



STATE OF ALABAMA  
SURFACE MINING COMMISSION

P.O. BOX 2390 - JASPER, ALABAMA 35502-2390  
(205) 221-4130 • FAX: (205) 221-5077

MEMORANDUM

TO: Sherry Wilson  
Office of Surface Mining

Mr. Jeff Kitchens  
Department of Environmental Management

Mr. Frank White  
Alabama Historic Preservation Officer

The District Engineer  
U.S. Corps of Engineers

Alabama Department of Industrial Relations  
Division of Safety & Inspection

BLM - District Office

State of Alabama  
Abandoned Mine Land Reclamation

Jefferson County Commission

U.S. Fish & Wildlife Service

Mr. Keith Guyse, Fish & Game Division

Mr. Mitch Reid - Alabama Rivers Alliance

FROM: JOHNATHAN E. HALL, DIRECTOR

RE: **PERMANENT PROGRAM PERMIT FOR:**

**Permit P-3987-01-21-S (Mine No. 2)- Black Warrior Minerals, Inc.**

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.

JEH/ml



# STATE OF ALABAMA SURFACE MINING COMMISSION

Page 1 of 9

Permit Number:P- 3987-01-21-S

License Number:L- 698

## 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:

Black Warrior Minerals, Inc.  
Post Office Box 1190  
Sumiton, AL 35148

Such operations are restricted to 1,348 acres as defined on the permit map and located in:

(See Attachment)

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.

## **Legal Description**

SW/SW of Section 2; SE/SE, NE/SE, NW/SE, SW/SE, SE/SW of Section 3; NE/NE, SE/NE, SW/NE, NW/SE, NE/SE, SE/SE, SW/SE of Section 9; SW/SW, SE/SW, NW/SW, NE/SW, NW/SE, SW/SE, SE/SE, NE/SE, SW/NW, SE/NW, NE/NW, NW/NW, NE/NE, NW/NE, SE/NE, SW/NE of Section 10; SW/SW, NW/SW, SW/NW, NW/NW of Section 11; NE/NE, SE/NE, SW/NE, NW/NE, NW/SE, NE/SE, NW/NW, NE/NW, SE/NW, SW/NW of Section 15; NW/NW, NE/NW, NW/NE, NE/NE, SE/NE of Section 16, Township 15 South, Range 3 West, all in Jefferson County, Alabama.

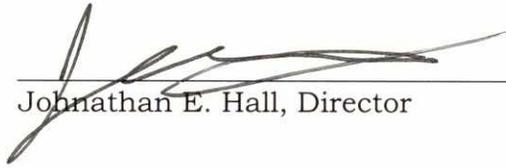
### **CONDITIONS TO BE PLACED ON PERMIT P-3987-01-21-S**

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(s) 1 and 2 consisting of 398 acres as defined on the permit map. Increment 1 consists of 118 permitted acres and 113 bonded acres. The five (5) acre difference is bonded under P-3950.
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. Allowable ungraded acreage on Increment No. 2 at any given time will be a maximum of 110 acres.
11. These conditions only apply to mining occurring in Parcel ID# 7-9-0-0-24 Section 9, Township 15, Range 3 West:

## **CONDITIONS TO BE PLACED ON PERMIT P-3987-01-21-S**

- 11-01: There shall be no land disturbance within 150 feet of any property zoned A-1 (Agriculture); said 150 foot setback boundary is to be flagged.
  - 11-02: There shall be no blasting within 600 feet of any currently occupied dwelling.
  - 11-03: There shall be no mining or disturbance on the northernmost 19.5 acre property except what is minimally necessary to construct and maintain sediment ponds and is within the current mining permit boundary.
  - 11-04: No operation at the mining facility shall commence prior to 7 a.m., nor extend past 5 p.m., Monday through Saturday only (i.e., no activity is to take place on Sunday).
  - 11-05: There shall be no blasting prior to 9 a.m., all blasting shall take place Monday through Friday (i.e., not on Saturdays or Sundays), no more than one (1) blasting event per day, and on no more than four (4) days in any given week.
  - 11-06: The property shall revert to A-1 (Agriculture) zoning upon completion of the mining of the property or on January 1, 2021, whichever comes first.
  - 11-07: All hauling traffic shall use to existing drive and shall only turn left (to the southwest) out of the mining site along Sardis Road.
  - 11-08: No more than 50 coal-hauling truck loads shall be allowed to leave the site per day.
  - 11-09: A website shall be established posting to the general public all information pertaining to the mining operation, including the progress of the operation on the subject property, and any blasting information to include warnings, schedules and seismic readings.
  - 11-10: The property is to be reforested after 18 months of the last grass planting following the completion of the mining operation.
  - 11-11: Only 40 acres of timber shall be cleared and hauled from the site at any given time following notification of all residents within ½ mile of the subject property.
12. The permittee must provide ASMC with written approval by the USACE for USACE Individual Permit, SAM-2014-01336-CMS dated July 27th, 2015 and its mitigation plan (revised November 20, 2015) prior to disturbance in any waters of the U.S. within the ASMC permit boundary.
13. The permittee must flag a minimum 50 feet setback from the western most 500 feet of stream segment S-11 and a minimum 50 feet setback from all of stream segment S-18 as designated by the jurisdiction determination dated January 29, 2015 in a flagging color different than the permit boundary flagging for ASMC permit Increment No. 1 and Increment No. 2 prior to conducting mining activities on Increment No. 1 or Increment No. 2.

**DATE ISSUED:** March 31, 2016  
**EFFECTIVE DATE:** March 31, 2016  
**EXPIRATION DATE:** March 30, 2021



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Johnathan E. Hall, Director

## **FINDINGS FOR PERMIT P-3987-01-21-S**

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.
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-10C-.58(4) and 880-X-10D-.52(4).

## **FINDINGS FOR PERMIT P-3987-01-21-S**

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 taken into account 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 remaining operation where the applicant intends to reclaim in accordance with the requirements of Section 880-X-10C-.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. In a letter dated July 8, 2015 the University of Alabama, Office of Archaeological Research (OAR), project number 15-201, conducted a Phase I Cultural Resource Survey in Jefferson County, Alabama, from June 8 - 26, 2015. The proposed project's area of potential effect (APE) is approximately 1,164 acres. As a result of the Phase 1 survey no new archaeological sites or historic standing structures were identified within the boundaries of the APE. The entirety of the APE has been heavily impacted by previous mining, logging, and subsequent erosion. Based on the findings of the Phase I Survey, Mine No. 2 will not have an adverse effect of any significant historic properties within the APE and a finding of no properties is recommended. By a letter dated August 3, 2015 the State Historical Preservation Office (SHPO) Re: AHC 2015-1097, based on the cultural resource assessments conducted by the OAR, determined that the project activities will have no adverse effect on cultural resources eligible for or listed on the National

## FINDINGS FOR PERMIT P-3987-01-21-S

Register of Historic Places (NRHP) and therefore concur with the 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. McGehee Engineering Corp (MEC) conducted an environmental assessment for the habitat and the possible presence of federally listed and state protected sensitive species for Jefferson County, Alabama in October and November of 2014, and March of 2015. The approximately 1,368 acre proposed Mine No. 2 area consists of upland area disturbed by silviculture, and natural valley and stream corridors. Portions of the area have been cleared of timber within the recent past, areas not cleared are vegetated with planted pines stands on upland ridges and natural hardwoods grow in the valleys and stream corridors. No habitat was found for the listed aquatic threatened and endangered species (T&E). No evidence was found or observed for the presence or possible presence of the listed species. There is no continuous flowing water on this site to support the T&E aquatic species. No habitat was found for the listed terrestrial T&E species, with the exception of the potential summer roosting habitat for the Indiana Bat (*Myotis sodalis*) and Northern Long-eared Bat (*Myotis Septentrionalis*). Segmented areas totaling approximately 99 acres of potential summer roosting habitat was found for the bat species scattered throughout the middle to east and south of the project area. An Acoustic Presence/Absence Survey was performed from May 26-June 2, 2015 by MEC in accordance with the US Fish and Wildlife Service (FWS) approved plan for the Indiana and Northern Long-eared bats due to the potential summer roosting habitat located within the project area. The findings of the survey indicate that there were no Myotid calls captured during the survey, and that disturbance of the area identified as potential summer roosting habitat is not likely to have a significant adverse effect upon the Indiana and Northern Long-eared bat. By comments dated July 31, 2015 the US Fish and Wildlife Service (FWS) agree with the findings that no federally listed species/critical habitat occur in the project area. In a letter dated April 9, 2015 the Alabama Department of Conservation and Natural Resources (ADCNR) states the closest sensitive species as occurring approximately 2.0 miles from the subject site. US Army Corps of Engineers (USACE) issued an Approved Jurisdictional Determination, Number SAM-2014-01336-CMS, on January 29, 2015 for the 1,251 acre Black Warrior Minerals, Inc. Mine No. 2 site. Black Warrior Minerals must provide ASMC with written approval of the USACE Individual Permit, SAM-2014-01336-CMS dated July 27, 2015 and the mitigation plan (revised November 20, 2015) within 6 weeks of issuance of ASMC Permit P-3987. 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.

**FINDINGS FOR PERMIT P-3987-01-21-S**

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.

BASED ON THESE FINDINGS, I RECOMMEND THAT THIS PERMIT BE ISSUED.

DATE: March 31, 2016

  
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Mark Woodley  
Permit Manager

/ml

cc: I & E, Permit File



# STATE OF ALABAMA SURFACE MINING COMMISSION

Page 1 of 9

Permit Number:P- 3987-01-21-S

License Number:L- 698

## 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:

Black Warrior Minerals, Inc.  
Post Office Box 1190  
Sumiton, AL 35148

Such operations are restricted to 1,348 acres as defined on the permit map and located in:

(See Attachment)

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

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MEMORANDUM

TO: Sherry Wilson  
Office of Surface Mining

Mr. Jeff Kitchens  
Department of Environmental Management

Mr. Frank White  
Alabama Historic Preservation Officer

The District Engineer  
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BLM - District Office

State of Alabama  
Abandoned Mine Land Reclamation

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U.S. Fish & Wildlife Service

Mr. Keith Guyse, Fish & Game Division

Mr. Mitch Reid - Alabama Rivers Alliance

FROM: JOHNATHAN E. HALL, DIRECTOR

RE: **PERMANENT PROGRAM PERMIT FOR:**

**Permit P-3987-01-21-S (Mine No. 2)- Black Warrior Minerals, Inc.**

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.

JEH/ml



# STATE OF ALABAMA SURFACE MINING COMMISSION

Page 1 of 9

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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 380-X-8-K-16~~ of any condition which threatens the environment or public health and safety.

## **Legal Description**

SW/SW of Section 2; SE/SE, NE/SE, NW/SE, SW/SE, SE/SW of Section 3; NE/NE, SE/NE, SW/NE, NW/SE, NE/SE, SE/SE, SW/SE of Section 9; SW/SW, SE/SW, NW/SW, NE/SW, NW/SE, SW/SE, SE/SE, NE/SE, SW/NW, SE/NW, NE/NW, NW/NW, NE/NE, NW/NE, SE/NE, SW/NE of Section 10; SW/SW, NW/SW, SW/NW, NW/NW of Section 11; NE/NE, SE/NE, SW/NE, NW/NE, NW/SE, NE/SE, NW/NW, NE/NW, SE/NW, SW/NW of Section 15; NW/NW, NE/NW, NW/NE, NE/NE, SE/NE of Section 16, Township 15 South, Range 3 West, all in Jefferson County, Alabama.

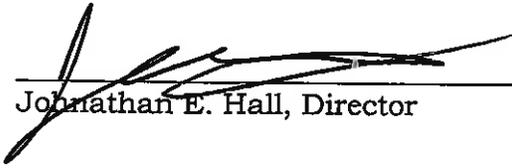
### **CONDITIONS TO BE PLACED ON PERMIT P-3987-01-21-S**

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(s) 1 and 2 consisting of 398 acres as defined on the permit map. Increment 1 consists of 118 permitted acres and 113 bonded acres. The five (5) acre difference is bonded under P-3950.
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. Allowable ungraded acreage on Increment No. 2 at any given time will be a maximum of 110 acres.
11. These conditions only apply to mining occurring in Parcel ID# 7-9-0-0-24 Section 9, Township 15, Range 3 West:

## **CONDITIONS TO BE PLACED ON PERMIT P-3987-01-21-S**

- 11-01: There shall be no land disturbance within 150 feet of any property zoned A-1 (Agriculture); said 150 foot setback boundary is to be flagged.
  - 11-02: There shall be no blasting within 600 feet of any currently occupied dwelling.
  - 11-03: There shall be no mining or disturbance on the northernmost 19.5 acre property except what is minimally necessary to construct and maintain sediment ponds and is within the current mining permit boundary.
  - 11-04: No operation at the mining facility shall commence prior to 7 a.m., nor extend past 5 p.m., Monday through Saturday only (i.e., no activity is to take place on Sunday).
  - 11-05: There shall be no blasting prior to 9 a.m., all blasting shall take place Monday through Friday (i.e., not on Saturdays or Sundays), no more than one (1) blasting event per day, and on no more than four (4) days in any given week.
  - 11-06: The property shall revert to A-1 (Agriculture) zoning upon completion of the mining of the property or on January 1, 2021, whichever comes first.
  - 11-07: All hauling traffic shall use to existing drive and shall only turn left (to the southwest) out of the mining site along Sardis Road.
  - 11-08: No more than 50 coal-hauling truck loads shall be allowed to leave the site per day.
  - 11-09: A website shall be established posting to the general public all information pertaining to the mining operation, including the progress of the operation on the subject property, and any blasting information to include warnings, schedules and seismic readings.
  - 11-10: The property is to be reforested after 18 months of the last grass planting following the completion of the mining operation.
  - 11-11: Only 40 acres of timber shall be cleared and hauled from the site at any given time following notification of all residents within ½ mile of the subject property.
12. The permittee must provide ASMC with written approval by the USACE for USACE Individual Permit, SAM-2014-01336-CMS dated July 27th, 2015 and its mitigation plan (revised November 20, 2015) prior to disturbance in any waters of the U.S. within the ASMC permit boundary.
13. The permittee must flag a minimum 50 feet setback from the western most 500 feet of stream segment S-11 and a minimum 50 feet setback from all of stream segment S-18 as designated by the jurisdiction determination dated January 29, 2015 in a flagging color different than the permit boundary flagging for ASMC permit Increment No. 1 and Increment No. 2 prior to conducting mining activities on Increment No. 1 or Increment No. 2.

**DATE ISSUED:** March 31, 2016  
**EFFECTIVE DATE:** March 31, 2016  
**EXPIRATION DATE:** March 30, 2021



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Johnathan E. Hall, Director

## **FINDINGS FOR PERMIT P-3987-01-21-S**

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.
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-10C-.58(4) and 880-X-10D-.52(4).

## **FINDINGS FOR PERMIT P-3987-01-21-S**

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 taken into account 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-10C-.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. In a letter dated July 8, 2015 the University of Alabama, Office of Archaeological Research (OAR), project number 15-201, conducted a Phase I Cultural Resource Survey in Jefferson County, Alabama, from June 8 - 26, 2015. The proposed project's area of potential effect (APE) is approximately 1,164 acres. As a result of the Phase 1 survey no new archaeological sites or historic standing structures were identified within the boundaries of the APE. The entirety of the APE has been heavily impacted by previous mining, logging, and subsequent erosion. Based on the findings of the Phase I Survey, Mine No. 2 will not have an adverse effect of any significant historic properties within the APE and a finding of no properties is recommended. By a letter dated August 3, 2015 the State Historical Preservation Office (SHPO) Re: AHC 2015-1097, based on the cultural resource assessments conducted by the OAR, determined that the project activities will have no adverse effect on cultural resources eligible for or listed on the National

## **FINDINGS FOR PERMIT P-3987-01-21-S**

Register of Historic Places (NRHP) and therefore concur with the 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. McGehee Engineering Corp (MEC) conducted an environmental assessment for the habitat and the possible presence of federally listed and state protected sensitive species for Jefferson County, Alabama in October and November of 2014, and March of 2015. The approximately 1,368 acre proposed Mine No. 2 area consists of upland area disturbed by silviculture, and natural valley and stream corridors. Portions of the area have been cleared of timber within the recent past, areas not cleared are vegetated with planted pines stands on upland ridges and natural hardwoods grow in the valleys and stream corridors. No habitat was found for the listed aquatic threatened and endangered species (T&E). No evidence was found or observed for the presence or possible presence of the listed species. There is no continuous flowing water on this site to support the T&E aquatic species. No habitat was found for the listed terrestrial T&E species, with the exception of the potential summer roosting habitat for the Indiana Bat (*Myotis sodalis*) and Northern Long-eared Bat (*Myotis Septentrionalis*). Segmented areas totaling approximately 99 acres of potential summer roosting habitat was found for the bat species scattered throughout the middle to east and south of the project area. An Acoustic Presence/Absence Survey was performed from May 26-June 2, 2015 by MEC in accordance with the US Fish and Wildlife Service (FWS) approved plan for the Indiana and Northern Long-eared bats due to the potential summer roosting habitat located within the project area. The findings of the survey indicate that there were no Myotid calls captured during the survey, and that disturbance of the area identified as potential summer roosting habitat is not likely to have a significant adverse effect upon the Indiana and Northern Long-eared bat. By comments dated July 31, 2015 the US Fish and Wildlife Service (FWS) agree with the findings that no federally listed species/critical habitat occur in the project area. In a letter dated April 9, 2015 the Alabama Department of Conservation and Natural Resources (ADCNR) states the closest sensitive species as occurring approximately 2.0 miles from the subject site. US Army Corps of Engineers (USACE) issued an Approved Jurisdictional Determination, Number SAM-2014-01336-CMS, on January 29, 2015 for the 1,251 acre Black Warrior Minerals, Inc. Mine No. 2 site. Black Warrior Minerals must provide ASMC with written approval of the USACE Individual Permit, SAM-2014-01336-CMS dated July 27, 2015 and the mitigation plan (revised November 20, 2015) within 6 weeks of issuance of ASMC Permit P-3987. 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.

**FINDINGS FOR PERMIT P-3987-01-21-S**

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.

BASED ON THESE FINDINGS, I RECOMMEND THAT THIS PERMIT BE ISSUED.

DATE: March 31, 2016

  
\_\_\_\_\_  
Mark Woodley  
Permit Manager

/ml

cc: I & E, Permit File

**Cumulative Hydrologic Impact Assessment**  
**Black Warrior Minerals, Inc.**  
**Mine No. 2**  
**ASMC P-3987**

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# CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

**Black Warrior Minerals, Inc.**

**Mine No. 2**

**ASMC: P-3987**

**NPDES: AL0079707**

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 Rule 880-X-8E-.06(1)(g). The following assessment and findings are intended to fulfill the above stated requirements.

## **I. GENERAL INFORMATION**

The Black Warrior Minerals, Inc. P-3987 is for a surface coal mining operation originally proposed to encompass 1,348 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 2, 3, 9, 10, 11, 14, 15 and 16, Township 15 South, Range 3 West, Jefferson County, Alabama as seen from the 1979 Gardendale, Alabama USGS 7.5 minute quadrangle.

The permit area is located south of the Locust Fork of the Black Warrior River and directly west of Alabama Interstate 65. It is south of Sardis Road in Morris, Alabama and adjacent to the Black Warrior Minerals, Inc. P-3950 Mine No. 1 permit. Map No. 1 shows the permit location.

### **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 monoclinial 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 lead 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 periods 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**

A small northern portion of the permit area is shown as previously mined by pre-law mining. Pre-law mining is mining that occurred before SMCRA (the Surface Mining Control and Reclamation Act) of 1977, Public Law 95-97. The previously disturbed acreage (108 acres) constitutes eight percent of the total acreage for this permit.

There are six coal mines within the vicinity that are considered active coal mines. “Active” refers to the permit being issued and at least one Increment bonded, but not necessarily the removal of coal. These permits are discussed in the following section.

## **II. CUMULATIVE IMPACT AREA (CIA)**

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.

There are six coal mines within the vicinity that will be considered in the Cumulative Impact Area (CIA) for this assessment. This includes the Black Warrior Minerals, Inc. Mine No. 1 (P-3950), located contiguous to the Mine No. 2 permit on the southwestern side, the MS&R Equipment Co., Inc. Sloan Mountain Mine No. 2 (P-3913) located northwest of the permit area across the Locust Fork, the Best Coal, Inc. Narley Mine (P-3850) located to the southwest of the permit area, the Drummond Coal Co. Knob Mine (P-3251) located west of the permit area, the Alden Resources, LLC Kimberly Mine (P-3982) located north of the permit area and Best Coal Inc. Jagger Mine (P-3932) located

west of the permit area. All of these mines are considered active, however at the time of this assessment P-3950, P-3913 and P-3850 are currently active with coal removal, P-3251 is active but under Temporary Cessation of Operations (TC), P-3932 and P-3982 are bonded with no activity yet. These permits include parts of the Cunningham Creek, Cane Creek-Locust Fork, Crooked Creek, and Campbell Creek sub-watersheds of the Locust Fork watershed. These mining operations are shown on Map No. 2 and an informational table is shown in Table 1 at the end of this assessment.

The critical point is a discharge-weighted technique used to find the concentrations of solutes at different locations in a stream system. Baseline conditions are needed for the general area as well as an estimate of solute concentrations for the proposed mining area. These are given in the PHC. For this permit, a site down stream of P-3932 (BCJMSW-3) on the Locust Fork will be used to estimate the cumulative effects of this mining operation with the effects of P-3950, P-3913, P-3251, P-3850 and P-3982 as well as site DSW-1 on Crooked Creek downstream of the Black Warrior Minerals, Inc. P-3950 Mine No. 1. These two sites are shown on Map No. 2.

The CIA for groundwater for this permit is limited to the proposed permit. The CIA has been selected based upon the Commission'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 areas. Other areas of proposed, future mining are not known at this time; however, no cumulative impacts to groundwater are expected due to the lack of a widespread, regional aquifer system. Groundwater occurs in openings along fractures and bedding planes generally in a sandstone unit within 250 to 350 ft. of the surface.

## **A. Geologic/Hydrogeologic Information**

### **i. Geology**

The proposed P-3987 permit area is located in the Cumberland Plateau section of the Appalachian Plateau. Locally, the strata which outcrops in the immediate vicinity of the Mine No. 2 site includes the Pennsylvanian aged Pottsville Formation, which includes sandstones, shales, siltstones, clays and coal seams associated with the Mary Lee Group. There are three mineable coal seams within the proposed permit area. These include in descending order the New Castle, Mary Lee and Blue Creek seams.

The average total overburden depth (to the Blue Creek seam) is 121 ft. and only the New Castle seam crops out within the permit area.

### **ii. Potentially Acid- and Toxic-Forming Materials**

Eight drill holes were used to describe the lithology for the area, with all eight being used for overburden analysis. Drill cuttings were taken every 5 ft. or change in lithology to at least 5 ft. below the coal seam in most instances 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 s.u. or a deficiency in calcium carbonate equivalent of at least 0 tons per 1,000 tons of material (T/KT).

### **iii. Surface Water**

The proposed permit area is located in the Locust Fork Basin and is drained by an unnamed tributary to Crooked Creek, an unnamed tributary to Turkey Creek, and an unnamed tributary to the Locust Fork. The Locust Fork is one of three Forks that make up the Black Warrior River.

The Alabama Department of Environmental Management (ADEM) has classified this portion of the Locust Fork as “Fish and Wildlife.” According to ADEM Admin. Code r. 335-6-11-.02, “use classifications apply water quality criteria adopted for particular uses based on existing utilizations, 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.” Map No. 4 shows the Black Warrior River Basin Classified Waters. This map can also be found at [www.adem.alabama.gov](http://www.adem.alabama.gov).

To characterize the existing quality and quantity of water within the vicinity of the permit area, baseline data were obtained and submitted in the permit application. The data includes discharge, pH, specific conductivity, TSS, iron, manganese, sulfates, acidity and alkalinity. Downstream surface water monitoring site DSW-1 on Crooked Creek was sampled on 19 occasions between 01-11-2010 and 04-29-2015. Upstream surface water monitoring site USW-1A on an unnamed tributary to Crooked Creek was sampled on ten occasions between 01-11-2010 and 7-29-2015. Downstream surface water monitoring site DSW-2 on an unnamed tributary to Locust Fork was sampled seven times between 12-30-2014 and 06-10-2015. Downstream surface water monitoring site DSTC-2 on Turkey Creek was sampled eight times between 12-30-2014 and 07-01-2015. Upstream surface water monitoring site USTC-1 on Turkey Creek was sampled eight times between 12-30-2014 and 07-01-2015. Upstream surface water monitoring site USUTCC-1 on an unnamed tributary to Crooked Creek was sampled seven times between 12-31-2014 and 06-10-2015. These surface water sites will be monitored on a quarterly basis through final bond release or until approval by the Regulatory Authority.

Additional parameters were monitored from each surface water site on a low flow and high flow discharge event. These parameters include specific metals associated with coal mining in the Warrior Coal Basin. These parameters will continue to be monitored bi-annually until a phase II bond release or approval by the Regulatory Authority. Table 2 included at the end of this assessment presents the baseline data. Tables 3 and 3a. show the additional surface water baseline parameters.

During mining, sixteen sediment control structures will be used under ADEM National Pollutant Discharge Elimination System (NPDES) Permit Number AL0079707. The purpose of sediment basins is to allow sediment to settle and not discharge into receiving streams.

#### **iv. Ground Water**

According to the Geohydrology and Susceptibility of Major Aquifers to Surface Water Contamination in Alabama; Area 4; USGS Water Investigations Report 88-4133, Area 4 is grouped into two types of major aquifers. These are the Knox-Shady and the Tusculumbia- Fort Payne. The geologic structure of the area has disrupted the regional continuity of the formations, so that each major aquifer type occurs repeatedly in different parts of this area. Because of this, the same aquifer type may be present in adjacent valleys, but not be hydraulically connected because of faulting and folding. The Pottsville aquifer is used for water supply within this area, but is not considered a major aquifer.

According to Geohydrology and Susceptibility of Major Aquifers to Surface Water Contamination in Alabama; Area 3; USGS Water Investigations Report 88-4120, which discusses the Pottsville aquifer in greater detail, groundwater in the Warrior Basin occurs in fractures and along bedding planes in the Pottsville Formation. The sandstone beds within 250 to 350 ft. of the surface generally contain the most productive water-bearing openings. Regionally, the primary source of recharge to groundwater is rainfall, which averages 54 inches per year. The Pottsville aquifer is tightly cemented and has small primary porosity and permeability, and the yields of public water for wells completed in this aquifer are less than 0.15 Mgal/d (million gallons per day). This aquifer is also commonly high in iron.

Water in the Pottsville aquifer occurs under confined conditions due to sharp contrast in permeability within the aquifer. Groundwater usually occurs at depths of less than 200 ft. 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.

As stated earlier, 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 to the confining beds, and movement within the aquifer generally is from hills and highland areas to streams and other areas of natural discharge.

Little is known about recharge and ground water movement in the Pottsville Formation, however, 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 some 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.

### **Domestic Wells**

A well inventory of the proposed permit area revealed 158 residences within a ½ mile radius of the proposed permit site. Six residents have wells, however only one of the residents utilizes their well which is for outdoor uses only. The primary water source for all residents is obtained from the Birmingham Water Works Board.

### **Company Installed Wells**

Groundwater monitoring sites used for describing the local characteristics within and adjacent to the Mine No. 2 include groundwater monitoring sites MW-2, MW/OB-4 and MW/OB-8.

Groundwater monitoring well MW-2 is drilled to a depth of approximately 50 ft. into a sandstone unit approximately 21 ft. below coal. It is cased to a depth of 22 ft. and monitors the characteristics of groundwater above and below the Mary Lee seam.

Groundwater monitoring well MW/OB-4 is drilled to a depth of approximately 165 ft. into a sandstone unit of the Pottsville Formation. It is cased to approximately 20 ft. and open hole the rest of the depth. This well monitors to below the Blue Creek seam.

Groundwater monitoring well MW/OB-8 is drilled to a depth of approximately 122 ft. into sandstone. It is cased for only approximately 20 ft. and open hole the rest of the depth. This well monitors to below the Blue Creek seam in the Pottsville Formation.

Baseline data was submitted for the monitoring wells. This data is summarized in Table 5 at the end of this assessment. Groundwater characteristics show similar quality to the aquifer characteristics of the Pottsville Formation.

## **B. Coal Processing Waste**

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

## **C. 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 ground water quality/quantity will be discussed in detail in the following Surface Water and Ground Water sections.

#### **B. Potentially Acid- and Toxic-Forming Materials**

Laboratory analyses of the bedrock overlying the Blue Creek coal seam show that the overburden at the Mine No. 2 contains 3480.4 tons/acre excess  $\text{CaCO}_3$  (calcium carbonate); a neutralization potential of +16.29, and an acid-base account of 10.23 (tons  $\text{CaCO}_3$ /1000 tons overburden). It should be noted that an acid-base account is not a water quality prediction tool, but instead is used to support the ability of vegetation to be established and supported. According to the "Coal Mine Drainage Prediction and Pollution Prevention in Pennsylvania" publication by the Pennsylvania Department of Environmental Protection, excess neutralization potential most likely produces alkaline drainage.

The materials handling plan included in the permit application will require any potentially acid- and toxic-forming strata encountered (such as spoiled coal) to be covered with a minimum of four ft. of non-toxic, non-combustible earthen material. Also, this material may not be placed within the root zone. The material will undergo relatively quick burial that will restrict the development of acid-forming conditions.

The sulfur percentages are very low in the overburden analysis, which is a major constituent in the acid-forming process. Such low sulfur values are a good indicator of inability for the acid forming process to begin and the overburden contains the ability to neutralize any potential acid that may be generated, though not anticipated.

### C. Surface Water

Based on laboratory analysis of the samples collected at surface water sites DSW-1, USW-1A, DSW-2, DSTC-2, USTC-1 and USUTCC-1, the water quality in this area shows neutral pH, low iron, low manganese and low to variable specific conductivity. Surface water monitoring site DSW-1 is used for the current P-3950 Black Warrior Mineral, Inc. Mine No. 1. Baseline data as compared to 'in operation' water data show an increase in specific conductivity only.

The initial critical point for surface water evaluation was the Best Coal, Inc. Jagger Mine surface water site BCJMSW-3 downstream of permits P-3982, P-3950, P-3913, P-3850, P-3932 and P-3251 on the Locust Fork. However this surface water site belongs to the Best Coal, Inc. Jagger Mine P-3932 which has not begun operation yet. As such, only baseline water data is available. Because of the limited data at the BCJMSW-3 site a downstream surface water site for P-3950 will be utilized as critical point as well. DSW-1 on Crooked Creek will be utilized as a critical point on Crooked Creek and BCJMSW-3 will be used as a critical point on the Locust Fork. These points are shown on Map No. 2 at the end of this assessment.

The critical Point evaluation was used to determine the new concentration of total suspended solids (TSS) and iron (Fe) during mining at average flow.

$$C_{nc} = \frac{Q_a C_a + Q_c [(A_c - A_a) / A_c] C_g}{Q_a + Q_c [(A_c - A_a) / A_c]}$$

Where:

$C_{nc}$  = new concentration at the critical point,

$C_g$  = concentration from the general area,

$C_a$  = concentration from the anticipated mine area,

$A_c$  = drainage area above the critical point

$A_a$  = anticipated mine area in the drainage basin,

$Q_a$  = average flow from the anticipated mining area in the drainage basin, and

$Q_c$  = average flow at the critical point

Using current monitoring data at the critical point and the information from the water quality and quantity projections, the new concentrations of analyzed parameters on Crooked Creek site DSW-1 and the Locust Fork site BCJMSW-3 are as follows:

	<b>DSW-1</b>	<b>BCJMSW-3</b>
TSS $C_{nc}$	10.7 mg/L	33.7 mg/L
Fe $C_{nc}$	0.82 mg/L	1.19 mg/L

A worksheet is available in Tables 4 and 4a. following this assessment.

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 are designed to retain all settleable solids, skim and retain all floating solids, and provide adequate detention volume and time to minimize the contribution of suspended solids and dissolved solids into the receiving streams. Effluent from the sediment basins will be monitored by the permittee in accordance with NPDES permit requirements issued by ADEM. The effluent will be chemically treated, if necessary, in accordance with the NPDES permit. The basins will be monitored bi-monthly through final bond release in order to characterize and document any effects the mining may have on the surface-water hydrologic balance.

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. Limits and monitoring requirements for these parameters can be found in both the Hydrologic Monitoring Plan for this permit, as well as the ADEM NPDES Permit No. AL0079707.

Any 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. Table 5 shows the post-mining water quality projections based on the downstream site Crooked Creek.

#### **D. Ground Water**

Laboratory analyses of samples collected from the installed wells reveal the ground water within the bedrock strata below the Blue Creek seam is neutral to slightly acidic. The water is mineralized with elevated levels of (at a minimum) iron, resulting in moderate conductivity measurements, which is typical of the Pottsville Formation. For a summary of the baseline data collected from the installed monitoring wells, please refer to Table 6 at the end of this assessment.

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. No long-term impact is anticipated to the ground water quality for the aquifer below the Blue Creek Seam due to the dip of the strata as well as the folding and structure of the area.

As discussed previously, the bedrock strata that will be excavated during the mining operations are predominantly non-acid and non-toxic. Should any increase in mineralization occur in the ground water as a result of the proposed activities, it is anticipated the levels will diminish and return to pre-mining concentrations once mining and reclamation activities are complete. Ground water will be further protected by properly abandoning and sealing all drill holes completed at the site (with the exception of blast holes) that will not be used for monitoring purposes. With regard to the availability of ground water after mining and reclamation is complete as compared to existing quantities, the backfilled spoil material will have a greater recharge capacity as compared to the undisturbed strata.

According to the permit application as well as published reports, groundwater movement is in the south and west directions, however groundwater movement in this area is influenced by streams, as well as local surface topography.

#### **IV. CONCLUSION**

The assessment of probable cumulative impacts of the Black Warrior Minerals, Inc. P-3987 Mine No. 2 finds the proposed operations have been designed to prevent material damage to the hydrologic balance outside the proposed permit area.

## **V. TABLES AND MAPS**

Table 1	CIA Mining Operations
Table 2	Ranges/Averages of Surface-Water Quality/Quantity
Table 3	Additional Surface Water Baseline Data High Flow
Table 3a.	Additional Surface Water Baseline Data Low Flow
Table 4	Critical Point Evaluation DSW-1
Table 4a.	Critical Point Evaluation BCJMSW-3
Table 5	Estimate of Post-Mining, Average Event Surface Water Quality
Table 6	Ground Water Baseline Data
Map No. 1	Permit and Adjoining Mining
Map No. 2	Cumulative Impact Areas
Map No. 3	Surface Water / Groundwater Monitoring Sites
Map No. 4	Black Warrior River Basin Classified Waters

**Table 1**

**Mining Operations in the Cumulative Impact Area**

Permit No.	Permittee	Permit Name	Date Issued	Acres*	Current Condition	Coal Seams
P-3950	Black Warrior Minerals, Inc.	Mine No. 1	2/10/2011	354	Active, coal removal	New Castle Mary Lee Blue Creek Jagger
P-3913	M S & R Equipment Co. Inc.	Sloan Mountain Mine No. 2	10/23/2009	615	Active, coal removal	Lick Creek Jefferson Black Creek
P-3850	Best Coal, Inc.	Narley Mine	3/30/2004	611	Active, coal removal	New Castle Mary Lee Blue Creek
P-3251	Drummond Company, Inc.	Knob Mine	3/1/1983	1161	Active, Temporary Cessation	Lick Creek Jefferson Black Creek
P-3982	Alden Resources, LLC	Kimberly Mine	8/4/2015	140	Bonded, no activity yet	Lick Creek Jefferson Black Creek
P-3932	Best Coal, Inc.	Jagger Mine	9/16/2011	615	Bonded, no activity yet	Jagger Ream

\*Acres at Issuance

**Table 2**  
**Ranges/Averages of Surface-Water Quality/Quantity Stream Points**  
**P-3987**

Parameter	DSW-1 DS Crooked Creek	USW-1A US UT Crooked Creek	DWS-2 DS UT Locust Fork	DSTC-2 DS Turkey Creek	USSTC-1 US Turkey Creek	USUTCC-1 US UT Crooked Creek
Discharge Rate (cfs)	0.3188 - 183.67 (25.2)	0.0109 - 4.3741 (1.09)	0.0135 - 1.2750 (0.32)	17.00 - 255.00 (183.7)	14.57 - 611.97 (236.34)	0.005 - 1.27 (0.47)
Field pH (S. U.)	6.81 - 8.48	6.65 - 7.96	7.01 - 8.71	6.81 - 8.22	6.68 - 8.42	7.36 - 7.99
Total Suspended Solids (mg/L)	4 - 34 (10.3)	1 - 8 (4.8)	3 - 10 (6.3)	2 - 39 (10.3)	3 - 25 (8.6)	1 - 6 (2.4)
Total Iron (mg/L)	0.11 - 2.25 (0.51)	0.03 - 0.36 (0.24)	0.31 - 1.19 (0.57)	0.02 - 2.58 (0.65)	0.05-2.72 (0.59)	0.04 - 0.34 (0.21)
Total Manganese (mg/L)	0.05 - 0.28 (0.11)	0.03 - 0.44 (0.13)	0 - 0.14 (0.02)	0.05 - 0.12 (0.07)	0.04 - 0.13 (0.07)	0.00
Specific Conductivity 25 °C (µmhos/cm)	149 - 1289 (426)	45 - 393 (180.2)	43 - 150 (80.1)	173 - 413 (256.37)	173 - 347 (261.8)	56 - 142 (73)
Acidity (mg/L)	0 - 14 (8.4)	0 - 11 (5.5)	0 - 10 (5.6)	2 - 31 (7.88)	2 - 15 (5.9)	5 - 48 (14.7)
Alkalinity (mg/L)	20 - 68 (40.5)	10 - 46 (20)	12 - 61 (24.6)	47 - 124 (82.6)	21 - 126 (77.6)	11 - 20 (15)
Sulfates (mg/L)	36 - 283 (109)	2 - 92 (45.8)	43 - 150 (80.1)	14 - 25 (22.4)	6 - 30 (19.5)	15 - 19 (16.7)

Average values are set in parentheses.  
Averaged via all data, not seasonally.  
DS = Downstream  
US = Upstream  
UT = Unnamed Tributary

**Table 3**  
**Additional Surface Water Baseline Data**  
**High Flow Metals Data**

Parameter	DSW-1	USW-1A	DSW-2	DSTC-2	USTC-1	USUTCC-1
Antimony (µg/L)	BML	BML	BML	BML	BML	BML
Arsenic (µg/L)	BML	BML	1.03	0.50	1.01	BML
Beryllium (µg/L)	BML	BML	BML	BML	BML	BML
Cadmium (µg/L)	BML	BML	BML	BML	BML	BML
Chromium (µg/L)	BML	BML	BML	BML	BML	BML
Copper (µg/L)	BML	BML	12.96	BML	1.55	BML
Lead (µg/L)	BML	BML	1.29	0.55	1.37	BML
Nickel (µg/L)	BML	BML	25.30	BML	BML	BML
Selenium (µg/L)	BML	BML	BML	BML	BML	BML
Silver (µg/L)	BML	BML	BML	BML	BML	BML
Thallium (µg/L)	BML	BML	BML	BML	BML	BML
Zinc (µg/L)	BML	BML	BML	BML	16.74	16.87

\*Flow shown in cfs  
 BML = Below Measurable Limits

**Table 3a.  
Additional Surface Water Baseline Data  
Low Flow Metals Data**

Parameter	DSW-1 0.5049*	USW-1A 0.0109*	DSW-2 17.0*	DSTC-2 0.0135*	USTC-1 14.57*	USUTCC-1 0.0054*
Antimony (µg/L)	BML	BML	BML	BML	BML	BML
Arsenic (µg/L)	0.39	BML	0.72	1.02	0.67	BML
Beryllium (µg/L)	BML	BML	BML	BML	BML	BML
Cadmium (µg/L)	BML	BML	BML	BML	BML	BML
Chromium (µg/L)	BML	BML	BML	BML	BML	BML
Copper (µg/L)	0.91	BML	BML	0.92	BML	BML
Lead (µg/L)	BML	BML	BML	0.55	BML	BML
Nickel (µg/L)	BML	BML	BML	BML	BML	BML
Selenium (µg/L)	BML	BML	BML	BML	BML	BML
Silver (µg/L)	BML	BML	BML	BML	BML	BML
Thallium (µg/L)	BML	BML	BML	BML	BML	BML
Zinc (µg/L)	BML	BML	BML	BML	BML	BML

\*Flow shown in cfs

BML = Below Measurable Limits

**Table 4**  
**Black Warrior Minerals, Inc. P-3987**  
**Critical Point Evaluation DSW-1**

$$C_{nc} = \frac{Q_a C_a + Q_c [(A_c - A_a) / A_c] C_g}{Q_a + Q_c [(A_c - A_a) / A_c]}$$

$C_{nc}$  = new concentration at the critical point,  
 $C_g$  = concentration from the general area,  
 $C_a$  = concentration from the anticipated mine area,  
 $A_c$  = drainage area above the critical point  
 $A_a$  = anticipated mine area in the drainage basin,  
 $Q_c$  = average flow at the critical point

			Units
<b>Standards:</b>	<b>A<sub>c</sub></b>	16.2	sq mi
	<b>A<sub>a</sub></b>	1.96	sq mi
	<b>Q<sub>a</sub></b>	26.56	cfs
	<b>Q<sub>c</sub></b>	25.2	cfs

<b>Variables:</b>	<b>C<sub>g</sub></b>	<b>C<sub>a</sub></b>	<b>Units</b>
TSS	10.3	11	mg/L
Fe	0.51	1.07	mg/L

<b>Results:</b>	<b>C<sub>nc</sub></b>
TSS	10.7 mg/L
Fe	0.82 mg/L

**A<sub>c</sub>** Data from P-3987 PHC  
**A<sub>a</sub>** Data from P-3987 PHC  
**Q<sub>a</sub>** Data taken P-3987 PHC  
**Q<sub>c</sub>** Data taken P-3987 Surface Water Hydrology

**Table 4a.**  
**Black Warrior Minerals, Inc. P-3987**  
**Critical Point Evaluation BCJMSW-3**

$$C_{nc} = \frac{Q_a C_a + Q_c [(A_c - A_a) / A_c] C_g}{Q_a + Q_c [(A_c - A_a) / A_c]}$$

$C_{nc}$  = new concentration at the critical point,  
 $C_g$  = concentration from the general area,  
 $C_a$  = concentration from the anticipated mine area,  
 $A_c$  = drainage area above the critical point  
 $A_a$  = anticipated mine area in the drainage basin,  
 $Q_c$  = average flow at the critical point

			Units
<b>Standards:</b>	<b>A<sub>c</sub></b>	871.4	sq mi
	<b>A<sub>a</sub></b>	1.96	sq mi
	<b>Q<sub>a</sub></b>	25.2	cfs
	<b>Q<sub>c</sub></b>	994.2	cfs

<b>Variables:</b>	<b>C<sub>g</sub></b>	<b>C<sub>a</sub></b>	<b>Units</b>
TSS	34.3	10.3	mg/L
Fe	1.27	0.51	mg/L

<b>Results:</b>	<b>C<sub>nc</sub></b>
TSS	33.7 mg/L
Fe	1.19 mg/L

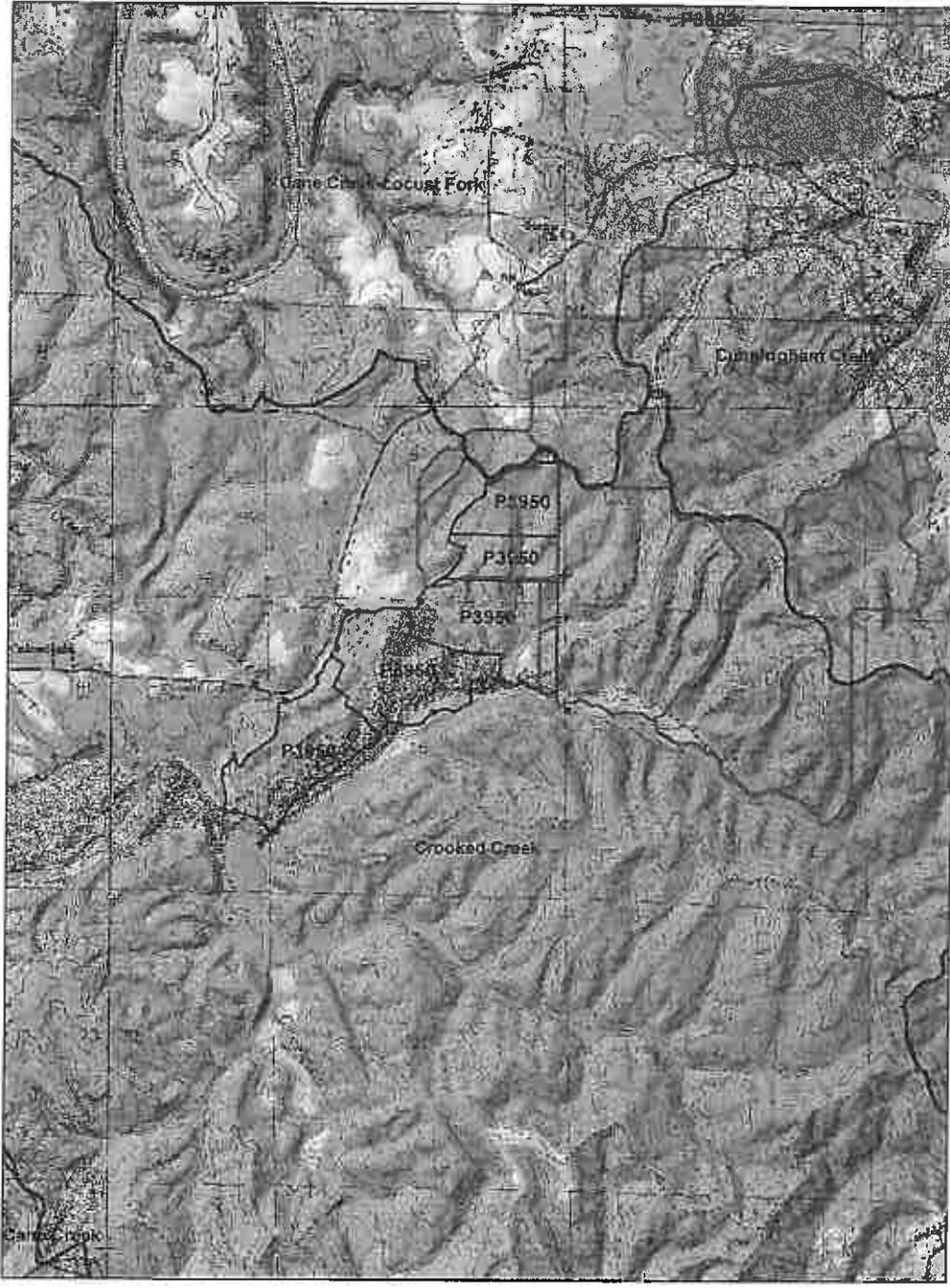
- A<sub>c</sub>** Data from P-3932 PHC
- A<sub>a</sub>** Data from P-3987 PHC
- Q<sub>a</sub>** Data taken from Permit Application PHC
- Q<sub>c</sub>** Data taken from Permit Application Surface Water Hydrology

<b>Table 5 P-3987 Estimate of Post-Mining, Average Event Surface-Water Quality DSW-1</b>	
<b>Parameter</b>	<b>Estimated Value</b>
Flow (cfsm)	1.59
pH (s.u.)	7.39
Iron (mg/L)	1.07
Manganese (mg/L)	0.55
Specific Conductivity 25 °C (µmhos/cm)	470
TSS (mg/L)	11

<b>Table 6 P-3987 Groundwater Baseline Data</b>			
<b>Parameter</b>	<b>MW-2</b>	<b>MW-4</b>	<b>MW-8</b>
Water Level (ft. below surface)	18.0 – 25.0 (23.7)	94.0 – 116.0 (99.2)	15.0 – 19.0 (16.7)
Specific Conductivity 25 °C (µmhos/cm)	49 - 139 (98)	290 - 407 (335)	349 - 404 (377)
Total Iron (mg/L)	0.72 – 12.55 (7.34)	0.92 – 18.11 (6.68)	0.44 – 4.83 (3.02)
Total Manganese (mg/L)	0.05 – 0.43 (0.20)	0.10 – 0.91 (0.26)	0.08 – 0.24 (0.14)
Field pH (s.u.)	6.86 – 8.03	6.11 – 7.61	6.87 – 7.65
Sulfates (mg/L)	BML* - 11	17 - 54 (34)	6 - 30 (17.5)
Average values are set in parentheses. Averages calculated as geometric means *BML – Below Measurable Limits			

**Map No. 1**  
**P-3987**  
**Permit Area and Adjacent Mining**

1



Base Map USGS Shaded Relief

0 0.15 0.3 0.6 0.9 1.2  
Miles

**Legend**

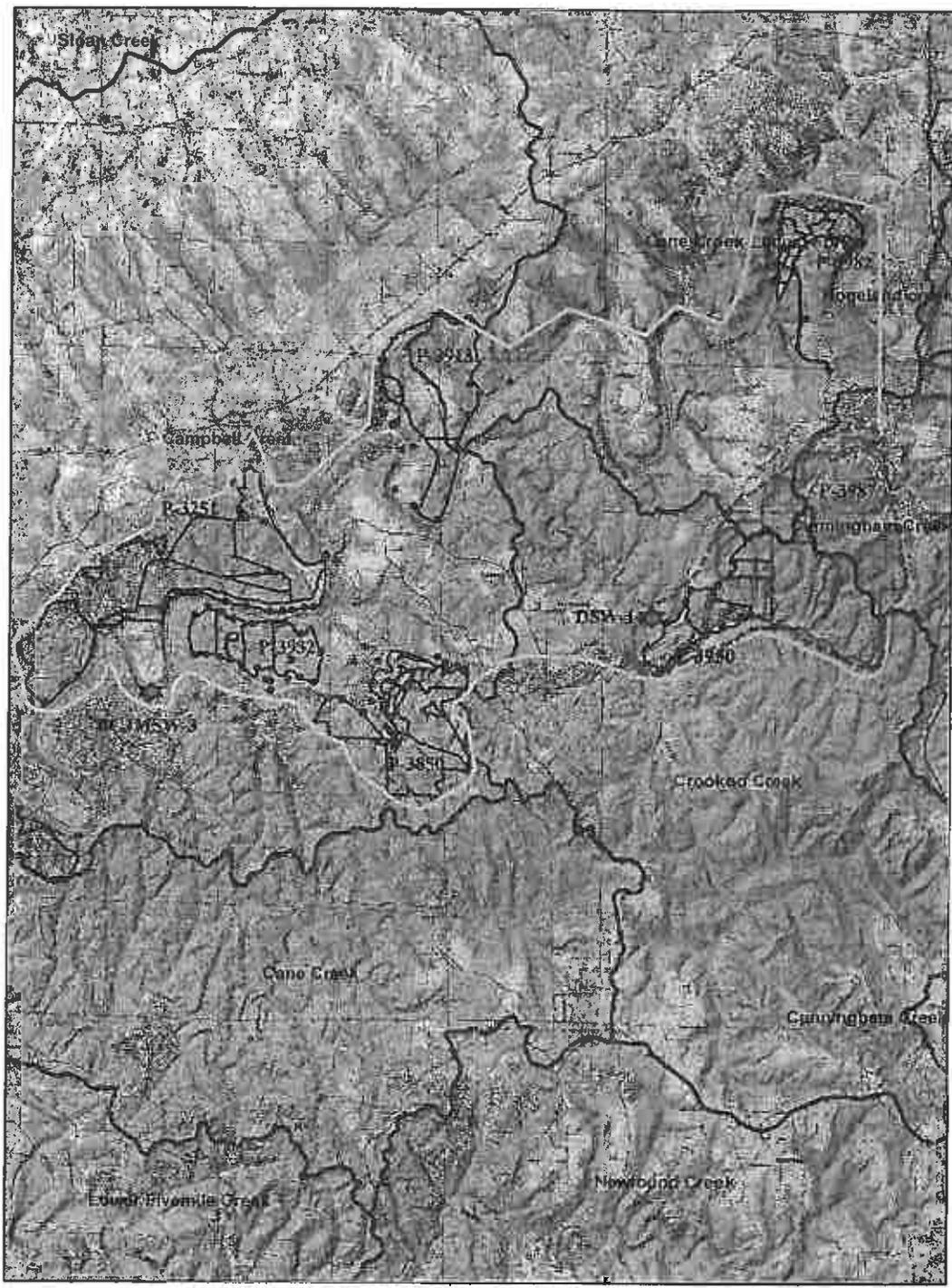
 P-3987 Area

 Surface Water Monitoring Site

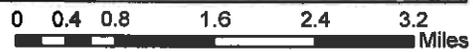
 HUC 12 Watershed Boundary (with watershed name)

**Map No. 2  
P-3987  
Cumulative Impact Areas**

1



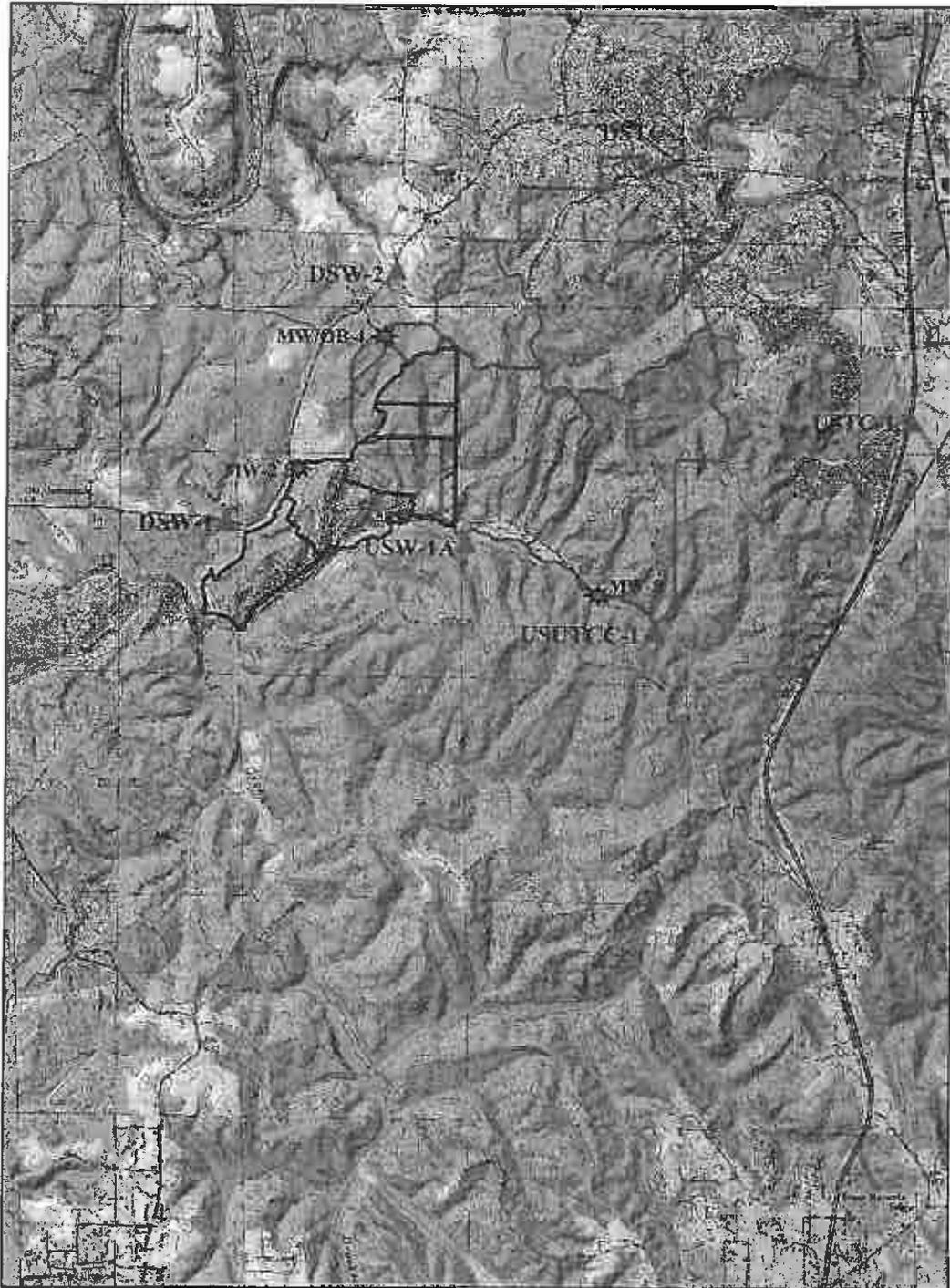
Base Map USGS Shaded Relief



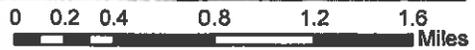
<b>Legend</b>	
 Surface Water CIA	 Groundwater CIA
 Surface Water Monitoring Sites	 Critical Point Site
 HUC 12 Watershed Boundary (with watershed name)	

**Map No. 3**  
**Surface Water / Groundwater Monitoring Sites**

**1**



Base Map USGS Shaded Relief



<b>Legend</b>	
Permit Area	P-3950 Permit Area
Groundwater Monitoring Site	Surface Water Monitoring Site

