SOUTHERN ENVIRONMENTAL LAW CENTER

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September 12, 2019

VIA EMAIL

Col. Daniel Hibner
U.S. Army Corps of Engineers
Savannah District
100 W. Oglethorpe Avenue
Savannah, GA 31401
Attn: holly.a.ross@usace.army.mil

Re: Permit Application No. SAS-2018-00554

Dear Colonel Hibner:

Twin Pines Minerals, LLC is seeking permission to operate a heavy mineral sand mining facility on approximately 12,000 acres of land in Charlton County, Georgia. The application demands heightened scrutiny for the following reasons:

- The proposed 12,000-acre mine could destroy the integrity of the iconic Okefenokee Swamp located next door.

- At full buildout, the proposed surface mine would eliminate thousands of acres of wetlands and tens of thousands of linear feet of stream, some of which flow into the Swamp.

- To our knowledge, the Corps' Savannah District has not authorized a private company to engage in destruction of this magnitude in recent history.

- Over 20,000 local, regional, and national organizations and individuals have written comments urging the Corps to deny Twin Pines' permit.

- Despite the scale of the project and the enormity of the risks, Twin Pines has not adequately studied the mine's potential impacts.

On behalf of Defenders of Wildlife (which prepared the Endangered Species Act and National Refuge Act sections of these comments), Altamaha Riverkeeper, Environment Georgia, Flint Riverkeeper, Georgia River Network, National Wildlife Refuge Association, Ogeechee Riverkeeper, One Hundred Miles, Savannah Riverkeeper, Satilla Riverkeeper, Sierra Club, St. Marys EarthKeepers, Suwannee Riverkeeper, Wilderness Society, and Wilderness Watch, we urge the Corps to deny the application or, in the alternative, to prepare an Environmental Impact Statement for review and comment.

Because we are so concerned about the adverse impacts that the proposed mine could cause, we would like to meet with you at your earliest convenience to discuss the mine.

The following comments address the flaws in Twin Pines' application under the National Environmental Policy Act, the Clean Water Act, the Endangered Species Act, the National Historic Preservation Act, the Refuge Administration Act, the Wilderness Act, and the Reserved Water Rights Doctrine. These statutes have complementary and often overlapping requirements. For example, both the Clean Water Act § 404(b)(1) Guidelines and NEPA require consideration of cumulative impacts. Although our comments are organized by statute, many of the issues implicate more than one statute.

I. Summary of Twin Pines' Mining Proposal

On August 7, 2018, Twin Pines met with federal agencies and proposed "to operate a 12,000-acre sand-derived minerals mine … [which] would be mined in 1,000-acre phases over an approximate 30-year time period."[1] Despite the enormity of the project and adverse impacts it would cause, Twin Pines was so bold as to request that the Corps authorize the proposed mine under a nationwide permit,[2] knowing that such permits are reserved for projects having "minimal adverse environmental effects."[3]

Almost a year later, Twin Pines submitted its application for "Phase One" of the proposed project. To prepare the site for mining, Twin Pines would clear the land and burn the vegetation.[4] Then Twin Pines would remove and stockpile the topsoil "two to six months in advance [of] mining activities."[5] Twin Pines would then excavate up to 70 feet in some places using a drag-line, a crane-like track machine equipped with a large bucket.[6] The drag-line would proceed back and forth across the site scooping out heavy mineral bearing sand.

Twin Pines would stockpile the excavated material "nearby," possibly to dewater, before conveying the material to separator plants on site that would remove the heavy minerals using centrifuges and groundwater from the Floridan aquifer.[7] As the dragline continued advancing at a

[1] U.S. Army Corps of Engineers, Issue Paper: Twin Pines Minerals Mining Project (2018) ("USACE Issue Paper") (attached as Ex. A); Letter from Donald Imm, U.S. Fish & Wildlife Serv., to Col. Daniel Hibner, U.S. Army Corps of Eng'rs (Feb. 20, 2019) at 1 (attached as Ex. B) ("USFWS Feb. 20, 2019 Letter").

[2] E-mail from Christopher Stanford, TTL, to Jared Lopes, U.S. Army Corps of Eng'rs (July 23, 2018) ("Our main objective is to obtain a permit, preferably a NWP, for heavy mineral mining.")

[3] 33 U.S.C. § 1344(e).

[4] Twin Pines Minerals, Surface Mining Land Use Plan, at 3–4 (July 25, 2019) ("SMLUP") (attached as Ex. C).

[5] *Id.* at 4. At a mining rate of 25–40 acres per month, anywhere from 50 to 240 acres could be cleared and stripped of topsoil at any one point in time.

[6] Permit Application at 1, 4. Roughly one sixth of Phase One will be mined up to 25 feet deep using a different machine. *Id.* at 10.

[7] *Id.* at 4–5; *see* App. F, Fig. 5.

rate of 25 to 40 acres a month across the site, the leftovers, or tailings, would be stockpiled then dumped back into open mining pits.[8] Twin Pines would then contour the filled part of the cut and cover it with topsoil.[9] In the drier areas, Twin Pines would plant pine trees. In the wetter area, Twin Pines would attempt to create wetlands and streams to offset what Twin Pines refers to as "temporary impacts."

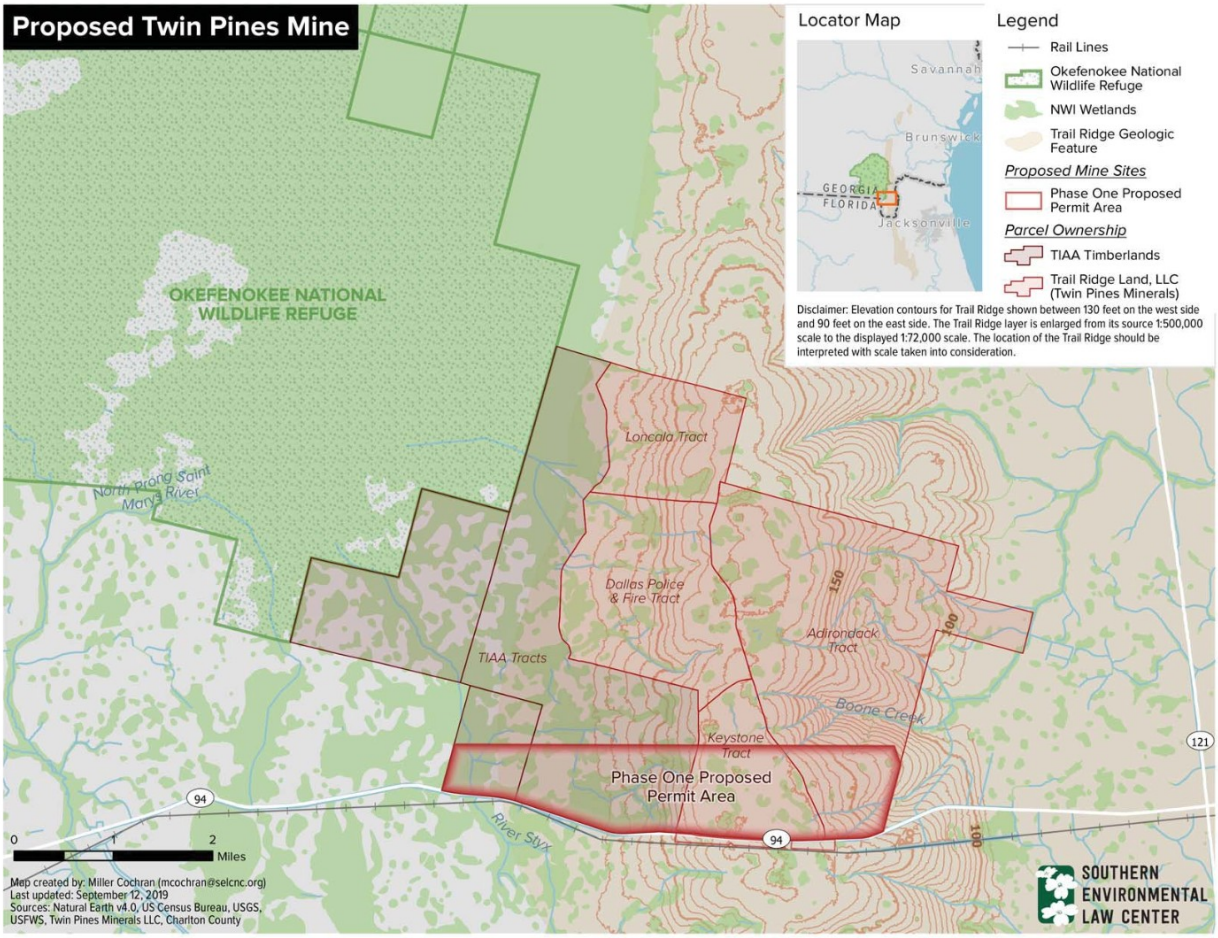

Figure 1: Proposed Twin Pines Mine

As discussed in Section IV, the potential for destroying the integrity of the Okefenokee Swamp is real.[10] As shown in the map above, the project is located on an elevated geological feature known as Trail Ridge which, according to the U.S. Fish and Wildlife Service, "serves as the eastern barrier of the swamp, keeping its waters contained."[11] Trail Ridge is part of an ancient barrier island complex running from Gainesville, Florida to Jesup, Georgia. A small percentage

[8] Permit Application at 1, 5.

[9] *Id.* at 5.

[10] Mark L. Hutson, Review of Surface Mining Permit Application Proposed Twin Pines Minerals, LLC, Heavy Minerals Mine Saint George, Charlton County, Georgia at 1 (2019) ("Hutson Report") (attached as Ex. D).

[11] USFWS Letter at 1.

of its sands are heavy minerals such as zircon and ilmenite (a source of titanium dioxide). Mostly, the sand is quartz. Interspersed throughout the ridge are what Twin Pines refers to as units of "humate-cemented sand (Black Sand)."[12] Water flows more slowly through these sands. Twin Pines' project, as described in its permit application, would destroy these low permeability layers and replace them with homogenized sands, thereby allowing "groundwater to more freely drain from the ridge."[13] In the 1990s, when DuPont proposed to mine a strip of Trail Ridge immediately to the north of Twin Pines' proposed project, a tidal wave of public protest broke on DuPont and caused it to abandon its plans. One of the biggest criticisms of the plan was that DuPont could not demonstrate that the proposed mine would not drain the Okefenokee Swamp. The U.S. Fish and Wildlife Service detailed some of those concerns:

> Significant long-term alterations to the hydrology and water quality of the Okefenokee Swamp and St. Marys River are likely. Impacts could include the destruction of thousands of acres of wetlands, alterations to surface water flow, and permanent changes to the hydrological relationships among the swamp, the underlying aquifer, and the surficial groundwater in the adjacent mined area.
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> * * *
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> Endangered species and their habitats that may be directly affected include red-cockaded woodpeckers, indigo snakes, and wood storks. In addition to environmental effects, the mine operation could significantly degrade the unique wilderness experience available to [visitors] through a variety of visual impacts and noise pollution.[14]

In short, the proposed mine could cause a trainwreck of adverse effects.

The similarities between the DuPont proposal and the Twin Pines proposal are striking. Throughout the application process, Twin Pines has repeatedly misrepresented the scale and severity of its project's impacts. For example:

- **Twin Pines misrepresented the size of the mine.** At a public meeting, Twin Pines told the public it was a "myth" that it "is planning to mine 12,000 acres of property."[15] According to Twin Pines, the 12,000-acre figure is merely "the area that Twin Pines evaluated." However, Twin Pines disclosed to federal agencies (but not the public) that it intends to mine "12,000 acres in 1,000 acre phases over a 30-year period."[16]

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[12] Permit Application, App. F.

[13] Hutson Report at 5.

[14] U.S. Fish and Wildlife Serv., *Okefenokee National Wildlife Refuge: Annual Narrative Report, Calendar Year 2000*, at 56 (April 2001) (excerpts attached as Ex. E)

[15] Twin Pines, LLC, Myths v. Facts: Twin Pines Mining Project at ¶ 3 (Aug. 13, 2019) ("Twin Pines Fact Sheet").

[16] USACE Issue Paper at 1; USFWS Letter at 1; E-mail from Christopher Stanford, TTL, to Jared Lopes, U.S. Army Corps of Eng'rs (July 23, 2018) ("The mine site is approximately 12,000 acres and the area will be mined in 1,000-acre parcels over 30 years."). Twin Pines was less coy during its presentation to the Okefenokee Chamber of Commerce on September 11,

- **Twin Pines misrepresented how long it would take to restore the site.** In its application, Twin Pines tells the public and the Corps that wetlands that are impacted by mining will be fully restored within 30 to 90 days.[17] According to information submitted to Georgia's Environmental Protection Division, however, Twin Pines will remove approximately one foot of topsoil *two to six months* in advance of mining activities. Within *six months* of mining, Twin Pines will refill drag line cuts with sand tailings and replace the topsoil. It will replant trees and vegetation within *18 to 24 months*. As discussed in Section IV(F) and the attached expert reports, we have serious concerns about Twin Pines' reclamation process. But even under their own timeline, wetlands impacts would last between two and three and a half years—not 30–90 days.

- **Twin Pines wrongly stated that no endangered species would be harmed.** At a public meeting, Twin Pines said it was a "myth" that "the mining operation will impact threatened and endangered species."[18] But according to biologists at the Fish and Wildlife Service, the federal agency charged with protecting threatened and endangered species, "after the mining it is questionable if the site will serve as habitat for [gopher tortoises] ever again."[19] The Service also expressed concerns that soil homogenization caused by mining "would like permanently destroy the habitat" of frosted flatwood salamanders, striped newts, and gopher frogs.[20]

- **Twin Pines made unsubstantiated claims the proposed mine would cause no harm to the Okefenokee Swamp.** At a public meeting, Twin Pines categorically stated that "[m]ining will not have an impact on the Okefenokee Swamp."[21] But according to Twin Pines, they had not completed studies on subsurface hydrology, hydraulic properties of subsurface soils, or groundwater models. Twin Pines is not entitled to a presumption of no impact; to receive a permit, it must affirmatively prove its proposed mine would not harm the Okefenokee Swamp.

These misrepresentations do not inspire confidence in Twin Pines' ability to preserve irreplaceable public resources like the Okefenokee Swamp.[22]

2019, reportedly referring to plans for expansion.

[17] Permit Application at 3; Twin Pines Fact Sheet at ¶ 6.

[18] Twin Pines Fact Sheet at ¶ 12.

[19] USFWS Letter at 4.

[20] *Id.*

[21] Twin Pines Fact Sheet at ¶ 7.

[22] Nor does its track record of non-compliance. Twin Pines operates a heavy mineral mining facility in Starke, Florida. In February 2019, the Florida Department of Environmental Protection found that Twin Pines had not received proper authorization to operate the Florida facility. More substantively, the DEP found during an inspection that Twin Pines' silt fence was "overwhelmed with sand" and that "process water and tailings fill [were] deposited in a wetland without permission." *Florida Dept. of Envtl. Prot. v. Chemours*, OCG File No. 18-1240, Consent Order (Feb. 7, 2019) at 5. The Corps should consider Twin Pines' track record of misrepresentations and non-compliance in evaluating the permit application.

II. The lack of information in the application prevents meaningful comment by the public.

The Corps may not issue a Section 404 permit before providing public notice and an opportunity to meaningfully comment on the proposed project.[23] "[T]he opportunity to comment … necessarily require[s] that the Army present for public scrutiny the rationale and pivotal data underlying its proposed action *before* the close of the comment and hearing period."[24] After all, "without pivotal data and information, public comment cannot be meaningful."[25]

For example, in *Ohio Valley Environmental Coalition v. U.S. Army Corps of Engineers*, the Corps issued a Section 404 permit to a coal mining company to operate a surface mine in West Virginia. The court vacated the permit, finding that the Corps had not provided adequate notice or opportunity to comment. The court reasoned, "in light of the central role compensatory mitigation plays in determining whether a Section 404 permit for a [surface] mine will cause or contribute to significant environmental degradation," "the lack of information on mitigation in the notices deprived plaintiffs of an existing procedural right – the right to comment intelligently."[26]

Here, like in *Ohio Valley*, the application lacks critical information. For example, the company still has not submitted basic documents like a water management plan. Nor has it completed critical tasks like developing adequate groundwater flow models. This leaves fundamental questions unanswered. For instance, would mining fifty to seventy feet deep, as Twin Pines intends to do, eliminate subsurface strata that prevent water in the Okefenokee Swamp from flowing eastward, thereby draining the swamp or at least lowering the water table enough to cause ecological disruptions?[27] Would mining in the northern phases of the project alter regional groundwater flows that currently move directly into the Okefenokee Swamp? Without complete information, the public cannot meaningfully comment on the proposed project, and the Corps cannot competently evaluate the application.

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[23] 33 U.S.C. § 1344(a); 33 C.F.R. § 325.3(a). The application must be complete at the time the notice is issued, which requires "sufficient information to give a clear understanding of the nature and magnitude of the activity to generate meaningful comment."

[24] *Nat'l Wildlife Fed'n v. Marsh*, 568 F. Supp. 985, 994 (D.D.C. 1983) (emphasis in original).

[25] *Friends of the Earth v. Hall*, 693 F. Supp. 904, 948 (W.D. Wash. 1988) (granting § 404 permit without releasing a mitigation monitoring plan for public comment violated notice requirements under Clean Water Act); *see also Ohio Valley Envtl. Coal. v. U.S. Army Corps of Engineers*, 674 F. Supp. 2d 783, 805 (S.D.W. Va. 2009) (granting § 404 permit without releasing substantive information on mitigation violated notice requirements under Clean Water Act); *Northwest Environmental Defense Center v. Wood*, 947 F.Supp. 1371 (D.Or.1996); *Nat'l Wildlife Fed'n v. Marsh*, 568 F. Supp. 985, 994 (D.D.C. 1983) (Clean Water Act notice requirements require that "the Army present for public scrutiny the rationale and pivotal data underlying its proposed action *before* the close of the comment and hearing period.").

[26] *Ohio Valley*, 674 F. Supp. 2d at 799, 804.

[27] *See* Richard Rheinhardt, Review of USACE Clean Water Act Permit Application by Twin Pines Minerals at 5–7 (2019) ("Rheinhardt Report") (attached as Ex. F), Hutson Report at 5.

Among other things, Twin Pines:

- Has not submitted a water management plan for mining operations.
- Has not "characterize[d] the pre-mining conditions along Trail Ridge."[28]
- Has provided practically no information regarding the middle 9,000 acres of the "project study area."[29]
- Has not "predict[ed] the impact of mining operations."[30]
- Has not "evaluate[d] the significance [or the extent] of the ['humate-cemented'] Black Sand relative to the hydrology of the site."[31]
- Has not developed groundwater flow models to evaluate hydrology and hydrogeology for the site, or the region.[32]
- Has not "evaluate[d] the post-mining hydrogeological conditions to inform reclamation/restoration efforts."[33]
- Has not conducted on-site surveys for the following species of concern: Florida hartwrightia, floodplain tickseed, purple honeycomb-head, palafoxia, Chapman's fringed orchid, yellow fringless orchid, or Stokes' aster.[34]
- Has not proposed mitigation measures to avoid an adverse effect on the threatened eastern indigo snake.[35]
- In addition, the Corps has failed to provide 24 pages of a cultural resources report, which apparently includes the report's conclusion.[36]

In short, Twin Pines has left the Corps hamstrung. Or, if the Corps allows Twin Pines to supply all of these items after the public comment period is over, Twin Pines and the Corps will be complicit in denying the public an opportunity to provide meaningful comments. This is especially troubling considering the magnitude of adverse impacts that the proposed mine threatens to cause.

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[28] Permit Application, App. F.
[29] *Id.*
[30] *Id.*
[31] *Id.*
[32] *Id.*
[33] *Id.*
[34] Permit Application at 22, 27–28.
[35] *Id.* at 33.
[36] *See* Permit Application, App. E: Cultural Resource Survey Reports, TerraXplorations, Inc., "A Phase I Cultural Resources Survey of the Twin Pines Minerals Keystone Property in Charlton County, Georgia, " at 41-65 (Oct. 26, 2018).

In light of these deficiencies, SELC requested an extension of the comment period until the Corps could provide this pivotal information to the public. The final day of the comment period, the Corps denied our request, while conceding that Twin Pines still had not provided hydrology reports and other project studies.

By failing to provide the requested information, the Corps deprived the public of its right to meaningfully comment on the application. To comply with the Clean Water Act and its implementing regulations, the Corps must provide the information requested in these comments for public review and comment.

III. To comply with NEPA, the Corps must prepare an Environmental Impact Statement to analyze the environmental impacts of the proposed mine.

A. The Corps must prepare an Environmental Impact Statement.

The National Environmental Policy Act (NEPA) is "designed to prevent agencies from acting on incomplete information and to 'ensure that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast.'"[37] To this end, NEPA obligates the Corps to prepare an Environmental Impact Statement if "*any* significant environmental impacts *might* result" from the issuance of a permit.[38]

To evaluate whether a potential impact is "significant," the Corps should analyze both the context in which the proposed action would take place and the intensity of its impact.[39] "Considering context is critical because the significance of an action can vary based on the setting and surrounding circumstances."[40]

"Intensity" concerns "the severity of impact."[41] NEPA regulations prescribe several factors that can make a proposed project significant from an intensity standpoint, including the following:

- "Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, … wetlands… or ecologically critical areas;"
- "The degree to which the effects on the quality of the human environment are likely to be highly controversial;"
- "The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks;"

[37] *Sierra Club v. U.S. Army Corps of Eng'rs*, 295 F.3d 1209, 1214 (11th Cir. 2002) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989)) (internal quotation marks omitted).

[38] *Sierra Club v. Peterson,* 717 F.2d 1409, 1415 (D.C. Cir. 1983) (first emphasis in original); 42 U.S.C. § 4332(2)(C).

[39] 42 U.S.C. § 4332(2)(C).

[40] *Am. Rivers v. Fed. Energy Regulatory Comm'n*, 895 F.3d 32, 49 (D.C. Cir. 2018)

[41] 40 C.F.R. § 1508.27(b).

- "The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration;"
- "Whether the action is related to other actions with individually insignificant but cumulatively significant impacts;"
- "Whether the action will violate other environmental statutes;"
- "The degree to which the action may …cause loss or destruction of significant scientific, cultural, or historical resources;" and
- "The degree to which the action may adversely affect an endangered or threatened species or its [critical] habitat."[42]

As explained below, the proposed mine trips every one of these intensity factors.

In assessing the context and intensity of a proposed action, the Corps must consider all related actions together. In other words, "[l]arge projects may not be artificially segmented into smaller ones for the purpose of avoiding NEPA or minimizing the appearance of adverse environmental impact."[43] As the regulations put it, "Significance cannot be avoided by terming an action temporary or breaking it down into small component parts."[44] Here, that means that the Corps must evaluate the full 12,000-acre project—not just the first phase of the proposed mine.

Both the context and intensity of the proposed mine warrant the preparation of an EIS. Regarding context, because the proposed mine borders a National Wildlife Refuge and a "Wetland of International Importance," it would have impacts in a local, regional, and national context.

Regarding intensity, the proposed mine implicates at least eight intensity factors. First, the proposed mine would have significant adverse impacts. Twin Pines concedes that Phase One of the proposed mine would impact at least 587 acres of wetlands and 4,658 linear feet of stream.[45] As discussed in Section IV(A) below, assuming a proportional amount of mining over the entire 12,000 acres, the proposed mine would, by conservative estimates, impact 2,400 acres of wetland and 23,000 linear feet of stream. And these numbers do not account for the secondary impacts to neighboring aquatic resources such as the Okefenokee Swamp. The numbers also do not reflect non-aquatic impacts, such as the destruction of habitat, the reduction of air and water quality through the release of contaminants, and the degradation of the visitor and wilderness experience due to light, dust, and noise from mining operations.

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[42] 40 C.F.R. § 1508.27.

[43] *Colony Fed. Sav. & Loan Ass'n v. Harris*, 482 F. Supp. 296, 302 (W.D. Pa. 1980) (describing "substantial case law").

[44] 40 C.F.R. § 1508.27(b)(7).

[45] Permit Application at 19.

Second, the proposed mine is located in a unique geographic area. The 12,000-acre project area borders the Okefenokee Swamp. "The Okefenokee is like no other place on earth."[46] In 1937, the Swamp was designated as a National Wildlife Refuge, and it remains the largest refuge in the eastern United States.[47] It is also a National Natural Landmark, a designation reserved for "the best examples of biological and geological features" in the country.[48] It is home to over 620 species of plants, 233 species of birds, 39 species of fish, 37 amphibians, 64 reptiles, and 50 mammals, and has been named a "Wetland of International Importance" through the Ramsar Convention."[49]

Third, as discussed throughout these comments, much of the information on aquatic impacts is incomplete or uncertain. "Preparation of an EIS is mandated where uncertainty may be resolved by further collection of data or where the collection of such data may prevent 'speculation on potential...effects.'" [50]

Fourth, the potential effects of the proposed mine are likely to be highly controversial—assuming Twin Pines' forthcoming studies and information will argue that mining would do no harm. The proposed application has already sparked controversy among agencies, academics, scientists, and concerned citizens. As shown throughout these comments, there is "a substantial dispute about the size, nature, or effect" of the proposed action.[51]

There will likely be controversy in the ordinary sense of the term as well. Within days of the submittal of Twin Pines' application, both local and national media outlets reported on the application, from the Savannah Morning News[52] to the Washington Post and New York Times.[53]

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[46] U.S. Fish and Wildlife Serv., *About the Refuge*, https://www.fws.gov/refuge/Okefenokee/about.html; *see also* Georgia Laws 1919, at 1424–26 ("Congress Urged to Establish a National Park in Okefenokee Swamp") ("[N]ature herself worked hard and furnished here a natural sanctuary… the dense jungles in which birds and animals hide themselves from danger will disappear unless protected, and the great forests, jungle and swamp which form the headwaters for two great rivers will disappear unless steps are taken to preserve the same.").

[47] U.S. Fish & Wildlife Serv., *Okefenokee at a Glance*, https://www.fws.gov/uploadedFiles/OkefenokeeGlance.pdf.

[48] Nat'l Park Serv., *National Natural Landmarks Program*, https://www.nps.gov/orgs/1211/index.htm.

[49] Ramsar Convention, *Wetlands of International Importance*, https://www.ramsar.org/about/wetlands-of-international-importance-ramsar-sites.

[50] *See Ocean Advocates v. U.S. Army Corps of Eng'rs*, 402 F.3d 846, 870 (9th Cir. 2004) (citations omitted).

[51] *See Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998); *Am. Bird Conservancy, Inc. v. FCC*, 516 F.3d 1027, 1033 (D.C. Cir. 2008).

[52] Mary Landers, *Strip Mining Planned Next to Okefenokee National Wildlife Refuge*, July 15, 2019, https://www.savannahnow.com/news/20190715/strip-mining-planned-next-to-okefenokee-national-wildlife-refuge.

[53] Russ Bynum, *Company Wants to mine at edge of protected Okefenokee Swamp*, July 16, 2019, https://www.washingtonpost.com/business/company-wants-to-mine-at-edge-of-protected-okefenokee-swamp/2019/07/16/cd427b34-a7ee-11e9-8733-48c87235f396_story.html?utm_term

The controversy echoes an earlier debate from 1997, when DuPont announced a similar plan to mine thousands of acres immediately north of the Twin Pines site. Then-Secretary of the Interior Bruce Babbitt visited the Okefenokee that April to oppose the mine, saying:

> "I don't think that kind of dredging and sand-mining operation is an appropriate neighbor for a national wildlife refuge."

Despite DuPont's assurances that it would take whatever steps were necessary, Secretary Babbitt stressed, "You can study this, you can write all the documents in the world, but they are not going to prove beyond a reasonable doubt that there will be no impact."[54] Local communities and conservation groups have been opposing titanium mining on Trail Ridge adjacent to the Okefenokee Swamp for over two decades since, and the controversy is likely to continue with the Twin Pines proposal—as evidenced by the over 20,000 public comments submitted to date.

Fifth, if the Corps were to grant a permit for the first phase of the mining project, it would likely establish a precedent for future actions and cause cumulatively significant impacts.[55] Twin Pines' application seeks a permit for Phase One of the mining project (approximately 2,414 acres), but the complete project site is approximately 12,000 acres. Thus, the permit covers only around 20 percent of the full project. As discussed further in Section IV(A)(3), below, there is also a reasonable probability of future mining proposals in the area which would rely on the Corps' determinations on this permit.[56]

Sixth, the proposed project threatens a violation of federal law or requirements for protection of the environment.[57] Here, the proposed mining project threatens to violate the U.S. Fish and Wildlife Service's ability to fulfill substantive management requirements for protecting Okefenokee Refuge.[58] To meet its statutory mandate to "ensure the biological integrity, diversity and environmental health of the [National Wildlife Refuge] System,"[59] refuge policy directs the

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[54] *See generally,* David R. Osier, "A strip mine next door to Georgia's greatest natural wonder could alter it forever," GEORGIA JOURNAL (Sept./Oct. 1997) (attached as Ex. G); USFWS Letter at 2.

[55] For example, DuPont (now Chemours)'s Florida Mines on Trail Ridge have expanded northward over the decades. *See* Regional Map, Fig. 3, below.

[56] In addition, this is a resource of regional importance to surficial waters and aquifers which interactions are increasingly understood to be highly interconnected throughout South Carolina, Georgia, Florida, and Alabama via the Floridan and other aquifers. Connections and interconnections with the Okefenokee are only dimly understood, but they exist. However, even if there is no connection to waters further away than the St. Marys and Suwanee River and underlying aquifer systems, the precedent of granting a permit such as what is proposed without the thorough review engendered by a full EIS is patently unwarranted and exceptionally dangerous.

[57] 40 C.F.R. § 1508.27(b)(10).

[58] *See* 16 U.S.C. §§ 668dd–668ee (Refuge Administration Act).

[59] 16 U.S.C. §§ 668dd(a)(4)(B).

Service to "first and foremost, maintain existing levels of biological integrity, diversity and environmental health at the refuge scale."[60] In addition, the Refuge Administration Act requires the Service to "assist in the maintenance of adequate water quantity and quality" to fulfill the wildlife-first mission of the Refuge System and the purposes of each refuge and even to acquire "water rights that are needed for refuge purposes."[61] As explained by expert hydrologists, the mine could cause leakage of groundwater from the Okefenokee Swamp, introduce contaminants into the refuge water supply, and produce other ecological disruptions.[62] The project's potential to severely degrade or destroy refuge habitat, disturb or kill refuge-dependent wildlife and adversely impact species that migrate between the refuge and the project site could make it extremely difficult, if not impossible, for the Service to comply with its mandated management requirements and lead to potential violations of the Refuge Administration Act.

Seventh, the proposed mine would likely contribute to the loss or destruction of significant scientific, cultural, or historical resources. Universities from around the world, as well as federal, state, and local agencies, have conducted scientific research within the neighboring Okefenokee Swamp for decades. The cultural and historic resources associated with the Swamp are equally important, with evidence of Native American occupation dating back to 2500 BCE and a long history of exploration and settlement in the region.

Finally, the proposed mine would likely harm threatened and endangered species or their critical habitat. As discussed in detail in Section VI below, the mining project is likely to adversely affect many species listed under the Endangered Species Act. For other listed species, at a minimum, the application lacks sufficient information to demonstrate that it will not adversely affect these species. The listed species that either will be or are at risk of being adversely affected by this project include:

- Atlantic Sturgeon, South Atlantic Distinct Population Segment (Endangered)
- Shortnose Sturgeon (Endangered)
- Hairy Rattleweed (Endangered)
- Red-Cockaded Woodpecker (Endangered)
- Florida Panther (Endangered)
- Gulf Sturgeon (Threatened)
- Wood Stork (Threatened)
- Eastern Indigo Snake (Threatened)
- Frosted Flatwoods Salamander (Threatened)

Any one of these significance factors may *alone* trigger the need for the preparation of an EIS[63]—together, they most certainly do.[64]

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[60] 601 FW 3, U.S. Fish and Wildlife Service Biological Integrity, Diversity and Environmental Health Policy.

[61] 16 U.S.C. §§ 668dd(a)(4)(F)-(G).

[62] *See generally* Hutson Report; Rheinhardt Report.

[63] *See Fund for Animals v. Norton*, 281 F. Supp. 2d 209, 235 (D.D.C. 2003) (noting that "the existence of one or more significance factors" can trigger the need for an EIS).

B. The Corps Cannot Rely on Section 7 Consultation to Meet Its Statutory Requirements under NEPA to Determine the Significance of the Project's Impacts on Listed Species.

The Corps must complete a comprehensive NEPA analysis on the significance of the impacts to Endangered Species Act-listed species in addition to completing ESA Section 7 consultation, because these two legally-required procedures serve different functions. One crucial factor when determining whether an action requires an environmental impact statement is whether "the action may adversely affect [a listed] species or its [critical] habitat."[65] Unlike the "no jeopardy" standard applied in Section 7 consultation under the ESA, significance for NEPA purposes need not necessarily indicate that the action is "likely to jeopardize the continued existence of any endangered species or threatened species…"[66] Rather, a lower threshold exists for the impacts of an agency action on a species to be considered "significant" under NEPA than for that same action to cause jeopardy under the ESA. Thus, a federal agency's legal obligations under NEPA and ESA are entirely separate, and compliance with ESA Section 7's prohibition against jeopardizing a species' continued existence,[67] does not simultaneously satisfy NEPA's requirements to analyze significant impacts short of the threat of extinction.

Courts have repeatedly upheld the need for agencies to engage in separate NEPA analyses and Section 7 consultations for species, noting the difference in standards for a finding of significant impacts under NEPA and a finding of jeopardy under the ESA.[68]

Moreover, because NEPA analyses are subject to public comment and biological opinions are not, if an agency fails to conduct an adequate NEPA analysis of the significance of

[64] The reasons and issues listed above are not exhaustive, throughout these comments we raise numerous other issues, risks, and inadequacies that trigger and should be addressed in an EIS.

[65] 40 C.F.R. § 1508.27(b)(9).

[66] 16 U.S.C. § 1536(a)(2).

[67] 16 U.S.C. § 1536(a)(2)

[68] *See Greater Yellowstone Coalition v. Flowers*, 359 F.3d 1257, 1275–76 (10th Cir. 2004) (recognizing Service conclusion that action not likely to cause jeopardy does not necessarily mean impacts are insignificant); *Makua v. Rumsfeld*, 163 F. Supp. 2d 1202, 1218 (D. Haw. 2001) ("A [Finding of No Significant Impact under NEPA] . . . must be based on a review of the potential for significant impact, including impact short of extinction. Clearly, there can be a significant impact on a species even if its existence is not jeopardized."); *National Wildlife Federation v. Babbitt*, 128 F. Supp. 2d 1274, 1302 (E.D. Cal. 2000) (requiring [Environmental Impact Statement] under NEPA even though mitigation plan satisfied ESA); *Portland Audubon Society v. Lujan*, 795 F. Supp. 1489, 1509 (D. Or. 1992) (rejecting agency's request for the court to "accept that its consultation with [the Service under ESA] constitutes a substitute for compliance with NEPA."); *Forest Service Employees for Envtl. Ethics v. U.S. Forest Service*, 726 F. Supp. 2d 1195, 1213 (D. Mont. 2010) ("Plaintiff correctly observes that [*Envtl. Prot. Info. Ctr. v. U.S. Forest Service*, 451 F. 3d 1005 (9th Cir. 2006)] does not allow an action agency to completely ignore an issue in its NEPA documents so long as the matter is discussed in adequate detail in a biological opinion….").

an action's impacts on species, the public is deprived of the opportunity to be fully informed of and comment on those impacts. NEPA regulations require the drafting agency to solicit comment from "those persons or organizations who may be interested or affected."[69] Thus, relying solely on ESA consultation to evaluate the significance of a proposal's impacts on ESA-listed species is wholly inadequate for NEPA purposes, because no opportunity for public comment is required prior to the issuance of the biological opinion. Public comment is one of the means by which NEPA promotes its purpose of "sensitizing all federal agencies to the environmental impacts of its actions."[70] The inclusion of these viewpoints in the decision-making process was the "paramount Congressional desire" in creating a statute that would increase agency awareness of environmental trade-offs.[71] Thus, completing consultation does not supplant the need to also conduct a NEPA analysis on the impacts to listed species and the Corps must instead engage in both analyses.

C. The Corps and other agencies have recognized the need for an EIS.

The Corps has already recognized the need for an EIS. In its 2018 Issue Paper on the Twin Pines project, the Corps recognized:

> Due to the location of the proposed project in relation to the Okefenokee National Wildlife Refuge, the potential for hydrologic alteration of groundwater and water flow into the Okefenokee, more than 1,000 acres of direct wetland and stream impacts (total is unknown at this time), the extent of indirect wetland impacts, pumping water from the Floridian aquifer for use in operation of the mine, and potential adverse (currently unknown) impacts to Cultural Resources, an Environmental Impact Statement will most likely be required if the applicant pursues the project as proposed.[72]

Similarly, in their February 2019 comments to the Corps, the U.S. Fish and Wildlife Service wrote, "We opine and recommend that an Environmental Impact Statement be prepared for the proposed project."[73]

Given the context and intensity of the proposed mine, as well as the request by the Service, NEPA plainly obligates the Corps to prepare an EIS. In the EIS, the Corps must take a

[69] 50 C.F.R § 1503.1(a)(4).

[70] *Nat'l Audubon Soc. v. Dep't of Navy*, 422 F.3d 174, 184 (4th Cir. 2005) (citing *Andrus v. Sierra Club*, 442 U.S. 347, 350–51 (1979).

[71] *State of Cal. v. Block*, 690 F.2d 753, 771 (9th Cir. 1982).

[72] USACE Issue Paper at 1.

[73] USFWS Letter at 1 (citing hydrologic, species, and wilderness area concerns throughout the letter).

hard look at the direct, indirect, and cumulative impacts[74] of the proposed project, as well as Twin Pines' proposed mitigation measures and alternatives to the project.

IV. The proposed project violates Clean Water Act 404(b)(1) Guidelines.

The 404(b)(1) Guidelines are substantive environmental criteria used to evaluate whether a proposed activity complies with Section 404 of the Clean Water Act. The Guidelines reflect two key principles: first, the degradation or destruction of wetlands may represent an irreversible loss;[75] and second, the Corps should not permit the discharge of dredged or fill material "unless it can be demonstrated" that the discharge will not have an unacceptable adverse impact.[76] In other words, unless Twin Pines can prove that the proposed mine would not have an unacceptable impact—which it has not—the Corps may not grant a Section 404 permit.[77]

The comments below address each relevant criterion: aquatic impacts, practicable alternatives, avoidance and minimization, mitigation, and protected species.

A. The proposed mine would significantly degrade aquatic resources.

Under the 404(b)(1) Guidelines, the Corps may not grant a Section 404 permit if the proposed action would "cause or contribute to significant degradation of the waters of the United States," including wetlands.[78] To determine whether a proposed project would significantly degrade wetlands or other waters, the Corps must consider direct, secondary, and cumulative impacts, including impacts to wildlife, recreation, aesthetics, and economics.[79] Here, the impacts of the proposed mine would significantly harm thousands of acres of wetlands and tens of thousands of feet of streams, as well as the wildlife that live there. In addition, the proposed mine would likely harm the neighboring Okefenokee National Wildlife Refuge and Okefenokee Wilderness.

1. Direct Impacts

[74] To determine the scope of the cumulative impacts analysis, the Corps should identify resources within the project impact zone (for example, air quality, water quality, wildlife, and sociocultural resources), determine the geographic areas occupied by those resources outside of the project impact zone, and set the largest of those areas as the zone for the cumulative impacts analysis. Council on Environmental Quality, Considering Cumulative Impacts under the National Environmental Policy Act (January 1997) at 15.

[75] 40 C.F.R. § 230.1 ("The guiding principle should be that degradation or destruction of special sites may represent an irreversible loss of valuable aquatic resources.").

[76] *Id.* ("Fundamental to [the] Guidelines is the precept that dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.").

[77] In other words, the burden of proof is not on the public to demonstrate that the proposed project would be harmful, *the burden is on Twin Pines*.

[78] 40 C.F.R. § 230.10(c).

[79] 40 C.F.R. § 230.10(c)(1)-(4); 40 C.F.R. § 230.11.

According to Twin Pines, the first phase of the proposed mine (approximately 1,268 mined acres on 2,414 acres of land) would directly impact at least 587 acres of wetlands and 4,658 linear feet of stream.[80] As described above, Twin Pines intends to excavate streams and wetlands to a depth of up to seventy feet, leaving the pit to fill with groundwater. They will then stockpile the excavated material "nearby," use centrifuges to separate the heavy minerals, dump the stockpiled tailings back into the mining pit, contour the fill, and replace the topsoil.

Twin Pines dismisses the bulk of these impacts by claiming that "return[ing] [the mined areas] to preconstruction contours and elevations" makes the impacts "temporary." But there is no five-second rule with biogeochemical functions. As discussed in Section IV(F) and the attached expert reports, we have serious concerns about whether Twin Pines could recreate wetlands and streams from scratch, particularly when the subsoil structure is sand that has been completely removed and then homogenized.[81] There is a very real risk that the sand, homogenized spoils produced in the mining process may be too permeable to ever support wetlands and streams.[82] Moreover, even if mined wetlands are "returned to preconstruction contours" within 30 to 90 days, their physical, biological, and chemical functions would not return so quickly.[83] It would likely take decades for habitat to return and perhaps longer for biogeochemical cycling to return to pre-mining conditions, especially if topsoil is not sorted by hydrogeomorphic (HGM) type when stockpiled.[84]

[80] Permit Application at 19.
[81] Rheinhardt Report at 2–3.
[82] *Id*.
[83] *Id.* at 3.
[84] *Id*.

2. Secondary impacts

The application also largely ignores secondary impacts of the proposed mine. Again, like NEPA, the 404(b)(1) Guidelines obligate the Corps to evaluate the secondary, or indirect, effects of a proposed discharge of dredged or fill material on the environment.[85] Under the Guidelines, "Secondary effects are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material."[86] The analysis of secondary impacts is critical: as the Guidelines recognize, "[w]hen disruptions in flow and circulation patterns occur, apparently minor loss of wetland acreage may result in major losses through secondary impacts."[87]

It is likely that the proposed mine will cause changes to the hydrology on the site and potentially in areas off of the site. Twin Pines and the Corps must consider the impact the proposed mine would have on groundwater levels in and around the mine, the direction of ground water flow to and from the mine, and water quality both under the footprint of the mine as well as for any waters flowing off the site.

Such hydrologic changes in an area can have profound changes on ecosystem diversity and resilience. As Mark Hutson, a geologist who specializes in hydrology issues as they relate to mining, said in his expert report, "The proposed project must be carefully studied to identify, evaluate and eliminate as many foreseeable impacts as possible prior to permitting such a potentially damaging project on the doorstep of a Wetland of International Importance."[88]

So far Twin Pines' identification and evaluation of potential changes in on-site and off-site hydrology has been unsophisticated, incomplete, and, in some cases, reckless. Given the location of the proposed mine, the scale of secondary impacts could be enormous. As Hutson pointed out, there is a real risk that the mine could irreversibly harm the Okefenokee Swamp by altering the direction of groundwater flow beneath the swamp.[89] Another expert in hydrology, Dr. Richard Rheinhardt, agrees. He states in his expert report that the mining would destroy existing layers of "low-permeability strata" that are currently acting to keep groundwater from flowing through trail ridge to the St. Marys River. Once these layers are ground up, combined with sand, and returned to the mining pits, there may be nothing to prevent groundwater from the Okefenokee Swamp from flowing eastward towards the St. Marys River. This leakage could lower the water table in the swamp and possibly drain it over time.[90]

[85] 40 C.F.R. § 230.11.
[86] *Id.*
[87] *Id.* § 230.41
[88] Hutson Report at 1.
[89] Hutson Report at 1; USFWS Letter at 3.
[90] Rheinhardt Report at 5.

The proposed mine would likely have substantial secondary impacts on the biology of the aquatic ecosystem as well by damaging or destroying neighboring habitat and harming the biological productivity of neighboring ecosystems.

3. Cumulative Impacts

a. The application does not consider the cumulative effects of piecemeal impacts.

Although the first "phase" of the proposed mine is limited to 1,268 mined acres (on 2,414 acres of property), Twin Pines in fact intends to operate a 12,000-acre mine.[91] Twin Pines' application does not consider the remaining 9,586 acres at all. Instead, it entirely ignores the impacts caused by 80 percent of the proposed project.

As with NEPA, the 404(b)(1) Guidelines do not permit this type of piecemeal analysis. They require all wetlands impacts from all phases of a project to be considered together. As the Fifth Circuit Court of Appeals put it:

> The [404(b)(1) Guidelines] . . . provide that the review may not be "piecemeal"—a few acres here, a small tract there. The rationale is simple. "Although a particular alteration of wetlands may constitute a minor change," the regulations note, "the cumulative effect of numerous such piecemeal changes often results in a major impairment of the wetland resources."[92]

The proper question, then, is whether the proposed 12,000-acre mine would significantly degrade wetlands or other waters. Although the Phase One impacts alone should be disqualifying, the scale of potential impacts from the full mine is staggering. During Phase One Twin Pines intends to mine approximately 1,268 acres (746 acres of upland and 522 wetland) of the 2,414 site. Conservatively assuming a roughly proportional amount of mining (50%) and wetlands impacts (40%) across the 12,000-acre project area,[93] over **2,400 acres of wetlands**

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[91] USACE Issue Paper at 1; USFWS Letter at 1; *see also* Regional Map, Fig. 3, below (showing progression of DuPont's Florida/Maxville Mines).

[92] *Buttrey v. United States*, 690 F.2d 1170, 1180 (5th Cir. 1982); *see also United States v. Rueth Dev. Co.*, 335 F.3d 598, 600 (7th Cir. 2003) (noting that the Corps denied a § 404 permit application because the applicant had "present[ed] his development plans in a piecemeal fashion in an attempt to avoid a comprehensive review of their cumulative environmental impact"); *Salt Pond Associates v. U.S. Army Corps of Engineers*, No. CIV.A. 92-597-LON, 1993 WL 738478, at *11 (D. Del. Sept. 22, 1993) (noting that the Corps denied the initial permit application because the Corps "did not respond to piecemeal permit applications in '[f]ederally regulated wetlands associated with a single and complete project'").

[93] Twin Pines will likely mine more than 50% of the 12,000 acres. First, 1,268 is 52.52% of the permit area of 2,414 acres. Second, the Phase One "permit area" is exaggerated westward into areas that Twin Pines had no intention of mining. *See* Section IV(E)(1) (Avoidance). Similarly, the tracts for future phases of the project more closely track Trail Ridge—where the heavy minerals are most concentrated.

(3.75 square miles) would be mined. Similarly, in Phase One, there are 8,349 linear feet of stream, of which 4,644 feet would be mined. Proportionally, on the 12,000 acres, over **23,000 linear feet of stream** would be mined.

These numbers far exceed (by nearly five-fold) the impacts discussed in the application. It is our understanding that the Savannah District has never permitted a project in Georgia with anything close to this much aquatic impact.

Twin Pines' application also misrepresents the proximity of the proposed mine to the Okefenokee Swamp. Twin Pines repeatedly states that the proposed site would be approximately 3.73 miles from Okefenokee National Wildlife Refuge, thus "providing a substantial buffer of protection for this sensitive resource."[94] Setting aside that the boundary of the Swamp spills outside of the Refuge's boundaries, and may even be on Twin Pines' property, later phases of mining would occur on property located within a half mile of the Refuge—over seven times closer than the application suggests.[95] In other words, Twin Pines strategically chose the portion of the 12,000-acre site that is furthest from the Swamp as its test site for permitting purposes. The Corps cannot turn a blind eye to this gamesmanship.

b. The application does not consider the cumulative impacts of past, present, and future mines.

The application also ignores the impacts of past, present, and reasonably foreseeable future heavy mineral mines on Trail Ridge. Like NEPA, the 404(b)(1) Guidelines require the Corps to consider "cumulative impacts," or changes that "are attributable to the collective effort of a number of individual discharges of dredged or fill material."[96] This is because "the cumulative effect of numerous…changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems."[97]

Here, Twin Pines should have considered the cumulative impacts of past, present, and reasonably foreseeable future mines in the region.

It is also likely that more than 40% of the mining area will be wetlands. First, 522 acres is 41.17% of the Phase One mining area of 1,268 acres. (One or two percent adds up at this scale; if Twin Pines mines 52.52% of the project area and that area is 41.17% wetlands, we are talking direct impacts to 2,595 acres of wetlands, almost 200 acres more than assumed above). Further, Twin Pines will impact more than 522 acres in Phase One: counting processing facilities and other structures, there will be 587 acres of wetlands affected (46.29%). It is unclear whether those structures will need to be moved to new wetlands to keep pace with the phases of the mining project. Finally, National Wetland Inventory maps show more wetlands on Trail Ridge along future phase sites than on Phase One, and as seen with Phase One, NWI often underestimates the extent of federally protected wetlands.

[94] Permit Application at 5.

[95] *Id.* at 15.

[96] 40 C.F.R. § 230.11

[97] *Id.*

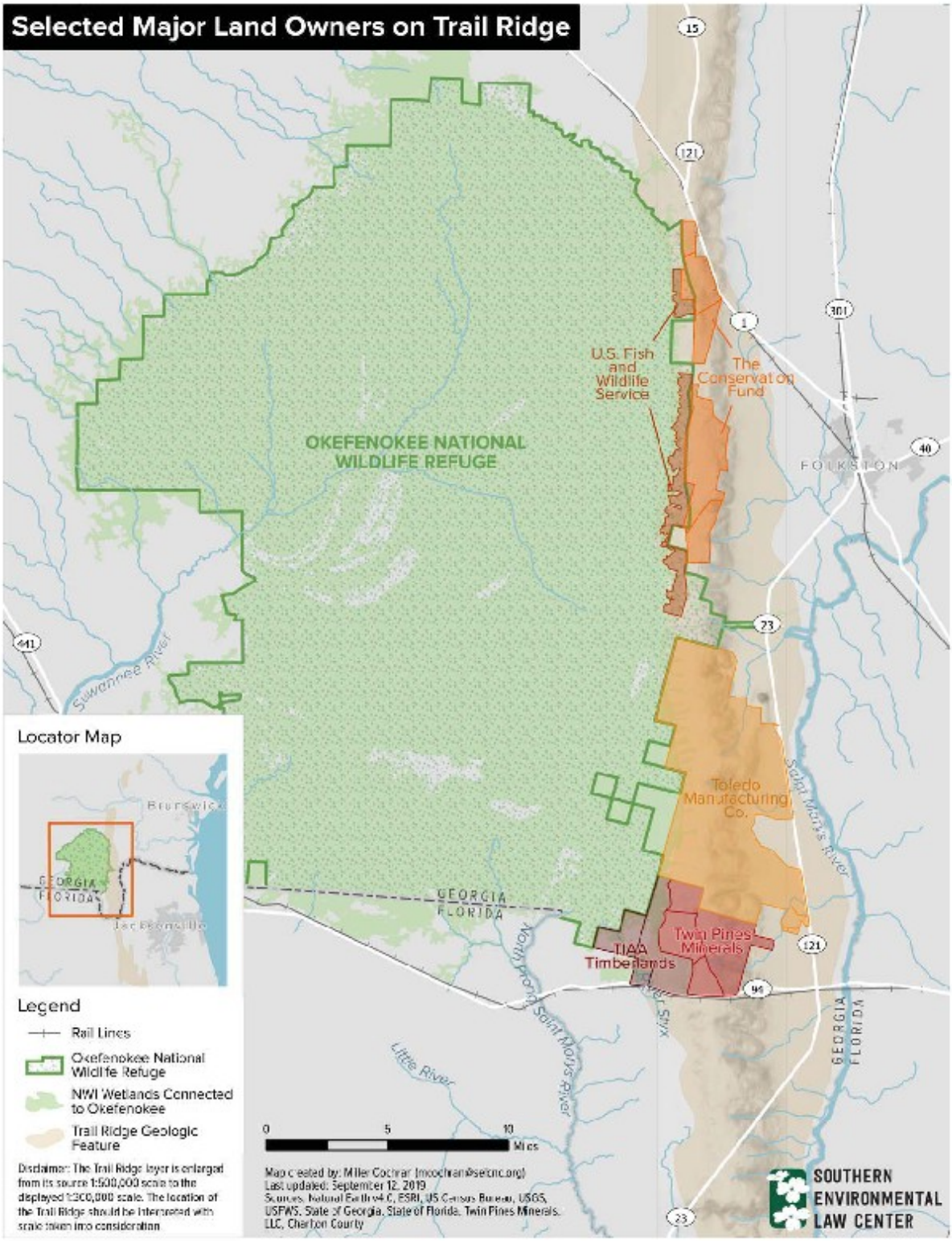

Figure 2: Selected Major Land Owners on Trail Ridge

In southeast Georgia, hundreds of acres have already been mined for heavy minerals, and mining operations remain ongoing.[98] In addition, there is a real risk of future heavy mineral mines in the region—for example, on neighboring property owned by Toledo Manufacturing Company.

In the 1990s, DuPont proposed to mine two main tracts of land on Trail Ridge, north of Twin Pines' property, as shown on the map above. After withdrawing its proposal in the face of scientific scrutiny and public outrage, DuPont retired the mineral rights to the northernmost 16,000 acres. This section of the ridge is now protected from future mining.[99] On the other main tract of land, DuPont had only a limited interest in the mineral rights, which was not donated for conservation.[100] This land, comprising over 30,000 acres, is still owned by Toledo Manufacturing Company and used as timberland. Assuming a proportional impact,[101] mining the Toledo tract could result in the excavation of **more than nine square miles** of Okefenokee-adjacent wetlands on top of Twin Pines' current project.

It is our understanding that Toledo Manufacturing Company has continued to entertain talks of heavy mineral mining on its property, making future mines reasonably foreseeable. Other agencies have also recognized the possibility of future mining and development. The U.S. Fish and Wildlife Service recently warned, "Future mining projects in adjacent portions of Trail Ridge could further magnify any environmental impacts by impacting the whole eastern side of the swamp."[102] Given the foreseeability of these potential mines, the Corps must consider their cumulative impacts under the 404(b)(1) Guidelines.

The Corps must also consider potential impacts caused by a Twin Pines expansion beyond 12,000 acres. It is our understanding that Twin Pines recently purchased an additional 2,000 acres of land. Mines like that proposed by Twin Pines often continue to expand once they establish a foothold, as has occurred in Florida with the Trail Ridge (then Highland, then Maxville, then North Maxville) Mine owned by DuPont (now Chemours).[103]

4. Lack of Analysis

Before the Corps grants a permit for the mine Twin Pines has proposed, Twin Pines must produce convincing evidence that what it proposes would not have adverse direct, secondary, and cumulative effects. So far, Twin Pines has fallen far short of this mark. That is not surprising considering that Twin Pines has not completed four of the hydrologic studies that it intends to

[98] *Cf.* The Chemours Company, "Chemours Acquires Operations of Southern Ionics Minerals (SIM): Acquisition Will Enable Substantial Increased in Mineral Sands Production" (Aug. 2, 2019), www.southernionicsminerals.com/pdf/news_release_chemours_acquires_ SIM.pdf.

[99] *See* Charles Seabrook, *16,000-acre gift to swamp*, THE ATLANTA JOURNAL-CONSTITUTION, Aug. 27, 2003, at A-1, A-12 (attached as Ex. H).

[100] *Id.*

[101] See discussion of assumptions in Section IV(A)(1).

[102] USFWS Letter at 3.

[103] *See* Regional Map, Fig. 3, below; *see also* Twin Pines Fact Sheet at ¶ 4 (noting Twin Pines "would like to expand").

use to support its position. Even if these reports are helpful to Twin Pines, it has not made these critical studies available to the public. Twin Pines has claimed that it has been transparent throughout the permitting process and supplied information when asked to do so. Considering that these reports may be the most important elements of Twin Pines' application, if Twin Pines does not release them and their underlying data to the public, Twin Pines' claims of transparency will ring hollow.

In his expert report, which is attached as Exhibit D, Hutson sets forth his major findings to date. His summary of those finding follows:

- The potential for water pumped from the Floridan aquifer to lower water levels in wells owned by nearby water users that are completed in this aquifer has not been evaluated.

- There is no indication that the accumulation of natural or process-related contaminants in the process water has been considered. The plans do not specify whether the process water ponds will be lined to prevent leakage.

- The mine plan submitted to GAEPD indicates that the objectives for reclamation will be to re-establish vegetation and post-mining topography, which will mimic pre-mining topography. The reclamation discussion supplied with the USACE permit application indicates that the topography of the reclaimed mine spoils will be returned as close to pre-mining elevations as possible, with final elevations determined from recovered groundwater levels. It is unclear how simultaneous mining and placement of tailings to elevations based on recovered groundwater levels could occur within a single mine cut.

- Destruction of the low permeability layers and their replacement with homogenized tailings will likely allow increase drainage of groundwater from mined areas and result in a general lowering of groundwater elevations following mining. There is no indication that the elevation of groundwater following recovery and the time necessary for that recovery to occur has been evaluated.

- It is possible that water levels beneath Trail Ridge will never recover to current elevations after mining and that assumed temporary impacts to reconstructed wetlands will in actuality turn out to be permanent.

- The mining permit applications indicate that Twin Pines will be preparing reports on the physical site and subsurface materials, pumping tests conducted in the project area, the hydrogeology of the site, and reports on two groundwater flow models of the Twin Pines Project Area. Regulators and the public are being asked to review and approve of this development without the benefit of this basic information.

- Mining the sand will destroy the low permeability units that are known to be present in the subsurface. Destruction of these low permeability layers and

replacement with homogenized sands will allow groundwater to more freely drain from the ridge. No evaluation of the elevation of groundwater beneath Trail Ridge following mining has been presented in the permit applications.

- A general lowering of the water table beneath Trail Ridge could result in reconstructed wetlands that lack water and streams that no longer flow.

- Mining permit applications have been submitted without the benefit of reports describing the quantity and quality of groundwater and/or surface waters at the site. There is no discussion of surface water quality before mining, during mining, or expected quality following mining. Groundwater quality before mining, during mining, and following mining are nowhere discussed.

- There are no chemical concentrations or water elevations established based on baseline characterization, which would trigger changes to site operations or additional reclamation actions.

- There is no discussion of the reclamation steps that would or could be taken to return site surface water and groundwater quality to its pre-mining condition in the event that impacts are detected. Regulators and the public are being asked to review and approve of this development without the benefit of this basic information.

- It is my recommendation that a complete evaluation of the proposal be required prior to taking any action on permitting this proposal.[104]

Similarly, Dr. Rheinhardt concluded his expert report by questioning whether Twin Pines had the knowledge and expertise needed to attempt a wetlands creation project on top of homogenized tailings where the hydrology of the site may have changed. He explained that mining the pits could cause hydrologic changes in the pits, as well as outside the footprint of the mine. He said that Twin Pines mitigation plan does not discuss such details and is "rudimentary at best."[105] Based on that plan, Dr. Rheinhardt remarked that Twin Pines does not have a "reasonable probability of reclamation success."[106] Then he pointed out that Twin Pines did not reference in its application any past projects where it "successfully created wetlands in mined sands."[107] Dr. Rheinhardt even pointed out that Twin Pines probably does not have a firm grasp on whether creating wetlands at the mining site was going to be cost prohibitive.[108]

We ask that Twin Pines address the points Hutson and Dr. Rheinhardt make above. In the beginning of his report, Hutson explains the components of a mine plan. In addition to responding to the experts' earlier points, Twin Pines should explain how it i) characterized the

[104] *See generally* Hutson Report.
[105] Rheinhardt Report at 6.
[106] *Id.*
[107] *Id.* at 7.
[108] *Id.* at 6.

hydrologic balance of the site; ii) identified potential impacts (both direct and indirect); iii) developed a reclamation plan; and iv) developed a monitoring program. If Twin Pines has not completed any of these plans, Twin Pines should explain whether it plans to complete them before the permit is issued. In response to Dr. Rheinhardt's concerns, Twin Pines should explain what experience it has in creating wetlands on top of homogenized sandy soils in an area that has been mined.

B. The proposed project would harm threatened and endangered species and their critical habitat.

The Corps should also deny the permit because the proposed mine would harm threatened and endangered species and their habitat. The 404(b)(1) guidelines and the Endangered Species Act prohibit the Corps from issuing a Section 404 permit if the proposed project would jeopardize the continued existence of a threatened or endangered species, or would result in the likely "destruction or adverse modification" of critical habitat.[109]

In assessing the project's impact on endangered species, the Corps may not limit its review to the direct impacts of the proposed fill, as Twin Pines has done in its application. The Corps must also consider the secondary or indirect impacts to the surrounding habitat and the endangered and threatened species that live there. For example, in *Riverside Irrigation District v. Andrews*[110] an applicant sought a Section 404 permit to deposit dredge and fill material to build a dam and reservoir. Although the applicant and the Corps agreed that the fill itself would not degrade an endangered species' habitat, the Corps found that the indirect impacts of building the dam – for example, depleted stream flow – would adversely affect the habitat. The applicant argued the Corps should not be permitted to consider this type of indirect impacts to endangered species. The court disagreed, explaining that the Corps was required to consider direct *and* indirect impacts to endangered species.

Here, the Okefenokee Swamp and its surrounding ecosystems are home to over 620 species of plants, 233 species of birds, 39 species of fish, 37 amphibians, 64 reptiles, and 50 mammals,[111] many of which are threatened or endangered, including the red-cockaded woodpecker, the wood stork, and the eastern indigo snake. The project area and the neighboring Okefenokee Swamp provides a unique and important habitat to these species.[112] As discussed in Section VI, the proposed mine is likely to harm threatened and endangered species and their habitat.

C. The proposed mine may significantly degrade Okefenokee National Wildlife Refuge.

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[109] 40 C.F.R. § 230.10(b)(3).

[110] 758 F.2d 508, 513 (10th Cir. 1985).

[111] U.S Fish & Wildlife Service, Okefenokee National Wildlife Refuge: Amphibians, Fish, Mammals, and Reptiles List, available at https://www.fws.gov/southeast/pubs/okfmam.pdf.

[112] *See, e.g.,* U.S Fish & Wildlife Service, Species Status Assessment Report for the Eastern Indigo Snake (Nov. 5, 2018) at 157, available at https://ecos.fws.gov/ServCat/DownloadFile/157073.

As part of its analysis under the Clean Water Act Section 404(b)(1) Guidelines, the Corps must specifically examine potential impacts to sanctuaries and refuges.[113] As previously discussed, the proposed mine is located less than four miles from Okefenokee National Wildlife Refuge, which conserves the nationally renowned and internationally recognized Okefenokee Swamp. Moreover, it is reasonable to conclude that Twin Pines will expand its operations in the future to directly abut the refuge boundary. Yet Twin Pines has failed to demonstrate that industrial resource extraction adjacent to this special aquatic site will not result in a loss of refuge values due to the hydrologic connection between the project site and the Okefenokee Swamp. Any mining-induced changes to current water levels, circulation patterns, turbidity, salinity, fluctuation, flow or discharge of contaminants to this sensitive ecosystem may well result in significant degradation of the Refuge.[114]

As detailed in the enclosed expert reports,[115] the Twin Pines mining project could transform the hydrology of Okefenokee Swamp in a variety of ways that threaten to irreparably damage the biological integrity, diversity and environmental health of the entire national wildlife refuge. The project could alter groundwater flows from the Trail Ridge with excavation of the 25–70 foot-deep mining pits, changing the chemical quality and quantity of water in the refuge. Radioactive uranium and other dangerous waste products could be released into the environment during redeposit of homogenized sand spoils, migrating into the refuge via contaminated groundwater. The intensive resource extraction and fill procedures may destroy Trail Ridge's uniquely layered subsurface strata, changing the permeability of the swamp's geologic foundation. This could cause groundwater to leak from the refuge, draining the Okefenokee Swamp, desiccating refuge habitat and even increasing the threat of wildfire.

The resulting impacts to refuge values would be severe. "Water depth and cycles of flood and drought determine rates of nutrient cycling and population growth [of swamp dependent species and habitat types.] Anything that changes the hydrology can, therefore, have a major influence on the aquatic communities of the Okefenokee Swamp."[116] The proposed mining project could have direct, indirect and cumulative impacts on a host of refuge values and ecological processes,[117] including

- Wildlife breeding, spawning and other critical life requirements
- Migratory movement of fish and wildlife through the refuge
- Impacts from unplanned and incompatible human access to remote aquatic areas
- New needs for frequent maintenance activity

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[113] 40 C.F.R. § 230.40.

[114] *See also* Bergstedt, A. E., and K. G. Porter, Aquatic Communities of the Okefenokee Swamp. *Proceedings of the 1997 Georgia Water Resources Conference*, held March 20-22, 1997, at The University of Georgia, at 266, 268 (noting that "maintenance of groundwater levels and hydroperiod is essential for the dynamic integrity of the swamp" and "immediate problems can arise from altered water tables and flow regimes").

[115] *See generally* Hutson Report, Rheinhardt Report.

[116] Bergstedt and Porter at 268.

[117] 40 C.F.R. § 230.40(B) (identifying an array of potential impacts on a refuge the Corps must consider in permit applications).

- Incursion of invasive, "competitive" species on the refuge
- Habitat destruction on the refuge

The Service has already expressed concerns about how a previous mining proposal near Okefenokee could negatively affect the refuge environment, waters, aquifers, air, species, habitat, and wilderness experience.[118]

The potential effects of mining on water chemistry and availability in the refuge could have disastrous consequences on fish, migratory birds, reptiles, amphibians, invertebrate species and other animals and plants that depend on the Okefenokee Swamp. Understanding these effects is critical to analysis of this permit application. Along with conducting comprehensive groundwater modeling and surface water flow analyses, experts recommend making "careful assessment of [even] small-scale drainage patterns" in the area and determining a "water budget [based on] recent climate, vegetation and evapotranspiration patterns, [which] can then be used to predict [development] effects on the mosaic of aquatic communities in the swamp."[119]

D. Twin Pines did not adequately consider alternatives.

Under the 404(b)(1) Guidelines, the Corps may not grant a Section 404 permit if there is a practicable alternative that would have less environmental impact.[120] An alternative is practicable if "it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose."[121] For non-water-dependent projects like this one, the presumption is that there is a less damaging alternative.[122] That presumption is difficult to overcome. To do so, an applicant must show that there are no other sites that can accommodate, or are available for, the project purpose.[123]

Twin Pines did not even try to meet its burden. Instead, the company artificially limited its search criteria to a site "within 50 miles of Jacksonville" having "direct access to a rail line." Twin Pines does not explain why a rail line is necessary (simply stating that "cost … is reduced" is insufficient)[124] or why another port would not do. Because of these hypothetical restraints, all

[118] U.S. Fish & Wildlife Serv., Okefenokee National Wildlife Refuge 1997 Annual Narrative Report at 53 (1998).

[119] Berstedt and Porter at 268.

[120] 40 C.F.R. § 230.10(a). The purpose of the alternatives analysis, as stated in the preamble to the Guidelines, is "to recognize the special value of wetlands and to avoid their unnecessary destruction, particularly when practicable alternatives were available in non-aquatic areas to achieve the basic purposes of the proposal." 33 C.F.R. § 230.10(a)(2).

[121] *Id*.

[122] 40 CFR § 230.10(a)(3); *see also Shoreline Assocs. v. Marsh*, 555 F. Supp. 169, 180 (D. Md. 1983), *aff'd,* 725 F.2d 677 (4th Cir. 1984).

[123] *Bersani v. U.S. Environmental Protection Agency*, 850 F.2d 36, 44 (2d Cir. 1988); *see also Hough v. Marsh*, 557 F. Supp. 74, 84 (D. Mass. 1982).

[124] Permit Application at 5. We are aware of multiple mines that have or continue to use trucks to transport their minerals, often significant distances. Iluka Resources trucked roughly a hundred miles from Lulaton to Green Cove Springs. Maria Mange and David Wright, Eds.,

of the applicant's potential alternatives are located on the 12,000-acre project site. As a result, all contain high percentages of wetlands and are located within 3.73 miles of the Okefenokee Swamp.

1. Twin Pines artificially limited its search criteria to eliminate off-site alternatives.

Twin Pines gives no credible explanation for why it ignored off-site alternatives.[125] According to the application, the purpose of the project is to extract of heavy mineral reserves.[126] Twin Pines acknowledged that "[m]any deposits of heavy mineral sands have been identified in the Atlantic Coastal Plain," including "a sequence of deposits along the Fall Zone in southeastern Virginia" and "the Lakehurst District in New Jersey."[127] It also admits that there are "[c]onsiderable resources" of heavy mineral sands in areas "near the modern shores or on barrier islands, for example the coasts of South Carolina, southeastern Georgia, and northeastern Florida."[128]

Independent surveys verify these deposits. For example, a geological survey conducted by Georgia's Department of Natural Resources in 1991 identified the occurrence of heavy mineral deposits on five ancient island complexes (left behind by receding sea levels), including the Wicomico (Trail Ridge), Penholoway, and Talbot formations, shown on the map below.[129]

HEAVY MINERALS IN USE, at 1184. Chemours intends to truck from its Amelia Mines in Jesup to its separation plant in Offerman. Southern Ionics Minerals, Press Release (Nov. 27, 2018).

[125] 40 C.F.R. § 230.10(a).

[126] Permit Application at 3.

[127] Permit Application at 3.

[128] Permit Application at 3.

[129] Georgia Geologic Survey, Heavy Mineral Bearing Sands from the Wicomico to the Princess Anne Paleobarrier Complexes Along GA Coastal Plain (Bulletin 111) (1991) (attached as Ex. I); *see also* U.S Geol. Survey, Titanium Mineral Resources in Heavy-Mineral Sands in the Atlantic Coastal Plain of the Southeastern United States, Scientific Investigations Report 2018-5045 (2018) (attached as Ex. J). Some of these mines have required permits from the Savannah District.

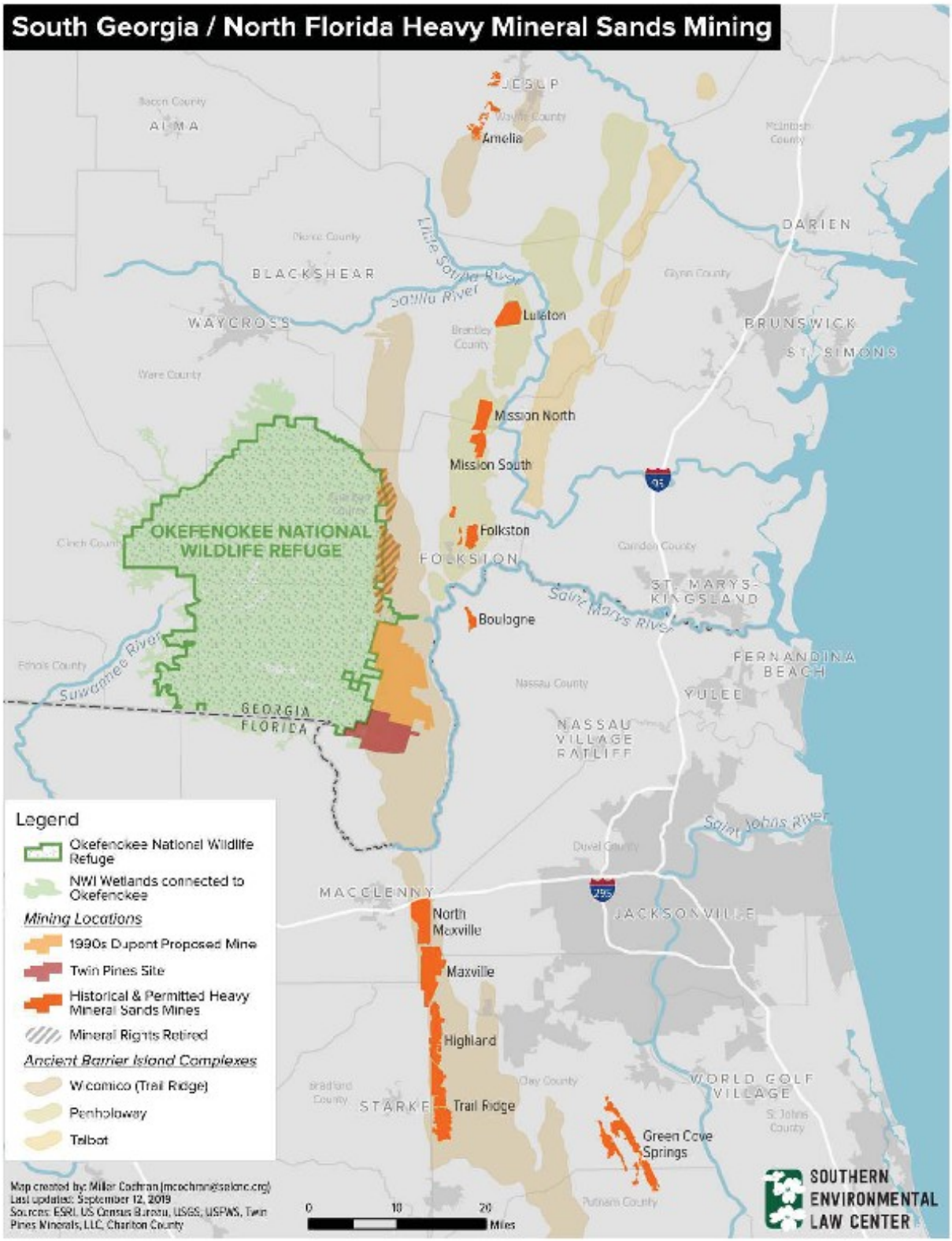
South Georgia / North Florida Heavy Mineral Sands Mining
JESUP
ALMA
Amelia
DARIEN
BLACKSHEAR
WAYCROSS
Little Satilla River
Satilla River
Lulston
BRUNSWICK
ST. SIMONS
Mission North
Mission South
OKEFENOKEE NATIONAL WILDLIFE REFUGE
Folkston
FOLKSTON
ST. MARYS-KINGSLAND
Saint Marys River
Boulogne
FERNANDINA BEACH
YULEE
Suwannee River
GEORGIA
FLORIDA
NASSAU VILLAGE RATLIFF
Saint Johns River
MACCLENNY
North Maxville
JACKSONVILLE
Maxville
Highland
WORLD GOLF VILLAGE
STARKE
Trail Ridge
Green Cove Springs
Legend
Okefenokee National Wildlife Refuge
NWI Wetlands connected to Okefenokee
Mining Locations
1990s Dupont Proposed Mine
Twin Pines Site
Historical & Permitted Heavy Mineral Sands Mines
Mineral Rights Retired
Ancient Barrier Island Complexes
Wicomico (Trail Ridge)
Penholoway
Talbot
Map created by: Miller Cochran (mcochran@selcnc.org)
Last updated: September 12, 2019
Sources: ESRI, US Census Bureau, USGS, USFWS, Twin Pines Minerals, LLC, Charlton County
0
10
20
Miles
SOUTHERN ENVIRONMENTAL LAW CENTER

Figure 3: South Georgia/North Florida Heavy Mineral Sands Mining

The feasibility of mining at least sections of the Penholoway Terrace has been demonstrated by other mining operations through the years, as shown in the map above.[130]

Twin Pines hand-waves away these "considerable resources" based on such impenetrable criteria as "the social and economic impacts of a proposed facility on the affected community" (which it does not even include in its summary chart on page 15 of the Application) and "the costs and availability of public services, facilities and improvements required to support a proposed facility and protect public health, safety and the environment" (which things are never explained).[131] Twin Pines also complains that "much of the modern coastal areas are covered by infrastructure [and] land-use and permitting considerations may limit mineral development"[132] Yet, the mere presence of infrastructure in the area does not make a site impracticable, rather two of Twin Pines' own criteria (rail and port proximity) are "infrastructure."

The law on this point is clear: an applicant cannot use overly narrow site selection criteria to preclude otherwise practicable alternatives from consideration.[133]

2. The on-site alternatives analysis is inadequate.

The so-called analysis that Twin Pines did conduct is riddled with inconsistencies, unsupported statements, and slight analysis. The company reviewed two tracts within the larger 12,000-acre site: the proposed Phase One site and the Loncala tract.[134] Twin Pines ignores the middle 9,000 acres of the "project study area," offering zero discussion or explanation of the omission.

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[130] From North to South on the Penholoway Terrace: Iluka Resources' Lulaton Mine operated from 2004 to 2006. Southern Ionics is currently operating two sites near Nahunta and Winokur. And Humphrey's Mining Company mined out a deposit northeast of Folkston from 1965 to 1974 before moving its equipment across the state line to Boulogne (1974 to 1979)—both operations on behalf of DuPont. Maria Mange and David Wright, Eds., HEAVY MINERALS IN USE, at 1170; *see also* PR-8: South Georgia Minerals Program: Heavy Mineral Bearing Sand, Coastal Region Georgia (1967), available at https://epd.georgia.gov/georgia-geologic-survey-guides-and-reports; B-120, Pirkle, et al. "Heavy Mineral Deposits of the Southeastern Atlantic Coastal Plain," at 21 (1984), available at https://epd.georgia.gov/georgia-geologic-survey-bulletins (referring to the Folkston, Bolougne, and Green Cove Springs deposits as being located on the "Duval Upland"). Iluka Resources' Green Cove Springs Mine operated, under various owners, from 1972 until 2016. Amelia A & B Mines near Jesup are owned by Chemours, have been permitted, but have not begun mining operations. DuPont, now Chemours, have operated along Trail Ridge south of the St. Marys River since the 1940s.

[131] Permit Application at 4.

[132] Permit Application at 4.

[133] *See National Wildlife Federation v. Whistler*, 27 F.3d 1341, 1346 (8th Cir.1994); *Sylvester v. U.S. Army Corps of Engineers*, 882 F.2d 407, 409 (9th Cir. 1989); *Fla. Clean Water Network, Inc. v. Grosskruger*, 587 F. Supp. 2d 1236, 1244 (M.D. Fla. 2008).

[134] The Loncala Tract is the northernmost tract owned by Twin Pines on Trail Ridge.

According to Twin Pines, mining Loncala or Alternative 2 is impracticable[135] because it is roughly 3 miles from a rail line, requiring longer material transport and "[cost] would increase as a result."[136] But, "the fact that an alternative might have some unquantified higher operating cost" does not mean the alternative is not practicable.[137] Moreover, given Twin Pines' purchase of the Loncala site and inclusion of it in the 12,000 acre project area, it appears that Twin Pines intends to mine the site in the future.[138]

Alternative 3 exemplifies the artificially narrowed scope of Twin Pines' analysis. In this scenario Twin Pines would use the 25-foot deep excavator/dozer mining method (that it proposes to use on 216 acres in its preferred plan) on the entire Phase One site. This alternative supposedly does not extract enough material to "allow the applicant to meet the requirements of its contracts with customers to supply the amount of heavy mineral sands required."[139] The Corps may not consider Twin Pines' "landowner commitments"[140] or the contracts they signed prior to the permitting process. To do so would allow a permit applicant to sidestep the entire alternatives analysis.[141]

Alternatives 4 and 5 would mine only the upland areas of the Loncala and Phase One sites, respectively. For Phase One, Twin Pines fails to explain why it must mine 522 acres of wetlands. We are unaware of any other heavy mineral sands mine in Georgia that requires such a blunt instrument. Alternative 5 again improperly refers to Twin Pines' prematurely-inked contractual obligations as the reason this alternative is impracticable, yet even if that were an appropriate consideration, there is no discussion of what could be cost-effective: why not mine only 500 acres of wetlands? That is, Alternative 5 presents a false dilemma between mining all or none of the waters sitting on heavy minerals. Twin Pines' lack of analysis on this point is further described in the section on Avoidance below.

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[135] Application at 15.

[136] Application at 8. Twin Pines fails to provide any support for its assertion that construction of a rail spur would necessarily result in more aquatic impacts.

[137] *Delaware Riverkeeper Network v. United States Army Corps of Engineers*, 869 F.3d 148, 159–60 (3d Cir. 2017). Further, "*significant* additional cost can prove determinative, in and of itself, *only if* the competing alternatives can reasonably be viewed as equivalent with respect to other factors." *Friends of the Earth v. Hall*, 693 F. Supp. 904, 946–47 (W.D. Wash. 1988) (emphasis added).

[138] We have heard that Twin Pines' pending groundwater modeling does not cover the Loncala Tract. If it did, the tract's proximity, less than half a mile, to the Okefenokee could make a difference in the analysis of aquatic resource impacts which is so lacking in the current application; perhaps due to Twin Pines' intent to mine the Loncala Tract in future phases of the project.

[139] *Id.* at 10. Miraculously, this alternative where Twin Pines cannot mine enough material to meet its contracts also has a "projected employment of 150-200 people for 8 years." *Id.*

[140] *Id.* at 3.

[141] *Cf.* 33 C.F.R. Pt. 325, App. B(9)(b)(4); 33 C.F.R. § 320.4(q).

Alternative 6, the no action alternative, mainly discusses the negative effects of certain forestry practices such as "intensive herbicide use,"[142] but fails to consider that the continuing use of the project site for forestry would leave the subsurface intact.[143]

Put simply, Twin Pines' alternatives analysis fails on every level: it artificially eliminates off-site alternatives, fails to critically consider on-site alternatives, and dismisses otherwise valid alternatives based on premature contractual commitments. At a minimum, Twin Pines should have considered off-site locations where economically viable concentrations of heavy minerals occur and all 12,000 acres of the proposed site. For those sites, Twin Pines should have analyzed the amount and quality of aquatic resources located in heavy mineral concentration areas and provided a fully explanation of why mining must occur in wetlands and streams.

E. The proposed project does not adequately avoid and minimize impacts to wetlands and other aquatic resources.

The 404(b)(1) Guidelines require applicants to avoid discharges of dredged or fill material to the extent practical, then minimize any unavoidable impacts, and then mitigate for any impacts that could not be minimized.[144] Twin Pines does none of these things.

1. Avoidance

To demonstrate that it has avoided discharges to the extent practical, a permit applicant must discuss the "original site development plan and why this plan was not the least environmentally damaging practicable plan."[145] Then, the applicant must compare the original plan to the final plan to demonstrate "how many acres of wetland and/or linear feet of stream were avoided."[146] Twin Pines does neither.

In 2018 Twin Pines proposed "to operate a 12,000-acre sand-derived minerals mine … [which] would be mined in 1,000-acre phases…."[147] Twin Pines then undertook preliminary site analysis of the Loncala tract, before submitting the Phase One application. To the extent Twin Pines' Phase One "test site" was originally the Loncala tract, pushing the mining of that location to a later phase of the project is hardly avoidance.

Further, ninety percent of Twin Pines' avoidance is effectively a sham. Of the 613.098 acres of wetlands Twin Pines claims to have avoided, 554 are in the western-most portion of the

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[142] Twin Pines does not address whether there could be any potential effects of mining and replacing herbicide impacted soils.

[143] Permit Application at 13–15.

[144] 33 C.F.R. § 320.4(r); 40 C.F.R. § 230.10(d).

[145] Guidelines for Preparation of Analysis of Section 404 Permit Applications Pursuant to the Section 404(b)(1) Guidelines of the Clean Water Act, at 9, available at https://www.sas.usace.army.mil/Portals/61/docs/regulatory/IP_SAS_404_b_1_Guidelines.pdf.

[146] *Id.*

[147] USACE Issue Paper at 1.

Phase One "permit area."[148] All indications are that Twin Pines never intended to mine these acres. Because of their distance from the crest of Trail Ridge, it is likely there are not enough heavy minerals there to make mining economically viable. In its application Twin Pines describes the fall off of "the mineralized zone" as one gets further from the ridge, noting that heavy minerals are "much shallower (10 – 20 ft)" on the TIAA tract.[149] Further, Twin Pines' own map of mineral depths, not included in the application, does not even extend that far west.[150] Claiming credit for "avoiding" these 550+ acres of wetlands is disingenuous at best. These 554 acres should not count as "avoidance;" if they did, Twin Pines might as well claim to have avoided all the wetlands in the state of Alabama as well.

True avoidance in this case would involve Twin Pines taking a hard look at the wetland and streams in the area they intend to mine and focusing only on these parts of the site that have the most heavy minerals. Twin Pines has also failed to avoid wetlands with respect to its processing facilities and stockpiles. The requirement of avoiding waters to the extent practical means there should be some efficiency trade-off (presumably these facilities are located centrally for convenience, as Twin Pines claims they "will still need to be constructed [in wetlands]" even under Alternative 5 which avoids all 522 acres of wetlands in the mining area).[151] Corps regulations require an effort to avoid aquatic impacts at the outset. Twin Pines cannot skip this step.

2. Minimization

Twin Pines likewise fails to minimize the impacts of the proposed mine. Under the 404(b)(1) Guidelines, minimization means "mitigating an aquatic resource impact by managing the severity of a project's impact on resources at the selected site."[152] "Minimization is achieved through the incorporation of appropriate and practicable design and risk avoidance measures."[153] Twin Pines barely mentions its mitigation obligations in the application, saying only that "[t]he team considered layout options that minimized impacts to aquatic resources, but also avoided/minimized impacts to threatened and endangered species."[154] To minimize its impacts, Twin Pines could, for example, only mine a portion of one of the larger wetlands on the site.

F. The application's compensatory mitigation plan violates the Section 404(b)(1) Guidelines.

[148] Permit Application, Fig. 4.1a.

[149] Permit Application, App. F. It appears that below an elevation of 130 feet, there are not enough minerals worth mining.

[150] Twin Pines Minerals, Map of Mineral Depths (detail of Keystone tract attached as Ex. K).

[151] Permit Application at 12. In fact, none of Twin Pines' alternatives on the Phase One site consider relocating these facilities.

[152] Envtl. Prot. Agency, Types of Mitigation Under CWA Section 404, https://www.epa.gov/cwa-404/types-mitigation-under-cwa-section-404-avoidance-minimization-and-compensatory-mitigation.

[153] *Id.*

[154] Permit Application at 16; *see also id.* at 18.

As explained above, Twin Pines is attempting to skirt the regulatory requirements pertaining to avoidance and minimization. By sidestepping avoidance, in particular, Twin Pines is attempting to advance directly to compensatory mitigation. In short, Twin Pines is attempting to simply pay for the damage it intends to do to the environment. It is a violation of the Section 404(b)(1) Guidelines to attempt such a maneuver.

But even if Twin Pines were permitted to sidestep the Guidelines in this manner, the compensatory mitigation it is proposing for the 522 acres of wetlands in the mining area, is equally brazen. Twin Pines' plan is in clear violation of the Clean Water Act. Under Twin Pines' compensatory mitigation plan, it would completely destroy the 522 acres of wetlands and then attempt to create them again within 90 days. As explained below, such an approach is should be given little credence.

1. Twin Pines will not be able to create functioning wetlands in 90 days.

The Section 404(b)(1) Guidelines provide that: "The fundamental objective of compensatory mitigation is to offset environmental losses resulting from unavoidable impacts to waters of the United States authorized by DA permits."[155] If compensatory mitigation is needed, "[t]the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions.[156] The Guidelines go on to provide that the Corps "must require a mitigation ratio greater than one-to-one where necessary to account for the method of compensatory mitigation (e.g., preservation), the *likelihood of success*, differences between the functions lost at the impact site and the functions expected to be produced by the compensatory mitigation project, *temporal losses* of aquatic resource functions, the difficulty of restoring or establishing the desired aquatic resource type and functions . . . ."[157]

To ensure that compensatory mitigation is successful into the future, applicants must develop maintenance, monitoring, and long-term management plans.[158] The applicant is also supposed to have an adaptive management plan and financial assurances should the compensatory mitigation fail.[159] With regard to financial assurances, the Guidelines provide that: "The district engineer shall require sufficient financial assurances to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with applicable performance standards."[160]

Due to a high failure rate of on-site mitigation, the Corps and EPA issued a rule in 2008 that required applicants to purchase mitigation credits from banks rather than undertake on-site or off-site compensatory mitigation themselves.[161]

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[155] 40 C.F.R. § 230.93(a).
[156] 40 C.F.R. § 230(f)(1).
[157] 40 C.F.R. § 230.93(f) (2)(emphasis added).
[158] 40 C.F.R. § 230.93(f) (8), (10) & (11).
[159] 40 C.F.R. § 230.94(c)(12) § (13).
[160] 40 C.F.R. § 230.93(n)(1).
[161] Compensatory Mitigation for Losses of Aquatic Resources under CWA Section 404 (Final Rule), 73 Fed. Reg.19,593, 19,601 (Apr. 10, 2008).

> We disagree that the rule should establish a preference for on-site compensatory mitigation, because the failure rate for such projects is quite high. On-site compensatory mitigation activities, especially wetland restoration or establishment, are particularly sensitive to land use changes. […] In many cases, there are circumstances in which on-site mitigation is neither practicable nor environmentally preferable.[162]

The Compensatory Mitigation Regulations also indicate that the Corps shares mitigation plans with the public in a meaningful way. As the regulations provide, "the rule requires that public notice for DA permits include a discussion of mitigation plans, including any compensatory mitigation."[163] Public comment can then help inform the development of detailed planning documents.[164]

And last, the agencies published a mitigation checklist to help applicants develop complete compensatory mitigation plans.[165] The checklist contains the twenty-three elements of a complete model plan. [166] Twin Pines' mitigation plan contained only a handful of these twenty-three elements.

2. Twin Pine's compensatory mitigation plan does not comply with the Guidelines and thus violates the Clean Water Act.

a. The proposed impacts are not temporary.

Under its compensatory mitigation plan, Twin Pines intends to destroy 522 acres of wetlands and then rebuild them within 90 days and ensure that the created wetlands will provide all of the functions of the wetlands destroyed.[167] It suggests that its mining would cause only temporary impacts.[168] Although it is true that in the mining context "temporary impacts" are determined by the district engineer on a case-by-case basis,[169] the impacts Twin Pines is proposing are not temporary, they are permanent. Twin Pines submits that the impacts are "temporary" because it plans to refill the holes it excavates with tailings and create functioning wetlands all within 90 days.[170] In its application for a state surface mining permit, Twin Pines tells a different story. In that application Twin Pines is more realistic. It says that it could take up

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[162] *Id.*

[163] *Id.* at 19,611.

[164] *Id*.

[165] U.S. Army Corps of Eng'rs and U.S. Envtl. Prot. Agency, Memorandum to the Field, Model Compensatory Mitigation Plan Checklist for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act (2003).

[166] *Id*.

[167] Permit application at 27.

[168] *Id*.

[169] 73 Fed. Reg.19,593, 19,607.

[170] Permit Application at 27.

to six months to fill in the pits and up to two years to replant any wetlands that it creates.[171] Two years cannot be considered temporary under any definition.

Furthermore, temporary fills do not include completely destroying wetlands and then attempting to rebuild them. Temporary fills involve placing fill material in a wetland for a short time and then removing the fill and restoring the wetland after the work is completed. A common example of a temporary fill involves the construction of an access road through a wetland. After the access road is no longer needed, the fill is removed and the wetland functions are restored. Temporary fills also include the placement of fill to bury utility lines, construct erosion control features,[172] construct cofferdams, and the dewatering of dredged material.[173]

b. The compensatory mitigation plan is too risky.

Even if the impacts to the wetlands were considered "temporary," it is highly unlikely that Twin Pines will be able to create wetlands that will offset the wetland functions that will be destroyed when Twin Pines conducts its proposed mining operation. In 1990, the Corps and EPA drafted a memorandum of agreement addressing compensatory mitigation. The two agencies agreed that: "There is continued uncertainty regarding the success of wetland creation or other habitat development. Therefore, in determining the nature and extent of habitat development of this type, careful consideration should be given to its *likelihood of success*."[174] In other words, if an applicant proposed to create wetlands as a part of its compensatory mitigation plan, the agencies should assume that there is a good chance the approach will fail.

Created wetlands still have a low probability of success today even under the best of circumstances. Twin Pines, however, is not simply proposing to create wetlands under normal circumstances. It is proposing to create wetlands under extremely challenging circumstances. Dr. Rheinhardt, a wetland ecologist, summed up this daunting task when he said in his expert report, which is attached, that: "In trivializing the difficulty of creating wetlands under potentially inhospitable reclamation conditions, it appears that TPM likely lacks a thorough understanding of the complexities involved."[175] In other words, Twin Pines does not appreciate the difficulties involved in creating wetlands, as Dr. Rheinhardt says, "from scratch."[176] Eric Hughes, a wetland ecologist who worked for EPA Region 4 for over three decades, was not so charitable in his comments when he stated, "the applicant's assertion that

[171] SMLUP at 2–5 .

[172] New Hampshire Department of Environmental Services, Frequently Asked Questions, https://www.des.nh.gov/organization/divisions/water/wetlands/categories/faq.htm#faq5.

[173] North Carolina Environmental Quality, Frequently Asked Questions, https://deq.nc.gov/about/divisions/water-resources/water-quality-permitting/401-buffer-permitting-branch/frequently.

[174] Envtl. Prot. Agency and U.S. Army Corps of Eng's, Memorandum of Agreement regarding Mitigation under CWA Section 404(b)(1) Guidelines at 4 (1990) ("Interagency MOA on Mitigation") (emphasis added).

[175] Rheinhardt Report at 5

[176] Rheinhardt Report at 5.

functional wetland mitigation/restoration at the refilled mining pits will be successful is not scientifically credible."[177]

It is not surprising that these experts do not have much faith in Twin Pines' proposal. In its Corps application, Twin Pines claims that it can:

1) strip sections of the site, which is half covered in wetlands, of 6 inches of topsoil;
2) dig in horizontal stripes across the site;
3) to, in some places, a depth of 70 feet;
4) separate out the valuable mineral sands;
5) shape the tailings into "wetland" basins, some of which will be over 100 acres in size;
6) create all the necessary hydrologic connections between the basins and the on-site streams;
7) replace the topsoil;
8) plant wetlands plants;
9) all within 90 days, while mining continues around it.

In light of these elements, Dr. Rheinhardt found Twin Pines' mitigation proposal to be a momentous task that Twin Pines is ill-equipped to undertake. Dr. Rheinhardt states in his report that, "TPM's lack of detailed insights into potential impacts and reasonable targets suggests that it may not have the expertise required to mitigate and compensate for potential on-site environmental impacts and in particular, loss of wetland functions. In fact, TPM did not show that it has ever successfully created wetlands in mined sands."[178] For these reasons, Dr. Rheinhardt concluded that before this application proceed any further, Twin Pines must prepare an environmental impact statement that includes a compensatory mitigation plan that addresses the questions contained in his report.[179]

Hughes concluded in his comments that an EIS is essential too based in large part on Twin Pines' questionable mitigation plan. As he states in his comments:

> The EIS should delve substantially into this [mitigation] matter. The proposed mining process will destroy the existing soil conditions to an approximate 50 foot depth and very likely permanently alter the pre-mining groundwater conditions. Simply backfilling the mining pit with a homogenous quantity of tailings materials will in no way replace or approximate the existing pre-mining soil and groundwater conditions that the existing wetland ecosystems are a part of.[180]

Hughes, like Rheinhardt, concluded that Twin Pines must flesh out, to the extent it is qualified to do so, the insufficient mitigation plan that it has produced. Rheinhardt submits that the following questions from his report need to be answered before any mitigation plan can be deemed complete.

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[177] Letter from Eric Hughes to Col. Daniel Hibner (Sept. 10, 2019) at 3 ("Hughes Letter").
[178] Rheinhardt Report at 5.
[179] Rheinhardt Report at 5.
[180] Hughes Letter at 3.

1) How did TPM determine that wetland ecosystems removed from the landscape and replaced within 30 d (which TPM refers to as "temporary" impacts) would not cause any loss in ecological functioning for which TPM has to compensate?

2) Exactly how would TPM create perched wetlands in unconsolidated sands?

3) How would TPM stockpile topsoil in a manner that will not adversely affect organic matter content, soil microbes, soil fungi (esp. root mycorrhiza), and seed banks of native plant species?

4) What ecosystems (or HGM subclasses) would TPM use to establish intermediate and final targets for their created ecosystems?

5) What mix of species would TPM plant and what is the basis for planting those species?

6) What mix of species would TPM plant and what is the basis for planting those species?

7) What is TPM's plan for preventing invasive species (e.g., cogongrass) from overtaking reclaimed land and their adaptive management approach if they do?

8) How would TPM manage alterations to groundwater during the mining process?

9) How would mining and subsequent homogenization of soils affect hydrology in the short-term?

10) How would mining and subsequent homogenization of soils affect hydrology in the long-term?

11) What is the adaptive management plan that would enable TPM to learn from mistakes/successes as the mining operations moves from one pit to the next?

12) How would 25–70-ft deep pits in strip mines affect the hydrology of Okefenokee Swamp and St. Marys River?

13) Would redeposited homogenized sand spoils in mined pits alter permeability enough to drain or lower the water table in Okefenokee Swamp?

14) How might homogenizing the replaced mined sand spoils affect the mobility and release of radionuclides, (primarily uranium-238 and thorium-232) into groundwater?[181]

[181] Rheinhardt Report at 1–5.

In his report, Rheinhardt explains that many of these questions cannot be answered without additional studies and modeling. Hughes agrees. In the light of such scientific controversy and incomplete and inadequate information, the Corps should require Twin Pines to prepare an EIS, especially when the proposed mine would adjoin the Okefenokee Swamp.

c. The mitigation plan addresses too few functions.

One reason Twin Pines created wetlands will likely fail is that it does not appear that it will be treating the topsoil that it removes from the site in a sufficiently careful manner. First, the soil used to create a wetland must be wetland soil, so Twin Pines will have to separate the wetland soil that it removes from the upland soil that it removes. Third, the wetland soil redeposited on the tailings must be at a sufficient depth to support wetland functions. Six inches may not be enough.[182] Finally, in its Corps application it appears that Twin Pines will stock pile its soil for 30 days.[183] In its state surface mining permit, Twin Pines states that it will stockpile its top soil for up to 6 months.[184] Stockpiling the topsoil for any extended time will make it more difficult for plant seeds to survive.

Even if Twin Pines were successful in creating wetlands on the site, these wetlands could not offset the functions lost during the mining. First, considering the poor success rate of created wetlands, it is unlikely that all of the wetlands would survive. Second, the mitigation would involve an uncompensated temporal loss. It will not be possible for Twin Pines to create wetlands that would immediately offset the wetlands that will be destroyed. Third, the MOA provides that more than one acre of wetlands should be restored or created when the "*likelihood of success of the mitigation project is low*."[185] Twin Pines contends that the created wetlands will offset the wetlands that it will destroy on a one-for-one basis. In light of the temporal loss, this is impossible.

V. The proposed project violates Clean Water Act Public Interest Guidelines.

In addition to the 404(b)(1) Guidelines, the Corps must comply with its own Public Interest Guidelines. While the 404(b)(1) Guidelines establish substantive criteria relating to a project's impact on aquatic resources, the Public Interest Guidelines obligate the Corps to evaluate whether the environmental and social costs of a project outweigh the economic benefit to the applicant.[186] As part of its analysis, the Corps may consider factors like "conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, … recreation, water supply and conservation, water quality, … and, in general, the needs and welfare of the people."[187]

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[182] Rheinhardt Report at 3.

[183] Permit Application at 10.

[184] SMLUP at 4.

[185] Interagency MOA on Mitigation at 5 (emphasis added).

[186] 33 C.F.R. § 320.4(a)(1); 33 C.F.R. § 320.4(b)(4) (Corps may not issue permit to alter "important" wetlands unless "the benefits of the proposed alteration outweigh the damage to the wetlands resource"); *see also Slagle v. U.S.*, 809 F. Supp. 704 (D. Minn. 1992) (Section 404 permit denied because it was not in the public interest).

The comments below address the relevant factors by category: harm to the environment and wetlands; harm to fish and wildlife; harm to historic, cultural and recreational values; harm to public lands; and economic considerations.

A. The proposed mine would harm wetlands and the environment generally.

As discussed in Section IV and the attached expert reports, the proposed mine would directly impact thousands of acres of wetlands and tens of thousands of feet of stream. We also have serious concerns that the proposed mine would harm the neighboring Okefenokee Swamp and Okefenokee National Wildlife Refuge. More generally, the mine would destroy habitat, reduce air and water quality through the release of contaminants, and produce light, dust, and noise that would degrade the wilderness experience in the Okefenokee Wilderness. These impacts are discussed at length in Section VII.

B. The proposed mine would harm fish and wildlife.

As discussed throughout these comments, Okefenokee National Wildlife Refuge supports exceptional wildlife values that are important to the public interest.[188] As described by the Service,[189] and elsewhere in these comments, intensive mining of Trail Ridge near the Refuge could have major and irreversible impacts on the Refuge, wetlands, wildlife and the incalculable public values supported by these public lands. Mining near the Refuge is not in the public interest, particularly for its potential impacts on wetlands that "serve significant natural or biological functions, including food chain production, general habitat and nesting, spawning, rearing and resting sites for aquatic or land species," that have been "set aside as sanctuaries or refuges," or that "are unique in nature or scarcity to the region or area."[190] Per federal regulation, no permit may be granted for an activity that involves alteration of such a wetland unless the benefits of the proposed alteration outweigh the resource damage.[191]

In analyzing and weighing a permit application, the Corps must also consider impacts on designated national landmarks, wilderness areas, historic properties, and other such areas established under federal or state law for similar or related purposes.[192] This invariably includes national wildlife refuges such as Okefenokee, which not only contains a number of these protective designations, but has also been nominated and recognized internationally for its exceptional resource values. Permit decisions should, in so far as possible, be consistent with and avoid significant adverse effects on the values or purposes for which those designations and their accompanying policy mandates were established.[193]

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[187] 33 C.F.R. § 320.4 (listing these values and others as proper considerations in assessing public interest)

[188] *See* 33 C.F.R. § 320.4(c).

[189] *See generally* USFWS Letter.

[190] 33 C.F.R. § 320.4(b)(2).

[191] *Id.* § 320.4(b)(4).

[192] *Id.* § 320.4(e).

[193] *Id*.

The primary purpose of Okefenokee National Wildlife Refuge is to protect the rare, expansive and extraordinary "ecological system of the 438,000-acre Okefenokee Swamp."[194] Most, but not all of the swamp wetlands are incorporated into the Refuge, and 353,981 acres within the Swamp are designated as wilderness, making it the third largest refuge and wilderness area east of the Mississippi River.[195]

The executive order establishing the Refuge in 1937 also identified an original purpose of the refuge as "a refuge and breeding ground for migratory birds and other wildlife."[196] Finally, the Okefenokee's federal function has been expanded over the decades under the authority of the Migratory Bird Treaty Act and the Endangered Species Act with the additional purposes of conserving internationally protected migratory birds and "fish or wildlife [or plants] which are [federally] listed as endangered species or threatened species."[197]

The Refuge wetlands were designated a Wetland of International Importance by the United Nations under the Ramsar Convention of 1971 in 1987, when the U.S. joined the convention. "The Convention on Wetlands of International Importance, Especially as Waterfowl Habitat" recognizes and supports conservation of globally important, rare, unique, ecologically critical wetlands. These values may also qualify the Okefenokee for designation as a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site—the Refuge was nominated in 2008 and its status is pending.

Okefenokee National Wildlife Refuge is a National Natural Landmark (since 1974), protects structures listed on the National Register of Historic Places, and offers a network of canoe trails that are part of National Water Trails System and designated national trails under the National Recreation Trail Act.

Its many national and international conservation and protective designations notwithstanding, the Okefenokee Swamp is also vital to the hydrology and ecosystem function of two major watersheds in the southeastern U.S. The Swamp is the headwaters of two rivers, the Suwannee and St. Marys, that drain into the Gulf of Mexico and the Atlantic Ocean, respectively. These rivers support entire ecosystems, human communities, and economies worth billions of dollars. The Corps must consider the potential impacts of mining Trail Ridge on both the Swamp and its dependent waterways in weighing the comparative value of the proposed project with the ecological impacts that mining could cause.

The Refuge environment supports a rich diversity of native flora and fauna, including 49 species of mammals, 233 birds, 39 fish, 101 species of reptiles and amphibians,[198] perhaps 1,000

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[194] U.S. Fish & Wildlife Serv., Okefenokee National Wildlife Refuge Comprehensive Conservation Plan at 6 (2006) ("Okefenokee Refuge CCP") (attached as Ex. L).

[195] *Id.* at 6.

[196] *Id*. at 6 and App. I.

[197] U.S. Fish & Wildlife Service Memorandum, Dec. 23, 1988 at App. B, B-41.

[198] Okefenokee CCP at 6; U.S. Fish & Wildlife Serv., Okefenokee at a Glance, https://www.fws.gov/uploadedFiles/OkefenokeeGlance.pdf.

species of moths and countless invertebrate species. Many of these species are directly affected by water quality and quantity. In fact, the Refuge is "world renowned for its amphibian populations that are bioindicators of global health."[199] More than 600 plant species have also been identified on the Refuge.[200]

Among the Refuge biota are an array of sensitive and imperiled species, including six federally listed species, 15 state-listed species in Georgia and/or Florida, and at least 19 plants and animals identified as Species of Greatest Conservation Need in Florida's or Georgia's State Wildlife Action Plan, or both.

Species listed under the Endangered Species Act that use, may use or could potentially (P) use the Refuge include:[201]

1. Eastern indigo snake (*Drymarchon corais couperi*) • *threatened*
2. Red-cockaded woodpecker (*Picoides borealis*) • *endangered*
3. Wood stork (*Mycteria americana*) • *threatened*
4. Hairy rattleweed (*Baptisia arachnifera*) • *endangered*
5. Frosted flatwoods salamander (*Ambystoma cingulatum*) • *threatened* (P)[202]
6. Florida panther (*Felis concolor coryi*) • *endangered* (P)[203]

[199] Okefenokee Refuge CCP at 6.
[200] *Id.* at 6.
[201] *Id.*, App. V.
[202] *Id.* at 56.
[203] *Id.* at 45.

Federal and State Protected Species on Okefenokee National Wildlife Refuge					
Species	**ESA**	**State Listed**		**State SWAP**	
		Georgia	**Florida**	**Georgia**	**Florida**
Eastern indigo snake *Drymarchon corais couperi*	Threatened	Threatened	Federally Threatened	SGCN	SGCN
Red-cockaded woodpecker *Picoides borealis*	Endangered	Endangered	Federally Endangered	SGCN	SGCN
Wood stork *Mycteria Americana*	Threatened	Endangered	Federally Threatened	SGCN	SGCN
Hairy rattleweed *Baptisia arachnifera*	Endangered	Endangered		SGCN	
Frosted flatwoods salamander *Ambystoma cingulatum*	Threatened	Threatened	Federally Threatened	SGCN	SGCN
Florida panther *Felis concolor coryi*	Endangered	Endangered	Federally Endangered	SGCN	SGCN
Bachman's sparrow *Aimophila aestivalis*		Rare		SGCN	SGCN
Bald eagle *Haliaeetus leucocephalus*		Threatened		SGCN	SGCN
Black-banded sunfish *Enneacanthus chaetodon*		Endangered		SGCN	SGCN
Florida black bear *Ursus americanus floridianus*					SGCN
Florida pine snake *Pituophis melanoleucus*			Threatened	SGCN	SGCN
Florida sandhill crane *Grus Canadensis pratensis*			Threatened	SGCN	SGCN
Yellow/golden trumpet *Sarracenia flava*		Unusual			
Gopher frog *Rana areolata aescpus*	Candidate	Rare		SGCN	SGCN
Gopher tortoise *Gopherus Polyphemus*	Candidate	Threatened	Threatened	SGCN	SGCN
Greenfly orchid *Epidendrum conopseum*		Unusual			
Hooded pitcher plant *Sarracenia minor*		Threatened			
Mud sunfish *Acantharchus pomotis*					SGCN
Parrot pitcher plant *Sarracenia psittacine*		Threatened		SGCN	
Round-tailed muskrat *Neofiber alleni exoristus*		Threatened		SGCN	SGCN
Sherman's fox squirrel *Sciurus niger niger*			Special Concern	SGCN	SGCN
Striped newt *Notophthalamus perstriatus*	Candidate	Threatened		SGCN	SGCN

Figure 4: Federal and State Protected Species on Okefenokee National Wildlife Refuge

Bald eagles, a species protected under the Bald and Golden Eagle Protection Act, may occasionally use the Refuge and adjoining habitats.

As described above and elsewhere in these comments, the Corps must consider the potential impact on federally protected species, state-listed species, and plants and animals managed by states in accordance with their federally approved State Wildlife Action Plans. These include at least 22 species of conservation concern that occur on Okefenokee Refuge. Effects analysis should account for the years of investment and effort by federal agencies, states, and partners to conserve and recover these species, including how mining near the refuge could threaten the decades of progress to date.

C. The proposed mine may harm the Okefenokee Swamp, which has important historic, cultural, scenic, and recreational values.

The Okefenokee Swamp supports an array of priority wildlife-dependent recreational and educational opportunities, including wildlife watching and photography, hiking, canoeing, motor boating, hunting, angling, picnicking, and attending naturalist presentations at the refuge visitor center and outdoor classroom. The Service welcomes increasing public visitation to the Refuge at the Suwannee Canal Recreation Area and Stephen C. Foster State Park, which it manages cooperatively with the Georgia Department of Natural Resources. Public use and enjoyment of the Refuge, including its nationally recognized scenic and historic offerings, is a major contributor to local and regional economies, "especially in small towns and rural areas that form 'Gateway Communities' adjacent to national wildlife refuges nationwide."[204]

The proposed Twin Pines mining operations could have deleterious and irreparable impacts on the Swamp and the Refuge, to the detriment of these public uses that attract hundreds of thousands of visitors per year.[205] Even routine mining activities could negatively affect visitation and enjoyment of the Refuge and its environs, including noise, dust, and exhaust generated from the operation and trucks traveling in and out of the area and 24-hour lighting that drives wildlife away and spoils night skies.

The Corps must also consider impacts to cultural and historic resources. The Okefenokee has a rich cultural history, with evidence of Native American occupation dating back to 2500 BCE and a long history of exploration and settlement in the region.

D. Twin Pines overstates the economic benefit of the proposed mine on the community and ignores the economic risks.

1. The application ignores the economic impact of the Okefenokee National Wildlife Refuge.

[204] Okefenokee Refuge CCP 2006 at 65.

[205] U.S. Fish & Wildlife Serv., Banking on Nature 2017 at 29 (June 2019), https://www.fws.gov/economics/divisionpublications/bankingOnNature/BoN2017/Banking-on-Nature-2017v4.pdf (attached as Ex. M).

According to Twin Pines' application, the proposed mine would likely generate fewer than 150 jobs. It is unclear how many of those jobs would be located in Charlton County, or whether some may be located at the processing plant in Florida. By comparison, Okefenokee National Wildlife Refuge, which the proposed mine endangers, generates substantial employment, economic input, and ecosystem services in Charlton County and neighboring communities.

Of the hundreds of national wildlife refuges throughout the nation, the Okefenokee ranks fourth in terms of economic output.[206] According to a May 2019 Report by the U.S. Fish and Wildlife Service, the Refuge had over 720,000 recreation visits in 2016, with approximately 65 percent of those visits coming from non-residents.[207]

Activity	Residents	Non-Residents	Total
Non-Consumptive:			
Pedestrian	35,554	82,958	118,512
Auto Tour	91,019	136,529	227,548
Boat Trail/Launch	4,367	13,102	17,469
Bicycle	782	261	1,043
Photography	3,627	10,881	14,508
Interpretation	37,534	87,578	125,112
Other Recreation	24,066	24,066	48,132
Visitor Center	49,922	116,485	166,407
Hunting:			
Big Game	155	-	155
Small Game	-	-	-
Migratory Birds	-	-	-
Fishing:	4,623	-	4623
Total Visitation	**251,649**	**471,860**	**723,509**

Figure 5: 2016 Recreation Visits to the Okefenokee National Wildlife Refuge[208]

Spending from those visits supported economic activity in the four-county region surrounding the Refuge, including Charlton County. According to the U.S. Fish and Wildlife Service, recreational spending in the local communities was associated with approximately 753 jobs, $17.2 million in annual employment income, $5.4 million in annual tax revenue, and $64.7 million in annual economic output.

[206] *Id.* at 12.,

[207] United States Fish & Wildlife Serv., Division of Economics, The Economic Contributions of Recreational Visitation at Okefenokee National Wildlife Refuge at 2–3 (May 2019), https://www.fws.gov/economics/divisionpublications/bankingonnature/bon2017/refuges/Okefenokee%20R%204.pdf (attached as Ex. N).

[208] *Id.*

Activity	Residents	Non-Residents	Total
Non-Consumptive	$4,702,100	$59,786,000	$64,488,100
Hunting	$4,600	$0	$4,600
Fishing	$210,600	$0	$210,600
Total Expenditures	**$4,917,200**	**$59,786,000**	**$64,703,200**

Figure 6: Visitor Recreation Expenditures Associated with the Okefenokee National Wildlife Refuge (2016)[209]

	Residents	Non-Residents	Total
Economic Output	$4,917,200	$59,786,000	$64,703,200
Jobs	57	697	753
Jobs Income	$1,307,000	$15,853,900	$17,160,900
State and Local Tax Revenue	$383,100	$5,065,700	$5,448,800

Figure 7: Local Economic Contributions Associated with Recreation Visit to the Okefenokee NWR (2016)[210]

2. The application ignores the ecological goods and services provided by the Okefenokee Swamp and neighboring wetlands.

In addition to direct economic benefits, the Okefenokee Swamp provides a number of ecological goods and services to the local community, including:

> (1) maintenance and conservation of environmental resources, services and ecological processes; (2) protection of natural resources such as fish, wildlife, and plants; (3) protection of cultural and historical sites and objects; (4) provision of educational and research opportunities; and (5) outdoor and wildlife-related recreation.[211]

An assessment by the University of Georgia, prepared for the U.S. Fish and Wildlife Service, estimates the gross economic value from wetlands in the Refuge to be approximately $125,000,000 per year:

[209] *Id.*
[210] *Id.*
[211] *Id.* at 1.

Ecosystem Service	Gross Economic Value Per Year
Storm Protection	$27,000,000
Water Quality	$45,000,000
Commercial Fishing Habitat	$0
Carbon Storage	$53,000,000
4 service aggregate	$125,000,000

Figure 8: Gross Economic Values from Okefenokee Refuge Wetlands per Year[212]

According to the authors, the estimated values are conservative, in part because the study "only consider[s] benefits to local populations whereas National Wildlife Refuges provide[] benefits to the nation as a whole." In addition, "because of lack of data, [the] results also leave out other ecosystem services such as biodiversity protection, aesthetic values, and cultural values (plus potentially many more)."[213]

3. The proposed project is inconsistent with the Joint Comprehensive Plan for Charlton County and the cities of Folkston and Homeland.

The Comprehensive Plan for Charlton County and the cities of Folkston and Homeland recognizes the importance of the Okefenokee Swamp to the regional economy. The Plan, developed jointly after public notice and comment from local citizens, emphasizes the community's desire to preserve its "sense of place" by "protecting scenic and natural features that are important to defining the community's character."[214] To this end, the plan highlights the local community's desire to protect its world-renowned resource for cultural and economic reasons. For example, the Plan states a goal for Charlton County "to become a regional center for eco-tourism"[215] by "target[ing] tourism opportunities presented by the Okefenokee Wildlife Refuge…"[216]

E. The proposed mine does not serve the general needs and welfare of the people.

More generally, the proposed mine does not serve the general needs and welfare of the people. The Okefenokee Swamp is a public resource that should be preserved "for the benefit of

[212] Douglas Patton et al., National Wildlife Refuge Wetland Ecosystem Service Valuation Model, Phase 1 Report (prepared for Division of Refuges and Division of Economics, U.S. Fish and Wildlife Service) at iii (April 2012), https://www.fws.gov/economics/Discussion%20Papers/USFWS_Ecosystem%20Services_Phase%20I%20Report_04-25-2012.pdf (attached as Exhibit O).

[213] *Id.* at 47.

[214] Joint Charlton County Comprehensive Plan at 54 (April 23, 2015), https://www.fws.gov/economics/Discussion%20Papers/USFWS_Ecosystem%20Services_Phase%20I%20Report_04-25-2012.pdf.

[215] *Id.* at 9.

[216] *Id*. at 25.

present and future generations of Americans."[217] As the Charlton County Historical Commission put it:

> The Okefenokee is more than a general wildlife refuge. It represents an attempt to hold in trust for all the people—sightseers, students, artists, naturalists, photographers, fishermen—this amazing lost world, with its beautiful mirrored lakes, covered with aquatic bloom, bordered by moss-bearded trees, landscaped only by nature, providing scenic effects of haunting, mysterious beauty.[218]

As demonstrated throughout these comments, the proposed mine would pose substantial and unnecessary risks to a unique public resource in violation of the public interest. Because the environmental and social costs to the community outweigh the narrow economic benefits of the proposed mine, the Corps should deny the application.[219]

VI. The proposed project violates the Endangered Species Act.

A. Potential Impacts to Individual Species

As an initial matter, the application does not consider the true area to be impacted by the project, and thus fails to examine the full range of species that will be affected. Despite the applicant's assertions otherwise, it is likely that hydrological impacts, when coupled with the conversion of Trail Ridge habitat, will impact several species that are found within the larger Refuge ecosystem as well as downstream in the St. Marys and Suwannee Rivers.

Twin Pines' application wrongly concludes that "Based on the implementation of … conservation measures, the proposed Project is not expected to have a significant effect on threatened and endangered species."[220] Yet they have failed to demonstrate the veracity of their assertion and, as discussed in greater detail below, evidence demonstrates either that (1) the proposed mine is likely to impact several species; or (2) an insufficient amount of information exists to rule out the potential for negative impacts to several listed species and other species of concern.

1. Endangered Species

a. Atlantic and Shortnose Sturgeon

Both the shortnose and Atlantic sturgeon are present in the St. Marys River, the headwaters of which are formed by the Okefenokee Swamp. Sturgeon use freshwater rivers such as the St. Marys to spawn and as juvenile habitat. Although Atlantic sturgeon travel to deeper marine waters for part of their lifetimes, shortnose sturgeon spend most of their time in their

[217] 16 U.S.C. § 668dd(2).

[218] Charlton County Historical Commission, Charlton County Georgia: Historical Notes 1972, at 204.

[219] 33 C.F.R. § 320.4(a)(1).

[220] Permit Application at 34.

natal estuary. Both species are vulnerable to bycatch, poor water quality (which impairs spawning success), dredging, and water withdrawals, among other things. The shortnose sturgeon is listed as Endangered throughout its entire range and all five U.S. Atlantic sturgeon distinct population segments (DPS) are listed as Endangered or Threatened under the Endangered Species Act (ESA).

Though shortnose and Atlantic sturgeon have suffered vast historical losses, researchers recently rediscovered both within the St. Marys River. Shortnose sturgeon trends are largely unknown, but the St. Marys (Critical Habitat for the Atlantic sturgeon) supports a year-round population of Atlantic sturgeon and serves as seasonally important habitat for migrating individuals.[221] From 2013–2016, a total of 25 individuals were captured (20 unique).[222] In 2014, the discovery of age-one river resident juveniles represented the "first documented evidence of successful Atlantic sturgeon reproduction within the St. Marys river."[223] However, in light of poor recruitment levels—the juveniles were likely produced from a single spawning event in 2013—the population remains "precariously close to extirpation."[224] The surviving sturgeon are thus acutely vulnerable to point source pollution; fluctuations in temperature; changes in dissolved oxygen levels; and increased sediment loads—all of which may result from the proposed mine.

Given the scale of the proposed project, increased sediment discharges into the St. Marys River basin are inevitable and threaten to potentially degrade the spawning habitat that remains. Indeed, Atlantic sturgeon depend upon "well-oxygenated water, clean substrates for egg adhesion, crevices that serve as shelter for post-hatch larvae, and macroinvertebrates for food."[225] In addition to sediment loads, to the extent that the proposed mine discharges treated water into the St. Marys River, over the course of many years, this would change the composition of riparian communities, the pH levels to which sturgeon are accustomed, and the levels of dissolved oxygen.

The National Marine Fisheries Service (NMFS) has already made clear in a 2014 Biological Opinion that "the loss of a small number of [shortnose sturgeon] . . . can have an appreciable effect on the numbers, reproduction and distribution of the species . . . [especially when] there are very few individuals in a population, the individuals occur in a very limited geographic range, or the species has extremely low levels of genetic diversity."[226] The Atlantic and shortnose sturgeon of the St. Marys River likely satisfy these criteria. With potentially as few as three dozen remaining Atlantic sturgeon (and maybe even fewer shortnose individuals),

[221] Fox, Adam & Wirgin, Isaac & Peterson, Douglas. 2018. Occurrence of Atlantic Sturgeon in the St. Marys River, Georgia. Marine and Coastal Fisheries. 10. 606-618.

[222] *Id.* at 610.

[223] *Id.* at 613–614.

[224] *Id.* at 615.

[225] Atlantic Sturgeon, Life History and Habitat Needs, Atlantic States Marine Fisheries Commission.

[226] NOAA's National Marine Fisheries Service, Northeast Regional Office. Endangered Species Act Section 7 Consultation Biological Opinion, Tappan Zee Bridge Replacement (Apr. 2, 2014).

the loss of even a single individual may cause the collapse of the river's population; diminish the genetic diversity of the South Atlantic DPS; and hasten the regional population's continued decline.

b. Red-Cockaded Woodpecker

The red-cockaded woodpecker (RCW) is among the coastal plain's most charismatic, visible and imperiled species. Though RCWs were once found throughout the greater Southeast, from New Jersey to Florida and west to Texas, historical logging operations resulted in the loss of nearly 90 million acres of longleaf pine. Because the species uniquely depends upon mature pine forest—trees that are at least 60–80 years old—as few as 7,800 active clusters exist today across the species' range, down from a historical, pre-European settlement estimate of 1–1.6 million family groups.[227] The species remains listed as Endangered under the ESA.

The larger 12,000-acre project is adjacent to the Refuge, where several active RCW clusters are known to reside. Currently, the Refuge is home to 97 clusters, 46 of which are active.[228] These "are most likely the remains of a much larger population that once depended on the pine stands surrounding the refuge," such as that within the proposed project site.[229]

Based on recent surveys, there are at least 15 active clusters near the southeastern-eastern refuge boundary.[230] Some RCWs may use the project site for foraging, and the full project could eliminate what habitat remains for dispersing individuals. For the Okefenokee clusters, this is of concern, since the population is already small, isolated and suffering from a lack of connectivity —three factors that are known to heighten the risk of extinction for the red-cockaded woodpecker.[231]

In addition to obvious habitat fragmentation concerns, the disturbances caused by light, noise and smoke pollution may further affect the Okefenokee population. The proposed mine will require the installation of heavy machinery, the erection of semi-permanent facilities, road construction, and night-time lighting near the Refuge. These activities may affect the nesting and foraging patterns of those found along the Trail Ridge boundary.

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[227] U.S. Fish and Wildlife Service. 2018. Draft Species Status Assessment Report for the Red-Cockaded Woodpecker (Picoides borealis). Version 1.1, at 1, 5.

[228] U.S. Fish & Wildlife Serv., Okefenokee National Wildlife Refuge-Red-Cockaded Woodpeckers Report.

[229] *Id.* at 1.

[230] *Id.*

[231] Schiegg K, Daniels SJ, Walters JR, Priddy JA, Pasinelli G. 2006. Inbreeding in red-cockaded woodpeckers: Effects of natal dispersal distance and territory location. Biological Conservation 131:544–552.

c. Hairy Rattleweed

Found within a 125-square-mile area in South Georgia, the hairy rattleweed is a perennial legume that is entirely covered in hairs. The species is primarily restricted to open, sandy areas and prefers higher and drier sites. The hairy rattleweed is found within the Refuge and is considered Endangered throughout its entire range. The rattleweed is negatively impacted by clear cutting, soil compaction resulting from heavy machinery, and inconsistent fire regimes. Should the hydrological regime change within the Refuge, however, fire intensity and frequency could increase, potentially exposing the species to unnatural burns. Florida hartwrightia (ESA candidate); floodplain tickseed (ESA candidate); purple honeycomb-head (ESA candidate); and white fringeless orchid (ESA Threatened) are also sensitive to soil disturbances and could be similarly affected by mining operations and an altered hydrological cycle.

d. Florida Panther

As one of the two apex predators that historically roamed the Southeast, the Florida panther was heavily persecuted for centuries. By the time the ESA was legislated, the species had been lost throughout virtually its entire range and only a handful of individuals clung to existence in South Florida (the last Georgian panther was killed in the Okefenokee Swamp in 1925). Thanks to tireless conservation efforts, those individuals were saved, and the population has since grown to an estimated 120–230 adults and subadults. In a major conservation milestone, females with kittens were also recently documented north of the Caloosahatchee River, which has long been a major barrier to panther dispersal and range expansion.

Despite this progress, however, the species (ESA Endangered) is still threatened by habitat loss and fragmentation, roadway mortality, and long-term challenges posed by a lack of genetic diversity and human acceptance. For the panther to even be considered for reclassification under the ESA, the species must overcome pervasive habitat fragmentation and establish a second core population north of Interstate 4, with gene exchange between subpopulations. Because natural recolonization may prove unattainable, researchers have examined several potential reintroduction sites, and concluded that, of the nine areas that were identified, Okefenokee National Wildlife Refuge, Ozark National Forest, and Felsenthal National Wildlife Refuge regions had the highest combination of effective habitat area and expert opinion scores.[232] The Florida Game and Freshwater Fish Commission (now Florida Fish and Wildlife Conservation Commission) moreover conducted a Florida Panther Reintroduction Feasibility Study and concluded that reintroduction of the Florida panther within the greater Okefenokee ecosystem is biologically feasible.[233]

Florida panthers have not yet established a presence in the greater Okefenokee ecosystem, nor are reintroduction efforts currently being considered. Nonetheless, were mining to commence along the Refuge boundary, Trail Ridge's upland habitat—the preferred hunting

[232]Thatcher, Cindy & Manen, Frank & Clark, Joseph. 2009. A Habitat Assessment for Florida Panther Population Expansion into Central Florida. Journal of Mammalogy.

[233] Belden, R. C. and J.W. McCown. 1996. Florida panther reintroduction feasibility study. Game and Fresh Water Fish Comrn., Bur. Wildl. Res. Final Rep. 70pp.

grounds for Florida panther—would be diminished and with it, the effective habitat area and the overall ability of the larger ecosystem to support a viable population.

2. Threatened Species

a. Eastern Indigo Snake

Reaching lengths of over eight feet, the eastern indigo is North America's longest snake, with males weighing up to ten pounds. The species is generally colored an iridescent bluish-black and enjoyed a historical range that once encompassed parts of Mississippi, Alabama, Georgia, and Florida. Though the eastern indigo utilizes a variety of habitats, including longleaf pine sandhills, flatwoods, and coastal dunes, the species requires hundreds to thousands of acres for home range territories, moves over longer distances than any other North American snake, and is particularly vulnerable to habitat fragmentation and loss.

Since its listing in 1978 (ESA Threatened), extant populations have grown increasingly disjunct, particularly those in the Florida panhandle, where gopher tortoise losses have accelerated.[234] The overall resiliency of the eastern indigo population is predicted to be low to very low in the future without targeted conservation efforts.[235]

Though much of Trail Ridge along the Okefenokee is subject to timber operations, the land offers indigo snakes a matrix of habitat types, including upland and lowland features, and is considered part of the species' recovery unit and a Conservation Focus Area. In recent years, mining for limestone, phosphate and titanium has increased in Georgia and Florida. Because these mines disproportionately occur in wildlife-rich areas, their effects on indigo snakes have been documented. The Service has already noted that habitat modification, mining debris and equipment, and the discharge of hazardous materials "adversely impact" indigo snakes.[236]

In this case, mining operations will likely result in both direct mortality and the fragmentation of existing populations: the proposed mine would operate all day and night for upwards of thirty years; require increased vehicular access, which, even in the absence of habitat alterations, can cause indigo populations to crash by 95 percent;[237] result in the loss of the vegetation and cover that indigo snakes depend upon; and ultimately impair north-south movement between Trail Ridge populations separated by the mine's 12,000-acre footprint.

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[234] Enge, K.M., D. J. Stevenson, M.J. Elliott, and J.M. Bauder. 2013. The historical and current distribution of the eastern indigo snake (Drymarchon couperi). Herpetological Conservation and Biology 8:288−307.

[235] U.S. Fish & Wildlife Serv.. 2018. Species status assessment report for the eastern indigo snake (Drymarchon couperi). Version 1.0. Atlanta, GA, 6.

[236] *Id.* at 41.

[237] Godley, J.S. and P.E. Moler. 2013. Population declines of eastern indigo snakes (Drymarchon couperi) over three decades in the Gulf Hammock Wildlife Management Area, Florida, USA. Herpetological Conservation and Biology 8:359-365.

The Service reaffirmed the likelihood of these impacts by noting that, without "meaningful avoidance and minimization measures … the proposed Project may result in loss of habitat, individuals, and natural corridors that are utilized by this species."[238]

b. Frosted Flatwoods Salamander

The frosted flatwoods salamander depends upon small, isolated and ephemeral ponds. Undocumented in the applicant's surveys, Trail Ridge historically supported the species. Even if there are no salamanders on site, the degradation of wetlands could permanently preclude its potential recolonization. It could also result in the loss of breeding habitat for other extant amphibian populations that require similar habitat conditions.

c. Wood Stork

The large, long-legged wood stork is the only stork native to North America. As tactile feeders, wood storks wade in water with their beaks open and partially submerged. When a prey item is touched, the wood stork snaps its mandible shut and throws back its head to swallow the prey whole. This feeding technique allows storks to forage at all hours. Feeding success is largely dependent upon prey abundance and availability. Historically, water levels in the Southeast fluctuated with the seasons. Wet seasons would provide increased prey and dry seasons would concentrate that prey in easily accessible locations for wood storks. Because much of the Southeast has been diked, canalized and drained, however, the natural cycle that wood storks depend upon has been altered and their historical populations severely diminished. The species is now listed as Threatened under the ESA.

Because the Okefenokee remains functionally whole and largely intact, wood storks utilize the Refuge for foraging and nesting purposes. Unfortunately, the proposed mine potentially stands to alter the hydrological regime upon which the species relies. The Service "expect[s] impacts to ground water characteristics including water table elevation, and rate and direction of flow as the soil profile is permanently homogenized" within the refuge.[239] Should these impacts be realized, they "may not be able to be reversed," and could potentially have a major impact upon the ability of wood storks to locate prey.[240] It is well established that "storks are especially sensitive to any manipulation of a wetland site that results in either reduced amounts or changes in the timing of food availability."[241] A drop in the water table, furthermore, would not only affect prey availability, but it could prove fatal to breeding storks, which avoid predation by creating nests in flooded environments.[242]

The Service has also noted that, in addition to drainage and wetland alteration issues, one of the greatest threats facing the wood stork are the behavioral changes caused by human

[238] USFWS Letter 4.
[239] USFWS Letter at 3.
[240] *Id.* at 2.
[241] Ogden J. Habitat Management Guidelines for the Wood Stork in the Southeast Region. Everglades National Park, 4.
[242] *Id.* at 5

disturbance.[243] The effects of 30 years of lighting, noise disturbances and human encroachment near the Refuge boundary may well affect the foraging and nesting habits of wood storks within the Okefenokee. Mine-related runoff, sedimentation, and potential chemical accidents may also cause a decline in the number and availability of native fishes (stork prey) and have a deleterious impact upon the aquatic vegetation upon which those fishes depend.

d. Gulf Sturgeon

Historically, the Gulf sturgeon subspecies occurred in most major Gulf rivers, from the Mississippi to Tampa Bay, Florida. Listed as Threatened under the ESA, major threats to the Gulf sturgeon include dams, loss of habitat, poor water quality and industrial runoff.

A significant number of Gulf sturgeon occur in the Suwannee river (182 river miles of Critical Habitat), the headwaters of which are formed by the Okefenokee Swamp. The Suwannee supports the most viable population of Gulf sturgeon remaining, with potentially upwards of 10,000 individuals. Gulf sturgeon are known to utilize much of the Suwannee River for spawning and nursery purposes and have been documented as far as 137 river miles upstream.[244] Like its counterparts, the Gulf sturgeon is sensitive to changes in water quality, dissolved oxygen levels, and temperature fluctuations.

The Suwannee River basin is pocketed by nearly 200 springs, all of which are fed by the Floridan aquifer. These springs partially influence water flow and temperature within the river and offer the Gulf sturgeon important cool water habitat. Unfortunately, decreased groundwater levels, caused by pumping, can reduce the spring flow that Gulf sturgeon rely upon in the summer months.[245]

Twin Pines intends to pump approximately 3000 gallons per minute from the Floridan aquifer for thirty years.[246] Though pumping is likely to occur closer to the St. Marys River than the Suwannee, the potential impacts of Twin Pines' water withdrawals on the Gulf sturgeon have not been examined. It is also unclear how an altered hydrological regime within the Refuge would affect spawning Gulf sturgeon.

3. Candidates for Listing under the ESA and other Key Species

a. Gopher Tortoise

Like many coastal plain species, the gopher tortoise was once common throughout upland habitats in the South. The species has lost 80 percent of its historical range and continues to suffer from habitat destruction caused by commercial and industrial development, urbanization, and agriculture. The gopher tortoise is now a candidate for listing under the ESA

[243] *Id.*

[244] U.S. Fish & Wildlife Serv. and Gulf States Marine Fisheries Commission. 1995. Gulf Sturgeon Recovery Plan. Atlanta, Georgia. 170, 14.

[245] *Id.* at 27.

[246] *See* Hutson at 5.

and is state-listed in Georgia and Florida. Should it experience continued declines, hundreds of other species, including the eastern indigo snake will feel the impacts. In Georgia, for example, indigo snakes depend upon tortoise burrows for warmth during the winter months.[247]

According to the applicant, the project site is home to approximately 30 adult tortoises, 25 subadults and several juveniles. Were mining to commence, tortoises that are found would be relocated on the property and fenced in to try to prevent attempted recolonization. In the long-term, however, continued mining would greatly reduce the ability of the property to support the species. Gopher tortoises require large parcels of undeveloped and unfragmented land, as well as soils that have not been permanently homogenized or compacted by heavy machinery. In this case, the cumulative impacts of mining—roadbuilding, logging, compaction of burrows, fragmentation of suitable habitat—is likely to result in the complete extirpation of the species from the entire 12,000-acres. This would affect not just the indigo snake, but other commensal species, such as the gopher frog.

b. Gopher Frog

The gopher frog is an ESA candidate species and is state-listed in Georgia. Surveys indicated that gopher frogs were documented on the Adirondack, Loncala, and Keystone tracts. Gopher frogs depend upon wetlands and gopher tortoise burrows for various life stages, both of which will be impacted by the proposed mine. Like gopher tortoise, it is unlikely that gopher frog will be found on site after mining operations conclude.

c. Florida Pine Snake and Southern Hognose Snake

The applicant's surveys confirmed the presence of the Florida pine snake on the Project Site. Because the species has lost 97 percent of its historical range, it is state-listed as threatened in Florida. Efforts are underway to restore habitat for the Florida pine snake, which requires high, dry, and easy-to-tunnel land. Because mining could result in the permanent compaction of the soils upon which the species depends, Florida pine snakes are likely to be extirpated from the site. The habitat of the Southern hognose snake (ESA candidate) was also documented on the site. Like the Florida pine snake, the species depends upon well-drained soils and requires underground habitat, which is likely to be compacted and disturbed by mining operations.

d. Bachman's Sparrow

The Georgia state-listed Bachman's sparrow has been documented on the site. The Bachman's sparrow has experienced significant range contractions, as a result of habitat conversion and commercial development. The species depends upon open, mature pinelands, regenerating clear cuts, and utility rights-of-way. Mining disturbances are likely to result in the localized disappearance of Bachman's sparrows from the site and affect the behavioral patterns of the larger population found within the Refuge.

[247] Stevenson, D.J., K.J. Dyer, and B.A. Willis-Stevenson. 2003. Survey and monitoring of the eastern indigo snake in Georgia. Southeastern Naturalist 2:393-408; Enge et al. 2013.

e. Bald Eagle

Bald eagles are known to utilize Okefenokee National Wildlife Refuge. Because Trail Ridge is an inseparable component of the larger refuge ecosystem, any mining disturbances stand to potentially affect the nesting and hunting success of the bald eagles that depend upon the waters of the Swamp.

f. Florida Black Bear

Florida black bears are known to occur on the site, as well as within the Refuge. Though the species is not federally-listed, the Florida black bear continues to suffer from a lack of connectivity and meaningful gene flow between populations.[248] The proposed mine threatens to further impair connectivity and, at least for the duration of mining, will likely result in the localized disappearance of the species from the larger tract. How this will affect the long-term genetic viability of the larger population is unaddressed by Twin Pines.

B. Twin Pines fails to demonstrate compliance with the Endangered Species Act.

All aspects of the Corps' permitting, and indeed the mine itself, must comply with the Endangered Species Act (ESA), "a powerful and substantially unequivocal statute."[249] Congress enacted the ESA "to provide a program for the conservation of … endangered species" and "to provide a means whereby the ecosystems upon which [such] … species depend may be conserved."[250]

"Conservation" and "conserve" mean "to use and the use of all methods and procedures which are necessary to bring an endangered species … to the point at which the measures provided pursuant to [the ESA] are no longer necessary"—i.e. to recover such species from imperiled status.[251] Thus, "[t]he plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost."[252] To accomplish this objective, the ESA was designed to be "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[253] "[T]he language, history, and structure of the [ESA] indicates beyond doubt that Congress intended endangered species to be afforded the highest of priorities."[254] This conservation mandate colors the Act from nose to tail.

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[248] Dixon, J.D., Oli, M.K., Wooten, M.C. et al. 2007. Conserv Genet. 8: 455.

[249] *Loggerhead Turtle v. Cty. Council of Volusia Cty., Fla.*, 148 F.3d 1231, 1246 (11th Cir. 1998) (quoting *Strahan v. Linnon,* 967 F.Supp. 581, 618 (D. Mass.1997), *aff'd* 187 F.3d 623 (1st Cir. 1998)).

[250] 16 U.S.C. § 1531(b).

[251] Id. § 1532(3); *see also* 50 C.F.R. § 402.02 (defining "recovery").

[252] *Fla. Key Deer v. Paulison*, 522 F.3d 1133, 1138 (11th Cir. 2008) (quoting *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 184, 194 (1978)).

[253] *Tenn. Valley Auth.*, 437 U.S. at 180.

[254] *Loggerhead Turtle*, 148 F.3d. at 1246 (quoting *Tenn. Valley Auth.*, 437 U.S. at 174).

Moreover, when Congress passed the ESA in 1973 it was acutely aware that stemming the loss of biodiversity required more than protecting individual animals and plants. It also required protecting habitat from destruction or adverse modification. Of the many threats to America's wildlife heritage, Congress recognized that the "most significant has proven also to be the most difficult to control: the destruction of critical habitat."[255] In the 1978 amendments to the ESA, Congress reemphasized that "[t]he loss of habitat for many species is universally cited as the major cause for the extinction of species worldwide."[256]

1. No compelling evidence demonstrates that Section 7 consultation would result in a finding of no jeopardy for listed species.

Section 7 of the Endangered Species Act imposes on the Corps (the action agency) a substantive obligation to promote the conservation of species.[257] As part of this duty, the Corps must consult with either the Service or the National Marine Fisheries Service (the consulting agencies) whenever it acts, authorizes, or funds a project that may impact a listed species or its habitat.[258] In doing so, the action agency and the consulting agency must determine that a project is not likely to (1) jeopardize the continued existence of any threatened or endangered species or (2) result in the destruction or adverse modification of the critical habitat of such species.[259] Throughout the consultation process, both the action agency and the consulting agency must "use the best scientific and commercial data available."[260]

Depending on the anticipated effects that a project will have on species or habitat, the Section 7 consultation process can constitute several steps. As a preliminary matter, the threshold for triggering consultation is low.[261] To comply with its ESA Section 7(a)(2) obligations, the action agency must first determine whether its action "may affect" each listed species or critical habitat for that species present in the action area, which means "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."[262]

If an action "may affect" listed species or critical habitat, the agencies must then engage in informal consultation, possibly followed by formal consultation. To complete informal consultation, the action agency must determine, with the written concurrence of the consulting agency, that the action is not likely to adversely affect listed species or critical habitat.[263] If the action is likely to adversely affect any listed species or designated critical habitat, the action

[255] H.R. Rep. No. 93-412, 93d Cong., 1st Sess. (July 27, 1973); *Tenn. Valley Auth.*, 437 U.S. at 179 ("Congress stated from the finding that '[t]he two major causes of extinction are hunting and destruction of natural habitat.' Of these twin threats, Congress was informed that the greatest was destruction of natural habitats.") (citations omitted).

[256] H.R. Rep. No. 95-1625, at 5 (1978), *reprinted in* 1978 U.S.C.C.A.N. 9453, 9455.

[257] 16 U.S.C. § 1536(a)(1).

[258] *Id*. § 1536(a)(2).

[259] *Id.*; 50 C.F.R. § 402.14(a).

[260] 16 U.S.C. § 1536(a)(2).

[261] *See* 50 C.F.R. §§ 402.13, 402.14.

[262] 50 C.F.R. § 402.14; 50 C.F.R. § 402.02 (defining "action area").

[263] 50 C.F.R. § 402.13(a).

agency and the consulting agency must proceed to formal consultation for those species.[264] To complete formal consultation, if the consulting agency determines that the agency action is not likely to result in jeopardy or destruction or adverse modification of critical habitat (a "no jeopardy" finding), the Service must issue a biological opinion, explaining how the proposed action will affect the listed species or habitat, together with an incidental take statement and any reasonable and prudent measures necessary to avoid jeopardy.[265] If the consulting agency, however, determines that the action is likely to jeopardize the species or result in the destruction or adverse modification of critical habitat, it "shall suggest those reasonable and prudent alternatives which [it] believes" would not result in jeopardy or adverse modification.[266]

Twin Pines has not demonstrated that it will not jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of the critical habitat of these species.[267] At best, there are too many gaps in the science and data presented in the application to know with certainty whether a "no jeopardy" finding is warranted for certain species. At worst, it appears likely that for some species, the mine would indeed result in jeopardy. The Corps, therefore, must engage the Service and the National Marine Fisheries Service (NMFS) for all listed species that may be affected by the proposed project within its action area.

This analysis must span "all areas to be affected directly or indirectly" by the project and not merely the immediate area involved in the action."[268] The impacts will likely carry far downstream of the 12,000-acre site and also within the Refuge. Therefore, the Corps and the appropriate consulting agency must consult on the below listed species that either may, will likely, or almost certainly be impacted.

[264] *Id*. § 402.14.

[265] 16 U.S.C. § 1536(b); 50 C.F.R. §§ 402.14(g)–(i).

[266] 16 U.S.C. § 1536(b)(3)(A).

[267] Under the CWA Section 404(b)(1) guidelines, the Corps may not permit a dredge and fill activity that "jeopardizes the continued existence" of an endangered species – the standard for prohibiting federal activities under section 7 of the ESA, 16 U.S.C. § 1536(a)(2); 40 C.F.R. § 230.10(b)(3). Because the Permit Application has failed to establish that the Project will not cause jeopardy to the above listed species, potentially among others, any approval of the Project by the Corps will also violate Section 404(b)(1).

[268] 50 C.F.R. § 402.02(d).

a. Shortnose and Atlantic Sturgeon

First, the Corps must engage NMFS in a Section 7 consultation on the endangered shortnose sturgeon and the Atlantic sturgeon, whose South Atlantic DPS is endangered. Both species are present in the St. Marys River, the headwaters of which are formed by the Okefenokee Swamp. This mining project will inevitably result in increased sediment loads to the river. This poses a threat to the shortnose and Atlantic sturgeon, which are vulnerable to such increases and use the St. Marys River for spawning habitat. There is a reasonable possibility that the project *would* result in jeopardy to the shortnose and Atlantic sturgeon because, as discussed earlier, so few relevant members of the species remain that the loss of only a few members can have an appreciable effect on the overall population. The surviving sturgeon are also acutely vulnerable to point source pollution, fluctuations in temperature, and changes in dissolved oxygen levels—all of which may travel from the proposed mine to their habitat. To this point, insufficient information exists to determine if and to what extent the shortnose and Atlantic sturgeon would be impacted by any such changes in their environment due to the proposed project. The agencies must make this determination when fulfilling their consultation obligations.

b. Gulf Sturgeon

The Corps must also engage NMFS in a Section 7 consultation on the threatened Gulf sturgeon, which may be affected because it utilizes the Suwannee River for spawning and nursery purposes. This river's headwaters are formed by the Okefenokee Swamp. Insufficient data currently exists to make a no jeopardy determination for the species because the application fails to include meaningful information about hydrologic impacts that could be used to analyze the potential impacts of water withdrawals on the species and how an altered hydrological regime would affect spawning Gulf sturgeon.

c. Hairy Rattleweed

The Corps and the Service must consult on the endangered hairy rattleweed, which occurs in the Refuge, because it may be affected by a change in hydrology and increased wildfires. The application currently lacks sufficient evidence to demonstrate that the project not jeopardize the hairy rattleweed.

d. Red-Cockaded Woodpecker

The application fails to demonstrate that there would be no jeopardy to the red-cockaded woodpecker, given that it would only worsen habitat fragmentation, may eliminate foraging habitat, and would cause disturbances such as light, noise, and smoke pollution.

e. Florida Panther

Twin Pines fails to incorporate sufficient information to ensure its mine would not result in jeopardy to the endangered Florida panther, a species that, even in light of successful recovery efforts, suffers low population numbers due to habitat loss and fragmentation. In one analysis,

Okefenokee National Wildlife Refuge and nine other areas were studied as potential locations to recolonize the species. The Refuge was one of three areas identified by researchers as an area that has the highest combination of effective habitat area and expert opinion scores. The proposed project may have a significant enough impact to preclude any potential future efforts to reestablish the species in the area, which may cause jeopardy to the species.

f. Wood Stork

A litany of negative impacts could cause jeopardy for the wood stork. The Corps and Service must therefore consult on this species. Changes in the hydrological regime and mine-related runoff could have a major impact upon the ability of wood storks to locate prey. Changes in the hydrological regime could also prove fatal to breeding storks. Moreover, impacts such as indefinite lighting, noise disturbances, and human encroachment near the refuge boundary are likely to affect the foraging and nesting habits of the species. Thus, it is impossible to make a no jeopardy determination regarding impacts on the wood stork unless further studies are conducted.

g. Eastern Indigo Snake

There is a reasonable likelihood that a Section 7 consultation between the Corps and the Service on the threatened eastern indigo snake would establish a finding of jeopardy. First, this species requires thousands of connected acres for home range territories and it has grown increasingly vulnerable due to habitat fragmentation. This heavy mineral sands mining would continue to compound this problem by creating habitat loss and disrupting natural corridors used by the species. Furthermore, as the Service has noted, mining debris and equipment, along with the discharge of hazardous materials, adversely impact this species. Despite these concerns, the applicant has not proposed any meaningful avoidance and minimization measures for impacts to this species.

2. The mine risks a take of individual listed species in violation of Section 9 of the ESA.

Unless an Incidental Take Permit has been issued, Section 9 of the ESA prohibits the take of individual members of any endangered species of fish or wildlife,[269] and the Service has historically extended these same protections to threatened species, as well. "The term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[270] Congress, in fact, intended the term "take" to be "defined in the broadest possible manner to include every conceivable way in which a person can 'take' or attempt to 'take' any fish or wildlife."[271] Moreover, "Congress intended 'take'… to cover indirect as well as purposeful actions."[272]

[269] 16 U.S.C. § 1538(a)(1)(B),

[270] 16 U.S.C. § 1532(19).

[271] S. Rep. No. 93-307, at 7 (1973) *reprinted in* 1973 U.S.S.C.A.N. 2995.

[272] *Loggerhead Turtle,* 148 F.3d at 1237 (quoting *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.,* 515 U.S. 687, 704 (1995)).

The take prohibition applies to a broad group, including any private entities such as corporations, along with the federal government—even via vicarious liability by authorizing activities that result in a take.[273] Furthermore, in *Center for Biological Diversity v. Marina Point Development Associates*, the court stated that to "[t]o obtain injunctive relief [in the case of an alleged take], a plaintiff need only show that the defendants' activities are likely to cause a take in the future. This standard recognizes that the balance of hardships and the public interest tip sharply in favor of endangered species."[274]

One particularly relevant form of take with respect to Twin Pines is "harassment." "Harass… means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering."[275] Even the Service has acknowledged that harassment by noise, light, and human activity could amount to a take of species of birds.[276]

Mining activities are accompanied by a significant amount of human disturbances that create noise, light, and dust, among other things, that can amount to a take of individual species in the form of harassment. First, actual mining activities themselves are accompanied by such disturbances. The Site Layout Map in the application shows other sources of disturbances, as well, including rail loading, truck loading, railway use, and roadway use.[277] Disturbances will also stem from a significant amount of construction, including construction of a magnetic separation plant, offices, labs, a large safety berm, sediment basins, fuel storage, a fuel tank, a pre-concentration plant, a parking area, and recycle water ponds.[278] Moreover, the mine will result in a significant amount of habitat loss, which can amount to a "take" for individual species. The extent of how much habitat will be destroyed remains undetermined, however, because the incomplete application fails to provide information on the impacts on hydrology. A change in the hydrological regime could alter a devastating amount of habitat; impact breeding, feeding, sheltering; and destroy habitat connectivity.

Another form of take that is relevant is "harm," which is defined by regulation to mean "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."[279]

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[273] 16 U.S.C. § 1532(13); *see Loggerhead Turtle* 148 F.3d 1231 (determining that a county can be vicariously liable for take of ESA-listed turtles).

[274] 434 F. Supp. 2d 789, 795 (C.D. Cal. 2006) (citations omitted).

[275] 50 C.F.R. § 17.3(c).

[276] *See Sweet Home,* 515 U.S. 687, 704–05 (1995); *Ctr. For Biological Diversity v. Marina Point Dev. Co.*, 434 F. Supp. 2d 789, 795–96 (C.D. Cal. 2006), *rev'd due to delisting of species* 566 F.3d 794.

[277] Permit Application, App. F, Fig. 5

[278] *Id.*

[279] 50 C.F.R. § 17.3(c).

The application has failed to demonstrate that the proposed project will not result in a take of certain species and in fact runs a reasonable risk of taking others. First, depending on the mine's hydrological impacts, it may result in a take in the form of harm of endangered Atlantic and shortnose sturgeons due to their vulnerability to point source pollution, fluctuations in temperature, changes in dissolved oxygen levels, and increased sediment loads. Second, the Project may result in a take of the threatened Gulf sturgeon in the Florida portion of the Suwannee River, where take of the species is banned.[280] Depending on the yet-to-be-determined extent of the hydrological impacts, take of Gulf sturgeon could occur in the form of harm, given their sensitivity to changes in water quality, dissolved oxygen levels, and temperature fluctuation. Moreover, if the hydrological impacts of the project reduce the spring flow that Gulf sturgeon rely upon in the summer months, take in the form of harassment could result because lost habitat may significantly disrupt normal behavioral patterns. The project could also take red-cockaded woodpeckers by harassment if any members of this species use the area for activities such as breeding, feeding, or sheltering that is close enough to Twin Pines for these behavioral patterns to be disrupted by mining activities such as lighting, noise, smoke, and habitat destruction. The project may also result in a take of the threatened wood stork, a species to which take prohibitions extend.[281] Depending on its hydrological impacts, the project could result in a take of wood storks by harassment due to both loss of prey and to habitat loss that would interfere with their use of the Okefenokee for foraging, breeding, and nesting purposes. Moreover, the project may result in a take of wood storks due to harassment from lighting, noise, and human encroachment near the refuge boundary. Finally, the project may result in take of eastern indigo snake by both harm and harassment. This is because mining operations are likely to result in both direct mortality and the fragmentation of existing populations due to habitat alterations.

VII. Before granting a Section 404 permit, the Corps should ensure that the proposed mine would not adversely impact Okefenokee Wilderness.

As part of the public interest test, the Corps must also consider whether the proposed mine would have any adverse impacts on Okefenokee Wilderness. The 12,000-acre Twin Pines tract directly abuts the wilderness. As explained elsewhere in these comments, since Twin Pines has made it clear that its mining project will progress in phases and there is no indication that Twin Pines will set aside a buffer between the proposed mine and the Wilderness area, it is fair to conclude that mined area will extend up to the wilderness area boundary. Unless Twin Pines engages in extraordinary measures, the proposed phased mining project will have adverse noise, light, and recreational impacts on the wilderness area.

Congress passed the Wilderness Act in 1964 to ensure that there were lands in the United States that offered solitude so that people would have the opportunity to experience natural sights and sounds. The Act aims to preserve and protect such lands in their natural

[280] Endangered and Threatened Wildlife and Plants; Threatened Status for the Gulf Sturgeon; Final Rule, 56 Fed. Reg. 49387 (Sept. 30, 1991) (extending take prohibitions).

[281] *See* Endangered and Threatened Wildlife and Plants; Reclassification of the U.S. Breeding Population of the Wood Stork From Endangered to Threatened; Final Rule 37080 (June 30, 2014) (extending take prohibitions).

condition.[282] Congress defined "Wilderness" as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain" and "an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions."[283] The area also must provide "outstanding opportunities for solitude or a primitive and unconfined type of recreation."[284]

Under the Wilderness Act, Congress determined that the Department of Interior (DOI) and Department of Agriculture should be in charge of administering any wilderness area set aside. Other Federal agencies are charged with the responsibility of "preserving the wilderness character" of these special places.[285]

In the Act, wilderness areas "shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use."[286] They were not to be exploited for commercial gain.[287] And, except in emergency situations, the DOI was to exclude all motorized vehicles.[288] Wilderness areas are intended to be a place where individuals can experience natural soundscapes and darkened night skies unmarred by human-caused noise and light, an area that can provide the visitor a sense of remoteness and solitude.

The Wilderness Act requires that wilderness areas and their "community of life are [left] untrammeled by man" and that their "primeval character and influence . . . are preserve[d] in [their] natural condition."[289] Congress concluded that it is only in this manner that the solitude and primitive nature of these special places can remain unspoiled. Of all federal lands in this country, wilderness areas are the only ones that are designed so that individuals can escape all the trappings of modern life. The proposed Twin Pines mine would thwart what Congress was trying to achieve when it designated the Okefenokee Wilderness.

Recognizing the iconic nature of the Okefenokee Swamp, Congress set aside 353,981 of the 438,000-acre swamp as a National Wildlife Refuge in 1937.[290] As one commentator explained, "the National Wildlife Refuge System is the nation's most valuable asset for ecological conservation."[291] One of the central goals of the Refuge system is to "Conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and

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[282] 16 U.S.C.§§ 1131-36.

[283] *Id.* § 1131.

[284] *Id.*

[285] *Id.* § 1131(b).

[286] *Id.*

[287] *Id.* § 1131(c).

[288] *Id.*

[289] 16 U.S.C. § 1131.

[290] USFWS Letter. Bruce Babbitt, then Secretary of the Interior, played a key role in shepherding an organic act for the century-old refuge program through Congress. *See* USFWS, News Release, "Interior Secretary Babbitt endorses unprecedented legislation defining mission and priority public uses of the National Wildlife Refuge System," 1997 WL 222781 (May 2, 1997).

seascapes that are unique, rare, declining, or underrepresented in existing protection efforts.[292] Thirty-seven years later, in 1974, Congress increased the protections to the swamp when it designated 343,850 acres of the refuge a wilderness area.[293] Those protections are embodied in the Comprehensive Conservation Plan for the wilderness area which states those protections are designed to, "Restore, preserve, and protect the primeval character and natural processes of the Okefenokee Wilderness, leaving it untrammeled by man while providing recreational solitude, education, scientific study, conservation ethics, and scenic vistas."[294]

For the myriad reasons discussed above, federal agencies have a duty to protect wilderness areas. This includes the Corps. Before the Corps grants a Clean Water Act permit, it must consider any adverse impacts that an activity might have on a wilderness area. Similarly, the federal agency administering the wilderness area, the Fish and Wildlife Service in this case, must consider these impacts during the Corps permit process.

Courts have been diligent in ensuring that federal agencies hold to their obligation to protect wilderness areas from outside impacts and pollutants. For example, the federal district court for the district of Minnesota found that a proposed snowmobile trail was incompatible with the use of the adjacent Boundary Waters Canoe Area, noting that the federal agency administering the wilderness area is responsible for preserving the wilderness character of the area.[295] The court explained that the text of Wilderness Act indicates that the agency's duty to preserve the wilderness is wholly independent of the source or location of that activity.[296] In other words, it does not matter whether the noise would be coming from inside or outside the wilderness, the administering agency has a duty to prevent it. Thus, in the case of the proposed Twin Pines mine, the Service, as well as the Corps, under its public interest test, have a duty to consider the impacts of the proposed mine on the Wilderness Area.

Under the proposed action, visitors to Okefenokee Wilderness Area, would be subject to the light, noise, and other forms of pollution that the proposed mine would emit, especially when Twin Pines begins mining the portions of its site abutting the Wilderness Area.[297] As explained above, the Wilderness Area attracts hundreds of thousands of visitors a year. In 2016, over 5,500 visitors camped overnight at the upland campsites and sleeping platforms in the Wilderness Area.[298]

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[291] Robert L. Fischman, Fischman, Robert L., "From Words to Action: The Impact and Legal Status of the 2006 National Wildlife Refuge System Management Policies," 77, 78 (2007). Articles by Maurer Faculty. Paper 170. http://www.repository.law.indiana.edu/facpub/170.

[292] 16 U.S.C. § 668ee.

[293] Okefenokee Wilderness, Public Law 93-429 (Oct. 1, 1974).

[294] Okefenokee Wilderness Area, Comprehensive Conservation Plan (2006).

[295] *Izaak Walton League of Am., Inc. v. Kimbell*, 516 F. Supp. 2d 982, 988 (D. Minn. 2007).

[296] *Id.*

[297] Until Twin Pines sells the mineral rights of those portions of its land abutting the wilderness area, it is fair to assume that it will mine up to the border of the wilderness area. Similarly. it is fair to assume that Twin Pines will operate the proposed mine 24 hours a day.

[298] E-mail from U.S. Fish & Wildlife Serv. staff member (Sept. 6, 2019).

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.[299] 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."[300] 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."[301] 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.[302] 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.[304] 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."[305] He went on to explain that "a shocking array of non-urban species, including bats, insects, plants, fish, turtles, marine invertebrates

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[299] Permit Application at 6.

[300] Permit Application at 5.

[301] Permit Application at 5 (It is not clear whether the mineral processing plant will be located at the mine, or elsewhere.)

[302] E-mail from U.S. Fish & Wildlife Serv. staff member (Sept. 6, 2019).

[303] 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?

[304] 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/.

including corals, and even primates."[306] This is particularly relevant to the Okefenokee Swamp because it is "world renowned for its amphibian populations that are bio-indicators of global health."[307]

It will be all but impossible to prevent light from the proposed mine from entering the Wilderness. In addition to the lights on the crane-like dragline and other the excavation equipment, the processing plants described above will also be lighted. At other comparable mines, such mills reach above the tree line and would shine directly into the wilderness area. From the observation tower at Seagrove Lake, visitors have commented on seeing the lights from the D. Ray James Prison, which is located 16 miles from the tower.[308] Based on this observation, the lights from the proposed mine would reach far into the wilderness area. Twin Pines must address such light pollution.[309]

VIII. Before granting a Section 404 permit, the Corps should ensure that the proposed mine would not adversely impact the Okefenokee National Wildlife Refuge.

As previously discussed, the Corps must consider whether the Twin Pines mining proposal would have any adverse impacts on Okefenokee National Wildlife Refuge as part of its analysis under the National Environmental Policy Act, the Clean Water Act Section 404(b)(1) Guidelines and Public Interest Review. In addition to other refuge-related concerns, the Corps has a duty to examine the ramifications of permitting a project that would likely undermine the ability of the Service to fulfill its congressional mandates under the National Wildlife Refuge System Administration Act as amended by the National Wildlife Refuge System Improvement Act (Refuge Administration Act).[310] Notably, the Corps must give full consideration to the views of the Service on fish and wildlife matters in deciding on the issuance, denial, or conditioning of the Twin Pines Clean Water Act permit.[311]

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[305] Our Nights are Getting Brighter, and Earth is Paying the Price, Science and Innovation, https://www.nationalgeographic.com/science/2019/04/nights-are-getting-brighter-earth-paying-the-price-light-pollution-dark-skies/.

[306] *Id.*

[307] U.S. Fish & Wildlife Serv., Okefenokee National Wildlife Refuge, About the Refuge, https://www.fws.gov/refuge/Okefenokee/about.html.

[308] E-mail from U.S. Fish & Wildlife Serv. staff member (Sept. 6, 2019).

[309] In response to these concerns about light pollution, is Twin Pines willing to conduct a light study to measure how much light will be emitted from the proposed mine and describe what concrete measures, if any, it intends to undertake to ensure that light pollution will not reach the wilderness area? 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 light from directly shining into the wilderness area?

[310] 16 U.S.C. §§ 668dd-668ee.

[311] 33 C.F.R. § 320.4(c).

The National Wildlife Refuge System is the only network of federal lands and waters dedicated to wildlife conservation. Comprising 567 refuges with at least one in every U.S. state and territory, the Refuge System is essential to protecting our nation's astounding diversity of wildlife, and also provides endless recreational and educational opportunities; supports more than 41,000 jobs nationwide; and generates 3.2 billion dollars in local, sustainable economic revenue.[312] Okefenokee National Wildlife Refuge is an exceptional unit of the System.

The Service manages Okefenokee Refuge in accordance with the Refuge Administration Act, which provides that it is the policy of the United States that "each refuge shall be managed to fulfill the mission of the system as well as the specific purposes for which that refuge was established."[313] The mission of the National Wildlife Refuge System is:

> to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. [314]

Refuge purposes are derived from the laws, executive orders, permits or other legal documents that authorize land acquisition for a refuge. The original purpose of Okefenokee Refuge is to serve as "a refuge and breeding ground for migratory birds and other wildlife."[315] As it expanded Okefenokee, Congress also added conservation of threatened and endangered species as a refuge purpose. Both the Corps and the Service must consider how authorizing proposed strip mining adjacent to Okefenokee Refuge detracts from the wildlife conservation mission of the Refuge System and conflicts with the purposes of the refuge.

In addition, the agencies must examine how the mining project could affect the Service's ability to carry out substantive refuge management requirements in accordance with the Refuge Administration Act. The law requires all refuge uses to be compatible with the primary purpose of the individual refuge and the wildlife conservation mission of the Refuge System.[316] There is no doubt that industrial mining is an inappropriate, incompatible use of the Okefenokee, so if the project encroaches upon the Refuge in any way, the Service must invoke its authority to deny such use prior to resource damage occurring.[317]

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[312] U.S. Fish & Wildlife Serv., Banking on Nature 2017 at i (June 2019).

[313] 16 U.S.C. § 668dd(a)(3)(A).

[314] 16 U.S.C. § 668dd(a)(2).

[315] Executive Order 7593 (March 30, 1937)

[316] 16 U.S.C. § 668dd(d)(3)

[317] It is worth noting that courts have upheld the Service's denial of a Section 668dd(d) permit for access to a refuge based on considerations involving the impacts *occurring outside* refuge boundaries, in areas not owned by the federal government. *See McGrail & Rowley, Inc. v. Babbitt,* 986 F. Supp. 1386, 1394-95 (S.D. Fla. 1997) *aff'd sub nom. McGrail & Rowley, Inc. v. U.S. Dep't. of Interior,* 226 F. 3d 646 (11th Cir. 2000) ("This [district] court finds that the FWS was acting within its authority pursuant to the Property Clause in regulating MRI's operations through state-owned water to federally owned Boca Grande Key. The agency has the power to regulate conduct 'on or off the public land that would threaten the designated purpose of federal

The Refuge Administration Act also sets forth one of the strongest legislative mandates for ecosystem protection on public lands and waters, directing the Service to "ensure that the biological integrity, diversity, and environmental health [BIDEH] of the System are maintained for the benefit of present and future generations of Americans…."[318] The BIDEH policy provides refuge managers with a process to prevent further degradation of environmental conditions on refuges and, where appropriate, restore lost or severely degraded components.[319] Notably, fragmentation of refuge habitat is considered a direct threat to the integrity of the Refuge System.[320] Upholding BIDEH could prove difficult, if not impossible, if the mine alters the hydrology of the Okefenokee Swamp. The Act further directs the Service to "assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the System and the purposes of each refuge" and to "acquire, under State law, water rights that are needed for refuge purposes."[321] These clear duties provide important protections for imperiled species and other plants and animals, aquatic ecosystems and other biological resources dependent on the Refuge and should be relevant to decision on whether to permit the Twin Pines mining project.

The Service has already raised significant concerns that the proposed mine poses substantial threats to the Refuge, could permanently disrupt the hydrology of the swamp and take imperiled species.[322] Moreover, as discussed elsewhere in these comments, Twin Pines' assertion that 3.73 miles provides a "substantial buffer of protection for this sensitive resource" from mining impacts is wholly unsubstantiated, notwithstanding future phases of the project.[323] Okefenokee Refuge safeguards a rich diversity of flora and fauna, from rare insect-eating pitcher plants, delicate swamp iris, water lilies, cypress and live oaks, to great blue herons, sandhill cranes, white ibises, bald eagles, water moccasins, alligators, river otters, bobcats, bats and Florida black bears. The Refuge is among the last sanctuaries of even more precious species, among them the imperiled gopher tortoise and gopher frog, the threatened indigo snake and frosted flatwoods salamander, and the endangered red-cockaded woodpecker and wood stork. The Refuge is simply too important to risk damaging. Given that the proposed mine could significantly degrade the Refuge and thwart the Service's ability to uphold its wildlife conservation mandates, the Corps should deny Twin Pines' the requested Clean Water Act permit or at minimum require an EIS.

IX. Before granting a Section 404 permit, the Corps must ensure that the proposed mine would not cause changes to surface or groundwater quantities that would impact the Okefenokee National Wildlife Refuge or the Okefenokee Wilderness Area.

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lands.'") (quoting the *State of Minnesota by Alexander v. Block,* 660 F.2d 1240, 1249 (8th Cir. 1981)).

[318] 16 U.S.C. § 668dd(a)(4)(B)

[319] 601 FW 3, U.S. Fish and Wildlife Service Biological Integrity, Diversity and Environmental Health Policy.

[320] 603 FW 2, U.S. Fish and Wildlife Service Compatibility Policy.

[321] 16 U.S.C. § 668dd(a)(4)(F)-(G).

[322] *See* USFWS Letter.

[323] Permit Application at 5.

Under the federal reserved water rights doctrine, when the United States sets aside federally protected land, including national wildlife refuges and wilderness areas, it impliedly reserves sufficient water to fulfill the purposes of the land.[324] The respective agencies have a legal obligation to manage those lands in a manner that fulfills their purpose.

The Okefenokee National Wildlife Refuge was established in 1937 as "a refuge and breeding ground for migratory birds and other wildlife."[325] Thus, the U.S. Fish and Wildlife Service has an obligation to manage the refuge in a manner that reserves any aquatic resources necessary for the protection of migratory birds and other wildlife.

The Service has already expressed concerns about the impacts of titanium mining on the aquatic resources of Okefenokee National Wildlife Refuge. In the Refuge's Comprehensive Conservation Plan, for example, the Service identified "strip mining for titanium … directly adjacent to the southeastern boundary of the swamp" as a leading threat to the Refuge. Specifically, the Service expressed concerns about "alternations to the water table elevation in the swamp as a result of changes to surface and ground water quantities and flows of the Trail Ridge."[326]

Before granting any federal permit, the Corps must ensure that the proposed mine would not cause changes to surface or groundwater quantities that would impact the National Wildlife Refuge or the Wilderness Area.

X. Twin Pines' cultural resource surveys are inadequate under the National Historic Preservation Act.

The "fundamental purpose of the NHPA is to ensure the preservation of historical resources."[327] Under Section 106 of the Act, federal agencies must "take into account the effects of their undertakings on historic properties and afford the [Advisory Council on Historic Preservation] a reasonable opportunity to comment on such undertakings."[328] Similar to NEPA, Section 106 is a "stop, look, and listen provision" requiring agencies to actually consider effects to historic and cultural resources before proceeding beyond project planning into implementation.[329]

Although Twin Pines had three Phase 1 cultural resources surveys performed for portions of three parcels of land within the 12,000-acre Twin Pines tract, these surveys are inadequate.

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[324] *Arizona v. California*, 460 U.S. 605, 610 (1983); *Cappaert v. United States*, 426 U.S. 128, 138 (1976); *Winters v. United States*, 207 U.S. 564 (1908)); *High Country Citizens' All. v. Norton*, 448 F. Supp. 2d 1235, 1239 (D. Colo. 2006).

[325] Executive Order 7593 (March 30, 1937).

[326] U.S. Fish & Wildlife Serv., Okefenokee National Wildlife Refuge Comprehensive Conservation Plan (2005), https://www.fws.gov/southeast/planning/PDFdocuments/OkefenokeeFinalCCP/Okefenokee%20Final%20CCP%20edited%20.pdf (attached as Ex. L)

[327] *Te-Moak Tribe v. U.S. Dep't of Interior*, 608 F.3d 592, 609 (9th Cir. 2010).

[328] 36 C.F.R. § 800.1(a); *see also* 54 U.S.C. § 306105.

[329] *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 805 (9th Cir. 1999).

The surveys do not encompass a sufficient geographic area. One survey was missing 24 pages, which included the conclusion of that survey. And the surveys themselves were improperly performed and not properly vetted.

After reviewing the three surveys, Terracon Consultants, Inc. identified seventeen substantial deficiencies. In the following, Terracon highlights the five potentially fatal deficiencies of the surveys:

> First, no [area of potential effects] was defined for the project. Second, the architectural survey and descriptions in the [Twin Pines] report were inadequate and it is unclear if this work was performed by someone meeting [required] standards. Third, there are conflicting assessments of the [certain effects]. Fourth, two of the three project areas had no architectural surveys conducted . . . and at least one possible historic resource, the Atlantic, Valdosta, and Western Railway, was missed. Fifth, and perhaps most significantly, is that there is no discussion of potential archeological deposits that may have been found deeper than 80 cm below the ground surface. Testing of deposits deeper than 80 cm should have been conducted.[330]

Terracon's full report is attached as Exhibit P. Before proceeding, Twin Pines and the Corps should address all seventeen of the comments provided by Terracon. Below we focus on three of the most egregious deficiencies.

[330] Letter report from William Green and Brent Handley to William W. Sapp, regarding Review of Three Cultural Resource Reports Pertaining to the Proposed Heavy Minerals/Twin Pines Mine Saint George, Charlton County, Georgia (August 28, 2019). A copy of this report is attached as Exhibit P.

A. Twin Pines violated the NHPA by not exploring a large enough geographic area.

Twin Pines' consultant went astray when it first started its work on this project. It did not establish an Area of Potential Effects (APE). In other words, it did not determine the proper scope of its surveys.[331] Unless this is done properly, the Corps, as the lead federal agency for the project, cannot rely on the results of the surveys. The APE is defined as:

> [T]he geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The [APE] is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.[332]

Under the NHPA, the Corps must identify any cultural and historic resources within the APE and determine whether the project would result in adverse effects to those resources. ACHP regulations implementing Section 106 of the Act define "adverse effect" broadly as:

> [A]n undertaking [that] may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.[333]

The Corps' historical and cultural resource analysis in this case thus substantially relies upon setting an appropriate APE. It is important to establish a proper APA because the work within the APE can be extensive. This analysis typically includes "background research, consultation, oral history interviews, sample field investigation, and field survey."[334] If an agency fails to define the APE properly, historic and cultural resources subject to direct or indirect effects from the project could be overlooked. Here, the Twin Pines failed to define an APE at all, leaving the public unable to meaningfully comment on the scope of the cultural analysis and the Corps unable to rely on the results of the surveys.

Even if the consultants had established an APE that encompasses the area that the consultants surveyed, the consultants would still have erred. For instance, in the introduction of each report, the consultants state that the surveys cover the Adirondack, Keystone, and TIAA parcels, when in fact they cover a fraction of those parcels.[335] To add additional confusion, the

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[331] 36 C.F.R. § 800.4(a).

[332] 36 C.F.R. § 800.16(d).

[333] 36 C.F.R. § 800.5(a)(1).

[334] 36 C.F.R. § 800.4.

[335] Matt Lyons, TerraXplorations, Inc., A Phase I Cultural Resources Survey of the Twin Pines Minerals Adirondack property in Charlton County, Georgia at 1 (May 2019) ("Adirondack Cultural Review"); Matt Lyons, TerraXplorations, Inc., A Phase I Cultural Resources Survey of the Twin Pines Minerals Keystone property in Charlton County, Georgia at 1 (October 2018) ("Keystone Cultural Review"); Matt Lyons, TerraXplorations, Inc., A Phase I Cultural

consultants state in the introduction of the Adirondack property survey that it covers the Keystone property.[336]

But even more important, since the project area is only the first phase of a multi-phased mining project that will cover the entire 12,000-acre Twin Pines tract, the cultural resources surveys should encompass the entire 12,000-acre tract, as well as any areas outside of the tract that containing historic properties that could be adversely affected by any mining on the 12,000-acre tract. Until the Corps conducts cultural resources surveys on this larger legally acceptable APE, it has not met the requirements of the NHPA. And until the Corps makes these new surveys available to the public for comment, it has not met is duty to provide an opportunity to be involved in the permit process.

B. Twin Pines did not dig its test pits to the proper depth

Even in the areas where the consultants did search for historic and cultural resources, they did not take the hard look that is required. As Terracon states in its report, when the consultant was using test pits for its archeologic investigation, it did not dig the test pits deep enough. Since this is such a critical element of archeological work, Terracon obtained a second opinion on this issue from Geoarcheology Research Associates, which specializes in answering questions of this nature. Geoarcheology concluded that Terracon is correct that the consultants did not dig its test pits sufficiently deep. Geoarcheology explained that there could be historic or prehistoric resources between the 60 cm depth that the consultant dug its test pits and the 80 cm depth that they should have reached.[337] In short, the consultants dug their 6,224 test pits 25 percent too shallow.

C. There is no indication that Twin Pines has shared it surveys with the State Historic Preservation Officer.

Had Twin Pines shared the surveys with the State Historic Preservation Officer (SHPO), the deficiencies in the surveys would, in all likelihood, have been identified. However, there is no indication in the Twin Pines application that the consultant has provided the surveys to the SHPO. Similarly, there is no indication in the application that the consultant shared the surveys with any federally recognized Indian Tribes. Both forms of vetting are required by Section 106 of the NHPA.

Twin Pines must share the surveys with the public as well. The public is entitled to review a complete copy of the application. In this case, however, that is impossible. The

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Resources Survey of the Twin Pines Minerals TIAA property in Charlton County, Georgia at 1 (June 2019) ("TIAA Cultural Review").

[336] Adirondack Cultural Review at 1.

[337] Joseph Schuldenrein, Geoarcheology Research Associates, Geoarchaeological Review of A Phase I Cultural Resources Survey of the Twin Pines Minerals Adirondack Property in Charlton County, Georgia by Matt Lyons, Terra XPlorations, Inc., May 31, 2019 (August 26, 2019) (appended to Ex. P).

application that both the Corps and Twin Pines have made available lacks 24 pages of text.[338] These pages include the conclusion of the report. These pages should be made available to the public for a comment period of 30 days.

XI. Request for Public Hearing

Due to the proximity of the proposed mine to the Okefenokee National Wildlife Refuge and Wilderness, the scale of the direct, secondary, and cumulative impacts, and the range of other known and unknown risks, we request that the Corps host a public hearing as part of its permit review process.[339]

XII. Conclusion

The bottom line is this: Twin Pines has failed to provide critical information to the public, and the information it has provided raises serious concerns that the proposed mine would substantially degrade the Okefenokee Swamp and surrounding ecosystems. Unless Twin Pines can prove that the proposed mine would not have an unacceptable impact—which it has not done—the Corps may not grant a Section 404 permit. Therefore, the Corps should deny the permit application or, at a minimum, prepare an EIS to ensure that the very real risks to one of the world's most exceptional ecosystems are not overlooked. The exhibits referenced in these comments are available here.

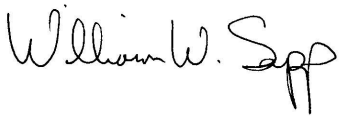
If you have any questions, please feel free to contact us at 404-521-9900 or bsapp@selcga.org. Thank you for considering this request.

[Signatures on following page]

[338] Keystone Cultural Review at 41-64.

[339] The Corps anticipated the potential need for a public hearing in its initial issue paper and committed to "host Public Meetings and/or Public Hearings as part of our review of an application" if necessary. USACE Issue Paper at 1.

Sincerely,



William W. Sapp
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