

BIOLOGICAL HABITAT ASSESSMENT

CAHABA RESOURCES, LLC.

JOHNSON NORTH MINE

**Prepared For:
CAHABA RESOURCES, LLC.**

**362 acres +/-
Section 27, 28, 33 & 34, Township 19 South, Range 6 West**

**ALL IN
JEFFERSON COUNTY ALABAMA**

June 6th, 2012

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Executive Summary

McGehee Engineering Corporation performed a biological habitat assessment survey for habitat and the possible presence of the species federally listed as endangered, threatened, or of concern on April 25th, 2012 to May 31st, 2012. The study was conducted on the proposed Cahaba Resources – Johnson North Mine project area. The proposed project area consists of approximately 362 acres located in Sections 27, 28, 33 & 34, Township 19 South, Range 6 West all in Jefferson County, Alabama.

The proposed Johnson North Mine project area consists primarily of upland area with strongly inclined slopes that are vegetated with hardwoods and pines. There are intermittent drainage tributaries fed by ephemeral tributaries within the study area. All of these tributaries eventually flow outside the project area to the east. There are ongoing mining operations to the south of the Johnson North Mine project boundary. The proposed project boundary lies east of Sealey Ann Mountain Road.

The biological habitat assessment survey focused in on T, E & C species listed in Jefferson County as can be found in Table 2.1 along with the Bald Eagle, Wood Stork and the Red Cockaded Woodpecker.

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Chapter 1. Proposed Project Review

1.1 Introduction

McGehee Engineering Corporation performed a biological habitat assessment survey for habitat and the possible presence of the species federally listed as endangered, threatened, or of concern on April 25th, 2012 to May 31st, 2012. The study was conducted on the proposed Cahaba Resources – Johnson North Mine project area. The proposed project area consists of approximately 362 acres located in Sections 27, 28, 33 & 34, Township 19 South, Range 6 West all in Jefferson County, Alabama.

The proposed Johnson North Mine project area consists primarily of upland area with strongly inclined slopes that are vegetated with hardwoods and pines. There are intermittent drainage tributaries fed by ephemeral tributaries within the study area. All of these tributaries eventually flow outside the project boundary to the east. There are ongoing mining operations to the south of the Johnson North Mine project boundary. The proposed project boundary lies east of Sealey Ann Mountain Road.

1.2 Project Location

Cahaba Resources, LLC. – Johnson North Mine project consists of approximately 362 acres and is located in Sections 27, 28, 33 & 34, Township 19 South, Range 6 West as located in Jefferson County, Alabama on the Abernant, Alabama U.S.G.S Quadrangle. The proposed site location is shown below on the attached project area map Figure 1. (Appendix “A”).

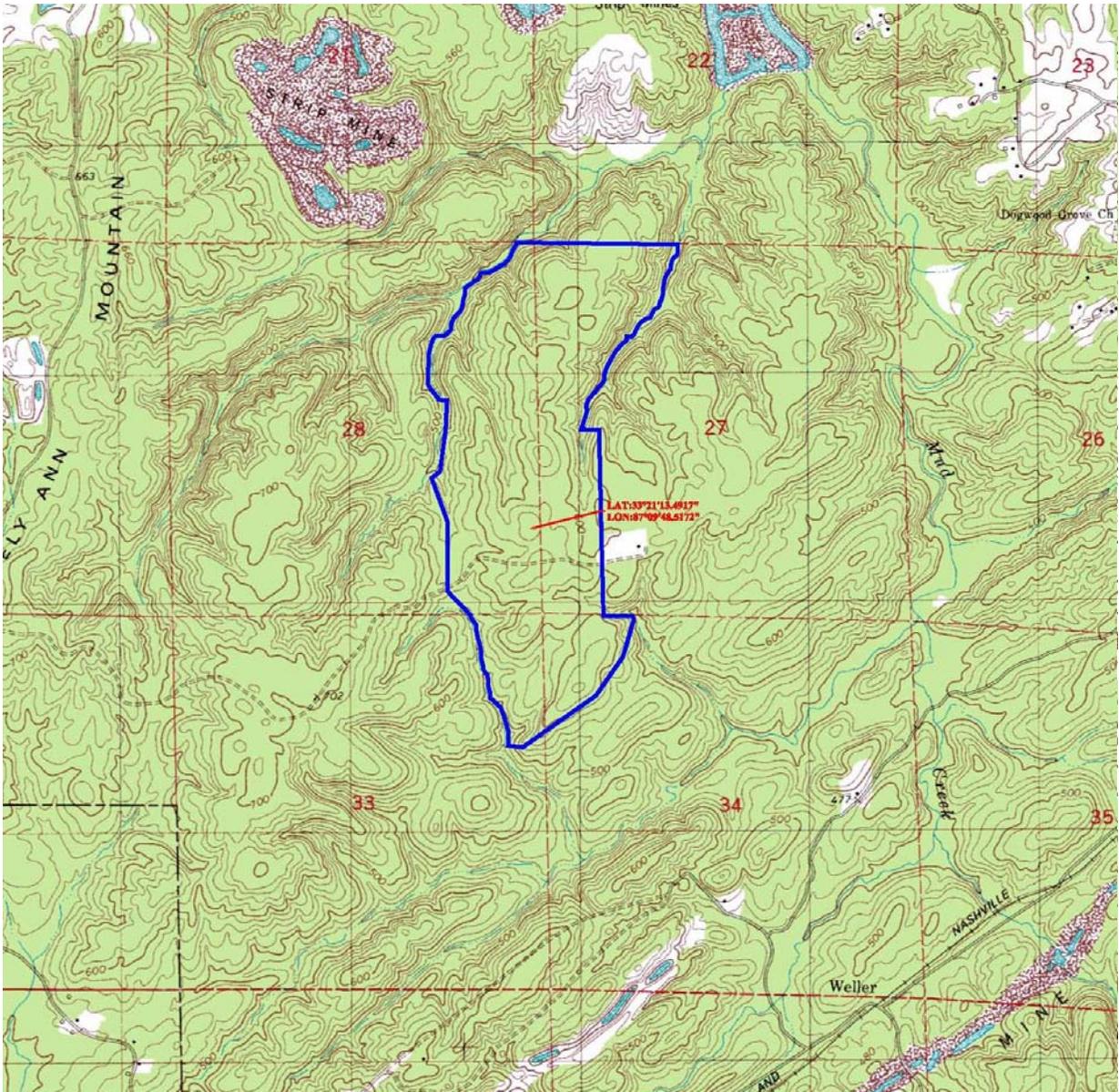


Figure 1. Project Area Map. (not to scale)

Chapter 2. Threatened & Endangered Species

2.1 Species Identification

The U.S. Fish and Wildlife Service (USFWS) threatened, endangered, and candidate species list for Jefferson County was reviewed by a qualified biologist in order to determine species potentially occurring in the project vicinity (Table 2.1). In addition, the Alabama Natural Heritage Section Database that contains numerous records of sensitive species in Alabama was queried to provide a list of special status species and habitats that may have been documented as occurring within the project area and/or the project vicinity.

Table 2.1. List of Threatened, Endangered and Candidate Species for Jefferson County.

Common Name <i>Scientific Name</i>	Status	General Habitat
Bald eagle <i>Haliaeetus leucocephalus</i>	BGEPA	Large open bodies of water where adequate food exist and human disturbance is limited
Red-cockaded woodpecker <i>Picoides borealis</i>	E	Open, mature and old growth pine ecosystems with minimal hardwood overstory and midstory
Wood stork <i>Mycteria americana</i>	E	Freshwater and estuarine wetlands, primarily nesting in cypress or mangrove swamps. Narrow tidal creeks or flooded tidal pools where fish become concentrated
Southern clubshell <i>Pleurobema decisum</i>	E	Sand and gravel bottom free flowing streams and rivers with good water quality and stable stream channels
Alabama moccasinshell mussel <i>Medionidus acutissimus</i>	T	Small to mid-sized streams with sandy-gravel and gravel substrates with moderate flow
Orange-nacre mucket mussel <i>Hamiota (=Lampsilis) perovalis</i>	T	Large rivers to small creek habitats swift flowing riffles and gravel-cobble substrates
Triangular Kidneyshell mussel <i>Ptychobranthus greenii</i>	E	Sand and gravel bottom free flowing streams and rivers with good water quality and a stable stream channels
Ovate clubshell mussel <i>Pleurobema perovatum</i>	E	Sand and gravel bottom free flowing streams and rivers with good water quality and stable stream channels
Southern pigtoe <i>Pleurobema georgianum</i>	E	Sand and gravel bottom riffles of free flowing streams and rivers with good water quality and stable stream channels
Dark pigtoe mussel <i>Pluerobema furvum</i>	E	Found in sand/gravel/cobble shoals and rapids in small rivers and large streams; usually highly oxygenated water with moderate flow.
Fine-lined pocketbook mussel <i>Hamiota (=Lampsilis) atilis</i>	T	Large rivers to small creek habitats with swift flowing riffles and gravel-cobble substrates
Upland combshell mussel <i>Epioblasma metastrata</i>	E	Stable gravel and sand riffles of high water quality streams. Thought to be possibly extirpated in Alabama (Lydeard <i>et al.</i> 1999).
Southern Acornshell <i>Epioblasma othcaloogensis</i>	E	Small to medium rivers in fine gravel substrata. Suggested to be extirpated in Alabama (Stansbery 1976a), and Lydeard <i>et al.</i> (1999).

Plicate rocksnail <i>Leptoxis plicate</i>	<i>E</i>	Shallow gravel and cobble shoals in the flowing waters of the bottom 1/3 (20 miles) of the Locust Fork of the Black Warrior River in Jefferson County
Cylindrical Lioplax <i>Lioplax cyclostomaformis</i>	<i>E</i>	Soft sediments under boulders in shoal habitats in a short reach of the Cahaba River.
Round Rocksnail <i>Leptoxis ampla</i>	<i>T</i>	Cobble, gravel, or other hard substrates in the strong currents of riffles and shoals in the Cahaba and Coosa Rivers.
Watercress darter <i>Etheostoma nuchale</i>	<i>E</i>	Slow moving spring fed tributaries to Black Warrior River at mid-depths in dense aquatic vegetation with dense populations of aquatic insect larvae and microcrustaceans. Associated with watercress.
Vermilion darter <i>Etheostoma chermocki</i>	<i>E</i>	Swift currents in streams of alternating riffles and pools. Riffles with small limestone rubble and shale cobble. Clean bedrock, sometimes with sand, occurs in pools. Associated with water willow in larger riffles and shoals. Near springs, in swift runs and chutes adjacent to watercress and pondweed all in Turkey Creek
Cahaba shiner <i>Notropis cahabae</i>	<i>E</i>	Quiet shallow, 1.6 feet or less, shoals below swift riffle areas and downstream of boulders in sandy patches or gravel beds in the main channel of the Cahaba river
Blue Shiner <i>Cyprinella caerulea</i>	<i>T</i>	Clear medium or large streams and are found in shallow pools with slow currents or in backwaters over sand and gravel substrates.
Goldline darter <i>Percina aurolineata</i>	<i>T</i>	Moderate to swift current, and water depths 2 feet or more, with gravel or sand substrates interspersed among cobble and small boulders in big and little Cahaba rivers
Rush darter <i>Etheostoma phytophilum</i>	<i>C</i>	Lives in the reeds and rushes on the edges of small freshwater streams. It needs clear, cool, unpolluted water to survive.
Flattened musk turtle <i>Sternotherus depressus</i>	<i>T</i>	Free-flowing creek or small river with pools about 1 m deep or more, with rocks, abundant mollusks, low silt load and deposits, moderate temperature rock-bottomed to sandy substrate
Black Warrior waterdog <i>Necturus alabamensis</i>	<i>C</i>	Streams with deep pools 1 to 4 meters with reduced sedimentation and large leaf packs supporting mayfly and caddis fly larvae
Gray Bat <i>Myotis grisescens</i>	<i>E</i>	Live in caves year-round; Winter hibernation in deep vertical caves, Summer roost in caves along rivers
Indiana Bat <i>Myotis sodalis</i>	<i>E</i>	Lives in a variety of habitats including floodplain and riparian zones for roosting with upland area nearby and caves and sometimes mines for hibernating and mating
Mohr's Barbara's buttons <i>Marshallia mohrii</i>	<i>T</i>	Moist sandy clay soils, along shale bed streams, road side right-of-ways, seasonally wet low swales around natural springs and seeps with full to moderate sun exposure. Most currently known populations occur on soils of the Conasauga-Firestone Association.
Georgia Aster <i>Symphotrichum georgianum</i>	<i>C</i>	Upland prairie grassland communities to thinned oak pine woodlands. Most remaining populations survive adjacent to roads, utility rights of way, and other openings
Leafy Prairie Clover <i>Dalea foliosa</i>	<i>E</i>	Prairie like areas on the edges of Cedar glades, favoring areas with wet springs and falls and dry summers

Georgia rockcress <i>Arabis georgiana</i>	<i>C</i>	Steep rocky riparian buffer along drainage of the Coosa and Oostanaula rivers.
Gentian pinkroot <i>Spigelia gentianoides</i>	<i>E</i>	Habitat not completely described, however, believed to occur in mixed pine and hardwood forests preferring sunlight (Rogers, pers. comm. 1989; Bowden, in litt. 1990) possibly alongside wiregrass. It is also suggested that these plants may benefit from controlled burns.
Tennessee Yellow-eyed grass <i>Xyris tennesseensis</i>	<i>E</i>	Seep-slopes, springy meadows, or on the banks or gravelly shallows of small streams with calcareous rocks at or near the surface creating soils that are circumneutral to basic. Associated with ferns, fern allies and many other wetland species.

Key to codes on list:

- **E** – Endangered
- **T** - Threatened
- **BGEPA** - Bald & Golden Eagle
- **C** - Candidate Species
- **(P)** - Possible Occurrence

Chapter 3. Methodology

3.1 Methodology

The subject property was surveyed by McGehee Engineering Corp. (MEC) for the occurrence and potential for occurrence for species protected or listed by the U.S. Fish and Wildlife Service (USFWS), based on known habitat preferences and geographical distribution. The principal surveyor for this site was Biologist Wes Lamon of McGehee Engineering Corp.

The study site was surveyed by completely traversing the site in a zigzag pattern at approximately 20 meters intervals. Survey conditions are described in Table 3.1. Prior to performing the field reconnaissance, MEC performed a review of aerial photographs of the project site and a pedestrian survey was conducted by MEC biologist to identify vegetation communities and land uses, perform general habitat assessment for plants and animals; assess the potential for nesting or roosting activity by birds and/or bats within the general study area. Focused surveys for sensitive aquatic species were not performed; however, the potential for habitat for these species was assessed during the survey. This was done by visual inspection of the drains and their substrata and rating the streams using the North Carolina Method. Substrata was randomly studied to assess habitat and check for the presence of macro benthic life and aquatic mussel and snail species

Table 3.1. Survey Conditions

Date: April 25th, 2012

Temperature (°F)	Wind (MPH)	Sky Cover %
75°	7-10	0%

Date: May 4th, 2012

Temperature (°F)	Wind (MPH)	Sky Cover %
77°	1-3	60%

Date: May 7th, 2012

Temperature (°F)	Wind (MPH)	Sky Cover %
79°	2-4	40%

Date: May 8th, 2012

Temperature (°F)	Wind (MPH)	Sky Cover %
78°	6-8	40%

Date: May 14th, 2012

Temperature (°F)	Wind (MPH)	Sky Cover %
70°	3-6	70%

Date: May 31st, 2012

Temperature (°F)	Wind (MPH)	Sky Cover %
83°	4-7	30%

As part of the field reconnaissance, MEC also conducted a delineation of potentially jurisdictional wetlands and waters of the U.S. as it relates to Section 404 of the Clean Water Act in accordance to the 1987 “*Corps of Engineers Wetlands Delineation Manual*”: Wetlands Research Program Technical Report Y-87-1 and the “*Eastern Mountain Piedmont Regional Supplement*.”

Additional Data sources other than mentioned within the report include the following:

USGS Quadrangle Map	Abernant, Alabama USGS Quad Revised 1983
National Wetlands Inventory Map	Abernant, Alabama NWI Quad developed 1981
SCS Soil Survey	Jefferson County NRCS Web Survey
Aerial Photos	03-22-2012
Plant Database	United States Department of Agriculture / Natural Resources Conservation Services Web Database
FEMA Flood Map	Federal Emergency Management DFIRM Database FIRMettes Jefferson County

Chapter 4. Environmental Setting

4.1 General Habitat Description

The proposed Cahaba Resources, LLC. – Johnson North Mine project area is located adjacent to and just east of Sealy Ann Mountain Road. Most of the proposed project area is heavily wooded, with pines, hardwood shrubs, herbs and vines. Large hardwoods grow along intermittent streams. It has had some disturbance through the development of access roads and through the cutting of timber. The project site of approximately 362 acres mostly consists of the following vegetation species:

Tree Stratum

American Beech (*Fagus grandifolia*)
American Hornbeam (*Carpinus caroliniana*)
Bitternut Hickory (*Carya cordiformis*)
Black Oak (*Quercus velutina*)
Chestnut Oak (*Quercus prinus*)
Eastern Hophornbeam (*Ostrya virginiana*)
Loblolly Pine (*Pinus taeda*)
Pignut Hickory (*Carya glabra*)
Red Maple (*Acer rubrum*)
Shagbark Hickory (*Carya ovata*)
Shortleaf Pine (*Pinus echinata*)
Sugar Maple (*Acer sacchrum*)
Sweet Gum (*Liquidambar styraciflua*)
Virginia Pine (*Pinus virginiana*)
Water Oak (*Quercus nigra*)
White Oak (*Quercus alba*)
Yellow Poplar (*Liriodendron tulipifera*)

Sapling Stratum

American Beech (*Fagus grandifolia*)
American Hornbeam (*Carpinus caroliniana*)
Chestnut Oak (*Quercus prinus*)
Eastern Hophornbeam (*Ostrya virginiana*)
Flowering Dogwood (*Cornus florida*)
Flowering Dogwood (*Cornus florida rubra*)
Loblolly Pine (*Pinus taeda*)
Pignut Hickory (*Carya glabra*)
Red Maple (*Acer rubrum*)

Shagbark Hickory (*Carya ovata*)
Shortleaf Pine (*Pinus echinata*)
Southern Red Oak (*Quercus falcata*)
Stellar Dogwood (*Cornus rutgersensis*)
Sugar Maple (*Acer sacchrum*)
Sweet Gum (*Liquidambar styraciflua*)
Virginia Pine (*Pinus virginiana*)
White Oak (*Quercus alba*)
Winged Elm (*Ulmus alata*)
Yellow Poplar (*Liriodendron tulipifera*)

Shrub Stratum

American Beech (*Fagus grandifolia*)
American Hornbeam (*Carpinus caroliniana*)
Bottle Brush Buckeye (*Aesculus parviflora*)
Chestnut Oak (*Quercus prinus*)
Devil's Walkingstick (*Aralia spinosa*)
Eastern Hophornbeam (*Ostrya virginiana*)
Eastern Red Cedar (*Juniperus virginiana*)
Fanleaf Hawthorn (*Crataegus flabellate*)
Flowering Dogwood (*Cornus florida*)
Hazel Alder (*Alnus serrulata*)
Loblolly Pine (*Pinus taeda*)
Northern Dewberry (*Rubus flagellaris*)
Oakleaf Hydrangea (*Hydrangea quercifolia*)
Pignut Hickory (*Carya glabra*)
Red Buckeye (*Aesculus pavia*)
Red Maple (*Acer rubrum*)
Shortleaf Pine (*Pinus echinata*)
Shagbark Hickory (*Carya ovata*)
Southern Red Oak (*Quercus falcata*)
Sugar Maple (*Acer sacchrum*)
Sweet Gum (*Liquidambar styraciflua*)
Sweet Mountain Azalea (*Rhododendron canescens*)
Sweetshrub (*Calycanthus floridus*)
Switch Cane (*Arundinaria gigantea*)
Virginia Pine (*Pinus virginiana*)
White Oak (*Quercus alba*)
Winged Elm (*Ulmus alata*)
Yellow Poplar (*Liriodendron tulipifera*)

Herbaceous Stratum

American Beech (*Fagus grandifolia*)
American Hornbeam (*Carpinus caroliniana*)
Bluestem broom-sedge (*Andropogon virginicus*)
Bottle Brush Buckeye (*Aesculus parviflora*)
Canada Goldenrod (*Solidago altissima*)
Chestnut Oak (*Quercus prinus*)
Christmas Fern (*Polystichum acrostichoides*)
Cinnamon Fern (*Osmunda cinnamomea*)
Devil's Walkingstick (*Aralia spinosa*)
Dog Fennel (*Eupatorium capillifolium*)
Ebony Spleenwort (*Asplenium platyneuron*)
Eastern Hophornbeam (*Ostrya virginiana*)
Eastern Red Cedar (*Juniperus virginiana*)
Elliot's Blueberry (*Vaccinium elliotii*)
Fanleaf Hawthorn (*Crataegus flabellate*)
Flowering Dogwood (*Cornus florida*)
Hazel Alder (*Alnus serrulata*)
Japanese Stilt grass (*Microstegium vimineum*)
Loblolly Pine (*Pinus taeda*)
Northern Dewberry (*Rubus flagellaris*)
Netted Chain Fern (*Woodwardia aerolata*)
Oakleaf Hydrangea (*Hydrangea quercifolia*)
Pignut Hickory (*Carya glabra*)
Red Buckeye (*Aesculus pavia*)
Red Maple (*Acer rubrum*)
Royal Fern (*Osmunda regalis*)
Sand Violet (*Viola affinis*)
Shagbark Hickory (*Carya ovata*)
Southern Red Oak (*Quercus falcata*)
Sugar Maple (*Acer saccharum*)
Sweet Gum (*Liquidambar styraciflua*)
Sweet Mountain Azalea (*Rhododendron canescens*)
Sweetshrub (*Calycanthus floridus*)
Switch Cane (*Arundinaria gigantea*)
Virginia Pine (*Pinus virginiana*)
White Oak (*Quercus alba*)
Winged Elm (*Ulmus alata*)
Yellow Poplar (*Liriodendron tulipifera*)

Woody Vine Stratum

Alabama Supplejack (*Berchemia scandens*)
Bristly Greenbrier (*Smilax tamnoides*)
Japanese Honeysuckle (*Lonicera japonica*)
Laurel-Leaved Greenbrier (*Smilax laurifolia*)
Muscadine (*Vitis rotundifolia*)
Poison Ivy (*Toxicodendron radicans*)
Round Leaf Greenbrier (*Smilax rotundifolia*)
Saw Greenbrier (*Smilax bona-nox*)
Virginia Creeper (*Parthenocissus quinquefolia*)

The slight slopes of the proposed Johnson Mine project area are dominated by pines of varying age and size, but most seem to be less than 20 years due to silvaculture and the construction of gas wells and access roads. These pines include Loblolly (*Pinus taeda*), Shortleaf (*P. echinata*), and Virginia (*P. virginiana*). The gas well roads and pads have typical growth of upland herbs, some brambles and grasses. Along waterways, a mix of hardwoods and the above mentioned pines are present. These hardwoods include Chestnut Oak (*Quercus prinus*), Yellow Poplar (*Liriodendron tulipifera*), Eastern Hophornbeam (*Ostrya virginiana*), Red Maple (*Acer rubrum*) Sugar Maple (*A. saccharum*), American Beech (*Fagus grandifolia*), American Hornbeam (*Carpinus caroliniana*) and Flowering Dogwood (*Cornus florida*). Many of these areas have a thin understory of Green briar (*Smilax rotundifolia*, *S. bona-nox*, *S. tamnoides*, and *S. laurifolia*), Muscadine (*Vitis rotundifolia*), Alabama supple jack (*Berchemia scandens*) and invasive Japanese honeysuckle (*Lonicera japonica*).

The primary soil groups within the project are Montevallo-Nauvoo association, steep phase soil that is well drained. The other is Nauvoo fine sandy loam, 8 to 15 % sloping phase soil that is well drained. Both soil types are partially hydric. The soils identified in the field matched the USDA Soil data profile therefore a more detailed description of the soil as well as the soil maps can be found in Appendix C.

There are perennial, intermittent and ephemeral flowing drainage courses located within the Johnson North Mine project boundary. All flow to Mud Creek.

Chapter 5. Habitat Study Results

5.1 Terrestrial and Terrestrial Habitat Species

- a. **Bald eagle** (*Haliaeetus leucocephalus*) - Habitat for this species does not exist. There was no potential nesting habitat for the Bald Eagles. There were no large trees near open water on or near this site.
- b. **Red-cockaded woodpecker** (*Picoides borealis*) - Habitat for this species does not exist. There were no isolated mature pines of the age and required size that would harbor the Red-cockaded woodpecker on or adjacent to the project site.
- c. **Wood stork** (*Mycteria americana*) - Habitat for this species does not exist. There was no potential nesting habitat for the Wood stork. There were no large trees near open water on or near this site.
- d. **Flattened Musk Turtle** (*Sternotherus depressus*) – Habitat for this species does not exist. Flowing streams on the site do not have the required depth or mollusk food source.
- e. **Black Warrior waterdog** (*Necturus alabamensis*) – Habitat for this species does not exist. Flowing streams on the site do not have the required depth or leaf packs for food source growth.
- f. **Indiana Bat** (*Myotis sodalis*) - Habitat for this species does not exist. There is a riparian zone along the banks of the un-named perennial tributary to Mud creek for summer roosting. This roost area was explored and no bats were discovered. No caves were found within or adjacent to the proposed project boundary for winter hibernation or mating. Assurances have been made that the perennial portions of this creek will be avoided in the final mine permit.
- g. **Gray Bat** (*Myotis grisescens*) – Habitat for this species does not exist. There are no caves located within or adjacent to the proposed project boundary.
- h. **Mohr's Barbara's buttons** (*Marshallia mohrii*) – Habitat for this species does not exist. There are seasonal seeps, but they lack the typically preferred soil and high sun exposure for this species to survive.
- i. **Georgia Aster** (*Symphotrichum georgianum*) -- Habitat for this species does not exist within the project boundary. Likely habitat would be road sides, utility right-of-ways, green fields and other openings similar to original prairie communities. All of which are highly disturbed. It is highly

unlikely that the Georgia Aster exists in this area due to the historical presence of hardwood forests.

- j. Leafy Prairie Clover** (*Dalea foliosa*) - There are no Cedar glades with prairie like areas or on or adjacent to this site. There are green fields, but they are highly disturbed. It is highly unlikely that Leafy Prairie Clover exists in this area due to the historical presence of hardwood forests.
- k. Georgia rockcress** (*Arabis georgiana*) – Habitat for this species does not exist. There are no steep rocky riparian slopes. Also, this species is only known of the drainage of the Coosa and Oostanaula rivers.
- l. Gentian pinkroot** (*Spigelia gentianoides*) – Habitat for this species does not exist within the project boundary. Likely habitat would be the thick pine and hardwood mixed forest along drains within the proposed boundary. All of which have little to no sunlight required for this species. It is highly unlikely that Gentian pinkroot exists in this area due to the historical presence of hardwood forests.
- m. Tennessee Yellow-eyed grass** (*Xyris tennesseensis*) – Habitat for this species does not exist. Groundwater seeps in the area do not have calcareous rock or required soils for this species to survive.

5.1.1 Summary

There was no habitat found for the above listed, threatened and endangered species. No evidence was found or observed for the presence or possible presence of these listed species.

5.2 Aquatic and Aquatic Habitat Species

- a. Flattened Musk Turtle** (*Sternotherus depressus*) – Habitat for this species does not exist. Flowing streams on the site wane during the dry season or do not have required substrate and depth to sustain this species. There is also not an adequate food supply of molluscan and benthic fauna.
- b. Black Warrior waterdog** (*Necturus alabamensis*) – Habitat for this species does not exist. Flowing streams on the site wane during the dry season or do not have required leaf packs and depth to sustain this species. There is also not an adequate food supply.

- c. **Orange-nacre mucket mussel** (*Hamiota (=Lampsilis) perovalis*) – Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- d. **Triangular kidneyshell mussel** (*Ptychobranthus greenii*) – Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- e. **Southern Acornshell** (*Epioblasma othcaloogensis*) – Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- f. **Fine-lined pocketbook mussel** (*Hamiota (=Lampsilis) altilis*) – Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- g. **Southern clubshell mussel** (*Pleurobema decisum*) – Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- h. **Alabama moccasinshell mussel** (*Medionidus acutissimus*) - Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- i. **Upland combshell mussel** (*Epioblasma metastriata*) - Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- j. **Dark pigtoe mussel** (*Pleurobema furvum*) - Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- k. **Ovate clubshell mussel** (*Pleurobema perovatum*) - Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- l. **Southern pigtoe mussel** (*Pleurobema georgianum*) - Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- m. **Plicate rocksnail** (*Leptoxis plicate*) - Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.

- n. Cylindrical Lioplax** (*Lioplax cyclostomaformis*) – Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- o. Round Rocksnail** (*Leptoxis ampla*) - Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- p. Watercress darter** (*Etheostoma nuchale*) -- Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present. Also are associated with spring fed tributaries to the Black Warrior River.
- q. Vermilion darter** (*Etheostoma chermocki*) -- Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present. Also are associated with springs, specifically in Turkey Creek.
- r. Rush darter** (*Etheostoma phytophilum*) -- Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present.
- s. Goldline darter** (*Percina aurolineata*) -- Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present. Also is only found in the cobble and small boulder area of the big and little Cahaba River.
- t. Cahaba shiner** (*Notropis cahabae*) -- Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present. Also is only found in the main channel of the Cahaba River.
- u. Blue Shiner** (*Cyprinella caerulea*) - Flowing streams on the site wane during the dry season and would not sustain this species or they are too near headwaters for these species to be present. In Alabama it is restricted to the lower reaches of Little River, Weogufka Creek, and Choccolocco Creek (Pierson and Krotzer, 1987). Dobson (1994) recently reported a 3-mile range extension upstream in Little River. Not seen in the Cahaba River since 1971.

5.2.1 Summary

There was potential habitat evaluated and determined to be insufficient to sustain the above listed, threatened and endangered species. No evidence was found or observed for the presence or possible presence of these listed species.

5.3 Wetlands and Streams

5.3.1 Wetlands

The project area was evaluated according to the 1987 “*Corps of Engineers Wetlands Delineation Manual*” and the “*Eastern Piedmont Regional Supplement*”. There were no wetlands within the proposed project area.

5.3.2 Streams

There are several unnamed ephemeral and intermittent drains within the proposed boundary. All of these tributaries flow outside to tributaries outside the project boundary. Drain 3 begins inside the project area at 3B. This drain flows north to the intermittent break at point 3A. This is also the location of another ephemeral drain feeding into the main drain. This drain continues and flows out of the boundary at point 3. Drain 4 flows into the project close to the center of the western boundary. This intermittent drain flows to a potentially perennial drain. The adjacent perennial portion has cobble substrata and is still very shallow, approximately 6 inches or less, but has high macrobenthic diversity. This drain continues flowing north to northeast outside the boundary. Drain 15 begins inside the proposed project and flows ephemerally to the intermittent break at point 15A. This drain continues flowing north out of the boundary at point 15. These tributaries were assessed in the rainy season and were flowing at time of evaluation. All streams were evaluated using the North Carolina Method.

Chapter 6. References

- Brinson, M.M. 1993. *A Hydrogeomorphic Classification for Wetlands*. Technical Report WRPDE-4. US Army Engineers Waterways Experiment Station, Vicksburg, MS.
- Cowardin, L.M., V. Carter, F.C. Golet and E.T. Laroe. 1979. *Classification of Wetlands and Deep Water Habitats of the United States*. U.S. Fish and Wildlife Service. FWS/OBS 79/31.
- Environmental Laboratory 1987. “*Corps of Engineers Wetlands Delineation Manual*”: Wetlands Research Program Technical Report Y-87-1 (Online Edition) 1987. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.
- Haag, Wendell R. 2004. *Alabama Wildlife. Volume 2. Imperiled aquatic mollusks and fishes*. The University of Alabama Press, Tuscaloosa, Alabama.
- “National List of Plant Species That Occur In Wetlands: Southeast (Region 2): U.S. Department of the Interior – Fish & Wildlife Service Biological Report 88(26.2) May 1988
- NC Division of Water Quality. 2010. *Methodology for Identification of Intermittent and Perennial Streams and their Origins, Version 4.11*. North Carolina Department of Environment and Natural Resources, Division of water Quality. Raleigh, NC.
- U.S. Fish and Wildlife Service, 1980. *Habitat Evaluation Procedures*. Division Ecological Services: Washington, D.C.
- U.S. Fish and Wildlife Services. April 2012. *Endangered Species List – List of Species by County for Jefferson County Alabama*.

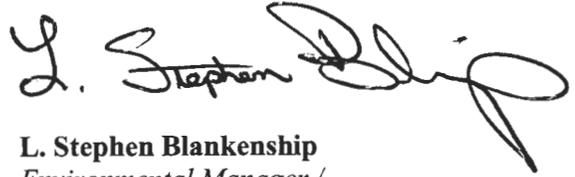
Chapter 7. Signatures of Preparers

Prepared by:



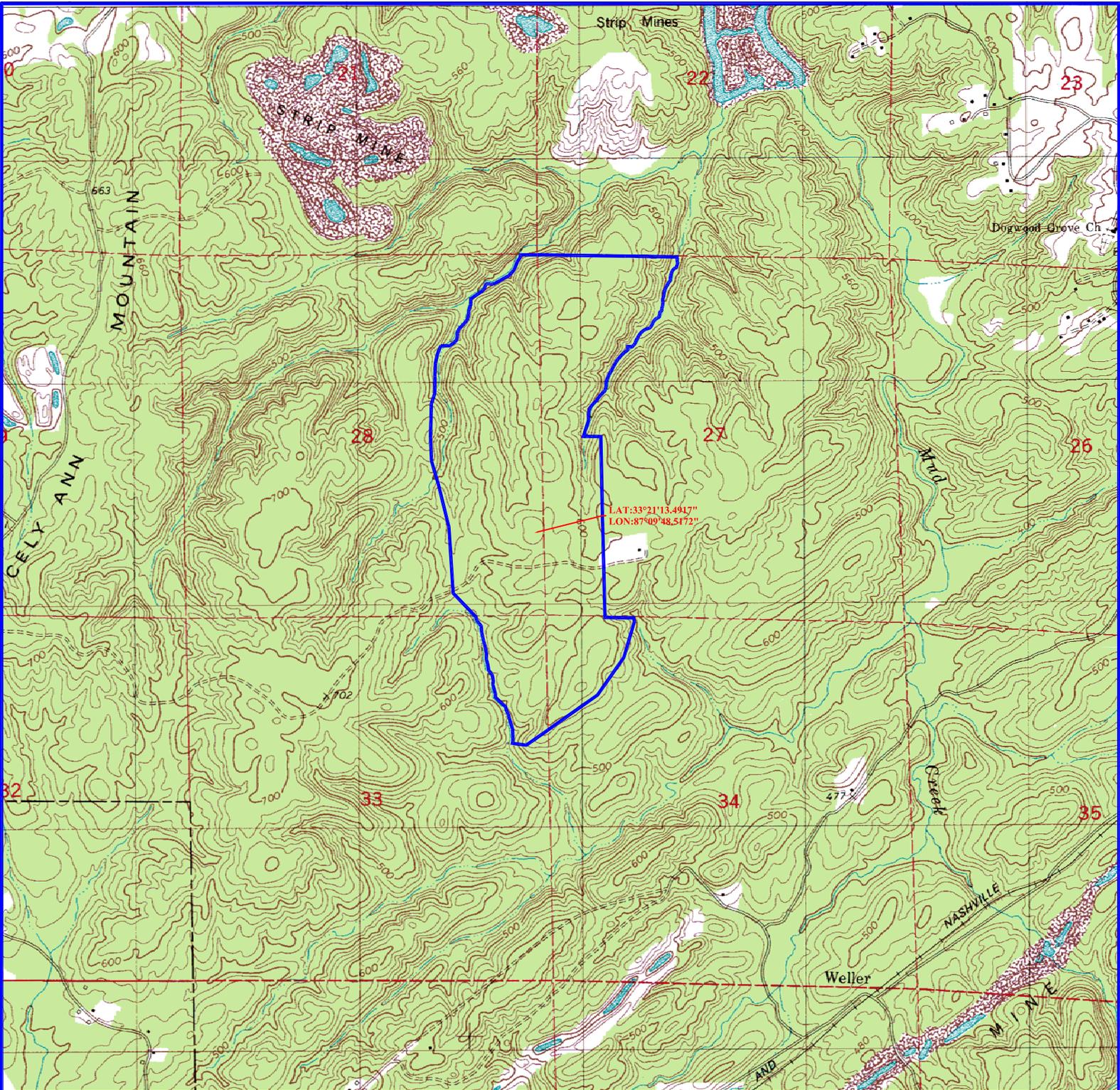
Wes Lamon
Biologist

Reviewed by:



L. Stephen Blankenship
*Environmental Manager /
Wetland Specialist*

Appendix A — Project Area Map



June 01, 2012
 SCALE: 1" = 2000'

CAHABA RESOURCES, LLC.
JOHNSON NORTH MINE
 (APPROXIMATELY 362 ACRES TOTAL)

PROJECT AREA MAP

**SECTIONS 27, 28, 33 & 34, TOWNSHIP 19 SOUTH, RANGE 6 WEST,
 ALL IN JEFFERSON COUNTY, ALABAMA
 AS FOUND ON THE ABERNANT, ALABAMA USGS QUAD.**



 **JOHNSON NORTH PROJECT BOUNDARY**

Latitude: 33°21'13" N
 Longitude: 87°09'48" W

Appendix B — Photographic Log

McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3164

Point No. 001

Description:

This area is primarily dominated by *Carya cordiformis*, *Liquidambar styraciflua*, *Quercus prinus*, *Liriodendron tulipifera*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3165

Point No. 001

Description:

This area is primarily dominated by *Carya cordiformis*, *Liquidambar styraciflua*, *Quercus prinus*, *Liriodendron tulipifera*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3169

Point No. 002

Description:

This area is primarily dominated by *Fagus grandifolia*, *Ligustrum sinense*, *Liriodendron tulipifera*, *Ostraya virginiana*, *Cornus florida*, *Quercus alba*, *Q. prinus*, *Liquidambar styraciflua* & *Aesculus parviflora*.

Ephemeral drain flows to tributary outside proposed boundary



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

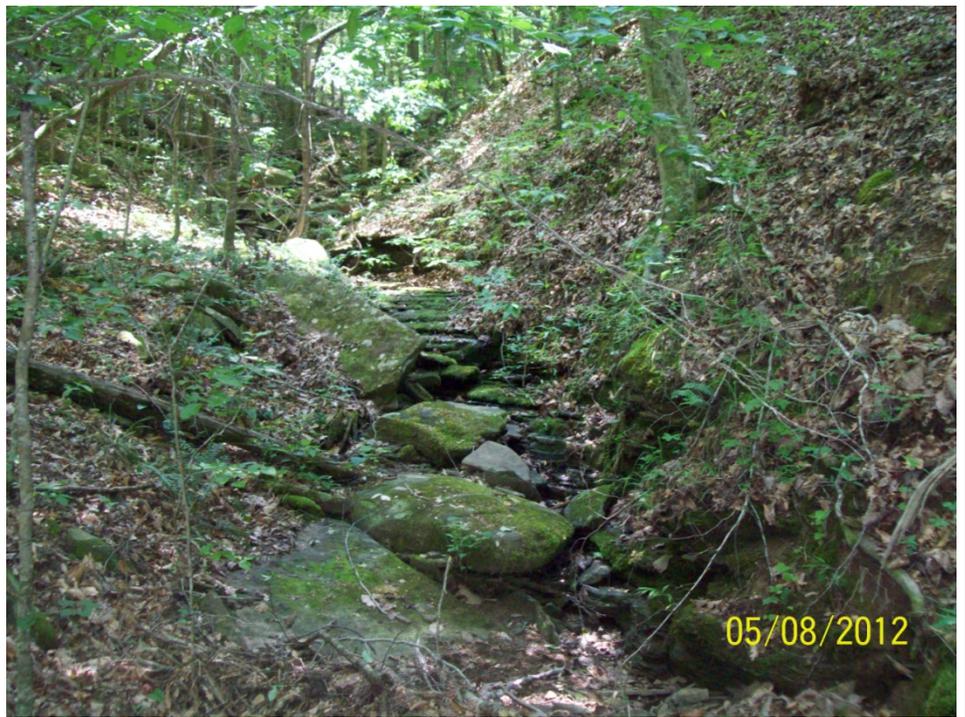
Date: 05-08-12

Photo No. 100_3170

Point No. 002

Description:

This area is primarily dominated by *Fagus grandifolia*, *Ligustrum sinense*, *Liriodendron tulipifera*, *Ostraya virginiana*, *Cornus florida*, *Quercus alba*, *Q. prinus*, *Liquidambar styraciflua* & *Aesculus parviflora*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-04-12

Photo No. 100_3020

Point No. 003

Description:

This area is primarily dominated by *Fagus grandifolia*, *Acer rubrum*, *Cornus florida*, *Ostrya virginiana*, *Rhododendron canescens*, *Aesculus parviflora*, *A. pavia* & *Hydrangea quercifolia*.

Intermittent Drainage Channel with shallow seasonal flow.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-04-12

Photo No. 100_3024

Point No. 003

Description:

This area is primarily dominated by *Fagus grandifolia*, *Acer rubrum*, *Cornus florida*, *Ostrya virginiana*, *Rhododendron canescens*, *Aesculus parviflora*, *A. pavia* & *Hydrangea quercifolia*.

Intermittent Drainage Channel with shallow seasonal flow.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-04-12

Photo No. 100_3026

Point No. 003A

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *Liquidambar styraciflua*, *Quercus prinus*, *Liquidambar styraciflua*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*.

Intermittent/Ephemeral headcut break



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-04-12

Photo No. 100_3027

Point No. 003A

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *Liquidambar styraciflua*, *Quercus prinus*, *Liquidambar styraciflua*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*.

Intermittent/Ephemeral break evaluated immediately after a rainfall.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-07-12

Photo No. 100_3121

Point No. 004

Description:

This area is primarily dominated by *Fagus grandifolia*, *Acer rubrum*, *Cornus florida*, *Ostrya virginiana*, *Rhododendron canescens*, *Aesculus parviflora*, *A. pavia*, *Microstegium vimineum* & *Hydrangea quercifolia*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-07-12

Photo No. 100_3129

Point No. 004

Description:

This area is primarily dominated by *Fagus grandifolia*, *Acer rubrum*, *Cornus florida*, *Ostrya virginiana*, *Rhododendron canescens*, *Aesculus parviflora*, *A. pavia*, *Polystichum acrostichoides* & *Hydrangea quercifolia*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-07-12

Photo No. 100_3112

Point No. 004A

Description:

This area is primarily dominated by *Fagus grandifolia*, *Acer rubrum*, *Cornus florida*, *Ostrya virginiana*, *Rhododendron canescens*, *Aesculus parviflora*, *A. pavia*, *Polystichum acrostichoides* & *Hydrangea quercifolia*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-07-11

Photo No. 100_3087

Point No. 004B

Description:

This area is primarily dominated by *Fagus grandifolia*, *Acer rubrum*, *Cornus florida*, *Ostrya virginiana*, *Rhododendron canescens*, *Aesculus parviflora*, *A. pavia*, *Polystichum acrostichoides* & *Hydrangea quercifolia*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources



Date: 05-08-12

Photo No. 100_3192

Point No. 006

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *Liquidambar styraciflua*, *Acer rubrum*, *Lonicera japonica* & *Ligustrum sinense*.

McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources



Date: 05-08-12

Photo No. 100_3195

Point No. 006

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *Liquidambar styraciflua*, *Acer rubrum*, *Lonicera japonica* & *Ligustrum sinense*.

McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 04-25-12

Photo No. DSCN0037

Point No. 007

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *P. virginiana*, *Acer saccharum*, *Aesculus parviflora*, *A. pavia*, *Vitis rotundifolia* & *Hydrangea quercifolia*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 04-25-12

Photo No. DSCN0026

Point No. 007A

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *P. virginiana*, *Acer saccharum*, *Aesculus parviflora*, *A. pavia*, *Vitis rotundifolia* & *Hydrangea quercifolia*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources



Date: 04-25-12

Photo No. DSCN0003

Point No. 008

Description:

This area is primarily dominated by *Fagus grandifolia*, *Acer rubrum*, *Cornus florida*, *Ostrya virginiana*, *Rhododendron canescens*, *Aesculus parviflora*, *A. pavia*, *Polystichum acrostichoides* & *Hydrangea quercifolia*.

McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources



Date: 04-25-12

Photo No. DSCN0008

Point No. 008A

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *P. virginiana*, *Acer saccharum*, *Aesculus parviflora*, *A. pavia*, *Polystichum acrostichoides* & *Hydrangea quercifolia*.

McGehee Engineering

Photographic Log

Client Name: <i>Cahaba Resources</i>	
Date:	<i>04-25-12</i>
Photo No.	<i>DSCN0014</i>
Point No.	<i>010</i>

Site Location:

Johnson North Mine



Description:
This area is primarily dominated by *Pinus taeda*, *P. echinata*, *P. virginiana*, *Festuca arundinacea*, *Solidago altissima*, *Andropogon virginicus* & *Liquidambar styraciflua*.

McGehee Engineering

Photographic Log

Client Name: <i>Cahaba Resources</i>	
Date:	<i>04-25-12</i>
Photo No.	<i>DSCN0018</i>
Point No.	<i>010</i>

Site Location:

Johnson North Mine



Description:
This area is primarily dominated by *Pinus taeda*, *P. echinata*, *P. virginiana*, *Festuca arundinacea*, *Solidago altissima*, *Andropogon virginicus* & *Liquidambar styraciflua*.

Dirt access road

McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3175

Point No. 011

Description:

This area is primarily dominated by *Festuca arundinacea*, *Pinus taeda*, *P. echinata*, *P. virginiana*, *Acer saccharum*, *Aesculus parviflora*, *A. pavia*, *Vitis rotundifolia*, *Liriodendron tulipifera*, *Liquidambar styraciflua* & *Lonicera japonica*.

Greenfield with shooting house



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3177

Point No. 011

Description:

This area is primarily dominated by *Festuca arundinacea*, *Pinus taeda*, *P. echinata*, *P. virginiana*, *Acer saccharum*, *Aesculus parviflora*, *A. pavia*, *Vitis rotundifolia*, *Liriodendron tulipifera*, *Liquidambar styraciflua* & *Lonicera japonica*.

Greenfield with shooting house.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3183

Point No. 012

Description:

This area is primarily dominated by *Carya cordiformis*, *Liquidambar styraciflua*, *Quercus prinus*, *Liriodendron tulipifera*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3184

Point No. 012

Description:

This area is primarily dominated by *Carya cordiformis*, *Liquidambar styraciflua*, *Quercus prinus*, *Liriodendron tulipifera*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3186

Point No. 013

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *P. virginiana*, *Festuca arundinacea*, *Solidago altissima*, *Andropogon virginicus*, *Liquidambar styraciflu* & *Toxicodendron radicans*.

Gas pad access road



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3189

Point No. 013

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *P. virginiana*, *Festuca arundinacea*, *Solidago altissima*, *Andropogon virginicus*, *Liquidambar styraciflu* & *Toxicodendron radicans*.

Gas pad access road



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3149

Point No. 015

Description:

This area is primarily dominated by *Liquidambar styraciflua*, *Quercus prinus*, *Liriodendron tulipifera*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3150

Point No. 015

Description:

This area is primarily dominated by *Liquidambar styraciflua*, *Quercus prinus*, *Liriodendron tulipifera*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3155

Point No. 015A

Description:

This area is primarily dominated by *Liquidambar styraciflua*, *Quercus prinus*, *Liriodendron tulipifera*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-08-12

Photo No. 100_3159

Point No. 015B

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *Vaccinium elliotii*, *Festuca pratensis* & *Lonicera japonica*.



Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-04-12

Photo No. 100_2977

Point No. 016

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *Liquidambar styraciflua*, *Rubus flagellaris*, *Conyza canadensis* & *Andropogon virginicus*.



Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-04-12

Photo No. 100_2989

Point No. 017

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *Liquidambar styraciflua*, *Festuca pratensis*, *F. arundinacea*, *Rubus flagellaris*, *Conyza canadensis* & *Andropogon virginicus*.

Gas well road



Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-04-12

Photo No. IMG_0891

Point No. 018

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *P. virginiana*, *Festuca arundinacea*, *Solidago altissima*, *Andropogon virginicus* & *Liquidambar styraciflua*.



Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-04-12

Photo No. IMG_0893

Point No. 018

Description:

This area is primarily dominated by *Pinus taeda*, *P. echinata*, *Liquidambar styraciflua*, *Festuca pratensis*, *F. arundinacea*, *Rubus flagellaris*, *Conyza canadensis* & *Andropogon virginicus*.

Gas well road



McGehee Engineering

Photographic Log

Client Name: <i>Cahaba Resources</i>	
Date:	<i>05-04-12</i>
Photo No.	<i>IMG_0899</i>
Point No.	<i>019</i>

Site Location:

Johnson North Mine



Description:
This area is primarily dominated by *Quercus prinus*, *Q. alba*, *Liriodendron tulipifera*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*

McGehee Engineering

Photographic Log

Client Name: <i>Cahaba Resources</i>	
Date:	<i>05-04-12</i>
Photo No.	<i>IMG_0912</i>
Point No.	<i>019A</i>

Site Location:

Johnson North Mine



Description:
This area is primarily dominated by *Pinus taeda*, *P. echinata*, *Hydrangea quercifolia*, *Sassafras albidum*, *Rubus flagellaris*, *Aesculus pavia* & *A. parviflora*.

Client Name: <i>Cahaba Resources</i>	
Date:	<i>05-04-12</i>
Photo No.	<i>IMG_0948</i>
Point No.	<i>020</i>

Site Location:

Johnson North Mine



Description:
This area is primarily dominated by *Liquidambar styraciflua*, *Quercus prinus*, *Liriodendron tulipifera*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*

Client Name: <i>Cahaba Resources</i>	
Date:	<i>05-04-12</i>
Photo No.	<i>IMG_0928</i>
Point No.	<i>020A</i>

Site Location:

Johnson North Mine



Description:
This area is primarily dominated by *Quercus alba*, *Q. prinus*, *Acer sacchrum*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia*, *Cornus florida* & *Polystichum acrostichoides*.

Slopes adjacent to the dry ephemeral drainage course.

McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-31-12

Photo No. P5310104

Point No. 021

Description:

This area is primarily dominated by *Liquidambar styraciflua*, *Quercus prinus*, *Liriodendron tulipifera*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia* & *Polystichum acrostichoides*

Dry ephemeral drainage course.



McGehee Engineering

Photographic Log

Client Name:

Site Location:

Johnson North Mine

Cahaba Resources

Date: 05-31-12

Photo No. P5310105

Point No. 021

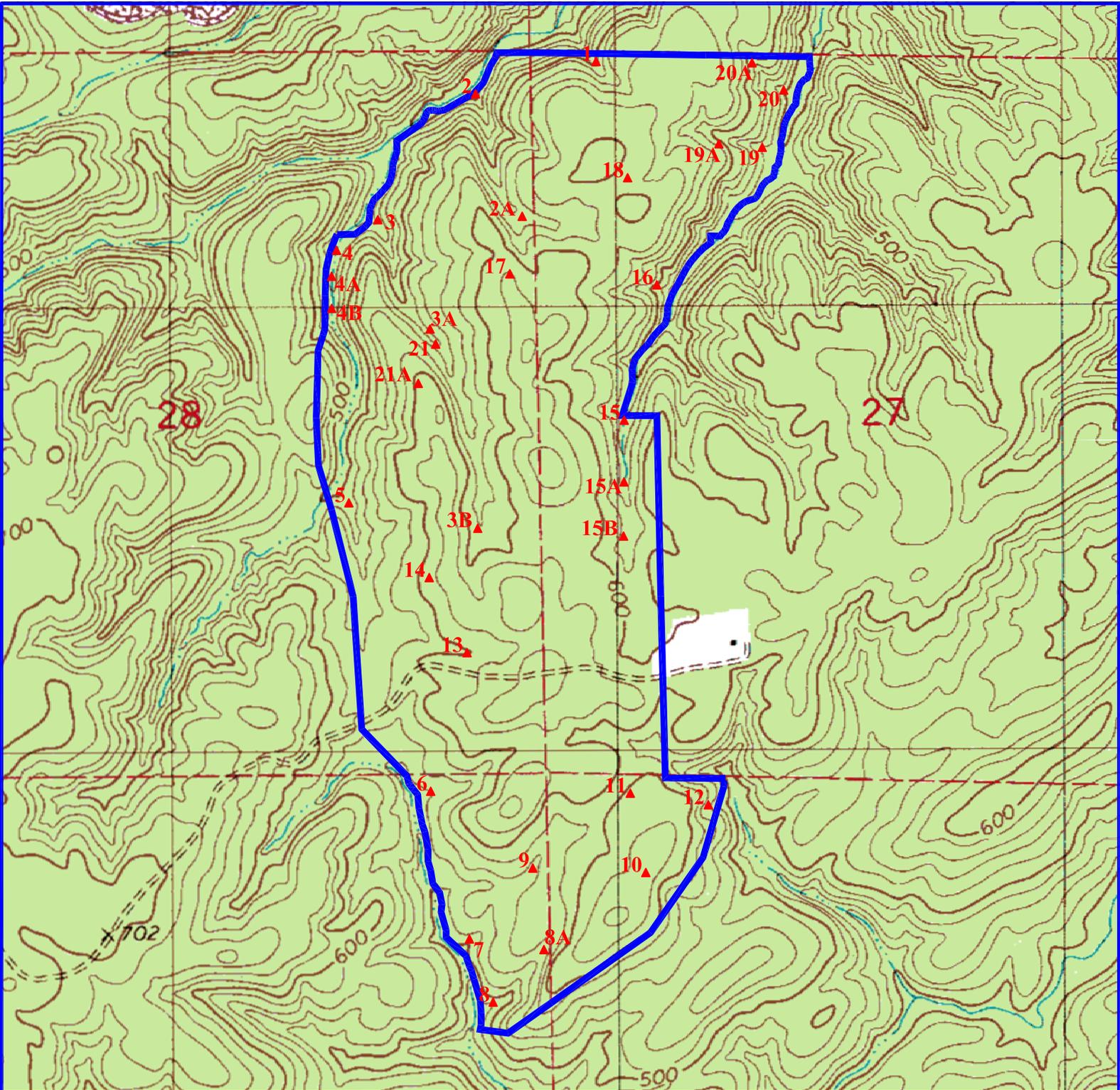
Description:

This area is primarily dominated by *Quercus alba*, *Q. prinus*, *Acer saccharum*, *Acer rubrum*, *Aesculus parviflora*, *A. pavia*, *Cornus florida* & *Polystichum acrostichoides*.

Slopes adjacent to the dry ephemeral drainage course.



Appendix C — Photo Log Point Location Map



JUNE 01, 2012
 SCALE: 1" = 1000'

CAHABA RESOURCES, LLC.
JOHNSON NORTH MINE
 (APPROXIMATELY 362 ACRES TOTAL)



WETLAND DELINEATION POINT MAP

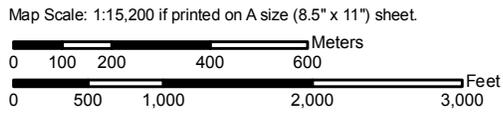
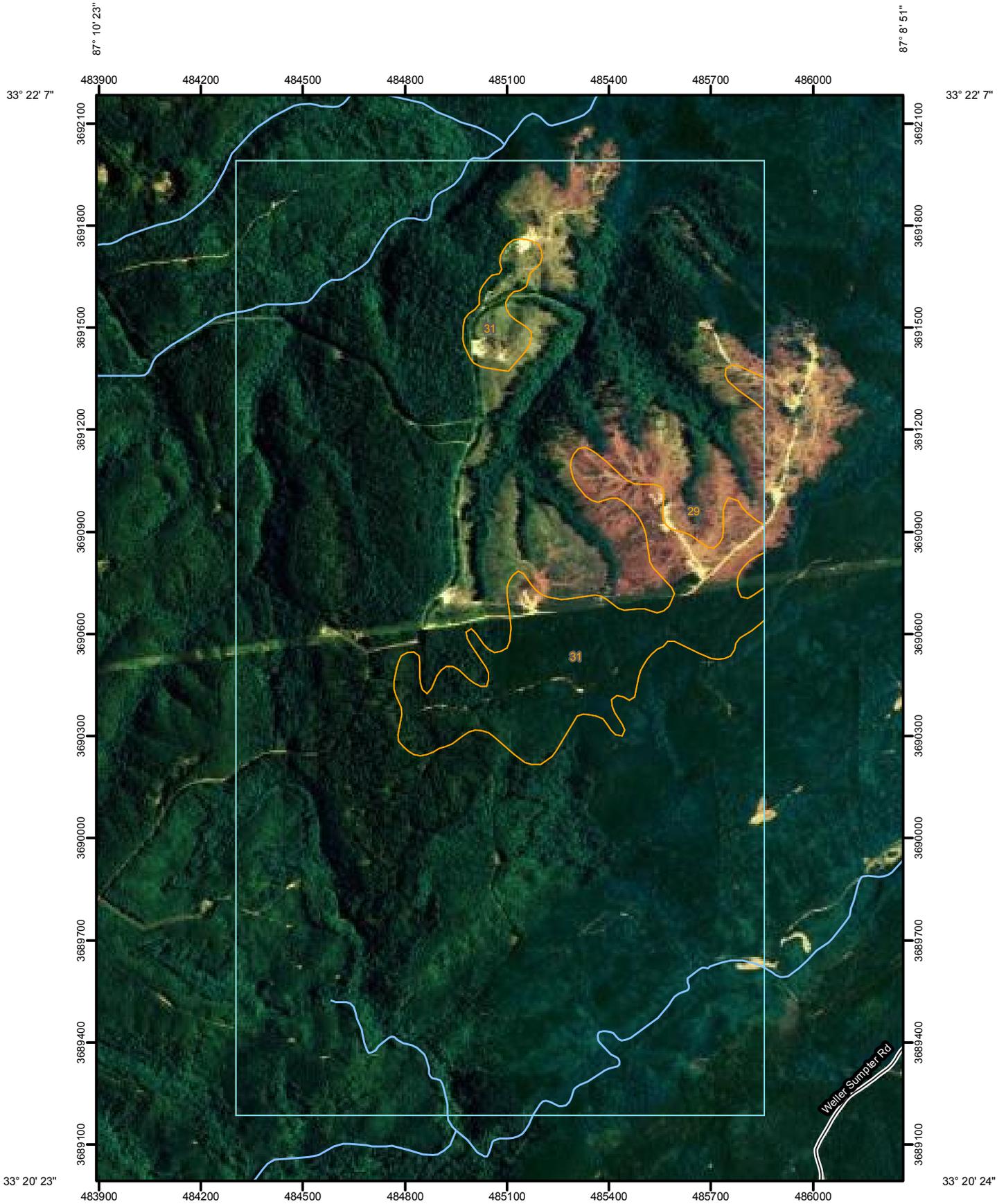
SECTIONS 27, 28, 33 & 34, TOWNSHIP 19 SOUTH, RANGE 6 WEST,
 ALL IN JEFFERSON COUNTY, ALABAMA
 AS FOUND ON THE ABERNANT, ALABAMA USGS QUAD.

 JOHNSON NORTH PROJECT BOUNDARY
 WETLAND DELINEATION POINT MAP

Latitude: 33°21'13" N
 Longitude: 87°09'48" W

Appendix D — Soil Map

Soil Map—Jefferson County, Alabama
(Cahaba Resources, LLC. -- Johnson North Mine -- Soil Map)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot

-  Very Stony Spot
-  Wet Spot
-  Other

Special Line Features

-  Gully
-  Short Steep Slope
-  Other

Political Features

-  Cities

Water Features

-  Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

Map Scale: 1:15,200 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Jefferson County, Alabama
 Survey Area Data: Version 5, Mar 11, 2008

Date(s) aerial images were photographed: 6/29/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Jefferson County, Alabama (AL073)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
29	Montevallo-Nauvoo association, steep	971.9	90.2%
31	Nauvoo fine sandy loam, 8 to 15 percent slopes	105.4	9.8%
Totals for Area of Interest		1,077.3	100.0%