

The proposed mining operation is designed to be water-efficient by recycling and recirculating water to minimize the amount required from the Upper Floridan Aquifer. Water will not be withdrawn from any natural surface water body. Sources for mine process water will include managing and reusing stormwater and withdrawals from the Upper Floridan Aquifer (UFA).

Twin Pines will operate the mine to be a low-impact neighbor to nearby residents. The active mining area will be designed so it will be bordered by a berm and/or forested buffers to minimize potential disturbances (noise and dust) as per the Surface Mining Land Use Plan (SMLUP) submitted to Georgia Environmental Protection Division Surface Mining Unit. Twin Pines has been in contact with area stakeholders, including Charlton County, Georgia EPD, and concerned citizens during the planning process for the proposed mine.

2 PURPOSE AND NEED

Twin Pines' purpose and need for the proposed mining project includes the extraction (maximum mineral recovery based on economic consideration and landowner commitments) of high quality heavy mineral reserves in a safe, cost effective and environmentally sound manner for export by truck, rail and eventual barge to national and international customers.

Mineral sand-derived products, particularly those containing titanium dioxide and zirconium, are in high demand worldwide in the pigment, aerospace, medical, foundry, and other industrial products. Elemental components, chiefly titanium, are used as the white pigments. Titanium dioxide is nontoxic and has replaced lead as the predominant pigment in paints and coatings.

Many deposits of HMS have been identified in the Atlantic Coastal Plain, including more than a dozen deposits that have been mined. Three Atlantic Coastal Plain districts have seen the bulk of the heavy mineral sands production and these districts are: (1) the Jacksonville district in northeastern Florida and southeastern Georgia, (2) a sequence of deposits along the Fall Zone in southeastern Virginia, and (3) the Lakehurst district in southern New Jersey. HMS are sediments containing dense (heavy) minerals that accumulate with sand, silt, and clay in coastal environments locally forming economic concentrations of heavy minerals.

Considerable resources of HMS in the form of detrital grains of titanium, ilmenite, leucosene, and rutile, could exist in large areas of the Atlantic Coastal Plain. These heavy mineral sand deposits represent possible domestic sources of titanium that have yet to be developed. Identifying potential domestic resources of titanium is useful because titanium has significant industrial applications, and because the great majority of titanium mineral concentrates consumed in the U.S. are imported (91 percent in 2016; Ober, 2017). Only two HMS mining operations are currently (as of 2017) active in the U.S., due to closure of the HMS mines in southern Virginia.

Many prospective areas for HMS deposits in the Atlantic Coastal Plain occur near the modern shores or on barrier islands, for example, the coasts of South Carolina, southeastern Georgia, and northeastern Florida. Much of the modern coastal areas are covered by infrastructure. Thus, land-use and permitting considerations may limit mineral development along the modern coast.