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Many visitors travel to the Wilderness Area to enjoy the quiet of a primitive place. The proposed mine would interrupt that quiet. The machinery at the proposed mine would generate a substantial amount of sound. Most of the excavation work would be done by a dragline, which Twin Pines describes as a "large crane-like earthmoving machine" that is equipped a with a "large capacity bucket" so that it can move "large quantities of material" efficiently. <sup>299</sup> In short, the dragline will likely be very noisy. This noise would be coupled with the noise from other pieces of smaller excavation equipment such as bull dozers, backhoes, and dump trucks. Once the titanium ore is harvested by these machines, Twin Pines would feed it into a "Pre-concentration Plant," which contains "spiral centrifuges." From there the concentrated ore would be fed into a "Wet Concentration Plant" for further processing. The materials would continue on to a "Mineral Separation Plant." Twin Pines will also use a train to move the processed material to market. The Twin Pine mine would be a highly industrialized and noisy endeavor.

Already, visitors to the Floyd Island campsites that are located within the Wilderness Area complain to the Service about hearing an existing train that is 10.5 miles away. The sounds from the proposed mine would only compound such noise intrusions into the Wilderness Area, and detract further from the wilderness experience. Twin Pines must address this noise pollution. 303

Many visitors travel to the wilderness area to also escape from the lights of developed areas. The wilderness area is an exceptional place to go for this purpose. The swamp is recognized as an International Dark Sky Park and has one of the darkest skies in the Southeast. In addition to attracting visitors to areas like the Okefenokee Wilderness Area, scientists are finding that skies that are not polluted by light are critical to the survival of ecosystems. As one scientist noted, "[t]hough it may not be as immediately toxic as a chemical spill, light pollution is now among the most chronic environmental perturbations on Earth." He went on to explain that "a shocking array of non-urban species, including bats, insects, plants, fish, turtles, marine invertebrates

<sup>&</sup>lt;sup>299</sup> Permit Application at 6.

<sup>&</sup>lt;sup>300</sup> Permit Application at 5.

<sup>&</sup>lt;sup>301</sup> Permit Application at 5 (It is not clear whether the mineral processing plant will be located at the mine, or elsewhere.)

<sup>&</sup>lt;sup>302</sup> E-mail from U.S. Fish & Wildlife Serv. staff member (Sept. 6, 2019).

<sup>&</sup>lt;sup>303</sup> Some of the questions we have about the Twin Pines operation follow: Is Twin Pines willing to conduct a sound study to predict the amount of sound that the proposed mine would generate and describe the concrete measures it would take to mitigate those impacts? Is Twin Pines willing to accept a permit condition that would limit work in the mine to an 8-hour shift during daylight hours? Is Twin Pines willing to accept a permit condition that would require it to construct an earthen berm of sufficient height to prevent the sounds emanating from the mine from reaching the wilderness area?

<sup>&</sup>lt;sup>304</sup> Stephen C. Foster State Park Named First International Dark Sky Park in Georgia (U.S.), https://www.darksky.org/stephen-c-foster-state-park-named-first-international-dark-sky-park-in-georgia-u-s/.