfs	s.u.	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L
1/24/2022	15.57	24.09202	6.14	8	573	220	18	34	1.69	3.36
4/21/2022	23.73	36.71829	6.63	4	568	250	6	30	1.28	3.15
7/25/2022	10.88	16.83502	7.27	10	1735	556	8	180	0.15	4.71

Table 4
P- 4002 High Flow/Low Flow Metals Data
Sample Site SW-1 Drainage area 1.14 Sq. Mi.
Upstream, North Fork Hurricane Creek

Parameter	High Flow Result (9.18 cfs) Date: 8/29/2022	Low Flow Result (1.930 cfs) Date: 9/28/2022	Minimal Level/Units
Aluminum (mg/L)	BML	BML	0.02 mg/L
Antimony (µg/L)	BML	BML	1.92 µg/L
Arsenic (µg/L)	0.28	0.28	0.30 µg/L
Arsenic III (µg/L)	BML	BML	0.27 µg/L
Beryllium (µg/L)	BML	BML	2.2 µg/L
Cadmium (µg/L)	BML	BML	0.08 µg/L
Chromium (µg/L)	BML	BML	1.64 µg/L
Copper (µg/L)	BML	BML	0.90 µg/L
Mercury (µg/L)	BML	BML	0.010 µg/L
Nickel (µg/L)	BML	BML	6.86 µg/L
Selenium (µg/L)	BML	BML	0.95 µg/L
Silver (µg/L)	BML	BML	0.15 µg/L
Thallium (µg/L)	BML	BML	0.08 µg/L
Zinc (µg/L)	BML	BML	16.45 µg/L

BML = Below Measurable Limits
All sampled dissolved except for Mercury and Selenium which are total.

Sample Site SW-2 Drainage area 10.78 Sq. Mi.
Downstream, North Fork Hurricane Creek

Parameter	High Flow Result (178.85 cfs) Date: 8/29/2022	Low Flow Result (80.71 cfs) Date: 9/28/2022	Minimal Level/Units
Aluminum (mg/L)	0.03	0.03	0.02 mg/L
Antimony (µg/L)	BML	BML	1.92 µg/L
Arsenic (µg/L)	0.28	0.28	0.30 µg/L
Arsenic III (µg/L)	BML	BML	0.27 µg/L
Beryllium (µg/L)	BML	BML	2.2 µg/L
Cadmium (µg/L)	BML	BML	0.08 µg/L
Chromium (µg/L)	BML	BML	1.64 µg/L
Copper (µg/L)	BML	BML	0.90 µg/L
Mercury (µg/L)	BML	BML	0.010 µg/L
Nickel (µg/L)	25.62	36.93	6.86 µg/L
Selenium (µg/L)	BML	BML	0.95 µg/L
Silver (µg/L)	BML	BML	0.15 µg/L
Thallium (µg/L)	BML	BML	0.08 µg/L
Zinc (µg/L)	BML	BML	16.45 µg/L

BML = Below Measurable Limits
All sampled dissolved except for Mercury and Selenium which are total.

Table 4
P- 4002 High Flow/Low Flow Metals Data
Sample Site SW-3 Drainage Area 3.86 Sq. Mi.
Upstream, Weldon Creek

Parameter	High Flow Result (15.95 cfs) Date: 8/29/2022	Low Flow Result (2.73 cfs) Date: 9/28/2022	Minimal Level/Units
Aluminum (mg/L)	0.03	0.03	0.02 mg/L
Antimony (µg/L)	BML	BML	1.92 µg/L
Arsenic (µg/L)	0.34	0.31	0.30 µg/L
Arsenic III (µg/L)	BML	BML	0.27 µg/L
Beryllium (µg/L)	BML	BML	2.2 µg/L
Cadmium (µg/L)	BML	BML	0.08 µg/L
Chromium (µg/L)	BML	BML	1.64 µg/L
Copper (µg/L)	BML	BML	0.90 µg/L
Mercury (µg/L)	BML	BML	0.010 µg/L
Nickel (µg/L)	58.82	70.77	6.86 µg/L
Selenium (µg/L)	BML	BML	0.95 µg/L
Silver (µg/L)	BML	BML	0.15 µg/L
Thallium (µg/L)	BML	BML	0.08 µg/L
Zinc (µg/L)	28.06	33.50	16.45 µg/L

BML = Below Measurable Limits
All sampled dissolved except for Mercury and Selenium which are total.

Sample Site SW-4 Drainage Area 1.72 Sq. Mi.
Upstream, North Fork Hurricane Creek

Parameter	High Flow Result (5.87 cfs) Date: 8/29/2022	Low Flow Result (1.66 cfs) Date: 9/28/2022	Minimal Level/Units
Aluminum (mg/L)	0.07	0.09	0.02 mg/L
Antimony (µg/L)	BML	BML	1.92 µg/L
Arsenic (µg/L)	0.31	0.37	0.30 µg/L
Arsenic III (µg/L)	BML	BML	0.27 µg/L
Beryllium (µg/L)	BML	BML	2.2 µg/L
Cadmium (µg/L)	BML	BML	0.08 µg/L
Chromium (µg/L)	BML	BML	1.64 µg/L
Copper (µg/L)	BML	BML	0.90 µg/L
Mercury (µg/L)	BML	BML	0.010 µg/L
Nickel (µg/L)	27.24	35.27	6.86 µg/L
Selenium (µg/L)	BML	BML	0.95 µg/L
Silver (µg/L)	BML	BML	0.15 µg/L
Thallium (µg/L)	BML	BML	0.08 µg/L
Zinc (µg/L)	BML	BML	16.45 µg/L

BML = Below Measurable Limits
All sampled dissolved except for Mercury and Selenium which are total.

Table 5
Groundwater Baseline

MW-1
Surface Elevation: 601.17 MSL
Monitoring Elevation: 604.50 MSL

Date	H2O Depth ft.	H2O Elev. Ft	pH s.u.	SpC µ-mhos/cm	Fe Mg/L	Mn Mg/L	SO4 Mg/L	Acid Mg/L	Alk. Mg/L
11/23/2021	75.60	525.57	6.10	195	2.04	3.09	24	16	30
12/22/2021	74.20	526.97	6.35	265	1.78	2.95	19	14	36
01/17/2022	73.40	527.77	6.19	247	1.88	2.87	20	11	26
02/18/2022	72.90	528.77	6.26	259	1.95	3.06	26	9	29
03/16/2022	72.45	528.72	6.33	256	2.11	2.73	17	14	33
04/19/2022	71.90	529.27	6.27	304	1.85	2.89	19	7	28
05/18/2022	70.50	530.67	6.45	278	2.73	3.12	24	7	19
06/22/2022	68.55	532.62	6.37	334	2.02	3.04	18	10	27
07/21/2022	66.98	534.19	6.24	310	1.96	2.74	14	19	26

MW-2
Surface Elevation: 491.89 MSL
Monitoring Elevation: 494.72

Date	H2O Depth ft.	H2O Elev. Ft	pH s.u.	SpC µ-mhos/cm	Fe Mg/L	Mn Mg/L	SO4 Mg/L	Acid Mg/L	Alk. Mg/L
11/23/2021	62.40	429.49	7.09	575	0.56	2.57	20	12	28
12/22/2021	60.60	431.29	6.85	624	0.17	1.99	19	16	24
01/17/2022	59.80	432.09	6.68	545	0.08	2.21	13	9	27
02/18/2022	60.15	431.74	6.82	560	0.09	2.30	17	10	30
03/16/2022	59.90	431.99	6.67	533	0.49	2.14	11	8	29
04/19/2022	60.10	431.79	6.54	611	0.55	1.87	13	7	32
05/18/2022	58.95	432.94	6.88	563	0.23	2.06	19	10	28
06/22/2022	56.53	435.36	6.74	549	0.47	2.13	15	11	28
07/21/2022	57.29	434.60	6.75	589	0.29	2.02	12	13	34

MW-3
Surface Elevation: 558.99 MSL
Monitoring Elevation: 561.49 MSL

Date	H2O Depth ft.	H2O Elev. Ft	pH s.u.	SpC µ-mhos/cm	Fe Mg/L	Mn Mg/L	SO4 Mg/L	Acid Mg/L	Alk. Mg/L
11/23/2021	50.80	508.19	6.45	624	0.75	1.26	5	14	29
12/22/2021	50.20	508.79	7.05	557	0.69	1.21	4	16	19
01/17/2022	49.90	509.09	6.90	510	0.65	1.05	4	12	26
02/18/2022	48.60	510.39	7.10	605	0.80	1.19	7	15	31
03/16/2022	46.72	512.27	7.21	552	0.68	1.10	3	15	34
04/19/2022	45.26	513.73	6.95	506	1.12	1.36	11	14	29
05/18/2022	43.63	515.36	6.78	588	0.98	1.28	10	23	37
06/22/2022	42.88	516.11	6.90	541	0.87	1.18	7	17	35
07/21/2022	42.25	516.74	6.86	606	1.02	1.02	5	12	30

Table 6
P-4002 Surface Water Projections Post Mining
Low/Average/High Flow
SW-2

Drainage area 10.78 mi^2
Mining areas 840 acres
Precipitation 56 in/yr

Mining Condition	Flow cfsm	pH s.u.	Fe mg/l	Mn mg/l	TSS mg/l	SpC µmhos/cm
Low Flow	0.02	6.8	5.27	0.6	9	366
Average Flow	1.59	6.88	2.14	2.25	20	735
High Flow	92.67	6.95	1.23	21	200	1932

Eaton Mine No. 1

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