



United States Department of the Interior

FISH AND WILDLIFE SERVICE
1208-B Main Street
Daphne, Alabama 36526

IN REPLY REFER TO:

2006-TA-0616

April 25, 2006

ASMC PERMIT FILE

P- 3888

Mr. Keith Madison
PERC Engineering Co., Inc.
P.O. Box 1712
Jasper, Alabama 35502

Dear Mr. Madison:

Thank you for your letter dated April 5, 2006, requesting our review of a proposed new surface coal mine, Old Union Mine, located northeast of Nauvoo, Winston County, Alabama. We are providing the following comments in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.) and the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Federally Listed Species

We have determined that the following Federally listed species may occur in your project area:

red-cockaded woodpecker (*Picoides borealis*) – Endangered

flattened musk turtle (*Sternotherus depressus*) – Threatened

ovate clubshell mussel (*Pleurobema perovatum*) - Endangered

Kral's water-plantain (*Sagittaria secundifolia*) – Threatened

Alabama streak-sorus fern (*Thelypteris pilosa* var. *alabamensis*) – Threatened

Mohr's Barbara's buttons (*Marshallia mohrii*) – Threatened

White fringeless orchid (*Platanthera integrilabia*) - Candidate



Please see the enclosed Fact Sheet for a brief description of these species and their habitats.

If suitable red-cockaded woodpecker nesting habitat (containing pine trees greater than 60 years old, with tree diameter at breast height greater than or equal to 10 inches) may be impacted by the project, then surveys should be conducted to determine the presence or absence of this woodpecker species. If pine stands of this age will not be affected, then surveys for this species

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P- 3888

are unnecessary and further consultation on red-cockaded woodpecker with this office is unnecessary.

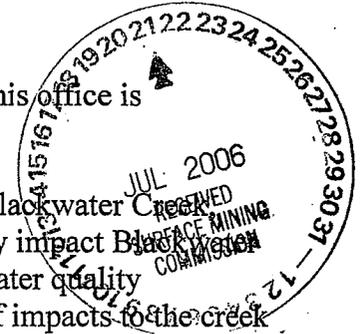
The flattened musk turtle and ovate clubshell mussel are known to occur in Blackwater Creek downstream of the proposed mining operation. If the project could negatively impact Blackwater Creek through increases in arsenic, selenium or mercury, siltation, or other water quality degradation, we recommend you contact this office for further discussions. If impacts to the creek and potential flattened musk turtle nesting habitat can be avoided through use of adequate vegetated buffers, settling ponds, and other BMPs, no further consultation is necessary. A vegetated buffer of at least 100 feet is recommended adjacent to Blackwater Creek and any of its tributaries.

We recommend that a survey for Mohr's Barbara's buttons, Kral's water-plantain, and the Alabama streak-sorus fern be conducted by a botanist. Prior experience with these particular species is strongly recommended for the consultant undertaking the survey, as is a visit to a known population of the species immediately prior to the survey to become familiar with the species, habitat and condition of plants at that time of year. Surveys cannot be accepted if the plant has no above-ground vegetation at the time of the survey. Mohr's Barbara's buttons can be seen from May to September. Alabama streak-sorus fern and Kral's water-plantain are visible year round. Please provide the names of surveyors, their credentials, and a thorough description of survey methods as well as shrub and forb species observed. If no suitable habitat exists within the impacted areas, a survey for these species is unnecessary.

The white fringeless orchid is not Federally listed, but is a Candidate species, and currently afforded no protection under the Endangered Species Act. A survey for this species is not required, but recommended. This information is being provided to alert you that the species could be proposed for listing in the future. If this species is listed, we recommend that you contact us concerning any additional survey or protective measures needed.

Wetlands Advisory

Upon review of the National Wetland Inventory (NWI) maps, it appears that there may be wetlands in the project area. The U.S. Army Corps of Engineers (USACE) recommends that a developer contact them if any amount of fill material may be placed in a water of the U.S., including any wetland. This includes mechanical land clearing and temporary stream rerouting or diversion. This also includes temporary or permanent basins constructed in intermittent or perennial streams for erosion control or storm water management purposes. If the project involves a discharge of fill material into water of the U.S., the developer will be required to apply for a Department of the Army permit. For very small impacts, the project could possibly be authorized under one the USACE's Nationwide Permits or Regional Permits (with verification by the USACE). However, projects impacting more than 0.5 acres of wetlands or 300 feet of stream will likely require an Individual Department of the Army Permit. The USACE will work with the developer to assess and minimize the impacts and determine possible mitigation requirements to compensate for stream and wetland or other losses and protect water quality and fish and wildlife.



Additional Recommendations

We strongly recommend that Birmingham Coal & Coke Company, Inc. closely adhere to Alabama Surface Mining Commission Administrative Code, Chapter 880-X-10C, PERFORMANCE STANDARDS SURFACE MINING ACTIVITIES, and develop an erosion control plan tailored to the mining site. We also recommend development of mine plans that closely adhere to protective measures in ADEM regulations sections 335-6-10-.06(a) and (c), to maintain minimum water quality conditions applicable to all State waters.

We recommend the following best management practices (BMPs) to control erosion and minimize impacts to aquatic systems:

- provide 100-ft naturally vegetated buffers adjacent to any streams, ditches, or drainages consisting of trees, shrubs, and grasses, or other herbaceous species to protect surface waters from soil runoff and mining contaminants.
- inspect BMP structures within 24 hours of each significant rainfall event and take immediate corrective action if erosion or soil runoff is observed.
- monitor water quality (especially turbidity or total suspended solids) to assure that discharges/runoff do not increase stream turbidity above background levels.
- immediately revegetate any disturbed areas not actively mined.
- execute any work that results in exposed earth on slopes leading to wetlands or other waters during periods when significant rainfall is not predicted.
- maintain at all times the State's standard for pH ("Wastes shall not cause the pH to deviate more than one unit from the normal or natural pH, nor be less than 6.0, nor greater than 8.5" (ADEM 1992)). This is particularly important for sustaining a healthy ecosystem and aquatic fauna.
- for specific techniques, consult the "Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (2003)" available from Alabama Soil and Water Conservation Committee or on-line:

http://www.swcc.state.al.us/pdf/HANDBOOK_EROSIONCTRL.pdf

If you have any questions or need additional information, please contact Mr. Rob Hurt at (256) 24-2526/2728/2930/31/353-7243 ext. 29. Please refer to the reference number located at the top of this letter.

Sincerely,



Carol A. Pollio
Acting Field Supervisor

Enclosure



Fact Sheet

Red-cockaded Woodpecker

The red-cockaded woodpecker is 18 to 20 cm long with a wing span of 35 to 38 cm. There are black and white horizontal stripes on its back, and its cheeks and underparts are white. Its flanks are black streaked. The cap and stripe on the side of the neck and the throat are black. The male has a small red spot on each side of the black cap. After the first post fledgling molt, fledgling males have a red crown patch. Egg laying occurs during April, May, and June with the female utilizing her mate's roosting cavity for a nest. Most often, the parent birds and some of their male offspring from previous years form a family unit called a group. Commonly, these groups are comprised of three to five birds. Rearing the young birds becomes a shared responsibility of the group. This bird's range is closely tied to the distribution of southern pines. Historically, the red-cockaded woodpecker occurred from East Texas and Oklahoma, to Florida, and north to New Jersey. Open stands of pines with a minimum age of 60 years provide suitable nesting habitat. Longleaf pines (*Pinus palustris*) are most commonly used, but other species of southern pine are also acceptable. Dense stands (stands that are primarily hardwoods, or that have a dense hardwood understory) are avoided. Foraging habitat is provided in pine and pine hardwood stands 30 years old or older, with foraging preference for pine trees 10 inches or more in diameter. In good, well-stocked pine habitat, sufficient foraging substrate can be provided on 80 to 125 acres. Pictures of the red-cockaded woodpecker and its nest cavity can be seen at:

<http://www.bragg.army.mil/esb/images/rcwl.jpg>
http://consci.org/Eglin/images/gallery_photos/rcw te.jpg

Flattened Musk Turtle

The flattened musk turtle is a small aquatic turtle with a distinctly flattened carapace up to 10 inches long. The keel is virtually, if not altogether, lacking. The carapace is dark brown to orange with dark bordered seams and is slightly serrated along the back edge. The plastron is pink to yellowish. The head is greenish with a dark network pattern which often breaks up to form spots on the top of the snout. Stripes on the top and sides of the neck, if present, are narrow. There are two barbels on the chin. All four feet are webbed, and males have thick, long, spine-tipped tails. The diet of the flattened musk turtle consists primarily of mollusks when available, and sometimes insects. Although the flattened musk turtle is capable of living in a variety of streams and lakes, its optimum habitat appears to be free-flowing large creeks or small rivers with vegetated shallows about 2-ft deep alternating with pools 3.6 to 5-ft deep. These pools have a detectable current and an abundance of crevices and submerged rocks, overlapping flat rocks, or accumulations of boulders. Flattened musk turtles nest up to 300 feet from the river bank in full to partial sun areas such as woodlands and roadsides. The nesting season for this turtle is from May 1 to September 15. A picture of the flattened musk turtle can be seen at:

<http://www.chelonia.org/SdepressusJHs1.jpg>



Ovate Clubshell

The ovate clubshell is a small to medium-sized mussel that rarely exceeds 50 mm in length. The shell is oval to elliptical in shape, with a nearly terminal beak cavity. The posterior ridge is well developed, broadly rounded, and often concave. The posterior slope is produced well beyond the posterior ridge. The outer surface color varies from yellow to dark brown, occasionally with broad green rays covering most of the umbo and posterior ridge. The inner surface is white. The habitat of the ovate clubshell is sand or gravel shoals and runs of small rivers and large streams. Primary threats to this mussel include changes in river and stream channels due to dams, dredging, or mining, and historic or episodic pollution events. A picture of the ovate clubshell can be seen at:

<http://bama.ua.edu/~clydeard/clam/pperovatum.jpg>

Alabama Streak-Sorus Fern

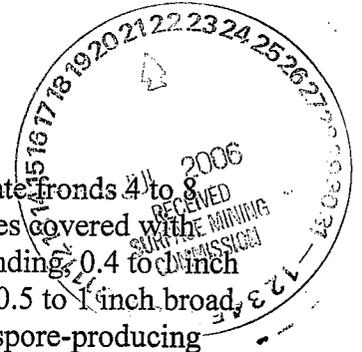
The Alabama streak-sorus fern is a small, evergreen fern with linear-lanceolate fronds 4 to 8 inches long. The fronds appear clustered, arising from short, slender rhizomes covered with reddish-brown scales. The stipe portion of the frond is slender, erect to ascending, 0.4 to 0.8 inch long, and covered with long hairs. The blade is typically 1 to 4 inches long, 0.5 to 1 inch broad, and divided once into many ovate to suborbicular leaf segments. Groups of spore-producing reproductive structures (sori) occur on the underside of the blades and are linear in shape. This is the only southeastern species of *Thelypteris* which lacks a thin membrane that covers the sori. Alabama streak-sorus fern takes root in crevices or on rough rock surfaces of Pottsville sandstone. Plants typically occur on "ceilings" of sandstone overhangs, on ledges beneath overhangs and on exposed cliff faces. These bluffs and overhangs are usually directly above the stream, but some may be away from the stream. These sites are kept moist by natural water seepage over the sandstone from up-slope runoff. Threats include impoundments, bridge construction, vandalism and incidental damage from recreational use and timbering of upslope forests. A picture of the Alabama streak-sorus fern can be seen at:

http://www.pfmt.org/wildlife/endangered/images/al_streak.jpg

Kral's Water-Plantain

An aquatic perennial herb, Kral's water-plantain arises from a stiff, elongated rhizome up to 10 cm in length. This plant can float above or below the water's surface. The shape of its leaves depends upon the velocity and depth of its habitat. In swift shallows, the leaves are linear, rigid, and sickle-shaped, 5 to 8 cm long and 2 to 5 cm wide. In quiet deep waters, the leaves are more quill-like, being longer (10 to 30 cm), linear in shape, and tapering. The petals are inconspicuous in the female flowers; however, in the male flowers, they are white and 1 to 1.5 cm long. The fruit consists of a cluster of achenes approximately 2 mm in length. Although infrequent, flowering occurs from May into July, and intermittently into the fall. Kral's water-plantain typically occurs on frequently exposed shoals or rooted among loose boulders in quiet pools up to one meter in depth. The immediate banks are often dominated by shrubs. The stream bottoms are typically narrow and bounded by sandstone. Substrates in the area are unconsolidated. A picture of Kral's water-plantain can be seen at:

http://www.pfmt.org/wildlife/endangered/images/kral's_water.jpg

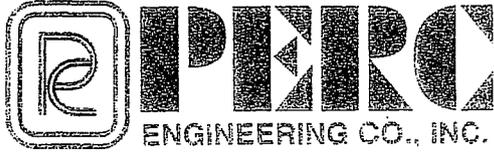


Mohr's Barbara's Buttons

A sunflower, Mohr's Barbara's buttons is an erect, perennial herb. The plant grows to 1-2 ft, or slightly greater in height. Its leaves are alternate, lance-oblong shaped, firm-textured, and three-veined. The leaves, about 3-8 inches long, are usually clustered near the base and gradually taper in size upwards. Mohr's Barbara's buttons has tubular-shaped flowers produced in several heads in a branched arrangement. The flowers are white to pale pink and are seen from mid-May through June. The fruit, an achene, is produced in July and August. This species typically occurs in moist prairie-like openings in woodlands and along shale-bedded streams. Populations extending onto right-of-ways (ROW's) are threatened by routine application of herbicides, future road expansions and the potential use of the ROW's for installation of utility lines (water and sewer lines). Suitable habitat continues to be converted for agricultural use. A picture of Mohr's Barbara's buttons can be seen at:

http://www.pfmt.org/wildlife/endangered/images/mohr's_barb.jpg





Telephone: (205) 384-5553
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Web Address: www.percengineering.com

July 14, 2006

Mr. Larry Goldman
Fish and Wildlife Services
Daphne ES Field Office
1208-B Main Street
Daphne, AL 36526

ASMC PERMIT FILE
P- 3888

RE: Birmingham Coal & Coke Co., Inc.
Old Union Mine
2006-TA-0616

Dear Mr. Goldman:

As per your April 25, 2006 letter, attached please find site surveys of the Red-cockaded Woodpecker, Kral's water-plantain, Alabama streak-sorus fern, Mohr's Barbara's buttons, and the White Fringless orchid negating their existence or existence of their habitat at the Old Union Mine. Please process as necessary. Your prompt consideration will be appreciated.

Also, it is noted that all performance standards as specified by the rules and regulations of the Alabama Surface Mining Commission will be adhered to during mining operations at the Old Union Mine Attached, please find a Biological Evaluation for the above referenced mine site. Please process as necessary.

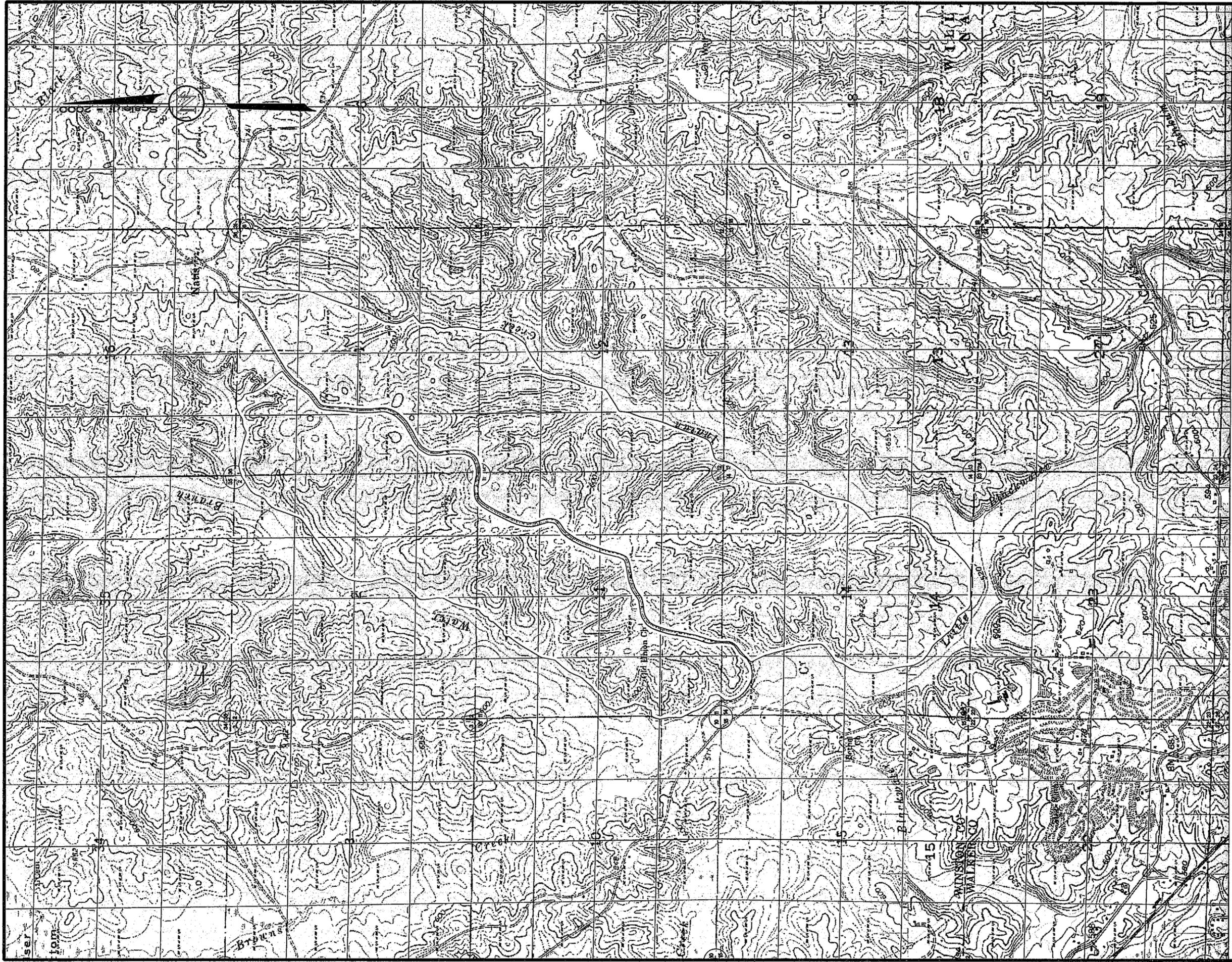
If you require additional information, please feel free to call.

Thank You,
PERC Engineering Co., Inc.

Keith Madison

Keith Madison, P.G.
for Birmingham Coal & Coke Co., Inc.





PERC
 ENGINEERING CO., INC.
 1000 1/2 Highway 20, Birmingham, Alabama 35202
 Phone: (205) 988-1111 Fax: (205) 988-1112

Birmingham Coal & Coke Company, Inc.
Old Union Mine

Site Location Map
 Part of Sections 1, 2, 11, 12, 13 &
 14, Township 12 South, Range 9 West,
 Winston County, Alabama

DRAWN BY: P.T.O.
 DWG. NAME: BCCOUSLM
 DATE: 3-28-06

APPROVED BY: W.K.M.
 SCALE: 1"=2000'

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 P-3888



LEGEND

- Permit Boundary/Increment Boundary
- Surface Contour
- Occupied Dwelling
- Unoccupied Dwelling (Barn, Shed, ect.)

The predominant land use which exists within the "Area of Interest" is undeveloped forest. Much of the area has been previously logged. Where the overstory exists it is composed of a mixture of typical deciduous and pine species. Dominant species are as follows: red oak, white oak, hickory, beech, sweet gum, yellow and tulip poplar, sycamore, Virginia pine, butternut, loblolly pine, and loblolly pine. Understory in these areas consists mainly of dogwood, redbud, mimosa, and muskiedine. Ground cover in these areas consists mainly of immature species mentioned above and fallen leaves from the above species, but also includes such species as sawbrir, greenbrir, purpletop, dog fern, black nightshade, curled doc, and mullein.

**BIOLOGICAL EVALUATION OF
OLD UNION MINE SITE
WINSTON COUNTY, ALABAMA**

June 2006

ASMC PERMIT FILE

P- 3888

Prepared for:
PERC Engineering Co., Inc.
P.O. Box 1712
Jasper, Alabama 35502

Prepared by:
Daniel D. Spaulding
Environmental Consultant
Wellington, Alabama



INTRODUCTION

Mr. Keith Madison, of PERC Engineering Co., Inc., contracted with Daniel D. Spaulding, environmental consultant, to determine any potential impacts on federally protected (listed or proposed threatened or endangered [T&E]) species which may be impacted by a +/- 1070 acres of a proposed new surface coal mine, Old Union Mine, located northeast of Nauvoo, in Winston County, Alabama.

SITE LOCATION AND DESCRIPTION

The site occurs in the Warrior Basin district of the Cumberland Plateau and is located northeast of Nauvoo, in Winston County, Alabama, in the Indian Creek water shed (figure 1). The area is in a rural setting and part of the site is adjacent to a previously mined area. The habitat consists of mostly of mixed pine/hardwood forests.

SURVEY METHODS

The site was surveyed and assessed by foot on May 13, 14, 20, 21 and June 3, 4, 10, 11, 2006 for threatened & endangered species and their potential habitats, especially the red-cockaded woodpecker (*Picoides borealis*), Kral's water-plantain (*Sagittaria secundifolia*), Alabama streak-sorus fern (*Thelypteris pilosa* var. *alabamensis*), Mohr's Barbara's-Buttons (*Marshallia mohrii*), and white fringeless orchid (*Platanthera integrilabia*). Additionally, general description of the site and surrounding area was recorded at the location, including an inventory of the dominant vegetation observed.



RESULTS AND DISCUSSION

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Threatened and Endangered Species

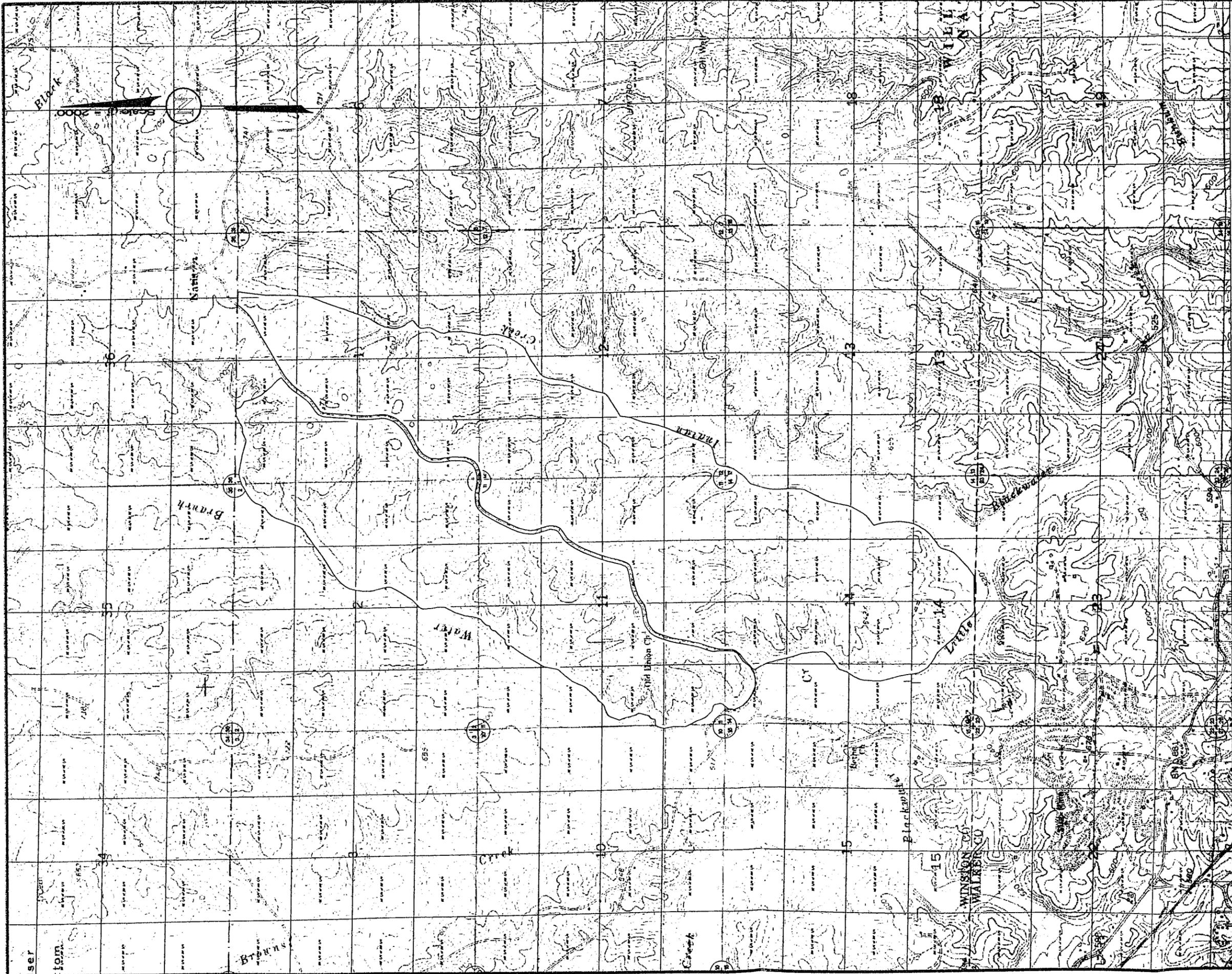
No protected terrestrial species were observed at the proposed site and, therefore, no impacts to the species listed below are expected from the project. Searches were also made for potential habitats for threatened and endangered species, but no suitable habitat was available for any of the species.

The red-cockaded woodpecker requires pine trees, often longleaf pine (*Pinus palustris*), that are generally 80 years old (U.S. Fish and Wildlife Service 2002). They require mature trees because of the need for sufficient heartwood for a cavity free of sap. Trees will usually be infected with a red heart fungus that allows for easier excavation of the roosting chamber (Conner 1993). Most of the pines seen in the area were not old enough to support a population. No birds or active or inactive cavity trees were observed.

Alabama streak-sorus fern requires shaded, moist ledges of sandstone bluffs (Kral 1983). This type of habitat was not present in the areas surveyed. All known occurrences of this fern are along the West Fork of the Sipsey River in Winston County and are confined to the Posttsville sandstone (Gunn 1995). No ferns were observed at the site.

Kral's water-plantain is an aquatic herb that is found shallow rapids or pools up to a meter in depth (Higginbotham *et al.* 1998). This plant is known only to occur in streams that flow across flat sandstone slabs with full sun (Whetstone 1988). The tributaries observed did not provide suitable habitat for this threatened species.





Birmingham Coal & Coke Company, Inc.
Old Union Mine
Site Location Map
 Part of Sections 1, 2, 11, 12, 13 &
 14, Township 12 South, Range 9 West,
 Winston County, Alabama

DRAWN BY: P.T.O.
 DWG. NAME: BCCOUSLM
 DATE: 3-28-06
 APPROVED BY: W.K.M. SCALE: 1"=2000'

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 P-3888

LEGEND

- Permit Boundary/Increment Boundary
- 600 Surface Contour
- Occupied Dwelling (Barn, Shed, ect.)
- Unoccupied Dwelling (Barn, Shed, ect.)



Landuse: Unmanaged Timberland
 The predominant land use which exists within the "Area of Interest" is undeveloped forest. Much of the area has been previously logged. Where the overstory exists it is composed of a mixture of typical deciduous and pine species. Dominant species are as follows: red oak, white oak, hickory, beech, sweet gum, yellow and tulip poplar, sycamore, virginia pine, butternut, and loblolly pine. Understory in these areas consists mainly of dogwood, redbud, mimosa, and muskiedine. Ground cover in these areas consists mainly of immature species mentioned above and fallen leaves from the above species, but also includes such species as sawbrar, greenbrar, purplebrar, dog fennel, black nightshade, curled doc, and mullein.

Mohr's Barbara's-Buttons is an erect herbaceous perennial usually less than three feet (7 dm) tall with leaves that have distinctive parallel veins. The flower clusters are showy and are light violet to white. Each plant usually has between 2 and 6 heads. It is typically in full bloom during May and early June (Kral 1983). The habitat for this Barbara's-Buttons is usually moist, prairie-like openings in woodlands or along streams. The plant typically prefers sandy, clay soils that are alkaline, high in organic matter and are seasonally wet (USFWS 1991). These combined conditions were not present along the area surveyed.

White fringeless orchid is found in red maple-blackgum seeps and along sandy, damp stream margins; or on seepy, vegetated slopes (Zettler & Fairey 1990). Its typical habitat is a seasonally wet, sandy, springhead swamp dominated by red maple and swamp blackgum (Patrick *et al.* 1995). No potential habitat for this orchid was located in the study area.

Habitat Description

Mixed Upland Forest

A mixed hardwood/pine forest is the most common habitat in the survey area (Figure 2). The composition of pines to hardwood varies along the road with either component being the common canopy tree or sharing dominance. Since the overall plant assemblage is similar throughout, it does not need to be differentiated into separate habitats.

Common canopy trees occurring in various combinations include chestnut oak (*Quercus montana*), black oak (*Quercus velutina*), scarlet oak (*Quercus coccinea*), post oak (*Quercus*

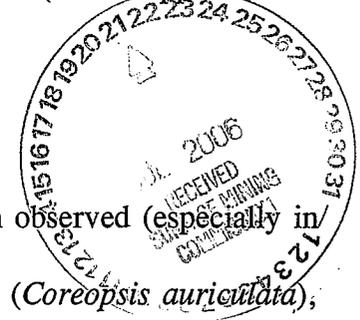


stellata), white oak (*Quercus alba*), southern red oak (*Quercus falcata*), mockernut hickory (*Carya tomentosa*), pignut hickory (*Carya glabra*), tulip-poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), and Virginia pine (*Pinus virginiana*).

Associated canopy and subcanopy trees are black gum (*Nyssa sylvatica*), red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), persimmon (*Diospyros virginiana*), black cherry (*Prunus serotina*), red bud (*Cercis canadensis*), bigleaf magnolia (*Magnolia macrophylla*), sassafras (*Sassafras albidum*), winged elm (*Ulmus alata*), flowering dogwood (*Cornus florida*), service berry (*Amelanchier arborea*), and red cedar (*Juniperus virginiana*).

Shrubs and vines that are often encountered include oak-leaf hydrangea (*Hydrangea quercifolia*), Carolina buckthorn (*Rhamnus caroliniana*), devil's-walking-stick (*Aralia spinosa*), low bush blueberry (*Vaccinium pallidum*), sparkleberry (*Vaccinium arboreum*), southern dewberry (*Rubus trivialis*), yellow jasmine (*Gelsemium sempervirens*), muscadine grape (*Vitis rotundifolia*), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radicans*), rattan vine (*Berchemia scandens*), greenbriers (*Smilax* spp.) and the exotic Japanese honeysuckle (*Lonicera japonica*).

Groundcover is somewhat sparse. Some of the herbaceous vegetation observed (especially in openings) includes greater tickseed (*Coreopsis major*), eared tickseed (*Coreopsis auriculata*), dwarf iris (*Iris verna*), pussy-toes (*Antennaria plantaginifolia*), hairy phlox (*Phlox amoena*),



common blue violet (*Viola sororia*), bird-foot violet (*Viola pedata*), hoary mountain-mint (*Pycnanthemum incanum*), daisy fleabanes (*Erigeron* spp.), needle grass (*Stipa avenacea*), panic grasses (*Dichanthelium* spp.), spikegrass (*Chasmanthium sessiliflorum*), Christmas fern (*Polystichum acrosticoides*), bracken fern (*Pteridium aquilinum*), and ebony spleenwort (*Asplenium platyneuron*).

Disturbed Areas

Portions of the site consisted of old fields and cleared areas, (figure 3). The vegetation was primarily herbaceous with seedlings and saplings of various trees from the surrounding forest.

The common plants included broomsege (*Andropogon virginicus*), bracted plantain (*Plantago aristata*), bushclovers (*Lespedeza* spp.), Johnson grass (*Sorghum halapense*), daisy fleabanes (*Erigeron* spp.), asters (*Aster* spp.), plumgrass (*Erianthus alopecuroides*), bahia grass (*Paspalum notatum*), panic grasses (*Dichanthelium* spp.), goldenrod (*Solidago altissima*), crossvine (*Bignonia capreolata*), greenbriers (*Smilax* spp.), highbush blackberry (*Rubus argutus*), ragweed (*Ambrosia artemesiifolia*), poor-joe (*Diodia teres*), Japanese honeysuckle (*Lonicera japonica*), downy oatgrass (*Danthonia sericea*), black-eyed-Susan (*Rudbeckia hirta*), smooth sumac (*Rhus glabra*), winged sumac (*Rhus copallinum*), bracken fern (*Pteridium aquilinum*), wild potato vine (*Ipomoea pandurata*), horse-nettle (*Solanum tuberosum*), butterfly-pea (*Clitoria mariana*), golden-aster (*Pityopsis graminifolia*), and cinquefoil (*Potentilla simplex*).





Figure 2. Mixed Forest

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Figure 3. Disturbed Old Field

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ADDITIONAL STUDIES AND MITIGATION RECOMMENDATIONS

Based on literature review and a field survey of the project site, **no** additional studies are required to be in compliance with state and federal endangered species laws associated with project impacts. The guidelines and recommended procedures in the following publications can help to mitigate impacts to all aquatic habitat and water quality in the project area:

- 1) Best Management Practices for Erosion and Sediment Control (Roberts 1995);
- 2) Erosion and Sediment Control Handbook (Wang and Grubbs, 1992);
- 3) Reducing Non-point Source Water Pollution by Preventing Soil Erosion and Controlling Sediment on Construction Sites (Smoot *et al.*, 1992); and
- 4) Riparian Restoration and Streamside Erosion Control Handbook (Thompson and Green, 1994).

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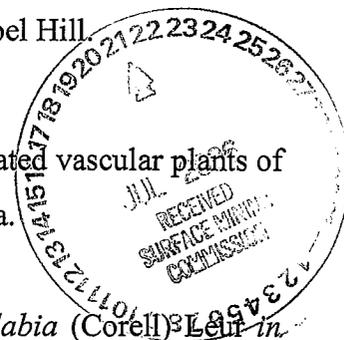


LITERATURE CITED

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P- 3888

- Conner, Richard, N. 1993. Red-cockaded Woodpecker Cavity Trees: An Introduction. Wildlife Habitat and Silviculture Laboratory, Southern Foret Experiment Station, USDA Forest Service. Nacogdoches, Texas.
- Davis, J. R. 1985. Non-Game Birds in Alabama: The Bald Eagle. Alabama Department of Conservation and Natural Resources, Game and Fish Division, Wildlife Section, Montgomery, Alabama.
- Gunn, S. C. 1995. Alabama streak-sorus fern (*Thelypteris pilosa* var. *alabamensis*). Technical Agency draft recovery plan. U.S. Fish and Wildlife Service, Jackson, Mississippi.
- Higginbotham, J. W., R. D. Whetstone, and E. McCartney. 1998. Conservation Biology of *Sagittaria secundifolia* (Kral's water-plantain) in Little River Canyon National Preserve. Research Publication Series of the National Park Service, Fort Payne, Alabama.
- Isley, D. 1990. Vascular Flora of the Southeastern United States, volume 3, part 2: Leguminosae (Fabaceae). University of North Carolina Press, Chapel Hill.
- Kral, R. 1983. A report on some rare, threatened, or endangered forest-related vascular plants of the South. U.S. Dep. Agric., For. Serv. Tech. Publ. R8-TP2. Atlanta.
- Patrick, T.S., J.R. Allison, and G. A. Krakow. 1995. *Platathera integrilabia* (Corell) Leu in Protected Plants of Georgia. Georgia Department of Natural Resouces.
- Roberts, B.C. 1995. Best Management Practices for Erosion and Sediment Control. Eastern Federal Lands Highway Design, Federal Highway Administration Report No. FHWA-FLP-94-005, 21400



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Smoot, J.L., T.D. Moore, J.H. Deatherage, and B.A. Tschantz. 1994. ³⁸⁸⁸Reducing Nonpoint Source Water Pollution by Preventing Soil Erosion and Controlling Sediment on Construction Sites (A Training Manual for Construction Inspection Personnel). Project #99102-1099-04.

Thompson, J.N., and D.L. Green. 1994. Riparian Restoration and Streamside Erosion Control Handbook. Tennessee Department of Environment and Conservation, Division of Water Pollution Control.

U.S. Fish & Wildlife Service. 1991. Mohr's Barbara's-Buttons (*Marshallia mohrii*) recovery plan. Atlanta, Georgia

U.S. Fish and Wildlife Service. 1991. Endangered and Threatened Species of the Southeastern United States (The Red Book) FWS Region 4. Prepared by the U.S. Fish and Wildlife Service. Asheville, North Carolina

U.S. Fish & Wildlife Service. 1993. Leafy Prairie-clover (*Dalea foliosa*) technical draft recovery plan. Atlanta, Georgia

Wang, S., and K. Grubbs. 1992. Erosion and Sediment Control Handbook. Tennessee Department of Environment and Conservation.

Whetstone, R. D. 1988. Status report on *Sagittaria secundifolia* (Alismataceae). JSU Technical Report in Biology 93-03, Jacksonville, Alabama.

Zettler, L.W. and J. E. Fairey, III. 1990. The status of *Platanthera integrilabia* (Corell) Leur, an endangered terrestrial orchid. Association of Southeastern Biologists Bulletin 37:86.

