these mitigation measures, Alternative 3 is not expected to have an effect on these species.

A cultural resource survey identified a total of 16 archaeological locations within the extent of the permit area. These included 7 isolated finds and 9 archaeological sites. Of these sites, 5 are the remains of early-to-middle-twentieth century domestic assemblages. None of the sites were recommended as eligible for NRHP inclusion and isolated finds are, by their nature, ineligible for NRHP inclusion. One resource located outside of the permit area boundary is recommended as potentially eligible for NRHP inclusion under Criterion C. This resource is a mid-century ranch home constructed in 1950. Though currently abandoned, the integrity of the structure is intact and its architecture is significant as a representative example of a mid-twentieth century ranch house. The cultural resource survey recommended avoidance of this property. Additionally, the house is currently located near an existing chip mill and railroad tracks and is currently exposed to heavy audible effects. Due to avoidance measures the historic resource will not suffer adverse visual and audible effects as a result of the proposed mining operations. The house will not be impacted by the project.

3.4 Alternative 4

Alternative 4 would be to mine only upland areas in the Loncala tract. The site is an approximately 1,012-acre area depicted on the U.S. Geological Survey (USGS) 7.5-minute Topographic Maps of Moniac, Georgia and Saint George, Georgia (Figure 1). The center of the site is located near latitude 30.576162 and longitude -82.128950. According to the USGS Topographic Map, the elevation at the site ranges from approximately 120 to 175 feet above mean sea level.

The mining boundaries for Alternative 4 are located 1.15 miles from the eastern limits of the Okefenokee National Wildlife Refuge property boundary. Alternative 4 is comprised of suitable reserves of heavy mineral sands containing the target minerals suitable for mining. The heavy mineral sands underlying the site are not comprised of an average of 2% concentration of the economically viable minerals. The location of Alternative 4 is within the reasonable 50-mile proximity to the port of Jacksonville. Public services and facilities required to support the mine and protect public health, safety and the environment are available onsite. Alternative 4 does not contain direct rail access and is located approximately 3.3 miles from a rail line. Without proper rail access, material would require transportation over greater distances on unimproved roadways or would require the construction of a rail which would ultimately increase onsite impacts. Without the construction of a rail, the cost of handling/transporting of material would increase as a result. The implementation of Alternative 4 is expected to have a beneficial economic impact on the adjacent community due to the its projected employment of 150-200 people for 6 years.

The northern boundary of Alternative 4 is within one-half mile of the boundary of the Okefenokee National Wildlife Refuge. The boundary follows a portion of Swamp Perimeter Road. Trail Ridge Road is located along the eastern portion of the site. The site has historically been used for silvicultural activities. The primary sources of hydrology for the site are onsite rainfall and surface water flow. The majority of the site is located within the Soldiers Camp Island watershed, cataloging unit 12-Digit HUC 030702040301. Three other cataloging unit 12-Digit HUCs occur along the northwestern (Cornhouse Creek – 030702040703), northeastern (Harris Creek – St. Mary's River– 030702040603), and the eastern (Boone Creek – 030702040602) portions of the site. All four cataloging units are located within the St Mary's watershed, cataloging unit 8-Digit HUC 03070204.

Alternative 4 would have reduced wetland and stream impacts. It is assumed that the permanent impacts of Alternative 4 would be roughly the same as Alternative 1. The permanent mining facilities would still need to be constructed at the site. By mining only in uplands, the temporary impacts to wetlands and streams would be significantly less.