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Sent via email

February 12, 2018

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Re: Comments on Supplemnetal Environmental Assessment, Draft Clean Water Act Section 404(b)(1) Guidelines Analysis, and Draft Public Interest Review for Department of the Army (DA) Permit Application SAJ-2011-01869; Mosaic-Ona Phosphate Mine

Dear Mr. Fellows:

On behalf of the staff and members of the Center for Biological Diversity, we respectfully submit the following comments to the U.S. Army Corps of Engineers (Corps) regarding the January 12, 2018 Public Notice for SAJ-2011-01869 (IP-JPF) also known as Ona Mine, in Hardee County, Florida (Project). We submit these comments on behalf of our members, including our thousands of members and supporters who recreate and live in Hardee, and nearby counties. We have reviewed the Public Notices, Areawide Environmental Impact Statement (AEIS), Supplemental Environmental Assessment, Draft Clean Water Act Section 404(b)(1) Guidelines Analysis, and Draft Public Interest Review and conclude the Project is not in the public interest, will have significant environmental impacts on wetlands, and will likely harm endangered species and their habitats. For these reasons, we respectfully request the Corps deny the permit application. Also, given the substantial interest in holding a hearing and public opposition to Ona Mine,[1] we request a public meeting to help ensure informed and transparent environmental decisionmaking.[2]

I. Ona Mine Application Background

On May 3, 2013, the Corps published a notice of availability for the Final Areawide Environmental Impact Statement on Phosphate Mining in the Central Florida Phosphate District (FAEIS).[3] On July 13, 2013, the Corps released an Addendum to the FAEIS that corrected its

[1] AEIS at Chp. 1, 43-46.
[2] 33 U.S.C. §§ 1251, 1344(a); 42 U.S.C. § 4332(2)(C); 33 C.F.R. § 327.4(b); 33 C.F.R. Part 325, App. B § 11; 40 C.F.R. § 1506.6 (c)(1).
[3] The draft AEIS purported to analyze SAJ-2011-01968 – Desoto Mine; SAJ-2011-01869 – Ona Mine; SAJ-2009-03221- Wingate East Mine; SAJ-1993-01395 – South Pasture Extension Mine. The Corps received over four

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surface water hydrology analysis, included public comments received during the comment period for the Draft AEIS but not responded to in the FAEIS, and included a Spanish language translation of the Executive Summary.

On January 12, 2018, the Corps released a Supplemental Environmental Assessment, draft public interest review, and draft Clean Water Act 404(b)(1) Guidelines analysis for Ona Mine (collectively Supplemental Environmental Assessment or EA).[4]

Ona Mine would impact22,483 acres of wetlands of the Myakka River Watershed and Peace River Watershed by mining phosphate ore from 16,842 acres over 30 years.

II. The Corps Must Deny the Clean Water Act Permit Application for the Ona Mine

In enacting the Clean Water Act in 1972, Congress sought "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[5] The statute provides that "the discharge of any pollutant by any person shall be unlawful" absent a permit.[6] A section 404 permit must satisfy regulations promulgated by the Corps and the Environmental Protection Agency (EPA).[7] Notably, a permit will not be granted if contrary to public interest.[8] The regulations under section 404(b)(1) of the Clean Water Act further provide that adverse impacts to wetlands must be avoided to the extent that practicable alternatives are available which will result in less adverse impacts.[9] A "practicable" alternative is one that is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."[10] The 404(b)(1) Guidelines establish a presumption that all practicable alternatives that do not involve a discharge into wetlands have less adverse impact on the environment "unless clearly demonstrated otherwise."[11]

To determine whether a practicable alternative exists, the Corps must undertake a multi-step analysis.[12] The Corps must first determine whether the project is water dependent. A water-dependent project is one that "requires access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose."[13] If the Corps determines that the project is not water-dependent, it then must presume that practicable alternatives not involving wetlands

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thousand public comments during the 60-day comment period.

[4] The document title describes itself as a Supplemental Environmental Assessment, but the document itself states "pursuant to 40 C.F.R. §§ 1501.3(b) and 1502.9(c)(2), the Corps is also exercising its discretion to prepare an environmental assessment (EA)…in order to assist with the permit decision and further the purposes of NEPA. Because there have been no substantial changes to the proposed action that are relevant to environmental concerns and no significant new circumstances or information since the project was analyzed in the Final EIS, supplemental NEPA was not required under 40 C.F.R. § 1502.9(c)(1)."

[5] 33 U.S.C. § 1251(a).

[6] 40 C.F.R. § 230.10(a).

[7] *Friends of the Earth v. Hintz*, 800 F.2d 822, 831 (9th Cir. 1986).

[8] 33 C.F.R. § 320.4.

[9] 40 C.F.R. § 230.10(a).

[10] 40 C.F.R. § 230.10(a)(2).

[11] *Id.*; 40 C.F.R. §§ 230.2(q-1), 230.41.

[12] 40 C.F.R. § 230.5.

[13] *Id.*

exist.[14] The Corps may not grant a permit unless the presumption is rebutted by a clear contrary demonstration by the Project applicant.[15] Where no practicable alternative sites exist that would avoid filling or have a less adverse impact on wetlands, the Corps must consider whether "appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem."[16]

Corps regulations require the Corps to evaluate the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest weighing foreseeable benefits against foreseeable detriments using all factors that may be relevant.[17] Relevant factors are numerous and include wetlands impacts, fish and wildlife habitat values, and recreational, aesthetic, and economic values.[18]

The Corps must deny the Clean Water Act 404 permit as contrary to the public interest and because it is not the least environmentally damaging alternative available and does not adequately compensate to damage to waters of the United States. First, Ona Mine is contrary to the public interest, as evidenced by the widespread opposition to phosphate mining in the region, which is based on the perceptions and opinions of the impacted communities, the science and observations offered by experts, and the economic analysis provided by the public. It is beyond dispute that Ona Mine's supposed public benefits do not outweigh the damage that will be done to the water resources the Clean Water Act is intended to protect. It is also undisputable that Ona Mine is not water dependent, and that the Corps and applicant have not overcome the presumption that a practicable alternative that does not involve a discharge into wetlands exists. Even if the Corps could conclude that practicable alternatives that meet the overall purpose of the project do not exist, it cannot ignore the comments by expert agencies and individuals – and the paucity of information provided by the applicant – that indicates that phosphate mine reclamation does not deliver the promised mitigation or compensation.

A. The Ona Mine is Contrary to the Public Interest

When evaluating a permit application, the Corps shall evaluate the probable impacts of the proposed activity on the public interest.[19] This public interest review requires weighing all relevant factors in a general balancing process. These factors include conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, energy needs, safety, and the broader "needs and welfare of the people."[20] The Corps must deny a permit application if it is "contrary to the public interest."[21] In order to perform this public interest review, the permit application must contain a complete description of the

[14] *Id.* at §§ 230.10(a)(3); 230.5.
[15] *Id.*
[16] *Id.* at § 230.10(d); *see also Fund for Animals, Inc. v. Rice*, 85 F.3d 535, 544 (11th Cir. 1996) (indicating that where "filling of wetlands cannot be avoided, the 'appropriate and practicable steps' must be taken to minimize the potential adverse impacts of the discharge on wetlands.").
[17] 33 C.F.R. §§ 320.4; 320.4(a)(1).
[18] *Id.*; 40 C.F.R. § 230.10(c).
[19] 33 C.F.R. § 325.1(f).
[20] 33 C.F.R. § 325.1(d)(1).
[21] *Id.*

proposed activity, including information on the location, purpose, and need for the activity.[22] This description must be thorough enough to provide public notice.[23]

An agency must exercise independent judgment in defining the purpose and need of a project and cannot rely exclusively on the statements and opinions of the applicant.[24] Additionally, the Corps may not put forward a purpose and need statement that is so narrow as to "define competing 'reasonable alternatives' out of consideration."[25]

The Corps' regulations state "the unnecessary alteration or destruction of [wetlands] should be discouraged as contrary to the public interest."[26] Wetlands considered to perform functions important to the public interest include:[27]

- Wetlands which serve significant natural biological functions, including food chain production, general habitat and nesting, spawning, rearing and resting sites for aquatic or land species;
- Wetlands set aside for study of the aquatic environment or as sanctuaries or refuges;
- Wetlands the destruction of alteration of which would affect detrimentally natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, current patterns, or other environmental characteristics;
- Wetlands which are significant in shielding other areas from wave action, erosion, or storm damage. Such wetlands are often associated with barrier beaches, islands, reefs and bars;
- Wetlands which serve as valuable storage areas for storm and flood waters;
- Wetlands which are ground water discharge areas that maintain minimum baseflows important to aquatic resources and those which are prime natural recharge areas;
- Wetlands which serve significant water purification functions; and
- Wetlands which are unique in nature or scarce in quantity to the region or local area.[28]

The regulations further provide that "[n]o permit will be granted which involves the alteration of wetlands identified as important by paragraph (b)(2) of this section . . . unless the district engineer concludes, on the basis of the analysis required in paragraph (a) of this section, that the

[22] 33 C.F.R. § 325.2(a).
[23] 42 U.S.C. § 4321.
[24] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 669 n. 1 (7th Cir. 1997); *Balt. Gas & Elec. Co. Natural Res. Def. Council Inc.*, 462 U.S. 87, 106-07 (1983).
[25] *Id.* at 669; *Citizens for Smart Growth v. Sec'y of Dep't of Transp.*, 669 F.3d 1203 (11th Cir. 2012); *Davis v. Latschar*, 202 F.3d 359, 367-68 (D.C. Cir. 2000).
[26] 33 C.F.R. § 320.4(b)(1).
[27] 33 C.F.R. § 320.4(b)(2).
[28] *Id.* § 320.4(b)(2)(i)-(viii).

benefits of the proposed alteration outweigh the damage to the wetlands resource."[29] Courts have upheld permit denials based on findings that wetlands were important within the meaning of 33 C.F.R. § 320.4(b)(2).[30]

In considering whether a project is in the public's interest, the Corps must refer back to purpose and need for the project. In this instance neither the EA nor the FEIS state a *public* need for mining phosphate in wetlands.

1. The public benefits of fertilizer production are in dispute

To begin with, the supposed economic benefit of fertilizer production and the phosphate industry more broadly is disputed. A review of the Corps' economic analysis by Richard Weiskoff in 2012 found that the AEIS economic analysis uses an inappropriate model and fails to take into account the full cost of displacing the dynamic and growing agricultural sectors, especially agricultural services, and their linkages. (Weiskoff 2012). In addition, it found that the quality and productiveness of the reclaimed land cannot be determined. Therefore, the real cost to the region is the loss of farm land, depletion of the aquifer, the accumulation of toxic waste, and the potential destruction of the downstream water supply.

2. If fertilizer is in the public interest, the Corps should have evaluated its impacts

Next, if the public need were truly for fertilizer, as opposed to just phosphate ore, then the EA or the FAEIS should have also evaluated the impacts of the growth or addition of phosphogypsum stacks that would result from approval of the Ona Mine. However, in its 2013 AEIS, the Corps stated that "the four proposed phosphate mines have independent utility from the existing fertilizer plants and that the mining operations are single and complete projects"[31] and that the Corps does not consider the phosphogypsum stacks to be a component of the direct and indirect effects of the four proposed mines. Aside from the Corps' failure to evaluate this indirect impact, it is difficult to believe the applicant would invest in a mine expansion for the stated purpose of obtaining phosphate ore for phosphate fertilizer production if it could not also rely on its ability to expand its phosphogypsum management system. The dredge and fill activities of the Ona Mine are inextricably related to any future phosphogypsum stack management expansion.

Phosphogypsum is a byproduct of the process that converts mined phosphate rock into the compounds used in fertilizer. The desired phosphorous content of the mined phosphate rock is in the form of calcium phosphate which is not readably useable as fertilizer because it does not dissolve in water and cannot be metabolized by crops.[32] In order to create its ultimate sellable product, the applicant separates phosphoric acid in a slurry using sulfuric acid,[33] the slurry is then stored in open-air storage stacks known as phosphogypsum stacks or gypstacks which are

[29] 33 C.F.R. § 320.4(b)(4).
[30] *See, e.g., Shoreline Assoc. v. Marsh*, 555 F. Supp. 169, 179 (4th Cir. 1984).
[31] AEIS ES-5.
[32] AEIS 1-30.
[33] *National Emission Standards for Radon Emissions From Phosphogypsum Stacks*, EPA, https://www.epa.gov/radiation/subpart-r-national-emission-standards-radon-emissions-phosphogypsum-stacks.

often created on unused or mined-out land on the processing site.[34] Phosphogypsum is radioactive, containing uranium, radium-226, and thorium. It may also contain high levels of cadmium, plus any chemicals used in the slurry.

Numerous commenters provided information on phosphogypsum stacks that should have been included in the AEIS, noting that:

> Phosphogypsum stacks are located in the study area and their number and extent are directly a result of past and future phosphate mining. The proposed mines will increase the need for such facilities and add to the recently observed impacts/costs of stack closures. They have not only environmental impacts on water quality, but also potential economic impacts for existing/future public utilities using surface water supplies downstream of mining in the [Central Florida Phosphate District]…[35]

The Corps dismissed the comments, stating "[p]hosphogypsum stacks are not specifically address [sic] in the Final AEIS except as an industrial aspect of the cumulative impacts."[36] According to the Corps "[a]lthough they are not included as part of the Proposed Action, they are included in the scope of the cumulative impacts analysis"[37] and that the Final AEIS "took into account the impacts of phosphogypsum stacks – as it does other past, present, and reasonably foreseeable actions in addition to the Applicants' Preferred Alternatives – in determining cumulative impacts of the Proposed Action and other reasonably foreseeable actions."[38] The Corps concluded that "the mineral processing plants that produce phosphogypsum as a byproduct, and the phosphogypsum stacks associated with those facilities, are considered by the USACE to have independent utility from the phosphate mining activity."[39]

The stacks are not in the public interest as they are radioactive and there's no long term solution for what will be done with the 1 billion tons (and growing) of radioactive waste generated by the process. Indeed, the EPA's 2015 settlement agreement with Mosaic, calling for $2 billion to remedy violations with respect to existing phosphogypsum stacks calls into question whether the applicant is fit to continue to put entire communities at risk with its waste production. The consent decree that resulted from the settlement agreement also calls for a Resource Conservation and Recovery Act (RCRA) hazardous waste determination for eight phosphogypsum stacks. If any of the phosphate mined from Ona Mine would contribute to one of those stacks, operations must not begin until a RCRA plan is in place.

The threats these phosphogypsum stacks create for local communities is imminent. On September 15, 2016, news broke that a sinkhole had opened up below and in a phosphogypsum stack at Mosaic's New Wales plant.[40] The sinkhole had allowed at least 215 million gallons of

[34] 1-30.
[35] Appendix A, at 233
[36] Appendix A, at 599
[37] AEIS ES-5.
[38] AEIS ES-5-6.
[39] AEIS 3-6.
[40] Mellissa Marino, *Mosaic Begins Work on Massive Sinkhole*, Channel 8 News, (Feb. 3, 2017 6:23 PM), http://wfla.com/2017/02/03/mosaic-begins-work-on-massive-polk-sinkhole/.

water to pour into the Floridan aquifer. It appears Mosaic knew about the spill and sinkhole for three weeks before the media broke the story (Bernard 2016). This is not the first time a sinkhole has opened up the stacks at this location, with sink holes occurring in 2013, 2004, and 1994.[41] The New Wales phosphogypsum stack is the destination site of the radioactive phosphogypsum that will be generated by the proposed Project. Beyond New Wales, in 2009 a sinkhole at the PCS White Springs facility released more than 90 million gallons of hazardous wastewaters into the Floridan aquifer.

To further show how dangerous phosphogypsum stacks are, a leading global specialty minerals and specialty chemicals company, Israel Chemicals Ltd., reported on June 30, 2017 that a dike partially collapsed that is used for the accumulation of phosphogypsum water, a byproduct of phosphate fertilizer production processes conducted at the plant.[42] The environmental damage is still yet to be determined while the company is continuing its efforts to remedy the immediate environmental effect and damages resulting from the phosphogypsum water spill. The Corps must take these threats to the region seriously and evaluate them as indirect impacts of authorizing phosphate mining in the region.

B. The Corps Must Comply with its Mandate to Avoid, Minimize, and Select the Least Environmentally Damaging Alternative Practicable

Under the Clean Water Act the Corps has the responsibility of evaluating permit applications for the discharge of fill into waters of the U. S. The Clean Water Act gave the EPA the task of developing the 404 (b)(1) Guidelines (Guidelines) with the specific goal of providing the environmental criteria and framework by which the Corps evaluates dredge and fill applications.

40 CFR Part 230 - Section 404 (b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material, Subpart A - General, Section 230.1 Purpose and policy states:

> (a) The purpose of these Guidelines is to restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material.
>
> . . .
>
> (c) Fundamental to these 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.
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> (d) From a national perspective, the degradation or destruction of special aquatic sites, such as filling operations in wetlands, is considered to be among the most severe environmental impacts covered by these Guidelines. The

[41] 2004 Anomaly at 25.
[42] PR Newswire, *Update On The Phosphogypsum Spill At ICL's Rotem Phosphate Fertilizers Plant In Israel's Negev Region*, http://news.sys-con.com/node/4116058.

> guiding principle should be that degradation or destruction of special sites may represent an irreversible loss of valuable aquatic resources.

Nichols et. al. (2008) succinctly describe the role of the Guidelines in framing the Corps' review of permit applications for discharges of fill in wetlands:

> Central to the Guidelines is the fundamental requirement for an alternatives analysis. " . . . [N]o discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the environment, so long as the alternative does not have other significant adverse environmental consequences . . . .[T]he application is required in every case (irrespective of whether the discharge site is a special aquatic site or whether the activity associated with the discharge is water dependent) to evaluate opportunities for the use of non-aquatic areas and other aquatic sites that would result in less adverse impact on the aquatic ecosystem." Thus, applicants must demonstrate that for any discharge or fill activity there is no practicable alternative site for the proposed activity that will have less adverse environmental impacts.

For special aquatic sites such as wetlands, however, the Guidelines propose a more difficult test for avoidance with two presumptions. For proposed discharges to special aquatic sites there is a presumption that an alternative site that is not a special aquatic site exists and a presumption that such a site will result in less adverse environmental impacts on the aquatic ecosystem. These rebuttable presumptions clarify how to determine if discharges proposed for special aquatic sites meet the requirement that the practicable alternatives have less significant adverse impact on the environment and do not have other significant environmental impacts.

Furthermore, the Clean Water Act and EPA's Guidelines make mitigation a requirement of the Section 404 program through standards set at 40 CFR §§ 230.10 (a)-(d). The Memorandum of Agreement between EPA and the Corps concerning mitigation under the Clean Water Act 404 (b)(1) Guidelines (Mitigation MOA) defines the three steps of mitigation - the first two being avoidance and minimization of impacts:

> 1. Section 230.10(a) allows permit issuance for only the least environmentally damaging practicable alternative. The thrust of this section on alternatives is *avoidance of impacts*. Section 230.10(a)(1) requires that to be permittable, an alternative must be the least environmentally damaging practicable alternative *(LEDPA)*. In addition, Section 230.10(a)(3) sets forth rebuttable presumptions that 1) alternatives for non-water dependent activities that do not involve special aquatic sites are available…
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> 2. Minimization. Section 230.10(d) states that appropriate and practicable steps to *minimize* the adverse impacts will be required through project modifications and permit conditions.

Sequencing requires the applicant must first demonstrate impacts to wetlands have been *avoided*.

Next the applicant must demonstrate any remaining unavoidable impacts have been *minimized*. Lastly, and only after avoidance and minimization of impacts has occurred, the applicant must compensate for any remaining impacts [i.e. compensatory mitigation].

Nichols et. al. provides an excellent description of the avoidance requirement:[43]

> Avoidance is the first step in the sequencing process by which the Corps determines whether or not the proposed project is the least environmentally damaging practicable alternative (LEDPA). The LEDPA is identified by an evaluation of the direct, secondary, and cumulative impacts on the aquatic ecosystem and "other ecosystems" of each alternative under consideration.

The Guidelines state:

> . . . *no discharge of dredged or fill material shall be permitted* if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem so long as the alternative does not have other significant adverse environmental consequences.

The universality of the requirement to evaluate opportunities for use of non-aquatic areas and other aquatic sites that would result in less adverse impact on the aquatic ecosystem was reiterated in a EPA and Army guidance memo in 1993.[44]

The Corps formalized the requirement for sequencing in its regulations regarding Compensatory Mitigation for Losses of Aquatic Resources, 33 CFR § 332.1:

> (2) Pursuant to these requirements, the district engineer will issue an individual section 404 permit only upon a determination that the proposed discharge complies with applicable provisions of 40 CFR part 230, including those which require the permit applicant to take all appropriate and practicable steps to avoid and minimize adverse impacts to waters of the United States. Practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. Compensatory mitigation for unavoidable impacts may be required to ensure that an activity requiring a section 404 permit complies with the Section 404(b)(1) Guidelines.
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> (3) Compensatory mitigation for unavoidable impacts may be required to ensure that an activity requiring a section 404 permit complies with the Section 404(b)(1) Guidelines. During the 404(b)(1) Guidelines compliance analysis, the district engineer may determine that a DA permit for the proposed activity cannot be issued because of the lack of appropriate and practicable compensatory mitigation options.

[43] *Id.* at 6.
[44] Regulatory Guidance Letter 93-02.

Therefore, based on the detailed description of the Clean Water Act's requirements, the 404 (b)(1) Guidelines, the mitigation sequencing requirement, and the least environmentally damaging practicable alternative are fundamental to the federal review of permit applications for the discharge of fill into wetlands.

Here, the Corps does not discuss the public's need to mine phosphate ore or the public's need for the applicant to have a mine in close proximity to its existing beneficiation plant infrastructure, nor does it explain the public's interest in the applicant meeting its desired production output. Since the purpose of the proposed action informs the alternatives analysis, and since the purpose and need statement are not in the public's interest, proper consideration has not been given to alternatives that were not the applicant's preferred alternative, especially the No Action Alternative. The Corps should independently address the purpose and need of the proposed project in its EA to better inform its alternatives analysis.

1. Practicable alternatives exist

The Clean Water Act, as well as the National Environmental Policy Act, require the Corps to analyze the alternatives to the proposed project. The regulations provide that adverse impacts to wetlands must be avoided to the extent that practicable alternatives are available which will result in less adverse impacts.[45] A "practicable" alternative is one that is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity may be considered."[46] Guidelines establish a presumption that all practicable alternatives that do not involve a discharge into wetlands have less adverse impact on the environment "unless clearly demonstrated otherwise."[47] The applicant has failed to demonstrate that the proposed project is in fact needed, much less that there are no practicable alternatives.

Alternatives explore other ways of meeting the purpose and need. Proposing alternatives that are actually projects slated for another time or have already been approved - like the Wingate East, Pioneer Tract, and Site W-2 - circumvents the purpose of an alternatives analysis, which is to consider other actions. Particularly since the Corps has already approved the Wingate East Mine application.
The Corps should consider other alternatives that would satisfy the project need, like importing the phosphate ore or using less fertilizer in general. There is consensus that the world's phosphate rock supply is finite and that in order to meet global demand for the agricultural sector, greater recycling of and sustainable use of phosphorus will be necessary (Cordell and White 2013). Proposals that look at non-phosphate rock supply could be examined if the purpose of the Project were more broadly drawn.

2. The proposed mitigation does not compensate for the Project's impacts

[45] 40 C.F.R. § 230.10(a).
[46] 40 C.F.R. § 230.10(a)(2).
[47] *Id.*; 40 C.F.R. §§ 230.2(q-1), 230.41.

The Clean Water Act requires applicants to first avoid wetlands through a practicable alternative. If all efforts have been made to avoid impacts, the Act requires the applicant to minimize impacts through project modifications. If and only if all efforts have been made to avoid and minimize impacts, may the applicant compensate for the loss through mitigation.[48] As explained above there are numerous practicable alternatives to the proposed project that would avoid significantly impacting these important resources. Further, there is no evidence that the applicant has minimized impacting these resources through project modifications.

Minkin and Ladd conducted a study of the effectiveness of compensatory mitigation projects (creation and restoration) required for permitted impacts in New England and to determine what programmatic improvements might be necessary. Their study found "Forty of the mitigation projects (67%) were determined to meet permit conditions and would be considered successful by that standard. However, only 10 (17%) were considered to be adequate functional replacements for the impacted wetlands." They attribute the failure of mitigation projects to compensate for wetlands losses in part to " . . . inadequate mitigation amounts for permitted impacts and also for inappropriate functional replacements, e.g., replacing forested wetlands with open water, emergent, and/or scrub-shrub systems." They also raised the issue of whether created or restored wetlands could replace those of natural systems and concluded that 1:1 mitigation ratios were inadequate.

The study also seems to indicate that insufficient compensatory mitigation has been required to offset project impacts. With impacts to 352.31 acres of wetlands and proposed compensatory mitigation of 324.12, of which no more than 317.65 became wetland, there would be an overall net loss in acreage of wetlands. Since there was considerable out-of-kind mitigation, there were increased losses in the more complex wetland types. The general replacement of forested wetlands with open water and emergent systems has resulted in considerable loss of function, particularly forested wildlife habitat and water quality functions such as denitrification, which occur best in seasonally saturated wetlands.

They also considered the results of other studies in reaching a conclusion that greater mitigation ratios are required:

> He [Whigham] questioned whether there is any scientific justification for the underlying assumption of mitigation, that restored and created wetlands function similarly to natural wetlands with regard to biodiversity and nutrient cycling. He also noted that concentrating on replacing lost acreage amounts fails to account for the wetland degradation and functional loss resulting from creation and restoration of mitigation wetlands of lower functional value. In this regard, *greater compensatory mitigation acreage is required to replace the lost functions of impacted systems, i.e., mitigation to impact ratio must be greater than 1:1*.

[48] 33 C.F.R. § 332.1(c) codifies a 1989 Memorandum of Agreement between the Corps and the EPA that sets forth the multi-step sequencing scheme of addressing wetland impacts. Memorandum of Agreement Between the U.S. Environmental Protection Agency and U.S. Department of the Army, Determination of Mitigation Under the Clean Water Act 404(b)(1) Guidelines. *See* Margaret N. Strand, Wetlands Deskbook, 93 (3rd Ed. 1997).

Minkin and Ladd concluded that there is a need for higher mitigation ratios if preservation and enhancement are proposed as compensatory mitigation:

An examination of enhancement and preservation, included in the overall mitigation proposals for several of the study projects was not reviewed in this study. Although preservation and enhancement can be important parts of a mitigation proposal, they do not prevent a net loss in wetland acreage and may not prevent a net loss in wetland function.

Mitigation banks might do no better in providing compensation for lost wetland functions and values. Kihslinger10 reported that:

> A recent more comprehensive review of 12 mitigation bank sites in Ohio found that *25% of the bank areas studied did not meet the definition of wetlands* (Mack and Micacchion 2006*). Of the actual wetland acreage, 25% was considered in poor condition, 58% was fair*, and 18% was good quality in terms of vegetation as compared to natural reference wetlands. *The study also found that amphibian community composition and quality was significantly lower at banks than at natural forest, shrub, or emergent wetlands and that pond-breeding salamanders and forest-dependent frogs were virtually absent from the bank sites*. A recent study from Florida found that of the 29 banks evaluated, 70% fell within the moderate to optimal range of function. Although the baseline conditions of most sites were in the high functional range, most of the projects relied upon enhancement, rather than restoration, as the mitigation method (Reiss et al 2007).

It must be noted that while the findings of the Florida study are more encouraging, these banks employed enhancement, rather than restoration, and that raises the concern that wetlands functions and values continue to be lost.

Brown and Lant conducted a survey of 68 mitigation banks within the United States as of January 1996 were achieving no-net-loss of wetland acreage nationally and regionally. Their review revealed that:

> Although 74% of the individual banks achieve no-net-loss by acreage, *overall, wetland mitigation banks are projected to result in a net loss of 21,328 acres of wetlands nationally*, 52% of the acreage in banks, as already credited *wetland acreages are converted to other uses*. While most wetland mitigation banks are using appropriate compensation methods and ratios, *several of the largest banks use preservation or enhancement, instead of restoration or creation. Most of these preservation/enhancement banks use minimum mitigation ratios of 1:1, which is much lower than ratios given in current guidelines*. Assuming that mitigation occurs in these banks as preservation at the minimum allowable ratio, ten of these banks, concentrated in the western Gulf Coast region, will account for over 99% of projected net wetland acreage loss associated with banks.

Sufficient evidence exists to demonstrate the general failure of compensatory mitigation in replacing lost wetlands functions and values. For this reason, an emphasis should be placed upon avoidance and minimization of impacts to waters of the state.

Beyond so-called "white papers" provided by the applicant which appear to be little more than propaganda for the applicant, the AEIS and EA present no information that past reclamation has produced adequate compensation or that future mitigation or reclamation will be adequate to compensate for impacts to wetlands and species' habitats. However, information to the contrary has been provided by several expert agencies and individuals. For example, USGS critiques the DAEIS for not basing its assumptions about surface and groundwater impacts in logic or science.[49] Likewise, the Florida Association of Mitigation Bankers found that "predicting the post-reclamation hydrology has been a challenge historically"; that "the risk of unsuccessful mitigation on mined site is understated in the Draft AEIS"; and that the analysis "should reflect the issues that have plagued the industry's post-reclamation (on-site) mitigation in the past, rather than optimistic speculation about the ability of new technology to resolve these issues."[50]

Experts on behalf of the Sarasota County Board of Commissioners informed the Corps that:

> the discussion of mitigation gives a conclusory assertion of an 'evolution' in technology, but does not explain how this evolution took place, and gives no empirical data which demonstrates that the post-reclamation wetlands and streams resemble native habitats in soil type, soil pH, dominant vegetative species composition, species richness or diversity, use by wetland dependent species, microtopography, or hydroperiods. Despite assertions by the industry that undesirable vegetative species in restored wetlands will inevitably die out and give way to desired species, some of the oldest reclamation sites are still dominated by wax myrtle. Given the doubts expressed again and again about the efficacy of past reclamation and restoration technologies...the Draft AEIS should provide an in depth discussion as to the reasons why it is believed that current technology will correct past failures.[51]

Brian Winchester, President and Technical Director of Winchester Environmental Associates, Inc., with more than 40 years as professional Florida ecologist specializing in wetlands ecology with emphasis on wetland creation and restoration cautioned that "over the last two decades there have been thousands of wetland acres released by agencies as being successfully reclaimed that in fact never demonstrated the type and function characteristics comparable to the native wetland systems they were intended to replace."[52]

Furthermore, while the EA states that the applicant will implement a monitoring program, it does not provide details about that program, other than that the applicant itself will monitor and periodically report to the Corps, allowing the fox to guard the henhouse.

[49] Appendix A to the FAEIS at 361.
[50] Appendix A to the FAEIS at 12.
[51] Appendix A to the FAEIS at 84.
[52] Appendix A to the FAEIS at 276.

The Corps must seriously consider the concerns of these expert agencies and individuals. It cannot accept the applicant's promises of doing reclamation better in the future than it has done in the past as scientific evidence that promised mitigation in the form of state-mandated reclamation will rise to the task of compensating for the wetlands that will be lost to phosphate mining.

III. The Corps must comply with the National Environmental Policy Act

Congress provided a broad environmental purpose in the National Environmental Policy Act (NEPA):[53]

> [t]o declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation…. [I]t is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

In that regard, NEPA is America's "basic national charter for protection of the environment."[54] NEPA ensures that federal agencies "will have available, and will carefully consider, detailed information concerning significant environmental impacts" and that such information "will be made available to the larger [public] audience."[55]

To this end, NEPA requires federal agencies to prepare a detailed EIS for any "major Federal actions significantly affecting the quality of the human environment."[56] The issuance of a Section 404 by the Corps is a "federal action" to which NEPA applies.[57] To determine whether the environmental impact of a proposed project is significant enough to warrant the preparation of an Environmental Impact Statement (EIS), the agency may prepare an Environmental Assessment (EA). An EA is "a concise public document that briefly provides evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact."[58]

When an EA is performed on a project, the Corps must take a "hard look" and "must make a convincing case" for a Finding of No Significant Impact (FONSI) and decision not to perform an

[53] 42 U.S.C. § 4321; 42 U.S.C. § 4331(a).
[54] 40 C.F.R. § 1500.1(a).
[55] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).
[56] 42 U.S.C. § 4332(2)(C).
[57] *United States v. South Florida Water Management District*, 28 F.3d 1563 (11th Cir. 1994); *Sierra Club v. Sigler*, 695 F.2d 957, 964 (5th Cir. 1983); *Fla. Wildlife Fed'n v. Army Corps of Eng'rs*, 401 F. Supp.2d 1298 (S.D. Fla. 2005).
[58] 40 C.F.R. § 1508.9; 33 C.F.R. § 230.10.

EIS.[59] The fundamental objective of NEPA is to ensure that an "agency will not act on incomplete information only to regret its decision after it is too late to correct."[60] Therefore, if "substantial questions as to whether a project . . . may cause significant degradation of some human environmental factor," an EIS must be prepared.[61]

The Council on Environmental Quality (CEQ) has promulgated regulations to guide agencies in determining whether a proposed project will have "significant" impacts to the environment.[62] Whether an action will have a "significant" impact on the environment, thus warranting the preparation of an EIS, requires considerations of both "context" and "intensity." "Context" means that the significance of an action must be analyzed in several different contexts (i.e. national, regional, and local significance of the action). "Intensity" refers to the severity of the impact. The CEQ regulations set forth several factors for the Corps to consider when evaluating intensity, including, but not limited to:

- The degree to which the proposed action affects public health or safety.
- Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, 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.
- 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. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
- The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act.

Courts have held that a plaintiff need not show that significant effects will in fact occur, but if a plaintiff raises substantial questions whether a project *may* have a significant effect, an EIS must be prepared.[63]

Completing an EIS is important as in it, the Corps must go beyond the analysis of an EA and

[59] *Hill v. Boy*, 144 F.3d 1446, 1450 (11th Cir. 1990).
[60] *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 371 (1990).
[61] *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1149 (9th Cir. 1998); *Greenpeace Action v. Franklin*, 14 F.3d 1324, 1332 (9th Cir. 1992); *Sierra Club v. United States Forest Serv.*, 843 F.2d 1190, 1193 (9th Cir. 1988).
[62] *See* 40 C.F.R. § 1508.27.
[63] *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1150; *Klamath Siskiyou Ctr. v. Boody*, 468 F.3d 549, 562 (9th Cir. 2006) (holding the standard for preparing an EIS is low).

describe (1) the "environmental impact of the proposed action," (2) any "adverse environmental effects which cannot be avoided should the proposal be implemented," (3) alternatives to the proposed action, (4) "the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity," and (5) any "irreversible or irretrievable commitment of resources which would be involved in the proposed action should it be implemented."[64]

As part of the EIS, each federal agency must "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[65] An agency must "rigorously explore and objectively evaluate all reasonable alternatives."[66] In addition, an agency "shall state how alternatives . . . will or will not achieve the requirements of section 101 and 102(1) of the Act" which requires agencies to "use all practicable means" to "assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings" and to "preserve important historic, cultural, and natural aspects of national heritage" as well as how alternatives "will or will not achieve the requirements of . . . other environmental laws and policies."[67] Until an agency issues a Record of Decision (ROD) pursuant to NEPA, no action concerning a proposal may be taken that would have an adverse environmental impact, or limit the choice of reasonable alternatives.[68]

NEPA requires the consideration of reasonably foreseeable, direct, indirect, and cumulative impacts to the natural and physical environment.[69] Cumulative impacts are impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.[70] Federal agencies have a continuing obligation to gather and evaluate new information relevant to the environmental impact of its actions. "An agency that has prepared an EIS cannot simply rest on the original document. The agency must be alert to new information that may alter the results of its original environmental analysis, and continue to take a 'hard look' at the environmental effects of [its] planned action, even after a proposal has received initial approval.[71]

Here, the Corps has clearly predetermined the outcome of its NEPA review. In its EA for Ona Mine, the Corps states that despite the fact that the draft analysis "does not include any of the final determinations" required by the Clean Water Act – because "the Corps cannot make such determination until the conclusion of the permit application review process" that those conclusions will be published in the record of decision and statement of findings (RODSOF) (as opposed to a FONSI or determination that an EIS is needed), and that the Corps plans to adopt the Final EIS and this EA in the RODSOF.

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[64] 40 C.F.R. § 4332.
[65] 42 U.S.C. § 4332(2)(E).
[66] 40 C.F.R. § 1502.14(a)-(c).
[67] 40 C.F.R. § 1502.2(d).
[68] 40 C.F.R. § 1506.1(a).
[69] *See* 40 C.F.R. §§ 1508.7, 1508.8.
[70] 40 C.F.R. § 1508.7.
[71] *Marsh v. Oregon Natural Res. Council*, 490 U.S. 360, 373-74 (1989).

Instead, the Corps must complete a site-specific evaluation of the Project and must evaluate the significant impacts will have on the human environment.

A. The Corps must complete a site-specific Environmental Impact Statement before rendering a final permit decision for the Ona Mine

The FAEIS does not alone satisfy NEPA requirements for individual projects within its scope. CEQ regulations indicate when tiering from a broader environmental impact statement to a subsequent narrower statement is appropriate, and specifically give the example of a regional or basinwide program statement and the ultimate site-specific statements.[72]

Manifesting this intent, the EA incorporates by reference the FAEIS and provides no further discussion of the Ona Mine's impacts.

Regarding the 1975 Florida law requiring that all lands mined for phosphate after July 1, 1975 be reclaimed; it has been estimated that there are 200,000-300,000 acres of lands yet to be reclaimed. It is important to note the meaning of the word "reclaimed," especially in the context of "restored." Restored lands are ones that assist in the reestablishment of natural communities, habitat, species, or other ecological attributes that have been eliminated or greatly reduced by phosphate mining. In contrast, reclaimed lands are lands disturbed by phosphate mining that are rebuilt to provide some beneficial land use. Reclamation has not been proven to provide the same ecosystem benefits as restoration.

At least one author has compared the restoration of phosphate mined lands to Everglades restoration, saying that "the restoration of phosphate mined lands may be a far greater challenge"[73].

A 1993 study comparing non-mined river basins with reclaimed river basins in west central Florida found the following (Lewelling 1993):

- Peak runoff rates from the reclaimed basins generally were higher than those from the unmined basins during intense, short-duration storms;
- Reclaimed basins backfilled with clay sustained no base flow to streams;
- The depth to the water table in the surficial aquifer in the three reclaimed basins was greater than the unmined basins; and
- Recharge from the surficial aquifer to the underlying aquifer was greatly reduced.

Other studies have found impacts to water quality. FIPR (2001) explains that the major reagents used in phosphate beneficiation include fatty acid (to collect the phosphate), amine (to collect the sand), fuel oil (as an extender), sodium silicate (to depress sand), soda ash or ammonia (to

[72] 40 C.F.R. § 1508.28.
[73] Brown, M.T. 2005. Landscape restoration following phosphate mining: 30 years of co-evolution of science, industry and regulation. Ecological Engineering 24 (2005) 309-329.

modify pH), and sulfuric acid (for washing away the collector on the rough concentrate). Multiple pounds of each of the above additives are used per each ton of phosphate, and since phosphate operations produce millions of tons annually, millions of pounds of the reagents are used annually. It is estimated that 30 percent of the reagents are unaccounted for and may be released into the environment. This same study detected fuel oil in groundwater samples of surficial aquifer and intermediate aquifer wells that had been installed in active and inactive sand tailing areas (FIPR 2001).

Zhang (2012) found that "[c]lay-settling areas (CSAs) are one of the most conspicuous and development-limiting landforms remaining after phosphate mining" (Zhang 2012). The clay-lined bottom of the CSA limit their recharge capacity, evaporating instead of recharging the groundwater system, which is a loss of water from the upper Peace River basin that did not occur before mining operations began (Metz 2009). This Project calls for the construction of clay settling areas.

The land has characteristics that are unique, including wetlands, particularly riparian forests. Riparian forests have been found to reduce delivery of nonpoint-source pollution to streams and lakes in many types of watersheds (Vellidis 2002, Vellidis 2003, Lowrance 1984, Lu 1985). Riparian forest ecosystems are excellent nutrient and herbicide sinks that reduce the pollutant discharge from surrounding agroecosystems (Peterjohn 1984). For example, studies from coastal plain agricultural watersheds reveal that riparian forest ecosystems are excellent nutrient sinks and buffer the discharge from surrounding agroecosystems (Lowrance 1984). Riparian buffers are especially important on small streams where intense interaction between terrestrial and aquatic ecosystems occurs (Vellidis 2003), because first- and second-order streams comprise nearly three-quarters of the total stream length in the U.S. (Leopold 1964).

During the Planning Commission meeting August 18, 2016, a representative of the applicant, Shannon Gonzalez of Flatwoods Consulting Group hired by Mosaic, stated that there was peer reviewed scientific information indicating that reclaimed lands provide the ecosystem benefits promised. This individual referenced, but did not offer into evidence, an unnamed 2008 report by the Florida Institute of Phosphate Research (FIPR).

The 2008 study co-authored by Shannon Gonzalez, commissioned by FIPR, reviewed 62 mined lands comprised of 24 upland, 18 wetland, and 20 mixed sites and found five classes of vertebrates, including 299 individual species (BRA 2008). The report did not however, rate how well the reclaimed areas faired using any metric.

Neither Chapter 4 of the FEIS, nor the EA by incorporating the FEIS, specifically discuss site-specific secondary effects caused by the Ona Mine. The purpose of an areawide impact statement is to facilitate the evaluation of cumulative impacts, and should not be a shortcut designed to eliminate in-depth, site-specific scientific evaluation of direct and secondary impacts for each permitted project.

B. The Corps cannot issue a Finding of No Significant Impact.

The Project meets several of the significance factors warranting an EIS.

Phosphate mining in Florida is open pit strip mining where a company strips approximately 10 meters of so-called overburden[74] and removes the matrix below which contains the phosphoric ore.[75] Beneficiation[76] of the matrix separates the phosphoric ore from the sand and the clay. The sand tailings are set aside for use in recontouring the land once mining is completed. The clay is returned to the empty pits and stored in elevated clay settling ponds (the clay is now swollen with water and chemicals used in beneficiation) where they wait to drain. These clay settling areas occupy about 40 percent of post-mining lands.[77]

The phosphoric ore is treated with sulfuric acid to produce phosphoric acid (which is used in fertilizer).[78] This process creates phosphogypsum, a radioactive byproduct for which the Environmental Protection Agency requires that it be stored in stacks indefinitely because of its radioactivity. It is radioactive due to the presence of naturally occurring, but artificially concentrated and released, uranium, radium-226, and thorium. It may also contain high levels of cadmium.

In 2003, Judge Johnston, in adjudicating a case regarding phosphate mining in neighboring Charlotte County found that " . . . phosphate mining in this area is accomplished through utter destruction of the local natural environment from ground surface down to a depth of approximately 50 feet."[79] Unfortunately, that is true wherever phosphate is mined in Florida. The Peace and Myakka river basins have been substantially altered by open pit mining for phosphate, changes in land use for mining, and groundwater use for phosphate mining.[80] It is beyond dispute that phosphate mining has forever altered the natural landscape, including streams and drainage. For example, in some areas of the upper Peace River basin, the surficial aquifer does not even exist because phosphate mining has removed the surface sediments.[81] In addition to scarring the landscape, groundwater pumping for phosphate mining has been implicated in the creation of sinkholes in the upper Peace River,[82] and storage of the acidic, radioactive waste generated by the process has also caused sinkholes.[83]

1. The proposed action may affect public health or safety

[74] Overburden: Layers of soil or rock overlaying a deposit of useful materials or ores.
[75] Matrix: a mixture of phosphate pebbles, sand and clay.
[76] Beneficiation: A mechanical process called washing is used to separate the larger phosphate pebbles from the ore. A process called flotation is used to recover the finer particles of phosphate from sand.
[77] Brown, M.T. 2005. Landscape restoration following phosphate mining: 30 years of co-evolution of science, industry and regulation. Ecological Engineering 24 (2005) 309-329.
[78] *National Emission Standards for Radon Emissions From Phosphogypsum Stacks,* EPA, https://www.epa.gov/radiation/subpart-r-national-emission-standards-radon-emissions-phosphogypsum-stacks.
[79] *Charlotte Co. v. IMC-Phosphates Company*, Case No. 02-4134 (Aug. 1, 2003), Recommended Order.
[80] The surficial aquifer is a vital component of the groundwater system; Rain recharges the surficial aquifer which then percolates downward to the water table. Metz, P.A. and B.R. Lewelling. 2009. Hydrologic Conditions that Influence Streamflow Losses in a Karst Region of the Upper Peace River, Polk County, Florida: U.S. Geological Survey Scientific Investigations Report 2009-5140, 82 p. at 1, 2.
[81] Metz 2009.
[82] *Id*.
[83] Peter Brenard, *Massive sinkhole drains contaminated water into Floridan aquifer*, CHANNEL 8 NEWS (Sept. 15, 2016 7:02 PM), http://wfla.com/2016/09/15/contaminated-water-flows-into-floridan-aquifer-after-sinkhole-opens-at-mosaic-facility/.

Phosphate rock mining leads to reallocation and exposure of several heavy metals and radionuclides that become airborne or enter waterbodies. Some of this information is described above in the public interest section regarding phosphogypsum stacks, which has grave health effects; however, in addition, several studies have indicated that phosphate mining poses human health risks.

Yang (2014) found elevated levels of lead, manganese, and mercury in house dust, attributable to nearby phosphate mines. Abdalla (2011) found wells downstream of phosphate mining activities had high concentrations of heavy metals, such as lead, cadmium, zinc, and nickel, when compared with upstream wells. In general, the release of these heavy metals can have serious health implications (Al-Hwaiti 2013).

Also submitted to the Corps via public comments on its DEIS, members of the public adjacent to mine sites cite loss of springs and ecosystem benefits of wetlands that were destroyed and/or moved by mining practices.[84] Likewise, neighboring property owners have complained of fugitive dust. In addition, once the land has been used for phosphate mining, the land can no longer be used for economic development such as agriculture, commercial or residential uses.

For example, John Jerue, a resident of South Lakeland, who filed a suit against developer Drummond Co., seeking damages suffered as a result of the contamination to his, and several other residents' properties by the phosphate mining and reclamation activities of Drummond and its real estate division.[85] After reclaiming the land, Drummond developed the land into residential properties and sold it without warning of, or disclosing to the buyers that the hazardous radiation and substances it knew emanated from the contaminated property.[86] Reclaimed phosphate land has dangerously high levels of radiation that drastically raise the risk of many cancers.[87]. In 2003, EPA officials considered that land so radioactive that it was a candidate for emergency cleanup action,[88] but local politics intervened and EPA never moved forward.[89]Such serious health and environmental concerns are clearly contrary to the public interest.

Phosphogypsum stacks

Phosphate ores are comprised of fluorapatite, goethite, quartz, Al-phosphates, anatase, magnetite,

[84] DAIS at Chp. 1 p. 39

[85] Complaint at ¶ 1, Jerue v. Drummond Co. Inc., (2017), https://www.plainsite.org/dockets/34gtcrcon/florida-middle-district-court/jerue-v-drummond-company-inc/.

[86] *See* Kate Bradshaw, *Suit alleges phosphate company knowingly developed homes on contaminated land in Polk County*, CL TAMPA (March 14, 2017 5:00 PM) http://www.cltampa.com/news-views/environment/article/20854874/suit-alleges-phosphate-company-knowing-developed-homes-on-contaminated-land-in-polk-county.

[87] *Id.*

[88]*EPA Abandons Major Radiation Cleanup Florida Despite Cancer Concerns,* https://www.publicintegrity.org/2014/01/30/14190/epa-abandons-major-radiation-cleanup-florida-despite-cancer-concerns.

[89] Douglas P. Guarino, *EPA Abandons Major Radiation Cleanup in Florida, Despite Cancer Concerns*, PUBLICINTEGRITY.ORG (Jan. 30, 2014 12:31 PM) https://www.publicintegrity.org/2014/01/30/14190/epa-abandons-major-radiation-cleanup-florida-despite-cancer-concerns.

monazite, barite, cadmium, nickel (and other heavy metals and trace elements), uranium, thorium, and radium. Phosphogypsum is a waste by-product of processing phosphate ore by "wet acid method." Phosphogypsum is largely comprised of gypsum, but may also contain phosphoric acid, monocalcium phosphate, dicalcium phosphate, calcium phosphate, residual acids, flourides, sulphate ions, trace metals (arsenic, silver, barium, cadmium , chromium, lead, mercury, and selenium, and organic matter. The wet processing also concentrates naturally occurring radium, uranium, polonium, and thorium.

Depending on the phosphoric ore, processed phosphogypsum can have 60 times the radioactivity as the level found prior to processing. Radium and lead are the major radionuclides with activity concentrations high compared to recommended normal levels (Afifi 2009). In a 2009 review of literature on the environmental impact and management of phosphogypsum, Tayibi et al. found that radon from Ra-226 decay is a significant environmental problem, as is exposure to local gamma radiation levels many times more than normal, background rates. It also found stack solutions and wells monitoring surface waters had elevated uranium and radium. Bolivar (2000) likewise identified estuary contamination of polonium, uranium, barium, zinc, nickel, copper, cadmium, and strontium from near phosphogypsum stacks. Wang (2014) found uranium in river sediments near phosphate mines. Duenas (2007) found significant radon exhalation from phosphogypsum stacks and nearby lands.

For every one ton of phosphoric acid produced, five tons of phosphogypsum are produced. The phosphate industry in Florida produces about 30 million tons of phosphogypsum each year.[90] Approximately 15 percent of phosphogypsum worldwide is recycled as building materials, fertilizer, or soil stabilizers, the remaining 85 percent are stored untreated in stacks. There are 25 gypstacks scattered around Florida, and just one stack can cover 500 acres wide and 240 feet tall. These gypstacks contain about 1 billion tons of radioactive phosphogypsum. That's enough to give every man, woman and child in Indonesia, Brazil and Pakistan, one ton of phosphogypsum each.

Sahu et al. (2014) found that phosphate ore processing and disposal of phosphogypsum contributes to enhanced levels of natural radionuclides and heavy metals in the environment, and that the resulting environmental impact should be considered carefully to ensure safety. They found that gypstacks can cause serious environmental contamination of soils, water, and the atmosphere through gypstack erosion and the release of heavy metals, sulphates, fluorosilicates, hydrogen fluorides, phosphorus, cadmium and radium-226.

Borylo et al. (2012) found elevated levels of metals in plants nearby phosphogypsum stacks, some higher than permissible levels in food. They calculated that the factor contamination for the plants were 2.1 for Pb, 3.7 for Zn, 2.8 for Ni, and 3.2 for Fe for green parts, to 11.8 for Pb, 12.2 for Zn, 9.4 for Ni, and 5.5 for Fe in root times higher in comparison to non-contaminated plants. They concluded that the subject gypstack may pose a health risk to the local population through consumption of the vegetables.

Borylo et al. (2013) found elevated levels of Po and Pb in soil near a phosphogypsum stack.

[90] *Phosphogypsum and the EPA Ban,* FIPR, www.fipr.state.fl.us/about-us/phosphate-primer/phosphogypsum-and-the-EPA-ban/.

They theorized that heavy rainfall for a long time may cause infiltration of radionuclides from phosphogypsum stacks to nearby soils and waterways.

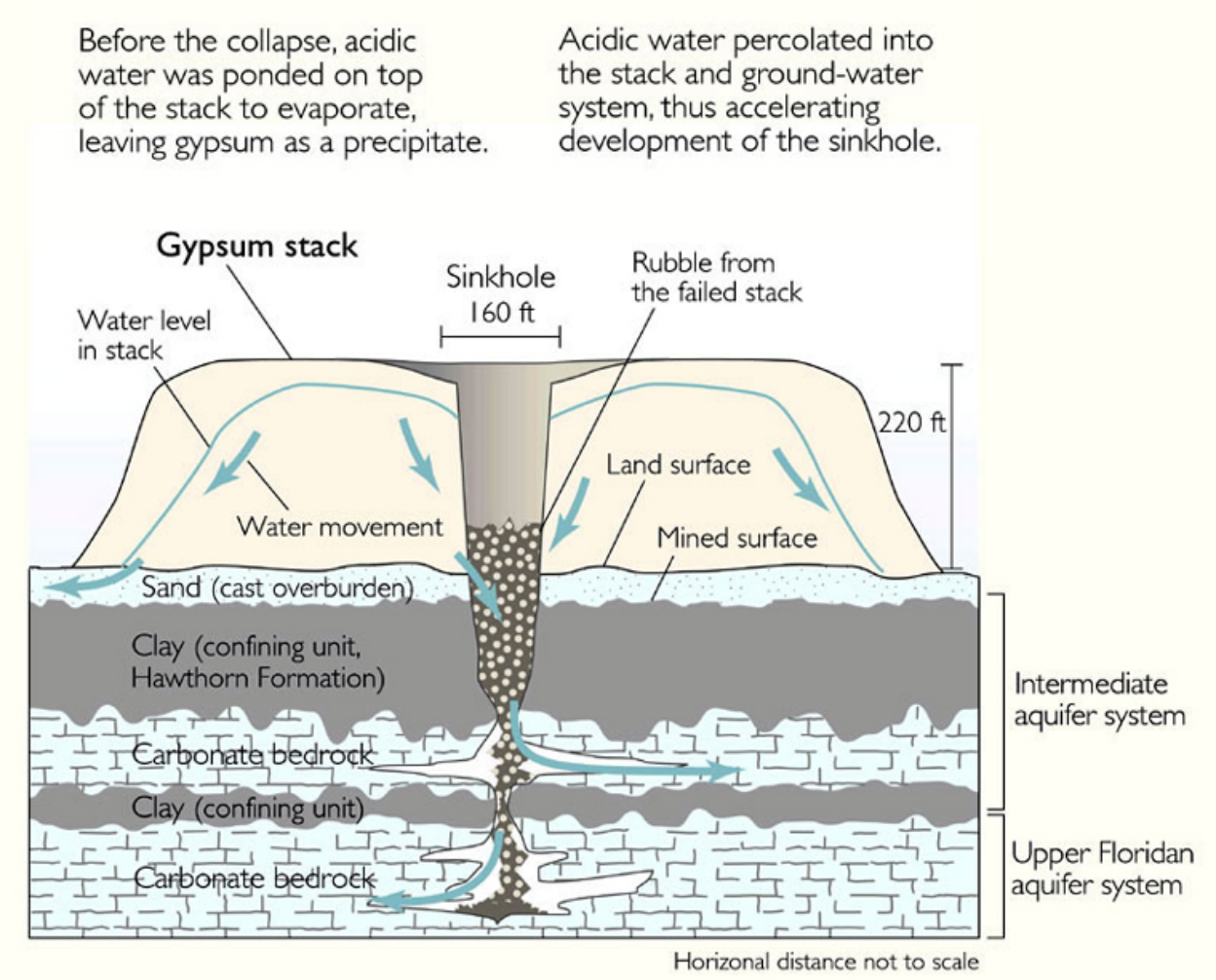
Al Attar et al. (2011) found elevated levels of fluoride in air and soil sampling near phosphogypsum stacks. Da Silva (2010) found that phosphate mining and processing (where phosphogypsum was created) enriched cadmium was enriched 105-208 times and uranium was enriched 18-44 times. It also found a general trend of an increase in heavy metals content with decreasing particle size.

There are 25 gypsum stacks in the region, including the New Wales stack that recently caused at least 215 million gallons of radioactive hazardous waste to spill into the Floridan aquifer.[91] This is not the first time a sinkhole has opened up below a radioactive phosphogypsum stack, it's not even the first time a sinkhole has opened up at this site. In 1994, a sinkhole formed under the north stack, and in 2004 and 2013, two other "anomalies" were remediated.[92]

Furthermore, in 2009 a sinkhole at the PCS White Springs facility released more than 90 million gallons of hazardous wastewaters into the Floridan aquifer.[93] In October 2015, the EPA and Mosaic settled a lawsuit regarding a series of alleged violations of how Mosaic handles and stores its hazardous waste.

The Southwest Florida Water Management District believes that sinkholes may form when "industrial phosphate run-off and materials settlement storage ponds are created….. The substantial weight of the new material can trigger an underground collapse of supporting material, thus creating a sinkhole."[94]

[91] AEIS 3-6.
[92] Fuleihan, N.F. 2013. Investigation of 2013 Anomaly New Wales Plan Closed North Gypstack.
[93] *Learn About Sinkholes: Sinkhole Collapse Beneath a Gypsum Stack,* SINKHOLE.ORG, www.sinkhole.org/facts10.php.
[94] *Florida Phosphate Mines Linked to Sinkholes*, FLMINES, https://www.flmines.com/sinkHoles.html.



2. The land has unique characteristics such as proximity to wetlands

The land has characteristics that are unique, including wetlands, particularly riparian forests. The proposed alternative will impact over 553 acres of Corps' wetlands. The wetlands and adjacent lands support a host of imperiled and iconic species including wood stork, eastern indigo snake, crested caracara, Florida scrub jay, bald eagle, gopher tortoise, Florida pine snake, gopher frog, Florida sandhill crane, Sherman's fox squirrel, Florida burrowing owl, southeastern American kestrel, Florida mouse, snowy egret, little blue heron, tricolor heron, white ibis, and American alligator.

Haag (2010) found wetlands are a dominant feature in Florida's landscape and represent a greater percentage of the land surface in Florida than in any other state in the conterminous United States. There are an estimated 11.4 million acres of wetlands, occupying 29% of the area of the State.[95] As Semlitsch and Bodie (1999) argue, small wetlands are crucial for maintaining regional biodiversity in a number of plant, invertebrate, and vertebrate taxa (e.g. amphibians). A consequence of losing these wetlands lies in potential changes to the metapopulation dynamics

[95] *Id.*

of the remaining wetlands.[96] The consequences could be a reduction in the number or density of individuals dispersing and an increase in dispersal distances among wetlands.[97] A reduction in wetland density can decrease the probability that a population can be "rescued" from extinction by a neighboring source population because of lower numbers of available recruits and greater distances between wetlands.[98] Remaining wetlands could face increased probabilities of population extinctions.[99]

While wetlands provide numerous services to human society, perhaps one of the easiest to quantify is flood protection. A Washington State Department of Ecology evaluation of the economic worth of this single function produced values ranging from $8,000 to $51,000 per acre (Leschine 1997). The study points out that "policies which permit wetlands to disappear that are presently contributing little to stem flood protection, but which have the potential to do so in the future, could lead to rapidly rising values for the remaining wetlands for flood protection, as increasingly marginal wetlands are called into service. At some point the 'next best' alternatives to enhanced flood protection will not involve wetlands at all, and the purely engineered systems that might have to be built could prove very expensive indeed."[100] Of course any analysis that included economic values of the full range of wetland functions including pollutant removal, flood protection, recreation, species protection, groundwater recharge, and others would obviously derive much higher values.

3. The effects on the quality of the human environment are likely to be highly controversial

The Corps has already received thousands of comment letters from concerned and impacted citizens of Florida.[101] Furthermore, the byproduct of the process the Corps is considering permitting is radioactive, with no real solution for permanent storage. These two factors alone warrant an Environmental Impact Statement and make a FONSI a factual and legal impossibility.

4. The possible effects on the human environment are highly uncertain or involve unique or unknown risks

This topic is covered in the public interest and public health and safety sections above.

5. The action is related to other actions with individually insignificant but cumulatively significant impacts

The FEIS details, and the Corps is currently considering, associated projects that cumulatively have significant impacts.

6. The action may adversely affect an endangered or threatened species or its

[96] *Id.* at 1131.
[97] *Id.*
[98] *Id.* at 1131-32.
[99] *Id.* at 1132.
[100] *Id.*
[101] AEIS at Chp. 1 p. 43-46; Manatee County Public Comments 1-7.

habitat that has been determined to be critical under the Endangered Species Act

This topic is covered in the following section.

IV. The Corps and U.S. Fish and Wildlife Service must comply with the Endangered Species Act

Congress enacted the ESA to provide a "means whereby the ecosystems upon which endangered species and threatened species depend may be conserved . . . [and to implement] a program for the conservation of such endangered species and threatened species."[102] At its core, the ESA prohibits any person from taking any species listed as endangered, and empowers the Service to promulgate regulations prohibiting the taking of any species listed as threatened.[103] "Take" is defined broadly to include all manner of harm or harassment to protected species, including both direct injury or mortality and also acts and omissions which disrupt or impair significant behavioral patterns.[104] Similarly, federal agencies are required to "carry[] out programs for the conservation of endangered species and threatened species,"[105] and to "insure that any action authorized, funded, or carried out by such agency…is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the adverse modification of [the critical] habitat of such species."[106]

Section 7 consultation is required for "any action [that] may affect listed species or critical habitat."[107] If the action agency determines its action "may affect" a listed species, the agency must initiate formal consultation with an expert agency (in this case, the Service).[108] Once the action agency has initiated formal consultation, the Service is required to complete a biological opinion (BiOp) for that proposed action.[109] The BiOp summarizes the Service's findings and determines whether the proposed agency action will jeopardize the continued existence of any species or result in adverse modification of critical habitat.[110] If the Service determines the agency action is likely to jeopardize the continued existence of a listed species or result in adverse modification, the BiOp impacts such that the agency action may avoid jeopardizing listed species.[111]

Pervading the Section 7 consultation process is the mandate for "each agency [to] use the best scientific and commercial data available."[112] Importantly, each federal agency has an independent duty to "use the best scientific and commercial data available" to ensure any action

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[102] 16 U.S.C. § 1531(b).
[103] 16 U.S.C. §§ 1538(a)(1); 1533(d); 50 C.F.R. § 222.101.
[104] "Take" is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19); 50 C.F.R. § 222.102.
[105] 16 U.S.C. § 1536(a)(2).
[106] *Id*.
[107] 50 C.F.R. § 402.14(a).
[108] *Id.*; JOINT CONSULTATION HANDBOOK at 2-6.
[109] 16 U.S.C. § 1536(b)(3)(A).
[110] 50 C.F.R. § 402.14(h).
[111] 16 U.S.C. § 1536(b)(3)(A).
[112] *Id.*

it authorizes "is not likely to jeopardize the continued existence…or result in the destruction or adverse modification of [the critical] habitat" of any listed species.[113] Section 7(a)(1) of the ESA requires the Corps, in consultation with and with the assistance of the Service, to utilize its authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species.[114] Federal agencies have an independent and substantive obligation to insure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify critical habitat.[115] Indeed, a "no jeopardy" BiOp from the Fisheries Service does not absolve the action agency of its duty to insure that its actions comply with the ESA.[116]

On June 1, 2012, the Corps issued a public notice for a permit application for dredging and filling activities at the Ona Mine. Ona Mine would extend mining south from historic mining areas and the approved Wingate East Mine, giving Mosaic approximately 45 years to mine phosphate from 22,320 acres in Hardee County and conduct reclamation activities.

Ona Mine is in the Peace River watershed and the Horse Creek floodplain. Horse Creek and the West Fork of Horse Creek flow directly through the Ona Mine site. Ona Mine contains 2,696 acres of herbaceous wetlands, 1,186 acres of forested wetlands, 6,339 acres of upland forests, 2,859 acres of native rangeland. Ona Mine is bordered to the north by the proposed SPE Mine and historical and ongoing mining areas, to the west by the approved Wingate East Mine, and to the south by the Pine Level/Keys Tract, an alternative considered in the FAEIS and still under consideration for future mining.

Mosaic's April 2015 biological assessment for Ona Mine does not discuss or otherwise mention manatees. Likewise, on August 1, 2012, the Corps submitted a request for formal consultation on the Ona Mine for eastern indigo snake, northern crested caracara, and wood stork, as well as a concurrence with its determination that Ona Mine may affect but is not likely to adversely affect the Florida panther, Florida scrub-jay, or Florida grasshopper sparrow.

1. The Service and Corps Must Evaluate Impacts of Ona Mine on Listed Species

Ona Mine will impact at least 16,000 acres of habitat for listed species, including the wood stork, eastern indigo snake, crested caracara, Florida scrub jay, bald eagle, gopher tortoise, Florida sandhill crane, gopher frog, Sherman's fox squirrel, Florida burrowing owl, southeastern American kestrel, Florida mouse, snowy egret, little blue heron, tricolor heron, white ibis, American alligator, Florida panther, and Florida manatee.

In addition to Ona Mine, the applicant is mining or in tends to mine an addition 30,000 acres of nearby land at Desoto, Wingate East, and South Pasture Mine. The Service must consider the cumulative effect of these mines on the species and their habitat at Ona Mine.

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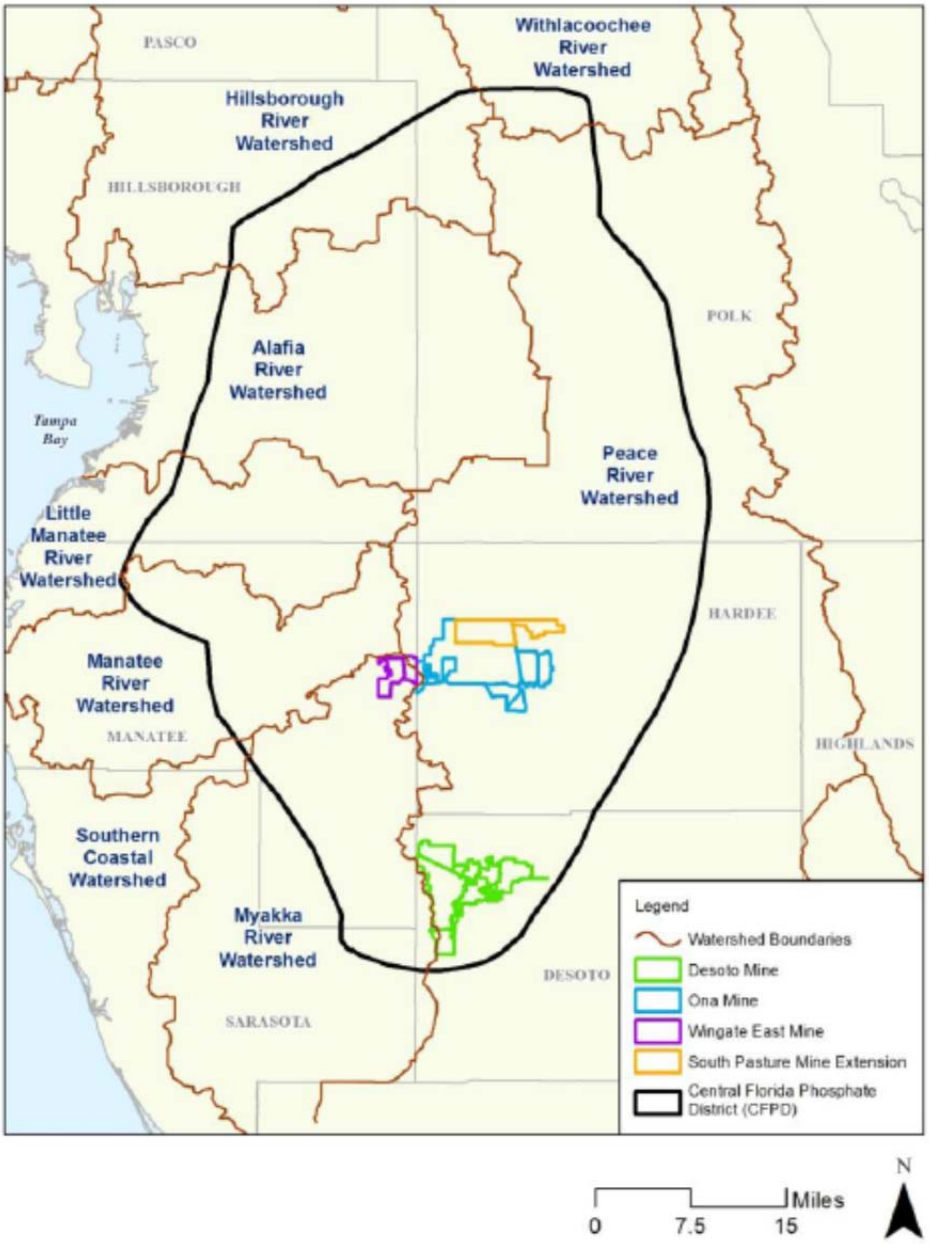
[113] 16 U.S.C. § 1536(a)(2).
[114] 16 U.S.C. § 1536(a)(1).
[115] 16 U.S.C. § 1536(a)(2); *See Pyramid Lake Paiute Tribe of Indians v. United States Dep't of the Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990).
[116] *Res. Ltd., Inc. v. Robertson*, 35 F.3d 1300, 1304 (9th Cir. 1994).



The leading cause of extinction is habitat loss (Harris 1984, Meffe 1997), and native habitats in Florida are rapidly disappearing (Kautz 2001 at 56). This has resulted in the extirpation or extinction of 13 vertebrates over the last 150 years (Kautz 2001 at 56). Habitat loss and fragmentation, coupled with human encroachment, have resulted in populations of species that are increasingly isolated from each other (Dobey 2002 at 68). Large mammalian carnivores, like the Florida panther, are particularly vulnerable to habitat loss and fragmentation because of their relatively low numbers, large home ranges, and interactions with humans (Noss 1996 entire, Woodroffe 1998 entire). Their low fecundity and long generation times result in reduced levels of genetic variation (Roekle 1993 entire, Lu 2001 entire). Habitat loss and fragmentation can lead to increased mortality (Jules 1998 entire); reduced abundance (Flather 2002 at 40-56);

disruption of the social structure of populations (Ims 1999 at 839-849, Cale 2003 entire); reduced population viability (Harrison 1999 at 225-230, Srikwan 2000 entire, Cale 2003 entire, Lindenmayer 2006); isolated populations with reduced population sizes and decreased genetic variation (Frankham 1996 entire). Loss of genetic variation may reduce the ability of individuals to adapt to a changing environment; cause inbreeding depression (Ebert 2002 entire); reduce survival and reproduction (Frankham 1995 entire, Reed 2003 entire); and increase the probability of extinction (Saacheri 1998 entire, Westmeier 1998, Kramer-Schadt 2004 entire, Letcher 2007 entire, Ruiz-Gutierrez 2008 entire, Sherwin 2000).

A 2009 study concluded the anthropogenic influences—primarily road density and vehicular traffic—can substantially affect the population dynamics of large carnivores with large home ranges, like the Florida panther (Hostetler 2009 entire). Habitat fragmentation and anthropogenic barriers to movement have limited the dispersal capability of species, reducing gene flow among populations and resulting in genetically distinct populations (Dixon 2007 at 455-464). Large carnivores may be much more susceptible to losses in genetic variation due to habitat fragmentation because of their large home ranges, low population densities, and long generation times (Paetkau 1994 entire, Johnson 2001). Isolation is reinforced when travel between subpopulations is limited due to significant barriers, such as high-volume roads (Paetkau 1997 entire, Mader 1984 entire, Brody 1989, Proctor 2002 entire, Voss 2001 entire, Keller 2003 entire, Gerlach 2000 entire, Trombulak 2000 entire, Coffin 2007 at 396-403). Thus roads and other anthropogenic obstacles cans substantially reduce gene flow among populations (Dixon 2007 at 455-464, Kyle 2001 at 343-346, Walker 2001 entire, Ernest 2004).

The applicant must provide with sufficient specificity what effect the permanent loss of the original habitat will have, or the effect the modified (so-called "reclaimed") land will have after it is finally "reclaimed" many years after it is destroyed.

Florida panther

The Service originally listed the Florida panther as an endangered species in 1967.[117] To this day the panther remains, "the most endangered mammal in the eastern [United States] . . . [with] only 120-180 left, all in South Florida."[118] While the Project does not currently support a Florida panther population, Florida panthers have been observed in the area and it could serve as important dispersal habitat and wildlife corridor connecting habitat farther north (Pinnell 2015).

As recently as 2012, the Florida Fish and Wildlife Conservation Commission was considering relocating Florida panthers to Duette Park to help support the population (Morelli 2012). A Florida panther was spotted near Myakka State Park in 2010, and there is no doubt that panthers are in Sarasota and Polk counties and will continue to move from south Florida northward across the Caloosahatchee River (Spinner 2012). Indeed, as recent as March 2017, wildlife biologists announced that they have verified the presence of at least two Florida panther kittens north of

[117] U.S. Fish & Wildlife Service, *ECOS: Environmental Conservation online System, Florida panther* (Puma(=felis) concolor coryi), http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A008.
[118] *Florida Panther: National Wildlife Refuge, Florida*, U.S. FISH & WILDLIFE SERV., http://www.fws.gov/refuge/florida_panther/.

Caloosahatchee.[119] Just not too long before the kittens were spotted, Florida Fish and Wildlife Conservation Commission (FWC) announced on November 14, 2016, that a female Florida panther has crossed the Caloosahatchee river.[120] In addition, the FWC reported on February 28, 2017 that a 3-year-old male Florida panther's body was found on a rural road in DeSoto County, east of Arcadia.[121] Florida panther sightings have increased as the continued destruction of their habitat occurs. Panthers have been seen in Sarasota and Polk counties, and are likely moving through Manatee County.[122]

Panthers have faced an uphill battle after their numbers declined to as few as 20-30 individuals.[123] Despite the relative success of a genetic restoration project, only "a single wild population in south Florida" exists and it is "all that remains of [the] species."[124] Development in south Florida has significantly increased in the area of suitable panther habitat and has led to increased panther mortalities from vehicle collisions, inbreeding, increased competition for food, and territorial disputes (Staletovich 2014).[125] For example, it is estimated that male panthers travel and patrol a territory of several hundred square miles (Tingley 2015). The panther's large territory-needs and limited habitat has led to intraspecific aggression, which was responsible for approximately 42% of panther mortalities between 1990 and 2004.[126]

The biggest threat to the panther's existence is habitat destruction, thus any proposed conservation plan must be consistent with the panther's recovery plan to ensure that the action undertaken does not undermine the species' chances of recovery. The recovery plan sets forth a goal to "maintain, restore, and expand the panther population and its habitat in south Florida and expand the breeding . . . population in south Florida . . . ."[127] The Project will negatively impact the recovery of the panther, whose greatest threats are habitat destruction and fragmentation.[128]

The Service's analysis of the environmental baseline will need to: 1) take into account the fact that there is currently not enough habitat available to support the existing panther population; and 2) analyze the impact of other projects in the area.

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[119] Craig Pittman, *Florida panther kittens found north of Caloosahatchee River for first time in decades*, TAMPA BAY TIMES (March 27, 2017 11:12 AM), http://www.tampabay.com/news/environment/wildlife/florida-panther-kittens-found-north-of-caloosahatchee-river-for-first-time/2318043.

[120] FWC,*FWC collects evidence of a female panther north of Caloosahatchee River* (Nov. 14, 2016 1:09 PM) https://content.govdelivery.com/accounts/FLFFWCC/bulletins/172613c.

[121] *Panther Found Dead in Southwest Florida*, USNEWS (March 3, 2017 2:06 AM), https://www.usnews.com/news/best-states/florida/articles/2017-03-03/panther-found-dead-in-southwest-florida.

[122]Isabel Mascareñas**,** *Panther sightings increase as development takes habitat***,** WTSP (March 31, 2016 7:08 PM) http://www.wtsp.com/life/animals/panther-sightings-increase-as-development-takes-habitat/112576382.

[123] *Florida Panther: National Wildlife Refuge, Florida*, U.S. FISH & WILDLIFE SERV., http://www.fws.gov/refuge/florida_panther/wah/panther.html.

[124] *Id*.

[125] *Id*. In 2014, thirty panthers were killed, and the majority of these deaths resulted from vehicle collisions. *Id*.

[126] The Florida Panther Recovery Team & South Florida Ecological Services Office, U.S. Fish & Wildlife Serv., *Panther recovery plan* (Puma concolor coryi), U.S. FISH & WILDLIFE SERV., at 17 [hereinafter *Panther Recovery Plan*]; Tingley at 26.

[127] *Id.* at (IV)(1), 101.

[128] *Everglades, Florida Panther: Species Profile*, NAT. PARK SERV., U.S. DEPT. OF INTERIOR, http://www.nps.gov/ever/learn/nature/floridapanther.htm.

Wood stork

The Service listed the wood stork under the ESA as an endangered species in 1984, and it is the only species of stork "regularly occurring in the United States."[129] In 2014, the Service upgraded the status of the species to "threatened" largely due to successful recovery efforts in Georgia.[130] Although wood storks have seen some improvements in their numbers overall, the species is still in decline, as evidenced by its numbers in Corkscrew Swamp, which until recently was considered "the most productive colony in the nation."[131] Wood storks are found primarily in Florida, Georgia, and parts of South Carolina; however, there have been occasional sightings in North Carolina and as far west as Mississippi.[132] It is suspected that the species migrates and spends its winters in south Florida, as there is an influx of storks during winter months.[133] Wood storks can be observed in south Florida all year. Historically, the central and northern Everglades are among the areas where this population surge is most evident. Some years, the Everglades system has been documented to support approximately 55% of the entire U.S. population of the species.[134] Unfortunately, south Florida colonies have been plagued with multi-year nest failures in recent years.

The wetlands and flow-way located on the project site support downstream regional wetland systems. In Southwest Florida, Lauritsen (2010) examined the importance of seasonal, short-hydroperiod wetlands to foraging federally threatened wood storks, which supply most of the food energy for initiating reproduction and suggested that the loss of these wetlands are not being appropriately mitigated for under State wetlands permitting law. The impacts of the loss of these wetlands may result in no nesting or abandonment of nesting attempts by wood storks at sites such as Corkscrew Swamp Sanctuary. The Service will need to calculate the loss of wetlands and other surface waters (jurisdictional and non-jurisdictional) that will result from the project and the effect that will have on the wood stork.

Both freshwater and estuarine wetland ecosystems may serve as suitable wood stork habitat.[135] Storks tend to nest in a variety of different trees depending on what is available within the habitat, including: cypress, black gum, southern willow, red mangroves, prickly pear cactus, Brazilian pepper, and Australian pine.[136] Wood storks require nesting sites located in standing water throughout the nesting season to protect the nest from predators.[137]

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[129] U.S. Fish & Wildlife Service, *Wood Stork Recovery Plan: Revised Recovery Plan for the U.S. Breeding Population of the Wood Stork*, http://ecos.fws.gov/docs/recovery_plan/970127.pdf, at 1 (Jan. 27, 1997) [hereinafter *Wood Stork Recovery Plan*].
[130] *Endangered and Threatened Wildlife and Plants; Reclassification of the U.S. Breeding Population of the Wood Stork From Endangered to Threatened*, 79 Fed. Reg. 37078 (June 30, 2014).
[131] National Audubon Society, Inc., *Audubon: Corkscrew Swamp Sanctuary, Wood Storks* (*Mycteria americana*) [hereinafter, *Audubon: Corkscrew Swamp*]. In the first decade of monitoring at Corkscrew Swamp, from 1958–1967, there was an average of 5,450 wood stork chicks a year, compared to the years 2003–2012, which experienced an average of 540 chicks.
[132] *Wood Stork Recovery Plan* at 2.
[133] *Id*.
[134] *Id*.
[135] *Id*. at 3.
[136] *Id*.
[137] *Id*.

For foraging, it is critical that the storks have access to shallow, open water.[138] The species forages using tactilocation, a process where it wades through the water with its beak submerged and clamps down on prey, usually small fish, when they come in contact with its beak.[139] Storks require shallow waters to wade in and fairly dense stocks of fish to support a colony's feeding habits.[140] Storks' needs are somewhat less specific when it comes to roosting trees; although they look for similar sites as those used for nesting, they will roost in a greater variety of trees depending on the availability of food.[141]

The greatest threats to the wood stork's existence are the loss of adequate habitat for feeding, changes in water levels and hydrology (habitat modification), lack of nesting habitat, "human disturbance," and loss resulting from the adverse effects of pesticide and chemical contamination.[142] As wetlands are drained and filled—primarily for development and agriculture—the stork's habitat is irreversibly destroyed. Because of the stork's specific foraging and nesting needs, changes in hydrology resulting from developmental impacts, both direct and indirect, can have a major effect on the species' ability to survive in a given area.

The Project would impact 533 acres of Corps jurisdictional wetlands that likely provide foraging habitat for the wood stork. Nothing in the 2012 statement indicates that a temporary loss is not a take under the ESA. Furthermore, nothing in the 2012 statement demonstrates that the land will be reclaimed adequately and prey base restored, by for example, comparing to other reclaimed lands. The 2012 statement does not look at take from vehicle collision over the course of the Project, or the loss or reduction of foraging habitat. The Service and Corps must consider all of these factors during Section 7 consultation.

Audubon's crested caracara

The Service listed the Audubon (or Northern) crested caracara as a threatened species under the ESA in 1987.[143] The species historically was found throughout peninsular south Florida in wet and dry prairie habitats featuring interspersed cabbage palm trees.[144] Now, the caracara has somewhat adapted to land use changes, using pasturelands and in some cases citrus and other agricultural lands in place of its natural habitat.[145] Still, caracaras nest almost exclusively in cabbage palms, and ideal habitat conditions for the species consists of these palms "surrounded by open habitats with low ground cover and low density of tall or shrubby vegetation."[146] The species is an opportunistic hunter, seeking out prey "on the wing, from perches, and on the ground."[147]

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[138] *Id*. at 4.
[139] *Id*.
[140] *Id*.
[141] *Id*.
[142] *Id*. at 10–12.
[143] U.S. Fish & Wildlife Service, *Multiple Species Recovery Plan for South Florida: Audubon's Crested Caracara:* Polyborus plancus audubonii, U.S. DEPT. OF INTERIOR, 4-219, http://www.fws.gov/southeast/vbpdfs/species/birds/acca.pdf.
[144] *Id*. at 4-221–4-222.
[145] *Id*. at 4-222.
[146] *Id*.
[147] *Id*. at 4-223.

The primary threat to the species is habitat loss.[148] The majority of the caracara's habitat loss is attributable to agricultural and residential development.[149] In addition to habitat destruction, the species has suffered from direct human impacts, including mortalities from vehicular collisions, traps, and intentional killings resulting from misplaced fear that the species preys on livestock.[150] The Service's recovery plan for the northern crested caracara outlines specific measures that should be taken to protect the caracara including, efforts to "create, restore, or expand occupied habitat wherever possible."[151] The plan further states that conservation goals may be met through the expansion of habitat in areas with individuals present, as well as restoration of habitat in vacant areas.

The 2012 statement does not evaluate the direct effects from the Project including mortality from vehicular traffic, harassment, and missed foraging and breeding opportunities; and that the indirect effects include post-construction maintenance. The Service and Corps will need to consider these impacts during Section 7 consultation.

The Project will harm amphibians and reptiles in particular

Reptiles and amphibians (herpetofauna) are in the midst of a global extinction crisis. In 2013, over 200 scientists published a study that found nearly one in five reptilian species are threatened with extinction globally, with the highest proportion of threatened reptile species living in freshwater environments (Bohm et al. 2014, Gibbons et al. 2000). Amphibians are also declining in the United States and globally (Adams et al. 2013, Gratwicke et al. 2012). These classes are particularly sensitive to changes in ecosystems because of their unique biology and life-history traits.

The state of Florida is blessed with a rich diversity of herpetofauna. According to Manatee County Mining Ordinance 04-039, 21 native amphibians and 49 native reptiles are known or suspected to occur in Manatee County on existing or future phosphate-mined lands.[152] Several of these species are rare and receive either state or federal protection.

The proposed mine extension will affect many of the unique and sensitive reptiles and amphibians on the mining site and in the surrounding areas. The Project will destroy important habitats and microhabitat features, degrade and fragment the mining site and surrounding land, and disrupt essential species behaviors. Several rare and imperiled species have ranges that overlap with the proposed mine extension and will be harmed by mining activities. The proposed mine extension will detrimentally and irreparably harm the native herpetofauna by destroying their natural habitat during the mining process, degrading and fragmenting surrounding habitat, and disturbing the species' essential feeding, breeding, and sheltering behaviors. For reptiles and amphibians, which are tremendously sensitive to environmental change due to their biology and natural history traits, these changes can be devastating.

[148] *Id*. at 4-225.
[149] *Id*.
[150] *Id*.
[151] *Id*. at 4-234.
[152] Manatee County Ordinance No. 04-039, Table 5, pp. 86, 88–100.

During the mining process, the loud noise and vibrations caused by the mining activities will likely interrupt essential amphibian and reptilian behaviors at the Project site and for great distances in the surrounding areas. For example, many frog species rely on "calling" or "chorusing" to successfully mate, and loud noises can interrupt their mating behaviors by causing physiological stress, altering the tone and sound of the frog's call (which can cause it to sound less attractive to prospective mates), or causing the frog to go silent (Tennessen et al. 2014; Parris et al. 2009; Thierry 2008; Bee & Swanson 2007). Likewise, vibrations and sounds may frighten or harass nearby reptiles and amphibians, causing them to travel out of their way to avoid the Project area, and thus disrupting their normal movement patterns as they seek out food and mates. Because the eastern indigo snake and Florida pine snake are wide-ranging species (USFWS 1999, Miller et al. 2009), it is possible the activities could even affect snakes that do not live on the site but instead use it as a travel corridor.

The Project will also destroy, degrade, and fragment suitable habitat the native herpetofauna relies on for survival. Phosphate mining completely alters Florida's natural landscape, which is an irreplaceable product of the slow, steady interactions of geology, biology, and hydrology over thousands of years (Allen and Main 2005). Phosphate mining companies use heavy machinery to remove all native vegetation and dig deep into the ground, manipulating the natural topography and soil composition, compacting the earth, and forcing native species from their habitat. It is likely that smaller, slower amphibians and reptiles will be unable to avoid the mining activities, causing them to be buried or crushed in the process. Those that avoid the activity will be forced from their homes for decades and potentially displaced into areas that lack the microhabitat they need to survive.

Habitat loss is especially harmful to reptiles and amphibians because many species have very particular and interrelated habitat needs. For example, the gopher tortoise requires well-drained, sandy soil in areas with longleaf pine, wiregrass, and herbaceous plants to eat (FWC, undated b; FWS 2016). Gopher tortoises require these particular habitat conditions to dig their burrows. In turn, gopher tortoise burrows are their own important microhabitats, providing refuge to over 300 other species. If mining were to be permitted in suitable, occupied gopher tortoise habitat, the tortoises would be protected and relocated under Florida law; however, many of the over 300 other species that depend on their burrows would be displaced and without the burrow associates they rely on to excavate protective refuges. Those species include the imperiled eastern indigo snake, gopher frog, Florida pine snake, and eastern diamondback rattlesnake.

Reptiles and amphibians that are able to migrate from the mining site will be left vulnerable as they search for new habitat to suit their needs. Importantly, ectothermic reptiles and amphibians need cool microhabitats (thermal resources) they can use to regulate their body temperatures (thermoregulate) (Sears et al. 2016). The costs of seeking out these microhabitats include energy loss, risk of being eaten by predators, and missed opportunities to feed and breed (Sears et al. 2016). These opportunity costs greatly increase when species must travel farther to reach thermal resources. Thus, far-traveled reptiles and amphibians are more likely to be spotted by predators and more likely to be in a weakened state and vulnerable to capture when they are spotted.

Reptiles' and amphibians' very abilities to regulate and maintain their body temperatures will be compromised when they are forced out of their natural habitat by mining activity. Reptiles and amphibians are ectotherms that depend on their surrounding environments to keep their bodies at stable, healthy temperatures. In a recent study, Sears et al. (2016) studied lizards' abilities to regulate their body temperatures in environments with small, evenly dispersed shaded areas against environments with large, irregularly distributed shaded areas. They found that the lizards were able to more accurately regulate their temperature using less energy in areas with evenly dispersed shaded areas (Sears et al. 2016). Because the phosphate mining operations will completely destroy any thermal resources on the Ona site, native reptiles and amphibians that are not buried or killed on site will have to travel great distances and expend enormous energy to seek out new thermal resources. This will disrupt their mating behaviors and subject them to increased predation as they travel in the open. It is also possible that smaller, slower, and weaker species will die from overheating or starvation before they find new habitat.
Even after mining activity is complete and the land is "reclaimed," the new landscape likely will not meet the needs of the varied herpetofauna that rely on it. Reclamation is not the same as habitat restoration, and there is no guarantee that the reclaimed land will have the same attributes it had before mining activity commenced, many of which are necessary to the viability of native reptiles and amphibians in the area.

Large-scale soil disturbance can cause ecological succession and encourage invasion of exotic species, which in turn lead to an entirely different vegetative structure than the previously sustained on a site (D'Antonio & Meyerson 2002, Davis et al. 2000, Sher & Hyatt 1999). For many species, native vegetation is key to their survival, and changes in vegetative structure will render the reclaimed site uninhabitable. For instance, gopher tortoises require specific sandy soils for digging burrows and herbaceous groundcover to eat (FWC, undated b; FWS 2016). Florida pine snakes can tolerate degraded habitats (to some degree) but may not use habitats where succession has led to closed canopy forests (FWC 2013b).

Moreover, phosphate mining companies have not demonstrated post-mining reclamation techniques that successfully restore the wide range of habitats, vegetation, and ecological functions needed to sustain the diverse range of species that once inhabited the site before mining activities began. This is particularly true for amphibians, which often have very particular and often diverse aquatic habitat requirements to maintain amphibian species composition, richness, and abundance (Brown et al. 2014). For example, some species prefer a long hydroperiod, which allows for longer breeding periods, while other species will not use wetlands with long hydroperiods because of the potential for predatory fish to colonize them (Brown et al. 2014).

Brown et al. (2014) reviewed 37 peer-reviewed studies of amphibian use of created and restored wetlands, within and outside the United States, which were produced to mitigate wetland habitat loss due to development or degradation. They found that species richness or abundance for some or all species was greater at created or restored sites (compared to reference sites) in 54% of studies, similar in 35% and lower in 11% (Brown et al. 2014). The scientists found that created and restored wetlands were typically larger, deeper, and had longer hydroperiods than natural wetlands, which generally resulted in greater species richness (Brown et al. 2014). However, the study also acknowledged that the rarest and most imperiled amphibian species are typically

habitat specialists that are "unable to adapt to human-influenced terrestrial or aquatic habitat changes" and that "need and preferences of target species should be a major consideration in wetland creation and restoration" (Brown et al. 2014).

Additionally, the scientists expressed concern that nearly every study in the literature review replaced seasonal wetlands with more permanent wetlands, noting that it "appear[ed] to be a common outcome of wetland creation projects" (Brown et al. 2014). For species like the gopher frog, which require temporary, fishless wetlands, this reclamation trend is troubling. Brown et al. (2014) also noted that in at least one study, these permanent wetlands created in mine tailing ponds at a California site provided ideal habitat for an invasive bullfrog. Moreover, the fact that the majority of wetland restoration and reclamation projects resulted in a single type of wetland (permanent) indicates that reclamation techniques have not yet demonstrated the ability to integrate diverse or specialized ecological attributes (such as ephemeral wetlands or longleaf pine uplands) (Brown et al. 2014).

Even studies conducted by FIPR have reflected the insufficiency of reclamation measures when it comes to restoring wildlife diversity. Mushinsky and McCoy (2001) compared vertebrate wildlife species found on reclaimed phosphate mined land (reclaimed land) with vertebrate wildlife species found on unmined land (reference land) in central Florida. They identified several species that were more commonly found at reference sites than at reclaimed sites, including the oak toad (*Bufo quercicus*), southern five-lined skink (*Eumeces inexpectatus*), pine woods treefrog (*Hyla femoralis*) (Mushinsky & McCoy 2001). However, this study did not analyze the difference in distribution at reference and reclaimed sites for the gopher frog, gopher tortoise, eastern indigo snake because they were too rare at the reference sites to determine a difference in distribution (Mushinsky & McCoy 2001, p. 67). They also found that although species of lizards and turtles were similarly represented at reference and reclaimed sites, species of amphibians and snakes that were widespread among reference sites were found at only a few reclaimed sites (Mushinsky & McCoy 2001). Likewise, species of amphibians and snakes found in relatively large numbers at reference sites were found in only small numbers at reclaimed sites (Mushinsky & McCoy 2001).

Though the study does show some similarities in species and prevalence between reference and reclaimed sites, it also clearly demonstrates that reclamation efforts do not fully restore the herpetofaunal diversity of comparable unmined lands. Furthermore, because it excluded rare species, the study has no bearing on the suitability of reclaimed lands for the most sensitive reptiles and amphibians. The scientists concluded that specific preferences for breeding sites and vegetation structure distinguished the species that were more commonly found at reference sites and made recommendations for future reclamation efforts incorporate more varied habitat types (Mushinsky & McCoy 2001). However, no matter how hopeful the recommendations are, they do not demonstrate the phosphate mining industry's ability to restore wildlife diversity at reclaimed sites.

The site of the proposed mine expansion overlaps with the ranges of several protected reptile and amphibian species including the eastern indigo snake, Florida pine snake, gopher tortoise, and gopher frog (see Figures 1 and 2, below). It also overlaps with the range of the eastern diamondback rattlesnake, which may be seen throughout the state and is currently under

consideration for federal Endangered Species Act protection. The site may also fall within the range of the Suwannee cooter, which is a state species of special concern whose known range has been extended farther south by recent studies.

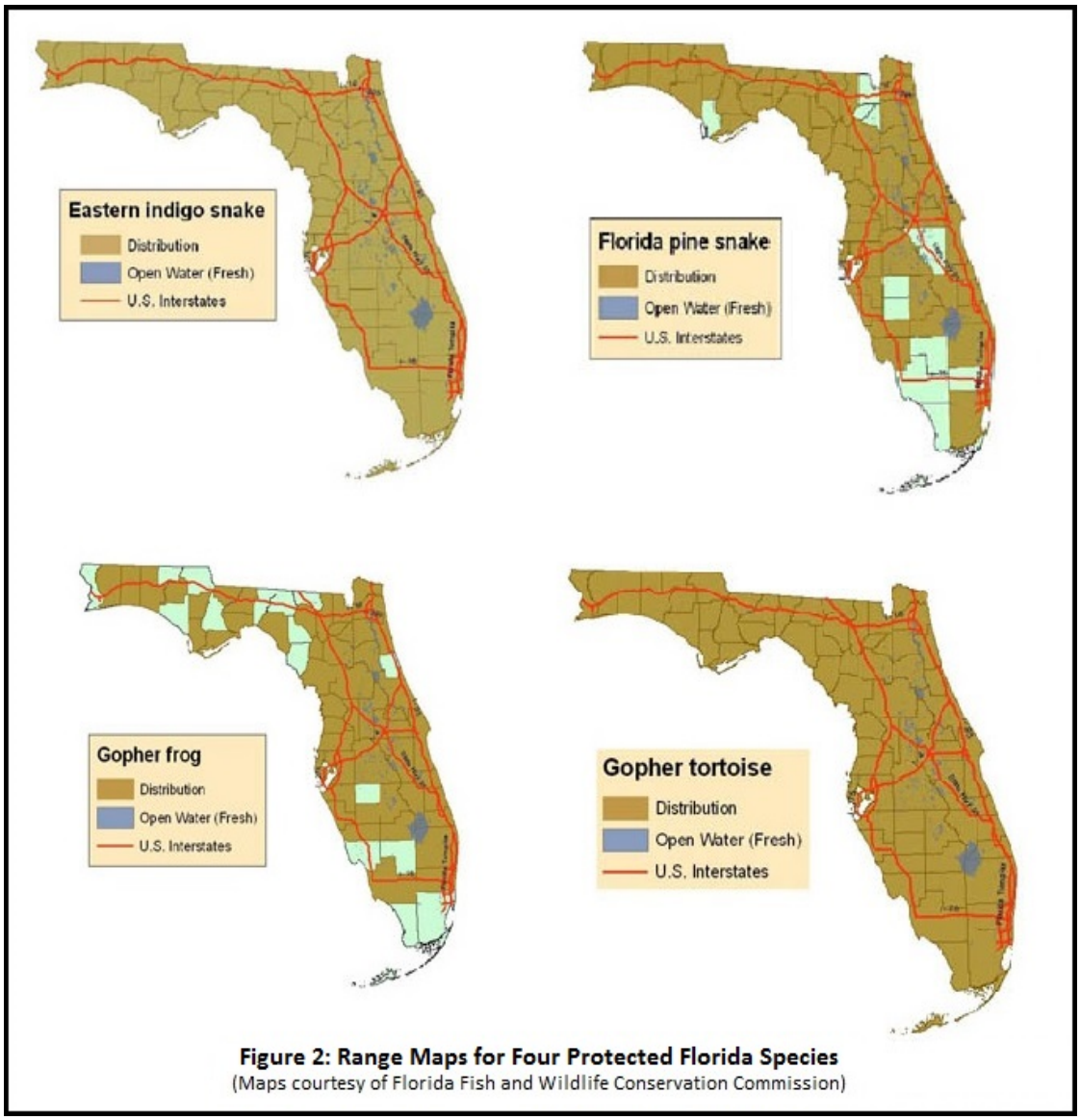


Figure 2: Range Maps for Four Protected Florida Species
(Maps courtesy of Florida Fish and Wildlife Conservation Commission)

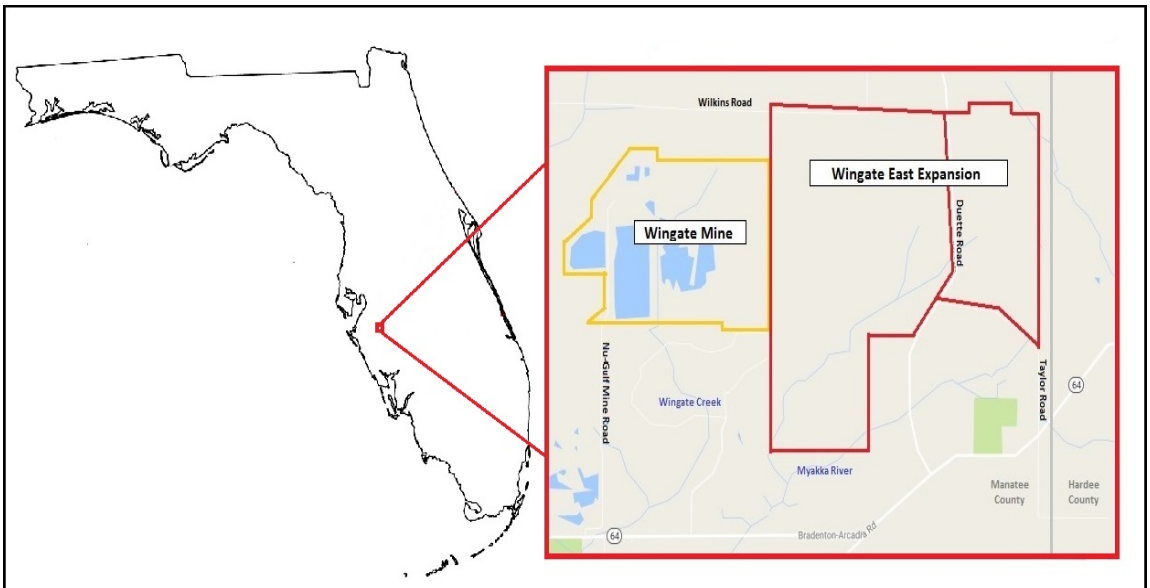


Figure 1: Approximate location of Wingate East Expansion in relation to the State of Florida
(Sources: Google Maps and Manatee County Property Appraiser website)

Gopher tortoise

In Florida, the gopher tortoise is a federal candidate species under the ESA and a highly valuable "keystone species" that benefits and ensures the survival of other species in its ecosystem.[153] This tortoise is known to benefit over 300 different species, including eastern indigo snakes, foxes, skunks, and lizards, which use gopher tortoise burrows for shelter and for various parts of their lifecycles.[154] The gopher tortoise is generally found in longleaf pine or oak sandhill ecosystems, but it may also be found in other dry, upland habitats within its historic range.[155]

The greatest threat to the gopher tortoise is habitat destruction, including habitat fragmentation and degradation, caused by urban development, agricultural conversion, forestry, and mining.[156] Habitat fragmentation can lead to reproductive isolation, increased predation due to exposed habitat edges, and mortality resulting from vehicular collisions.[157]

Intraservice consultation and conference must consider effects on listed, proposed, and candidate species.[158] "Candidate species are treated as if they are proposed for listing for purposes of

[153] U.S. Fish & Wildlife Service, *Range-Wide Conservation Strategy for the Gopher Tortoise*, U.S. DEPT. OF INTERIOR, 4, http://www.fws.gov/southeast/candidateconservation/pdf/FinalGopherTortoiseStrategy.pdf [hereinafter *Conservation Strategy for Gopher Tortoise*].
[154] *Id*.
[155] U.S. Fish & Wildlife Service: North Florida Ecological Services Office, *Gopher Tortoise* (*Gopherus polyphemus*), U.S. FISH & WILDLIFE SERVICE, http://www.fws.gov/northflorida/gophertortoise/gopher_tortoise_fact_sheet.html.
[156] *Conservation Strategy for Gopher Tortoise* at 9; NatureServe. 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia, http://www.natureserve.org/explorer.
[157] *Conservation Strategy for Gopher Tortoise* at 9.
[158] Consultation Handbook at 1-5.

conducting internal FWS conferencing." Therefore, must consider impacts to the gopher tortoise during consultation.

Gopher frog

The gopher frog is under review by the Service to be listed under the ESA. The gopher frog is a relatively large, brown-spotted frog that can grow to be between 2.5 and 4.4 inches long (FWC 2013). Their tadpoles are greenish gold with dark spots scattered over the body and tail (FWC 2013). Gopher frogs typically live in dry, well-drained upland habitats that are occupied by gopher tortoises and close to shallow, temporary, fishless breeding wetlands (FWC 2013). They have been found in a variety of habitats including sandhills, upland pine forests, scrub, flatwoods, dry prairies, pastures, and various other disturbed habitats that still host gopher tortoises (FWC 2013). Gopher frogs spend the majority of the year in the dry uplands, where they shelter in gopher tortoise burrows and hunt insects and small frogs (FWC 2013).

Gopher frogs have very specific habitat needs for breeding. They generally breed in the summer in central and south Florida, though they can breed any time of the year with heavy rains (FWC 2013). Male frogs attract females to the breeding pools by calling, and females deposit a fist-sized mass of 500-5,000 eggs, which the male then fertilizes (FWC 2013). The eggs hatch in 4–5 days and develop as tadpoles for 3–7 months (FWC 2013). Newly metamorphosed frogs then migrate back into the uplands where they shelter in burrows (FWC 2013).

Even with the appropriate habitat conditions, successful reproduction—and thus population viability— can be difficult. Gopher frog longevity in the wild is unknown, though tadpoles face many predators, ranging from water snakes to predatory fish to insects, as they develop (FWC 2013). One study found that nearly 75% of froglets leaving a pond were killed by snakes or mammals (FWC 2013). Adult frogs are preyed upon by water snakes and possibly turtles (FWC 2013). Thus, having accessible, suitable wetland habitat for breeding and upland habitat for feeding and shelter is imperative to the gopher frog's survival.

Unfortunately, the gopher frog has experienced drastic population declines because of habitat loss and degradation, and the species now occurs only in scattered populations in the southern United States (Humphries & Sisson 2012). Populations in the Florida peninsula are relatively secure, but the species is declining in other parts of its range and in some parts of Florida (FWC 2013). Surdick (2013) studied gopher frogs in the Big Bend Wildlife Management Area on the Gulf Coast of Florida and remarked that the frog is "of conservation concern because most populations have gone locally extinct across the geographic distribution." Likewise, the gopher frog's range in North Carolina has contracted dramatically (Humphries 2012), and sparse records of the gopher frog exist in Tennessee (TWRA, undated).

Habitat loss leads to isolated populations, which itself is another threat to the survival of the gopher frog. Greenberg (2001) studied influences on success of juvenile recruitment for gopher frogs, and he found that the condition of longleaf pine-wiregrass sandhills surrounding ponds may influence levels of juvenile recruitment. Greenberg's study illustrates the role of multiple ponds in sustaining gopher frog populations. This finding is important, as roads often fragment essential amphibian habitats and can lead to road mortality. Cosentino et al. (2014) found that

"road disturbance was almost universally important in that it constrained total species richness and the distribution of most species" of amphibians they studied. Though not specifically covered in scientific literature, the excavation of a mining pit and clay settling pond could easily create similar impacts to a gopher frog's ability to access and use suitable breeding and sheltering habitat. Aside from destroying the utility of any habitat at the Project site itself, mining activities would also create a barrier between suitable isolated wetlands on adjacent land. It could also physically separate members of a gopher frog population, genetically isolating them.

Climate change is and will continue to be a major threat to the gopher frog, impacting availability of water and altering the frog's behavior. For amphibians, water availability is a key resource that affects survival, reproduction, activity levels, and dispersal, while temperature can affect timing of breeding, hibernation, and the ability to find food (Corn 2005; Blaustein et al. 2010, Lawler et al. 2010). Climate change is driving greater variability in precipitation, increasing the frequency of extreme weather events, and increasing surface water temperatures (Melillo et al. 2014). As a result, climate-change-related changes in hydrological regimes (i.e., alterations in stream flow, lake depth, amount and duration and winter snow pack, pond hydroperiods, soil moisture) and warming temperatures are predicted to have largely negative effects on amphibian breeding success and survival, dispersal, and habitat suitability (Blaustein et al. 2010, Walls et al. 2013).

Gopher frogs will likely experience a number of other behavioral shifts which could lead to climate-change induced population declines. Numerous studies have documented climate-associated shifts in amphibian phenology, range, and pathogen-host interactions (Corn 2005; Blaustein et al. 2010; Li et al. 2013), with emerging evidence for climate change-related declines (Lowe 2012, Rohr & Palmer 2013). Li et al. (2013) reported the results of 14 long-term studies of the effects of climate change on amphibian timing of breeding in the temperate zone of the U.S. and Europe. This meta-analysis indicated that more than half of studied populations (28 of 44 populations of 31 species) showed earlier breeding dates, while 13 showed no change, and 3 populations showed later breeding dates, where spring-breeding species tended to breed earlier and autumn-breeding species tended to breed later. Several studies indicate that shifts in timing of breeding can have fitness and population-level consequences. For example, amphibians that emerge earlier in the spring can be vulnerable to winter freeze events or dessication if they arrive at breeding sites prior to spring rains (Li et al. 2013).

In addition, global climate change poses a serious threat to terrestrial ectotherms like the gopher frog simply because they rely on the external environment to regulate and stabilize their body temperatures. Although Florida's climate is predicted to warm less than other regions in North America, a climate inventory over the past 35 to 108 years indicated Florida is experiencing greater climate extremes, with trends of increased summer and fall maximum temperatures and decreased winter and spring minimum temperatures (Reece et al. 2013). Because gopher frogs rely on the external environment to regulate and maintain their body temperatures (thermoregulate), they will have difficulty surviving as temperatures rise (Reece et al. 2013). This threat will only be compounded by habitat destruction and fragmentation, which will force gopher frogs to travel farther distances to concentrated areas of habitat with the appropriate microclimate to thermoregulate (Sears et al. 2016).

The gopher frog is also threatened by sea-level rise, which will cause human populations to move into previously unaltered habitats to escape coastal areas (Cameron Devitt et al. 2012; Mellilo et al. 2014; Karl et al. 2009; FWC, undated a). Because of declining gopher frog populations and the many threats they face, the gopher frog is listed as a Florida State Species of Special Concern (FWC 2013); however, it is proposed for delisting in Florida's Imperiled Species Management Plan as FWC intends to phase out the "Species of Special Concern" listing status by the end of 2017 (FWC 2016). In 2012, the Center for Biological Diversity and partners petitioned the U.S. Fish and Wildlife Service (FWS) to have the gopher frog listed under the federal Endangered Species Act (CBD et al. 2012), and it received a positive 90-day finding on July 1, 2015, indicating listing may be warranted.[159]

Intraservice consultation and conference must consider effects on listed, proposed, and candidate species.[160] Therefore, the Service must consider impacts to the gopher frog during consultation. The Service should consider the effects of habitat destruction, degradation, and fragmentation on the gopher frog when considering the impacts of the Project. Specifically, it should consider how mining activities will destroy existing wetland and upland habitat, degrade surrounding habitat, and prevent movement between isolated habitat fragments surrounding the Project area. Likewise, the Service should take microhabitat into account—specifically, the need for shallow, fishless, ephemeral wetlands for mating, as well as dry, sandy gopher tortoise burrows in the uplands for shelter. The Service should also consider how the Project's impacts will exacerbate the effects of climate change on the gopher frog. The applicant must provide substantial and competent evidence proving that the Project is not incompatible with the gopher frog or its habitat needs.

Eastern diamondback rattlesnake

The eastern diamondback rattlesnake is currently under consideration for federal ESA listing after receiving a positive 90-day finding on May 10, 2012.[161] Though the eastern diamondback rattlesnake's range once encompassed the Coastal Plain of the southeastern United States from North Carolina to south Florida, and west to Mississippi and the Florida parishes of Louisiana; its area of occupancy, number of subpopulations, and population sizes are declining throughout its range.[162] This contraction in the snake's range is largely attributable to loss of its native longleaf pine ecosystems to agriculture, silviculture, urbanization, and plant succession resulting from fire suppression (Timmerman 2003). Florida encompasses half of the eastern diamondback rattlesnake's current range,[163] which makes habitat preservation in this state critical to the species' survival. The eastern diamondback rattlesnake's survival is also crucially linked to the presence and welfare of the gopher tortoise, whose burrows provide essential microhabitat for the snake to use for shelter.[164]

[159] 80 Fed. Reg. 37568 (July 1, 2015).
[160] Handbook at 1-5.
[161] 77 Fed. Reg. 27403–27411 (May 10, 2012).
[162] Natureserve.
[163] *Id.*
[164] *Id.*

Today the most significant threats to the eastern diamondback rattlesnake are habitat destruction and human exploitation. The species has sustained a 97% reduction in its native, longleaf-pine forest habitat, on which it relies for feeding, breeding, and sheltering (Van Lear 2005). This loss of longleaf pine ecosystems is the single most important factor affecting the survival of the eastern diamondback rattlesnake. Fragmentation of remaining suitable habitat also leads to road mortality, population isolation, and reduced genetic diversity, which is detrimental to the species' long-term viability (Andrews and Gibbons 2005 at 779). Rattlesnakes are particularly vulnerable to vehicle strikes because of their morphology and behavior. A study conducted by Andrews and Gibbons (2005) shows that venomous, heavy-bodied snakes like the eastern diamondback rattlesnake experience detrimentally high mortality levels even at medium traffic densities because, unlike other species of snake, they move at slow speeds and immobilize when confronted with vehicles.

Eastern diamondback rattlesnakes are also threatened by human exploitation. Thousands of snakes are killed each year for meat, skin, and venom, with no limits on annual harvest (Means 2009). "Rattlesnake roundups," annual events that offer hunters prizes for capturing snakes, which are displayed and then killed, boost snake kills and foster negative attitudes that venomous reptiles like the rattlesnake are repugnant and must be removed from nature (Andrews and Gibbons 2005). Means (2009) collected data from these roundups, analyzed trends, and concluded that declining maximum size of snakes collected during roundups reflects possible age-class truncation.[165] This troubling trend could lead to negative impacts on annual recruitment of young rattlesnakes, which in turn undermines the snake's ability to maintain viable populations (Means 2009). Because of negative attitudes toward rattlesnakes, the eastern diamondback is also at risk from isolated killings, independent of roundups, when snakes enter urban or suburban areas. Existing regulations are inadequate to address these significant threats to the eastern diamondback rattlesnake, so they are constantly at risk of human-caused mortality and may be taken in unlimited numbers.

Intraservice consultation and conference must consider effects on listed, proposed, and candidate species.[166] Therefore, the Service must consider impacts to the eastern diamondback rattlesnake during consultation. The Service should closely study the Project's potential impacts on the eastern diamondback rattlesnake, precisely estimate take associated with the project, and carefully consider more robust conservation measures than currently proposed in the plan, favoring use of avoidance measures over minimization or mitigation.

American alligator

The Service listed the American alligator as an endangered species in 1967.[167] The alligator gained status as an endangered species in response to a massive decline in individuals, most of which was attributed to hunting and habitat destruction.[168] In 1987, the Service determined that the species was recovered and removed it from the endangered species list; however, the

[165] *Id.*
[166] Consultation Handbook at 1-5.
[167] U.S. Fish & Wildlife Service, *American Alligator:* alligator mississippiensis, DEPT. OF INTERIOR, https://www.fws.gov/endangered/esa-library/pdf/alligator.pdf (Feb. 2008).
[168] *Id.*

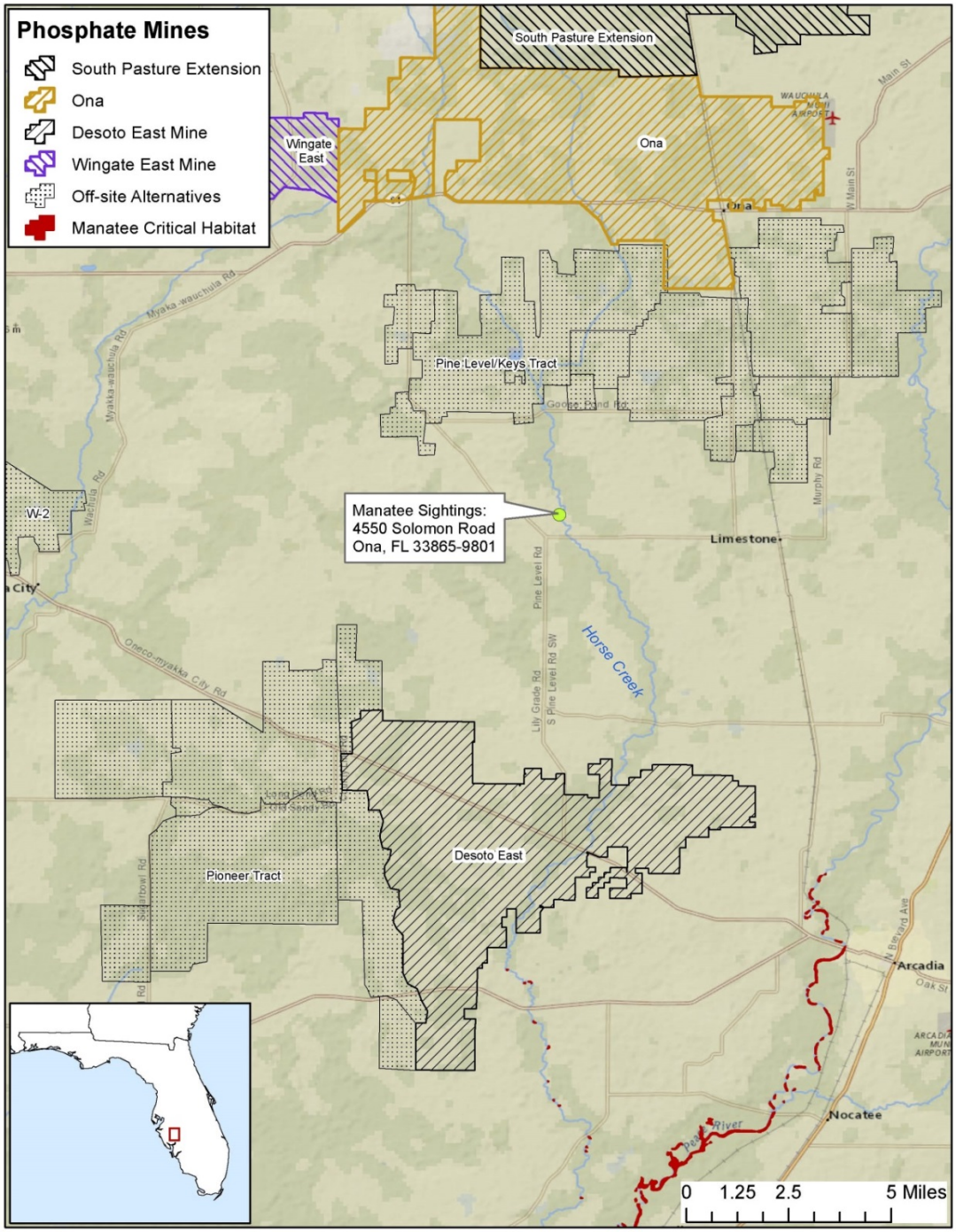
alligator is still protected under the ESA as "threatened due to similarity of appearance," to the American crocodile.[169] Due to its status as a threatened species, the Service continues to regulate the hunting, trade, and any goods made from the species.[170]

Within its ecosystem, alligators are greatly valuable to other animals that share its ecosystem. They create "gator holes," depressions in the marsh that retain water in the dry season.[171] Other species, including snakes, birds, and fish, use the gator holes as a source of water during the dry season or times of drought.[172] American alligators also play an important role in the native food webs as both predators and prey, linking aquatic and terrestrial food webs. Adult alligators are opportunistic feeders that prey on a wide range of species throughout their lives, including insects, mollusks, crustaceans, fish, amphibians, reptiles, birds, and mammals.[173] Small alligators serve as prey for many species, including the northern crested caracara and the eastern indigo snake.[174] The Service and Corps must evaluate the effect the clay pits and loss of habitat will have on alligators.

Florida manatee

On August 20, 2017, Denise and Larry Wheeler observed three Florida manatees in Horse Creek, which is within the Peace River watershed, as it runs through their property at 4550 Solomon Road in Ona, Florida 338650-9801.

[169] *Id*.
[170] *Id*.
[171] *Id*.
[172] *Id*.
[173] NatureServe. 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia, http://www.natureserve.org/explorer.
[174] National Park Service, *Everglades National Park, Eastern Indigo Snake: Species Profile*, U.S. DEPT. OF INTERIOR, http://www.nps.gov/ever/learn/nature/easternindigosnake.htm [hereinafter *Everglades Eastern Indigo Snake*]; U.S. Fish & Wildlife Service at 4-223.



For about thirty minutes around noon on that day, they observed the three manatees in Horse Creek, in their backyard, apparently eating vegetation on the river bank and vegetation floating in the creek. The Wheelers then observed the manatees swim north upstream. The Wheelers photographed the manatees.

The Wheelers are willing to be contacted by the Service and/or Corps regarding their observations.

The location of the observation is just south of the proposed SPE, Ona, and Wingate East mines, and in between the planned Pine Level/Keys Tract and DeSoto East mines. As it relates to the SPE Mine, the Service's biological opinion does not address manatees, and the Corps' biological assessment indicates that informal consultation resulted in a no effect determination, evaluating

only whether the SPE Mine would impact manatees in Charlotte Harbor, 40 miles south.[175] Specifically, the biological assessment states:

> Please note that we do not individually address in this assessment the eight Federally listed marine/estuarine species known or expected to occur downstream from the SPE project in Charlotte Harbor (four species of sea turtles [Kemp's Ridley, leatherback, loggerhead and green turtle], gulf sturgeon, small tooth sawfish, West Indian manatee and piping plover). The SPE is located inland approximately 40 miles (65 km) upstream from the mouth of the Peace River with Charlotte Harbor. No significant impacts to downstream hydrology, flow regime or water quality are anticipated from the proposed activities on SPE (see September 2011 ACOE permit application). For these reasons, federally listed marine or estuarine species are not anticipated to have any direct, indirect or cumulative adverse effects. For purposes of drafting the Biological Opinion, CF requests that an interagency informal Section 7 consultation with NOAA/NMFS and USFWS take place in order to obtain concurrence that marine and estuarine species are not expected to be adversely affected by the SPE project.[176]

Consultation documents for Wingate East Mine, Ona Mine, and DeSoto Mine also fail to mention or discuss impacts to manatees in any manner. The FAEIS likewise fails to address impacts to manatees. In its discussion of Charlotte Harbor, the Corps acknowledges that Florida manatees occur in the estuary but does not discuss impacts to manatees specifically.[177]

2. The Corps and Service must evaluate population growth and other nearby development

A leading cause of habitat loss is human population growth and corresponding land uses. A 2000 analysis of potential ecological connectivity in Florida found that only about half the land identified for habitat connectivity was publically owned and managed (Hoctor 2000 at 984-999). Meanwhile, *Florida 2060: A Population Distribution Scenario for the State of Florida* predicts Florida's population will grow by 49 percent by 2060. The FWC's *Wildlife 2060: What's at stake for Florida?* estimates that such population increases could result in the conversion of 7 million acres from rural and natural to urban uses (Cerulean 2008 at 2). It predicts that nearly 3 million acres of existing agricultural lands and 2.7 million acres of native habitat will be claimed by roads, shopping malls and subdivisions; 1.6 million acres of woodland habitat may be lost; wetland habitat may become more isolated and degraded; 2 million acres of lands bears depend on may disappear; and gopher tortoises may lose a fifth of their existing range (Cerulean 2008 at 4). While Florida is projected to increase its population statewide by 50% by 2060, Hardee County is projected to grow from 31,242 residents in 2015 to 43,922 in 2060. Hardee is projected to have at least 14 times more urban development in 2060 than it does presently, making it one of the fastest growing counties.

[175] SPE Mine Biological Assessment at 12-13.
[176] *Id.*
[177] FAEIS at 3-116 through 3-117.

The Corps must consider the synergistic and cumulative effects of these planned nearby projects, along with all past land use projects. The Ona Mine is only one of several phosphate mines in the region that will impact listed species. The EA fails to consider the DeSoto, South Pasture Extension, and other alternative mines' impacts on species at the Ona Mine site. For example the South Pasture Extension Mine will impact 1,218 acres of wetlands,[178] the Ona Mine will impact 7,615 acres of wetlands,[179] and the DeSoto mine will impact 3,253 acres of wetlands.[180] The Corps must consider the cumulative impacts from all four mines on the environment.

3. The Corps and Service must evaluate climate change

Climate change in south Florida could exacerbate current land management challenges involving habitat fragmentation and other threats, it refuses to attempt to analyze the specific impact it will have on the species and habitat impacted by this Project. The Service must consider all available climate change science in evaluating the effects of the Project.

Climate models project continued warming in all seasons across the southeast United States and an increase in the rate of warming (Karl 2009 at 111-113). The warming of air and water temperatures projected for the southeast will create heat-related stress for fish and wildlife. Climate change will alter the distribution of native plants and animals and will lead to the local loss of imperiled species and the displacement of native species by invasive species (Karl 2009 at 113). Concerning the effects climate change is expected to have on southeastern environments, Karl (2009 at 115) states, "[e]cological thresholds are expected to be crossed throughout the region, causing major disruptions to ecosystems and to the benefits they provide to people."

Climate change will increase the incidence and severity of both drought and major storm events in the southeast (Karl 2009 at 111-116). The percentage of the southeast region experiencing moderate to severe drought has already increased over the past three decades. Since the mid-1970s, the area of moderate to severe spring and summer drought has increased by 12 percent and 14 percent, respectively. Fall precipitation tended to increase in most of the southeast, but the extent of region-wide drought still increased by nine percent (Karl 2009 at 111). Both drought and severe storms could threaten the Florida black bear with habitat alteration, altered vegetation, and altered prey base and food availability (Seager 2009 entire).

The warming climate will likely cause ecological zones to shift upward in latitude and altitude and species' persistence will depend upon, among other factors, their ability to disperse to suitable habitat (Peters 1985 entire). Because of some of the species' already limited range and the high degree of development in the surrounding area, there is likely no suitable habitat where the species could disperse, making climate change a dire threat to its survival.

Global average sea level rose by roughly eight inches over the past century, and sea level rise is accelerating in pace (Melillo 2014 at 373). As summarized by the Third National Climate Assessment, "Since the late 1800s, tide gauges throughout the world have shown that global sea

[178] AEIS at Chp. 1 p 26.
[179] *Id.*
[180] *Id.* at p. 23.

level has risen by about 8 inches. A new data set shows that this recent rise is much greater than at any time in at least the past 2000 years. Since 1992, the rate of global sea level rise measured by satellites has been roughly twice the rate observed over the last century, providing evidence of additional acceleration" (Melillo 2014 at 44). Many areas of the Southeast Atlantic and Gulf of Mexico coasts have experienced significantly higher rates of relative sea-level rise than the global average during the past 50 years (Karl 2009 at 37). Large regions of Florida have elevations at or below 3 to 6 feet, making these areas particularly vulnerable to sea-level rise and flooding (Weiss 2011 entire, Strauss 2012 at 3-4).

According to the Third National Climate Assessment, global sea level is projected to rise another 1 to 4 feet by 2100, with sea-level rise of 6.6 feet possible (Melillo 2014 at 589). Sea level rise could increase by another 6 inches in just the next decade (Melillo 2014 at 400). In its 2012 sea-level rise assessment, the National Research Council similarly estimated global sea-level rise at 8 to 23 cm by 2030, 18 to 48 cm by 2050, and 0.5 m to 1.4 m by 2100 (NRCNA 2012 at 4). The effects of sea-level rise will be long-lived. Scientists estimate that we lock in 8 feet of sea-level rise over the long term for every degree Celsius (1.8 degrees Fahrenheit) of warming (Levermann 2013 at 13746).

Regional projections for Florida also indicate that sea level rise of three to four feet or more is highly likely within this century. The Southeast Florida Regional Climate Change Compact Counties—Monroe, Miami-Dade, Broward, and Palm Beach counties—released the Southeast Florida Regional Climate Change Action Plan in October 2012, which included a detailed "Unified Sea Level Rise Projection" for south Florida. The sea level rise projections for south Florida are similar what has been estimated globally by the National Research Council: 8 to 18 cm (3 to 7 inches) by 2030, 23 to 61 cm (9 to 24 inches) by 2060, and 48 cm to 1.45 m (19 to 57 inches) by 2100 (SFRCCC 2011 at 9-10).

Increasingly intense storms and storm surge pose additional climate threats to coastal wildlife species in Florida. Studies have found that the frequency of high-severity hurricanes is increasing in the Atlantic (Elsner 2008 at 92-94, Bender 2010 at 454-458, Kishtawal 2012 at 1-6), along with an increased frequency of hurricane-generated large surge events and wave heights (Grinsted 2012 at 19601-19604, Komar 2008 entire). The risk of extreme storm surges has already doubled as the planet warms, and these events could become 10 times more frequent in the coming decades (Grinsted 2012 entire). High winds, waves, and surge from storms can cause significant damage to coastal habitat. When storm surges coincide with high tides, the chances for damage are greatly heightened (Cayan 2008 at 557). As sea levels rise, storm surge will be riding on a higher sea surface, which will push water further inland and create more flooding of coastal habitats (Tebaldi 2012 entire). For example, one study estimated that hurricane flood elevations along the Texas coast will rise by an average of 0.3 meters by the 2030s and 0.8 meters by the 2080s, with severe flood events reaching 0.5 meters and 1.8 meters by the 2030s and 2080s, respectively (Mousavi 2011 entire).

Coastal species face significant risks from coastal squeeze that occurs when habitat is pressed between rising sea levels and coastal development that prevents landward movement (Scavia 2002 at 17-18, Fitzgerald 2008 at 601-634, Defeo 2009 at 6-7, LeDee 2010 entire, Menon 2010 entire, Noss 2011 entire). Human responses to sea-level rise including coastal armoring and

landward migration pose significant risks to the ability of species threatened by sea-level rise to move landward, if other suitable habitats were even available (Defeo 2009 at 1-9). Projected human population growth and development in Florida may thus threaten the species with coastal squeeze (Zwick 2006 entire).

The Corps and Service must consider the loss of habitat sea-level rise and climate change will cause and the pressure that will place on human and non-human populations and habitat, and how that will be effected by the Project.

Conclusion

Thank you for the opportunity to comment on the Ona Mine proposal. Given the largescale impacts of the Project, we request a public hearing to present public comments that further demonstrate that this Project is not in the public interest. We respectfully request that the Corps deny the permit application for the Ona Mine. Please keep us informed about the progress of these permit applications, including any future notices, announcements, EAs, EISs, or decision notices, and do not hesitate to contact us with any questions about this letter.

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