

ORAL ARGUMENT NOT YET SCHEDULED  
No. 23-5189

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**UNITED STATES COURT OF APPEALS  
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

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EL PUENTE DE WILLIAMSBURG, CORALATIONS,  
CENTER FOR BIOLOGICAL DIVERSITY,  
*Plaintiffs-Appellants,*

v.

U.S. ARMY CORPS OF ENGINEERS, LIEUTENANT GENERAL SCOTT A.  
SPELLMON, NATIONAL MARINE FISHERIES SERVICE, GINA  
RAIMONDO, U.S. FISH AND WILDLIFE SERVICE, DEBRA HAALAND,  
*Defendants-Appellees.*

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Appeal from the United States District Court  
For the District of Columbia  
No. 1:22-cv-02430-CJN

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**BRIEF OF AMICI CURIAE  
TOABAJEÑOS EN DEFENSA DEL AMBIENTE, AMIGX DEL M.A.R.,  
RACHEL SILVERSTEIN, PH.D., AND ABEL VALDIVIA, PH.D.  
IN SUPPORT OF PLAINTIFFS-APPELLANTS**

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**CERTIFICATE AS TO PARTIES, RULINGS, RELATED CASES, AND  
SEPARATE BRIEFING**

Pursuant to D.C. Circuit Rule 28(a)(1) and this Court’s Order dated August 24, 2023, Amici Curiae Toabajenos en Defensa del Ambiente, Amigx del M.A.R., Rachel Silverstein, Ph.D., and Abel Valdivia, Ph.D. (“*Amici*”) submit the following Certificate as to Parties, Rulings, Related Cases, and Separate Briefing.

All parties and amici appearing before the district court are listed in the Plaintiffs-Appellants’ Opening Brief. Additional amici appearing in this appeal are Rachel Silverstein, Ph.D. and Abel Valdivia, Ph.D.

References to the ruling under review and the absence of related cases appear in the Plaintiffs-Appellants’ Opening Brief.

Pursuant to D.C. Circuit Rule 29(d), *Amici* state they are not aware of any other planned amicus brief in this appeal.

Respectfully submitted,

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## GLOSSARY

Amigxs	Amigxs del M.A.R. (Movimiento Ambiental Revolucionario)
Dredging Project or Project	U.S. Army Corps of Engineers San Juan Harbor Dredging Project
Corps	U.S. Army Corps of Engineers
EPA	Environmental Protection Agency
ESA	Endangered Species Act
LNG	Liquified Natural Gas
NEPA	National Environmental Policy Act
Toabajenos	Toabajenos en Defensa del Ambiente



## IDENTITY AND INTERESTS OF AMICI CURIAE

*Amici* are community-based environmental organizations who advocate for the protection of Puerto Rico's natural resources and a healthy environment for their communities. *Amici* oppose the dredging project at issue in this case (Dredging Project or Project) because it will exacerbate the environmental concerns of their communities, specifically the Cataño and Guaynabo Municipios, and perpetuate Puerto Rico's dependence on fossil fuels. Organizational *Amici* are joined in this brief by two coral scientists with deep expertise in coral and aquatic ecosystem health, who support Plaintiffs-Appellants' arguments that the Project will illegally harm endangered corals in San Juan Bay.

Amigxs del M.A.R. (Movimiento Ambiental Revolucionario) (Amigxs) is an environmental organization founded in 1995 with the purpose of protecting Puerto Rico's natural resources. Its members educate the community, bring environmental and social awareness both in the territory and in the mainland United States, and condemn environmental crimes in Puerto Rico. Some of Amigxs' members reside in the San Juan Harbor area in municipalities directly affected by the U.S. Army Corps of Engineers' (Corps) Dredging Project.

Toabajenos en Defensa del Ambiente (Toabajenos) is a community-based environmental organization founded in 2014. The organization is based in the coastal community of Toa Baja, a municipality west of the Cataño Municipality.

Toabajenos advocates for environmental issues on its community's behalf, working with the local legislature to conserve and protect the Puerto Rican coast, engaging in community outreach, and participating in events with local leaders and other conservation-interested organizations.

Dr. Rachel Silverstein is an Executive Director and Waterkeeper of Miami Waterkeeper and a coral scientist focused on human impacts on coral reefs. She was a Knauss Sea Grant Fellow and Professional Staff for the U.S. Senate Commerce Committee's Subcommittee on Oceans, Atmosphere, Fisheries and Coast Guard, and has won multiple awards for her nonprofit work in protecting water quality and coral from dredging.

Dr. Abel Valdivia is the World Wildlife Fund's Lead Marine Conservation Scientist in the Oceans Team with extensive research experience in marine ecology, coral reefs, conservation, and spatial and data analysis. He has fifteen years of experience monitoring coral reefs across the Caribbean and advocating for endangered marine species and their habitats.

In March 2023, Amigxs and Toabajenos submitted an amicus brief in the district court supporting Plaintiffs El Puente et al.

Organizational *Amici*'s members live, work, and play in the Cataño and Guaynabo Municipalities of southwest San Juan, and scientist *Amici* have studied coral reefs in tropical waters for years. The Dredging Project will exacerbate the

health impacts of pollution in these communities, harm the area's wildlife and natural resources, and deepen Puerto Rico's fossil fuel dependence. Because the Project will cause permanent harm to the long-term health of the environment and the affected Puerto Rico communities, *Amici* have strong interests in holding the Corps accountable for unlawfully failing to ensure rigorous environmental review with adequate public participation.

### **RULE 29(a)(4) STATEMENT**

Pursuant to Federal Rule of Appellate Procedure 29(a)(4), *Amici* represent that their counsel drafted this brief. No party or their counsel made a monetary contribution intended to fund the preparation or submission of this brief, and no person other than *amici curiae* or their counsel contributed money intended to fund preparing or submitting this brief.

### **INTRODUCTION**

The Corps issued an Environmental Assessment and a Finding of No Significant Impact for the Project in 2018. Neither were adequate. As Plaintiffs-Appellants argue, the Corps violated the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA) when it approved a major dredging project in San Juan Bay without properly identifying and considering impacts to both the environment and communities overburdened by environmental pollution. 42 U.S.C. § 4332(2)(A)–(H); 16 U.S.C. § 1636(a).

An effective environmental analysis would fully consider and address the Dredging Project's effects on Puerto Rico's environment and the communities surrounding San Juan Bay. The Corps violated its NEPA obligations by failing to consider the conversion of local power plants to liquified natural gas (LNG) as a connected action, failing to consider the direct and cumulative impacts of the project on environmental justice communities, and abdicating its public participation responsibilities throughout the approval process. For these reasons, this Court should reverse the district court and remand to vacate the Corps' Environmental Assessment and Finding of No Significant Impact.

## **BACKGROUND**

The Puerto Rico communities of Cataño and Guaynabo have high numbers of Hispanic and non-English-speaking residents with substantial, longstanding environmental justice concerns. According to a report generated using the U.S. Environmental Protection Agency's (EPA) EJ Screen software for the communities closest to the Harbor (in Appendix A), 99 percent of the population is Hispanic, 83 percent are low income, and 93 percent do not speak English—all well above Puerto Rico averages.

Near the Dredging Project site, the Army Terminal Turning Basin borders Cataño and Guaynabo, receiving shipments of petroleum-based products, cargo, and bulk grains. USACE\_000062; USACE\_000066; Energy Info. Admin., *Puerto*

*Rico Territory Energy Profile*, <https://www.eia.gov/state/print.php?sid=RQ> (last updated Sept. 21, 2023). Landside storage facilities for the petroleum products dot the area, but most diesel and LNG shipments go to the San Juan Power Plant to the south of the Harbor or to the Palo Seco Power Plant to the north. USACE\_000062; USACE\_000066.

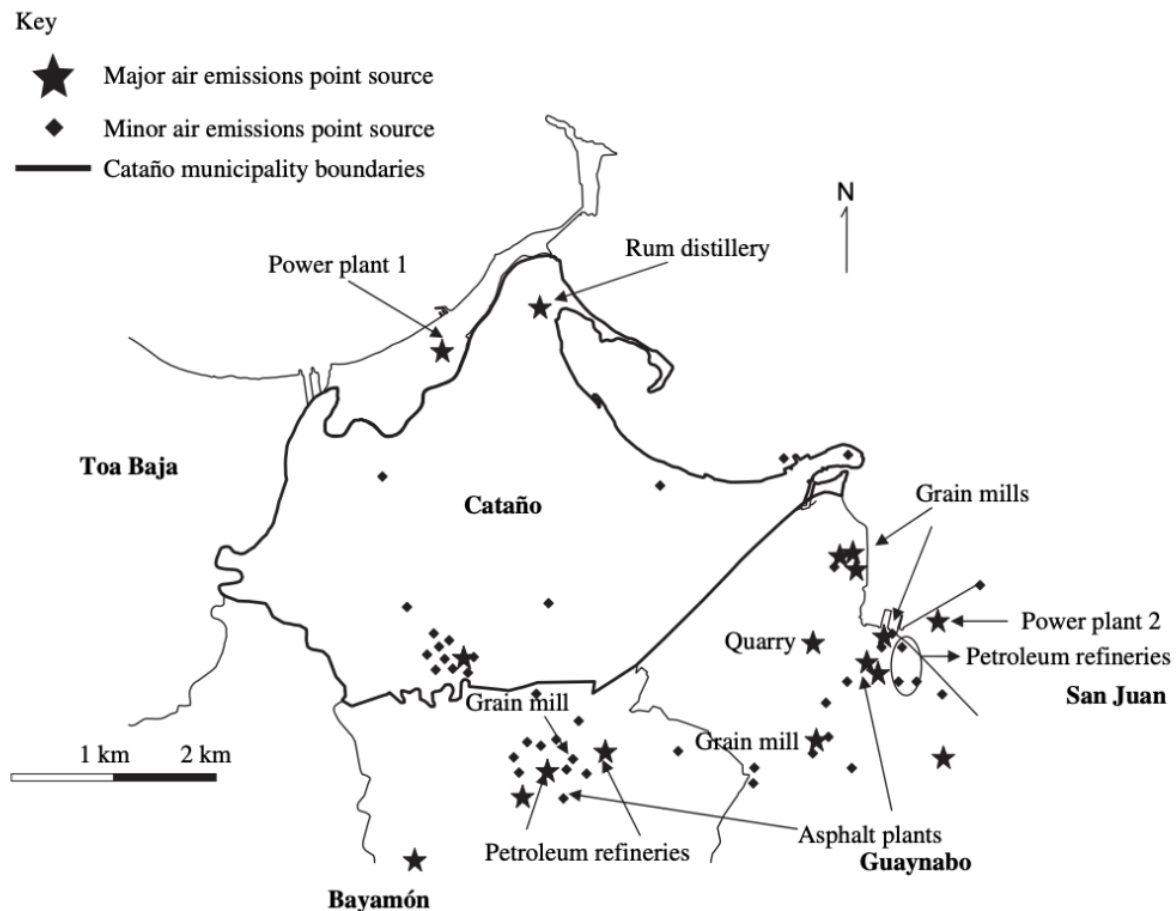
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Figure 1. Overview of San Juan Harbor Existing Port Configuration and Commodities (annotated with locations of Cataño and Guaynabo and approximate location of the San Juan Power Plant). USACE\_000054.

Industrial pollution and poor air pollution measures raise Cataño and Guaynabo’s environmental burden. The Cataño Air Basin has seventeen major emissions sources, including the two power plants, and Guaynabo has moderate

non-attainment for air pollution. Loyo-Berrios et al., *Air Pollution Sources and Childhood Asthma Attacks in Cataño, Puerto Rico*, 165 *Am. J. Epidemiology* 927, 930 (2007); USACE\_002636. Petroleum refineries and the San Juan Power Plant are air pollution sources clustered near the Harbor and Cataño and Guaynabo. Loyo-Berrios et al., *supra*, at 931.



*Figure 2: Distribution of the air pollution point sources in Cataño and nearby municipalities, Puerto Rico, 1997–2001. Power plant 1 is the Palo Seco Power Plant, and Power plant 2 is the San Juan Power Plant. Loyo-Berrios et al., supra, at 931.*

There is a strong positive correlation between common air pollutants and adverse health effects, including respiratory diseases, asthma, and even premature deaths. Nat'l Inst. for Env't. Health Sci., *Air Pollution and Your Health*, NIH, <https://www.niehs.nih.gov/health/topics/agents/air-pollution/> (last updated Sept. 8, 2023). Air pollution takes more than two years from the average person's life expectancy. *Most of the World Breathes Unsafe Air, Taking More Than 2 Years Off Global Life Expectancy*, AQLI (June 14, 2022), <https://aqli.epic.uchicago.edu/news/most-of-the-world-breathes-unsafe-air-taking-more-than-2-years-off-global-life-expectancy/>.

Data on air pollution currently impacting the communities are daunting. According to the Air Toxics Respiratory Hazard Index, diesel particulate matter from heavy land and marine traffic puts the area in the state's 98<sup>th</sup> percentile for exposure to this pollutant. Appendix A. The communities are also in the 95<sup>th</sup> percentile for air toxics respiratory hazards. *Id.*

Pollution from ships and the proximity to hazardous facilities already significantly exacerbate public health risks in Cataño and Guaynabo, and the Project will only make those risks worse. The communities are within the 98<sup>th</sup> percentile for Risk Management Program Facility Proximity, which measures how many high-risk chemical facilities are in the vicinity. *Id.* Moreover, a significant amount of pollution comes from shipping. Puerto Rico has a 2.5-times higher



asthma mortality rate compared to the continental United States, including from shipping transportation pollution. EPA, *Designation of Emission Control Area to Reduce Emissions from Ships in the U.S. Caribbean 2* (2011),

<https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EG0X.PDF?Dockey=P100EG0X.PDF>.

With the Project's expansion of San Juan Harbor's capacity for large tankers, the Puerto Rico Electric Power Authority can continue operating the Palo Seco and San Juan Power Plants, perpetuating the burning of fossil fuels at these facilities, and continuing their pollution of the air and adverse health impacts in nearby communities for years to come. USACE\_000004; USACE\_006511; Energy Info. Admin., *supra*.

## ARGUMENT

### **I. The Corps' Environmental Justice Analysis Was Inadequate.**

The Corps' environmental justice analysis for the Project was unlawfully inadequate in both substance and scope. The Corps failed to consider LNG conversion as a connected action or take into account its cumulative impacts, and the analysis arbitrarily excluded vast swaths of environmental justice communities. The Corps' Supplemental Environmental Analysis is an impermissible post-hoc rationale and cannot cure its original incomplete analysis. By failing to incorporate a meaningful environmental justice analysis, the Corps violated NEPA and should be compelled to fix its errors.

**A. NEPA Requires a Serious Environmental Justice Analysis.**

NEPA and regulations command the Corps to take a “hard look” at the environmental impacts of its actions to ensure informed decision-making and public participation. 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1500.1(a)–(b) (2018). Agencies must perform an environmental assessment analyzing all direct, indirect, and cumulative impacts of a federal action and fully disclose all potential impacts. 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1502.3, 1508.7, 1508.8 (2018). Executive Order 12898 also directs agencies to address long-standing environmental harm on communities by incorporating an environmental justice lens into their programs and practices and expand affected communities’ access to the public participation process. Exec. Order No. 12898, 59 Fed. Reg. 7629 (Feb. 11, 1994), § 1-101; *see also* Council on Environmental Quality, *Environmental Justice Guidance Under the National Environmental Policy Act* 1, 21 (1997); Exec. Order No. 14096, 88 Fed. Reg. 25251 (Apr. 26, 2023), § 3(i)–(xv).

The D.C. Circuit evaluates environmental assessments by examining:

- (1) whether the agency took a “hard look” at the problem;
- (2) whether the agency identified the relevant areas of environmental concern;
- (3) as to the problems studied and identified, whether the agency made a convincing case that the impact was insignificant; and
- (4) if there was an impact of true significance, whether the agency convincingly establishes that changes in the project sufficiently reduced it to a minimum.

*Nat. Res. Def. Council. v. Herrington*, 768 F.2d 1355, 1430 (D.C. Cir. 1985) (quoting *Sierra Club v. Peterson*, 717 F.2d 1409, 1413 (D.C. Cir. 1983) (citations omitted)). Under this test, the Corps’ environmental assessment “will pass muster only if it undertook a ‘well considered’ and ‘fully informed’ analysis of the relevant issues and opposing viewpoints.” *Am. Rivers v. FERC*, 895 F.3d 32, 49 (D.C. Cir. 2018) (citation omitted). Here, the Corps’ environmental justice analysis failed to identify the LNG conversion as a connected action with significant cumulative effects on environmental justice communities like Cataño and Guaynabo. Not only did the Corps fail to consider these impacts, it also entirely failed to include Cataño and Guaynabo in its initial environmental justice analysis. These shortcomings render the Corps’ environmental justice analysis and Environmental Assessment unlawful.

**B. The Corps Failed to Take a “Hard Look” at the Connected Action of LNG Conversion and Its Significant Environmental Impacts.**

The Plaintiffs-Appellants’ brief explains the Corps’ NEPA requirement to consider “connected actions” includes those that “[c]annot or will not proceed unless other actions are taken previously or simultaneously.” 40 C.F.R. § 1508.25(a)(1)(ii) (2018); Plaintiffs-Appellants’ Opening Brief at 13 (P-A Br.). Additionally, the Corps is also required to consider the “cumulative impacts” of proposed projects. 40 C.F.R. § 1508.7 (2018). A cumulative impact affects the

environment, resulting from the action’s “incremental impact . . . when added to other past, present, and reasonably foreseeable future actions regardless of what agency . . . or person undertakes such other actions.” 40 C.F.R. § 1508.7(g)(3) (2018); *Sierra Club v. U.S. Dep’t of Energy*, 867 F.3d 189, 198 (D.C. Cir. 2017); *Del. Riverkeeper v. FERC*, 753 F.3d 1304, 1310 (D.C. Cir. 2014) (explaining agency must use “reasonable forecasting and speculation” to determine foreseeable effects (emphasis added)); *Scientists’ Inst. for Pub. Info., Inc. v. Atomic Energy Comm’n*, 481 F.2d 1079, 1092 (D.C. Cir. 1973) (stating the agency cannot “avoid drafting an impact statement simply because describing the environmental effects of and alternatives to . . . agency action involves some degree of forecasting”).

Here, the Corps identified the LNG conversion as “a reasonably foreseeable future assumption,” but then failed to consider it as a connected action or take into account its cumulative impacts on disproportionately harmed communities. USACE\_000151. Yet the Project’s *purpose* is to increase LNG shipping in the Bay, aligning with the Puerto Rico Electric Power Authority’s long-term goal to convert Puerto Rico’s power plants from diesel to LNG. USACE\_000004; USACE\_000115; Energy Info. Admin., *supra*. Indeed, the LNG expansion *cannot* go forward unless the Dredging Project occurs. This is a classic “connected action” requiring full consideration under NEPA.

The Corps performed a cursory environmental justice analysis only on actual construction's effects, not of any long-term impacts of the Project, including the LNG conversion. The Corps determined there would be a temporary and minor effect to human populations in the area from noise and air quality emissions associated with construction and no long-term adverse direct or indirect impacts. USACE\_000188–89. It claimed the Project complies with Executive Order 12898 because “the proposed activity will not (a) exclude persons from participation in, (b) deny persons the benefits of, or (c) subject persons to discrimination because of their race, color, or national origin, nor will the proposed action adversely impact ‘subsistence consumption of fish and wildlife.’” *Id.*

Like the Corps, the district court determined the LNG conversion was not a connected action nor did its cumulative effects need be considered due to timing uncertainties, that no federal action had taken place, and that the Dredging Project would still accrue \$2 million in economic benefits as opposed to the \$60 million in projected benefits should the conversion occur. *El Puente v. U.S. Army Corps of Eng'rs.*, No. 1:22-cv-02349 (CJN), 2023 WL 4706152, at \*\*3, 12–13 (D.D.C. July 24, 2023).

The Corps justified the Project by inappropriately giving great weight to the benefits of the LNG conversion (USACE\_000035) without considering its impact on environmental justice communities. This was an error. *City of Bos. Delegation*

*v. FERC*, 897 F.3d 241, 252 (D.C. Cir. 2018); *Mont. Env't. Info. Ctr. v. U.S. Off. of Surface Mining*, 274 F. Supp. 3d 1074, 1098 (D. Mont. 2017) (agency cannot place “thumb on the scale by inflating the benefits of the action while minimizing its impacts”).

LNG conversion is a reasonably foreseeable future action given its dependence on the Project and the Corps' consideration of its benefits. It is irrelevant that no federal action has taken place nor that the exact timing of the project has not been confirmed. Federal agencies are required to consider the cumulative impacts of *any* future, reasonably forecasted actions regardless of the actor. 40 C.F.R. § 1508.7 (2018); *Sierra Club v. U.S. Dep't of Energy*, 867 F.3d at 198. Especially given the fact the Corps accounts for the benefits of the potential LNG conversion, it was obligated to consider its impacts in its Environmental Assessment and environmental justice analysis. P-A Br. at 16; USACE\_000035.

In its NEPA analysis, the Corps failed to consider the impacts the LNG conversion would have on communities in Cataño and Guaynabo. The transportation, storage, regassification, and eventual burning of LNG for energy brings significant environmental impacts and safety risks. Baalisampang et al., *Modelling an Integrated Impact of Fire, Explosion and Combustion Products During Transitional Events Caused by an Accidental Release of LNG*, 128 Process Safety and Env't. Prot. 259, 259. Natural gas liquefaction processes have harmed

the health of sensitive individuals working at other plants and those surrounding communities, with nitrogen dioxide levels being significantly higher than the EPA's permissible standards. Abdul-Wahab et al., *A Study of the Effects of CO, NO<sub>2</sub>, and PM<sub>10</sub> Emissions from the Oman Liquefied Natural Gas (LNG) Plant on Ambient Air Quality*, 13 *Air Quality, Atmosphere & Health* 1235, 1242 (2020). An LNG leakage within the port area could lead to an environmental disaster and a significant loss of human health and life. Kalbarczyk-Jednak et al., *Assessment of Explosion Safety Status within the Area of an LNG Terminal in a Function of Selected Parameters*, 15 *Energies* 4057, 4057 (2022). Even a small LNG leakage could cause several serious events at once, like a fireball, flash fire, or a vapor cloud explosion, when the vapor is ignited. Baalisampang et al., *supra*, at 260. The Corps failed to consider these concerns in its analysis.

Further, the Corps failed to adequately consider how the Dredging Project will affect shipping traffic and its impacts on environmental justice communities. The district court accepted the Corps' argument that the Dredging Project will decrease shipping traffic because fewer larger ships would be able to navigate the Harbor and bring an equal amount of cargo as more smaller ships. *El Puente*, 2023 WL 4706152, at \*12 (citing USACE\_000180). This argument depends on, as the Corps and district court admits, "all other operations in the Harbor remain[ing] the same." *Id.* Because the Project would allow for the LNG conversion, traffic

patterns through the Army Terminal Turning Basin to access LNG facilities and the San Juan Power Plant will change and concentrate in this area even if the overall amount of traffic in the Harbor at large does not change. USACE\_002672. LNG tankers allowed to access to Harbor after the Dredging Project may have greater capacity, but LNG itself produces less energy than fuel oil per unit of volume, so LNG imports must be *double* the volume of fuel oil imports to reach the same power generation needs per day. USACE\_000181-82. Even assuming the Project would not increase traffic, the Corps analysis is still inadequate because it fails to consider the impacts of larger ships with regards to noise, air, and water pollution. Again, the Corps only considers the benefits of the Project to operators of larger ships without considering the impacts. USACE\_000182–83.

The Corps' analysis of the potential impacts of increased ship traffic is limited to an unsupported conclusion that the Dredging Project, if denied, would cause increased costs on cargo shippers and the power plants, U.S. Army Corps of Eng'rs., *Final Supplemental Environmental Assessment* 20 (2023), <https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll7/id/23122>. But it fails entirely to consider the impact of air pollution on the Harbor's communities and marine ecosystems. Because of the island's dependence on marine transportation and the island's physical and human geography, Puerto Rico's "populations and environments [are] at an elevated risk from ship-related



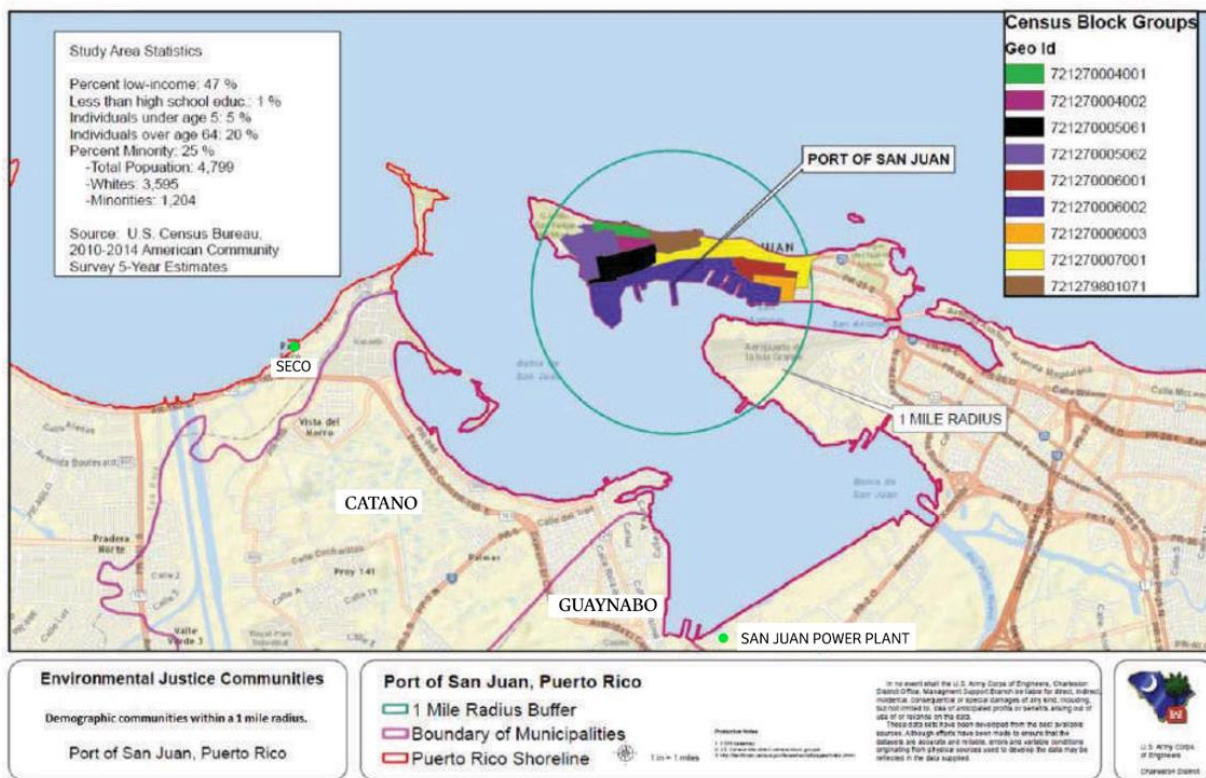
pollution.” EPA, *supra* at 2. Marine life is also sensitive to increased shipping traffic. Sulfur and nitrogen emissions from ships can cause acidification, eutrophication, and nutrient enrichment. Fung et al., *NRDC White Paper: Prevention and Control of Shipping and Port Air Emissions in China* 19 (2014). The emissions acidify the ocean and alter water chemistry, knocking out acid-sensitive marine organisms’ populations. *Id.* If the ocean is too acidic, coral die off as well. *Id.* Eutrophication and nutrient enrichment can cause toxic algae blooms that kill additional marine life. *Id.*

The Corps entirely failed to consider these potential impacts. Members of *Amici* in Cataño and Guaynabo are already at increased risk from poor air quality, caused significantly by the shipping traffic and San Juan Power Plant, and are economically dependent on the marine ecosystems. The Corps took none of this into account in its environmental justice analysis, rendering it inadequate and unlawful under NEPA and Executive Order No. 12898.

**C. The Corps’ Analysis Failed to Identify Environmental Justice Communities.**

Not only is the Corps’ environmental justice analysis unlawful in its content, it is also unlawful in its scope. The Corps limited the primary environmental justice analysis to a 1-mile radius that does not even encompass the Project’s entire footprint and around a point arbitrarily selected in an area with a below average minority population. USACE\_000805. The area entirely excluded the southern

portion of the Project and the Cataño and Guaynabo Municipalities. In violation of NEPA, the Corps offered no reason for limiting the analysis to a fraction of the Project area and excluding identifiable environmental justice communities. *Vecinos para el Bienestar de la Comunidad Costera v. FERC*, 6 F.4th 1321, 1330 (D.C. Cir. 2021) (finding arbitrary and unlawful agency's decision to consider only two-mile radius when project's impacts would extend farther).



*Figure 3. The 1-mile radius in the Corps' environmental justice analysis, which excludes the entire southern portion of the Dredging Project and Cataño and Guaynabo and the San Juan Power Plant (locations added).*

The Corps later attempted to cure its analysis by publishing a Supplemental environmental justice analysis in 2022 that purported to consider a 5-mile radius to

include Cataño and Guaynabo. USACE\_024688. However, as Plaintiffs-Appellants argue, NEPA and the Administrative Procedure Act prohibit the Corps from offering such supplemental rationalization. 40 C.F.R. § 1500.1(b); *Calcutt v. FDIC*, 598 U.S. 623, 629 (2023) (citing *SEC v. Chenery Corp.*, 332 U.S. 194, 196 (1947)). Even if the Corps could rely on the 5-mile radius analysis, it still suffers from the deficiencies explained above by only considering the direct impacts of construction and not the long-term effects of the LNG conversion or changes to shipping traffic.

## **II. The Corps Failed Its Responsibilities to Communicate With and Provide Meaningful Opportunity for Public Participation for Affected Communities.**

The Corps violated NEPA and Executive Order No. 12898 when it excluded the public from its decision-making process and failed to communicate the Environmental Assessment's results. 40 C.F.R. § 1506.6(a)–(f) (2018); Exec. Order No. 12898 at § 2-2. To ensure an adequate procedure for meaningful public comment, the Corps must disclose projected environmental impacts to environmental justice communities. 40 C.F.R. §§ 1506.6(a)–(c), (e)–(f) (2018); Exec. Order No. 12898 at § 2-2; *see also Eagle Cnty., Colo. v. Surface Transp. Bd.*, No. 22-1019, 2023 WL 5313815, at \*\*5, 10, 12–15, 28 (D.C. Cir. Aug. 18, 2023) (explaining NEPA responsibilities and required disclosures for “relevant environmental information” (citing *Pub. Emps. for Env't Resp. v. Hopper*, 827 F.3d

1077, 1082 (D.C. Cir. 2016) (citations omitted)). Indeed, the Corps recently implemented an environmental justice policy and promised to “*accommodate and encourage participation of all communities as partners* in the assessments of need, studies, planning development, and project implementation.” U.S. Army Corps of Eng’rs., *Implementation of Environmental Justice and the Justice40 Initiative* 1, 2 (2022) (emphasis added)).

In September 2017, Hurricanes Irma and Maria hit Puerto Rico two weeks apart from each other. The hurricanes battered Puerto Rico, creating “widespread and catastrophic” damage in one of the worst natural disasters in U.S. history.

*Hurricanes Irma and Maria: Impact and Aftermath*, RAND CORP.,

<https://www.rand.org/hsrd/hsoac/projects/puerto-rico-recovery/hurricanes-irma-and-maria.html> (last visited Oct. 11, 2023). First responders could not reach the

injured because the disaster shut down over 97 percent of the roads and critical infrastructure failed. *Id.* Electricity, water supply, communications, and

transportation broke, leaving residents without critical services to survive the

hurricanes’ wrath. *Id.* In an eleven-month blackout, the island’s electricity grid

failure became the longest in U.S. history. *Hurricane Recovery Can Take Years—*

*But for Puerto Rico, 5 Years Show Its Unique Challenges*, GAO (Nov. 14, 2022),

<https://www.gao.gov/blog/hurricane-recovery-can-take-years-puerto-rico-5-years-show-its-unique-challenges>. In the aftermath, Puerto Rico had to count its dead and

tally the destruction. At least 2,975 people died and over 200,000 refugees fled to mainland United States. Nicole Acevedo, *Puerto Rico Sees More Pain and Little Progress Three Years After Hurricane Maria*, NBC NEWS (Sept. 20, 2020), <https://www.nbcnews.com/news/latino/puerto-rico-sees-more-pain-little-progress-three-years-after-n1240513>. Those who remained had to rebuild the shattered landscape and endure a year-long struggle for the power grid to return. *Id.*

Yet, in the middle of all the destruction, the public comment period for the Dredging Project took place without extension. USACE\_001554. Organizational *Amici* and the Cataño and Guaynabo communities could not meaningfully participate in the public comment process. Two problems faced organizational *Amici*'s members. First was language access. Non-English speakers comprise of 93 percent of the Cataño and Guaynabo population. Appendix A. Second was a chronic lack of access to broadband internet. The area encompassing Cataño and Guaynabo are in the 99<sup>th</sup> U.S. percentile and 89<sup>th</sup> Puerto Rico percentile for inadequate broadband internet access. *Id.*

Despite its legal mandate and internal policy, the Corps also failed to provide adequate Spanish access for the Dredging Project's documents. USACE\_002492; USACE\_002302. The district court was satisfied that the public participation obligations were fulfilled because there was "no evidence of late-submitted comments that weren't considered by the government or of any request

to extend the comment period.” *El Puente*, 2023 WL 4706152, at \*11.24.

However, evidence of comments submitted after the deadline is an unreasonably narrow metric in the face of the destruction wrought by the Hurricanes and their prolonged disruption of everyday life. Further, Plaintiffs-Appellants point out that there was, in fact, a comment submitted asking the Corps to reasonably extend the comment period “so that all stakeholders have equal and fair opportunity for comment.” USACE\_002302; P-A Br. at 30. The Corps presented no evidence that it responded to this comment and released the final Environmental Assessment and Finding of No Significant Impact less than a year later. USACE\_00028-1284; USACE\_000003.

As Plaintiffs-Appellants explain, precedent requires the Corps to disclose environmental impacts and other relevant information to facilitate public understanding of proposed projects. *Nat. Res. Def. Council v. U.S. Nuclear Regul. Comm’n*, 685 F.2d 459, 487 n.149 (D.C. Cir. 1982), *vacated on other grounds sub nom. Balt. Gas & Elec. Co. v. Nat. Res. Def. Council*, 462 U.S. 87, 97–98 (1983) (stating NEPA obligation to disclose and listing supporting cases); *see also* 40 C.F.R. § 1508.8(a)–(b) (2018) (describing effects agencies must consider).

For an effective public participation process, the Corps should have disclosed relevant information in the community’s common language and reasonably extended the public comment period when the community’s critical

infrastructure collapsed. Its failure to do so tainted the Corps' NEPA review.

Therefore, the Court should vacate the Corps' inadequate Environmental Assessment to ensure opportunities for robust community feedback.

### **III. The Dredging Project and Facilitated LNG Expansion Are Antithetical to Puerto Rico's Clean Energy and Climate Goals.**

The Dredging Project is inextricably linked to the proposed expansion and conversion of LNG facilities in Puerto Rico and locks in the island's fossil fuel dependence for decades to come. The most recent International Panel on Climate Change report predicts expected global greenhouse gas emissions through 2030 will tip our climate over the 1.5°C benchmark within this century and limit countries' ability to keep warming below 2°C. IPCC, *Summary for Policymakers, in Climate Change 2023: Synthesis Report* § A.4 (2023),

[https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_SPM.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf).

Already, human-caused climate change is affecting weather and climate extremes globally, with vulnerable communities bearing the greatest losses and damage to nature and people. *Id.* at § A.2. Tackling the climate crisis requires rapid transition from fossil fuels across all energy systems where “[d]eep, rapid, and sustained reductions in greenhouse gas emissions would lead to a discernible slowdown in global warming within around two decades.” *Id.* at § B.1.

Puerto Rico has responded to this global call for energy transition by passing the Puerto Rico Energy Public Policy Act, which sets a required timeline for

renewable energy transition with the ultimate goal of 100 percent renewable energy by 2050. 2019 P.R. Laws 17-2019 § 1.6(7). The Act also sets interim goals of 40 percent by 2025 and 60 percent by 2040. *Id.* Unfortunately, Puerto Rico is behind meeting these goals. In the fiscal year of 2022, only three percent of total electricity came from renewable energy. Energy Info. Admin., *supra*.

A rapid transition to renewable energy, especially distributed renewable energy like rooftop or onsite solar and other built environments, is critical for Puerto Rico and *Amici* communities in the face of increased extreme weather events like Hurricanes Irma, Maria, and most recently Fiona. IPCC, *supra* at §§ Figure SPM.1, A.2.1–2.2, B.1.4, Figure SPM.4. Mitigating climate change is especially crucial to *Amici*'s communities of racially and economically marginalized residents who disproportionately experience the harms and disruptions of these storms. IPCC, *supra* at §§ Figure SPM.1, A.2.1–2.2, B.1.4, Figure SPM.4.

As discussed above, the hurricanes wreaked havoc on the electric grid and left 1.5 million residents without power. Alexia Fernández Campbell, *It Took 11 Months to Restore Power to Puerto Rico After Hurricane Maria. A Similar Crisis Could Happen Again*, VOX (Aug. 15, 2018), <https://www.vox.com/identities/2018/8/15/17692414/puerto-rico-power-electricity-restored-hurricane-maria>. The failure to restore energy was due to the



“current system of fewer, centralized and larger power plants [that take] longer to restore electricity across the island, especially in remote and mountainous regions.”

Jeff Brady, *Solar Energy Could Be Key in Puerto Rico's Transition to 100% Renewables, Study Says*, NPR (Jan. 23, 2023),

<https://www.npr.org/2023/01/23/1150775235/solar-energy-could-be-key-in-puerto-ricos-transition-to-100-renewables-study-say>.

In the aftermath of this systemic energy catastrophe, Department of Energy researchers found that the island has significant renewable energy potential. Nat'l Renewable Energy Laboratory, *Quantifying the Solar Energy Resource for Puerto Rico*, 22 (2021), <https://www.nrel.gov/docs/fy21osti/75524.pdf>. Localized and distributed renewable energy systems like solar rooftop panels would provide residents of Puerto Rico with desperately needed resiliency against natural disasters. Brady, *supra* (citing PR100, One-Year Progress Summary Report: Preliminary Modeling Results and High Resolution Solar and Wind Data Sets 4 (2023)). Agustín Carbó, the Director of the Department of Energy's Puerto Rico Grid Modernization and Recovery Team, stated in an interview, “We were able to prove that these [distributed energy] systems are resilient to hurricane winds, and they can provide pretty fast power, within hours after a storm.” *Id.* As fossil fuel emissions continue to exacerbate climate change, disaster events like Hurricanes Irma and Maria are going to get “bigger and more powerful,” and the current

system of fewer, larger, and more centralized power plants leave the island vulnerable to long-term blackouts. *Id.*

By facilitating the expansion and entrenchment of LNG as fuel for electric generation, the Dredging Project only amplifies the negative impacts of climate change and hinders Puerto Rico's ability to transition to a more sustainable future. The Corps' decision to move forward with the Project without adequately considering the climate considerations and Puerto Rico's energy goals violates its NEPA obligations. 40 C.F.R. §§ 1508.8(a)–(b), 1508.25(a) (2018).

#### **IV. The Corps Violated the Endangered Species Act.**

As Plaintiffs-Appellants argue in detail, the Corps' process for approving the Project failed to protect endangered coral in San Juan Bay—an ecologically significant natural resource of vital importance to *Amici*—in violation of NEPA and the ESA. Below, the district court wrongly accepted the Corps' rationale that the damage to coral from an analogous Miami dredge project was not an apt forecast of what will happen in San Juan Bay because the two projects “have materially different geographies,” there is “significantly less material to be dredged” from San Juan Bay, and because the Project proposes to use a different dredge method than what was used at Miami. *El Puente*, 2023 WL 4706152, at \*5, \*8.

However, the Miami dredge did damage corals and the agencies relied on virtually the same assumptions and analyses. *First*, as explained in the attached declaration by Dr. Rachel Silverstein, a Ph.D. coral biologist, impacts to corals even beyond 1,000 meters of the Miami dredge were observed, even though the agencies' analysis presumed no damage would occur beyond 150 meters. Appendix B, Decl. ¶¶ 33–34, 42–43. The agencies relied on the same disproven analyses, making the same incorrect assumptions for the Project, which has hardbottom habitat suitable for coral species less than 500 meters from the dredge area and designated critical habitat 762 meters north of the dredging area, as well as habitat adjacent to the transit route to the disposal site. *Id.* ¶¶ 35–36, 42. *Second*, the spoil transport barges leak dredge sediment and scow leakage alarms fail to protect corals, *id.* ¶¶ 48–50, yet the agencies again relied on sediment leakage alarms to prevent harm to the seven protected species of coral and the designated critical habitat adjacent to the disposal route. *Id.* ¶¶ 51–52. *Third*, even though the harm from Miami dredge is likely to have contributed to a stony coral tissue loss disease pandemic in the region, *id.* ¶ 57, the agencies entirely ignored that risk in their analysis of the Project. *Id.* ¶ 58. *Fourth*, the agencies relied on a vague adaptive management plan to address harm to corals in the Miami dredge, which the Corps refused to implement citing high economic costs, *id.* ¶¶ 63–67, yet the

agencies appear to be relying on similar assurance for the San Juan Bay dredge, *id.* ¶¶ 68–69.

In addition to these plain errors, the agencies also arbitrarily and unlawfully failed to include *any* coral health monitoring, *id.* ¶¶ 70–72, did not require the same protections they now require at other dredge cites like no overflow and no dredging during spawning, *id.* ¶¶ 24, 56, 71–72, and failed to use the best available data in omitting the reporting data from the Miami dredge project and dozens of readily available scientific studies, *id.* ¶¶ 73–74.

## CONCLUSION

For the foregoing reasons, *Amici* urge this Court to reverse the district court and remand with direction to grant Plaintiffs-Appellants’ request to vacate the Corps’ Environmental Assessment and remand to the Corps to reevaluate and reconsider the Dredging Project’s effects and impacts on the environment and climate change and on environmental justice communities.

Respectfully submitted,

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Dated: October 12, 2023

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## CERTIFICATE OF COMPLIANCE

I hereby certify that this brief complies with the type-volume limitations applicable to this brief. As measured by the word-processing system used to prepare this brief, the brief contains 5,485 words, exclusive of the certificate as to parties, rulings, related cases, and separate briefing; table of contents; table of authorities; signature lines; attachment; and certificates of service and compliance. The brief complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and complies with the type-style requirements of Fed. R. App. P. 32(a)(6) because it has been prepared in a 14 point proportionally spaced roman-style typeface (Times New Roman).

## CERTIFICATE OF SERVICE

I hereby certify that, on October 12, 2023, I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the District of Columbia Circuit using the appellate CM/ECF system, which served a copy of the document on all counsel of record in the case.

Dated: October 12, 2023

/s/ Christophe Courchesne  
Christophe Courchesne  
Assistant Professor  
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**ATTACHMENTS**

## APPENDIX A

User-Generated EJScreen Community Report for Cataño and Guaynabo, U.S. EPA,  
(Sept. 26, 2023)



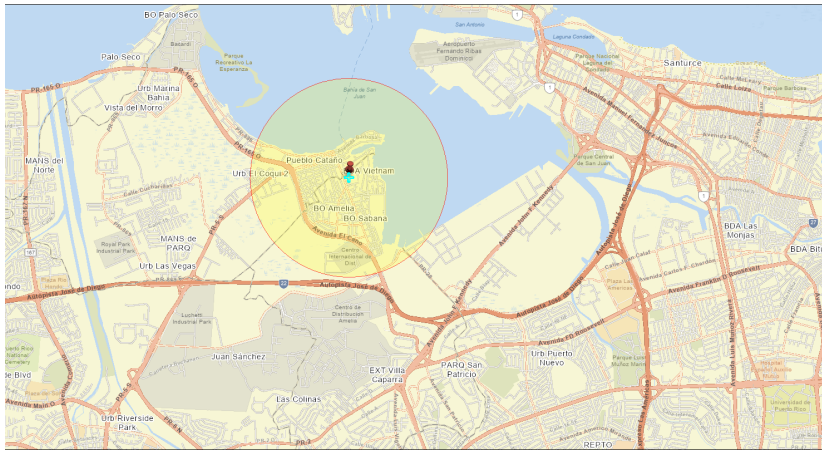


# EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

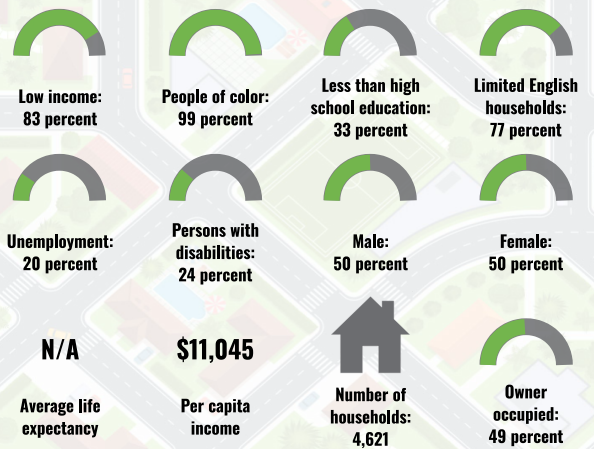
## Guaynabo, PR

1 mile Ring Centered at 18.438088,-66.116066  
 Population: 12,199  
 Area in square miles: 3.14

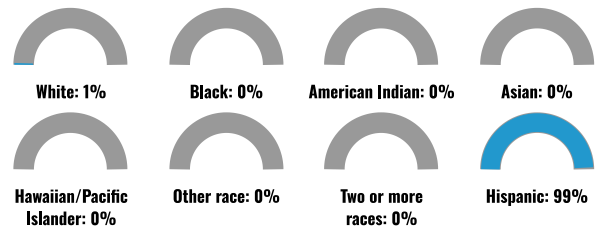


October 26, 2023  
 EJ Communities  
 1:36,112  
 0 0.42 0.85 1.7 mi  
 0 0.5 1 2 km  
Esri, HERE, Garmin, Mapbox, SateGeo, GeoTechnologies, Inc., METRAC, USGS, NPS, US Census Bureau

### COMMUNITY INFORMATION



### BREAKDOWN BY RACE



### BREAKDOWN BY AGE



### LIMITED ENGLISH SPEAKING BREAKDOWN



Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race. Source: U.S. Census Bureau, American Community Survey (ACS) 2017-2021. Life expectancy data comes from the Centers for Disease Control.

### LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	7%
Spanish	93%
Total Non-English	93%

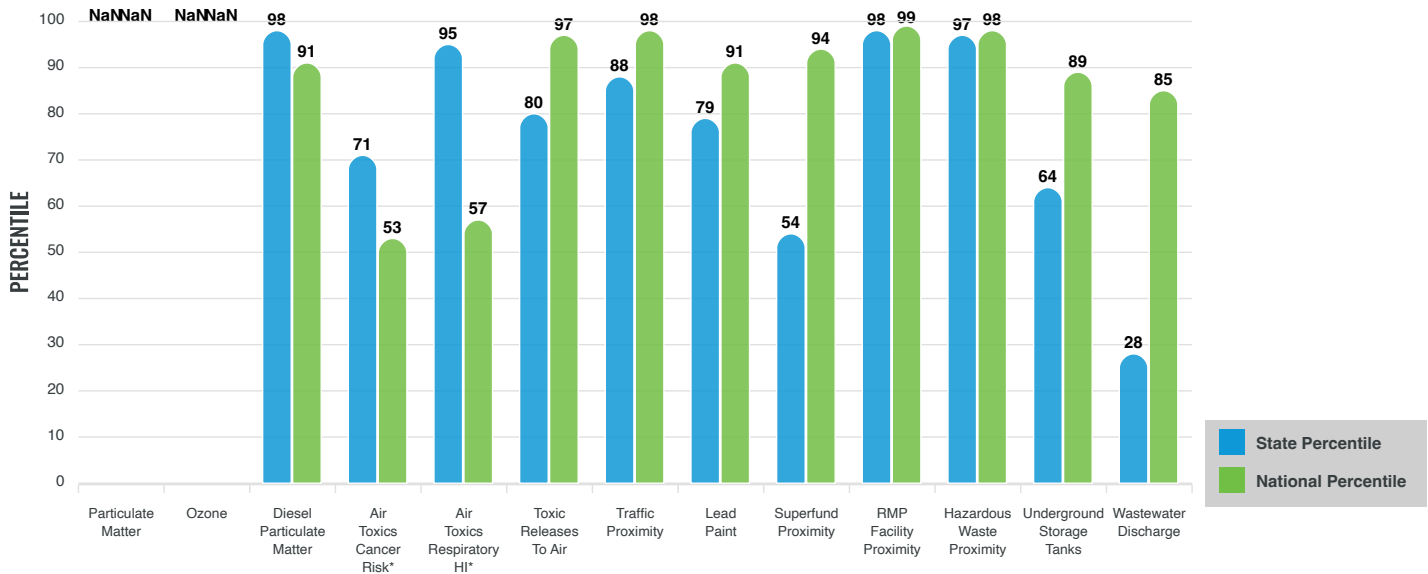
# Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the [EJScreen website](#).

## EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

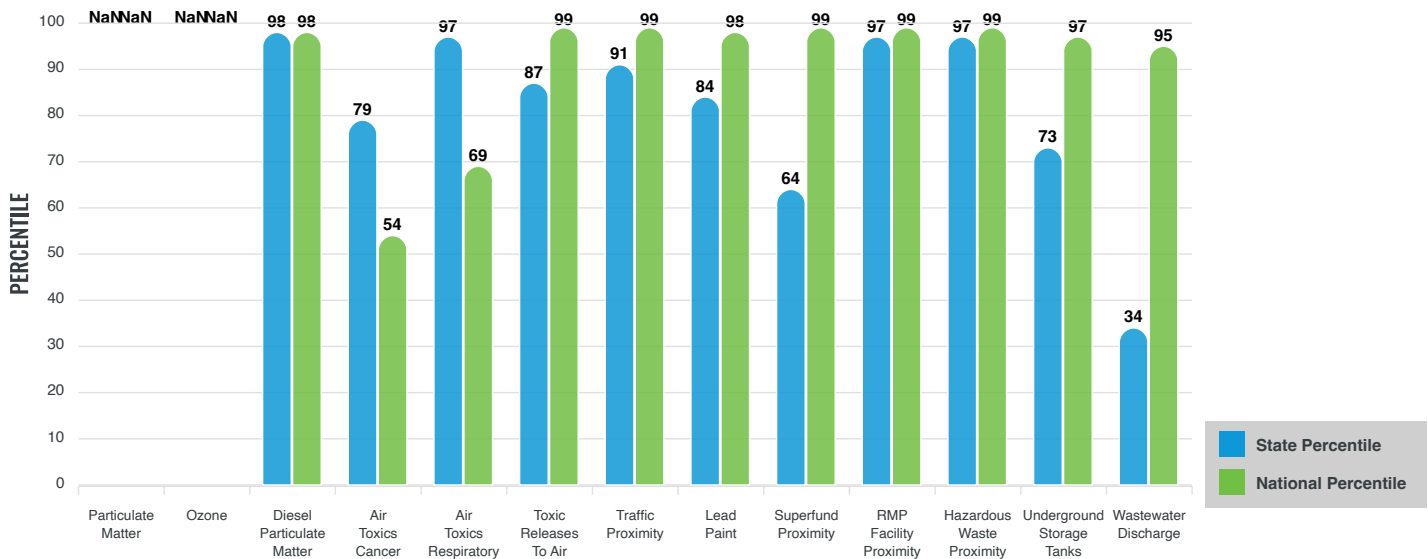
### EJ INDEXES FOR THE SELECTED LOCATION



## SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

### SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for 1 mile Ring Centered at 18.438088,-66.116066

# EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
<b>POLLUTION AND SOURCES</b>					
Particulate Matter (µg/m <sup>3</sup> )	N/A	N/A	N/A	8.08	N/A
Ozone (ppb)	N/A	N/A	N/A	61.6	N/A
Diesel Particulate Matter (µg/m <sup>3</sup> )	0.245	0.0667	98	0.261	57
Air Toxics Cancer Risk* (lifetime risk per million)	20	20	15	25	5
Air Toxics Respiratory HI*	0.23	0.19	17	0.31	4
Toxic Releases to Air	1,800	4,300	76	4,600	70
Traffic Proximity (daily traffic count/distance to road)	340	180	84	210	85
Lead Paint (% Pre-1960 Housing)	0.27	0.16	81	0.3	56
Superfund Proximity (site count/km distance)	0.083	0.15	51	0.13	60
RMP Facility Proximity (facility count/km distance)	3.3	0.47	98	0.43	98
Hazardous Waste Proximity (facility count/km distance)	3	0.76	95	1.9	81
Underground Storage Tanks (count/km <sup>2</sup> )	4.9	1.7	88	3.9	77
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.00088	2.3	32	22	47
<b>SOCIOECONOMIC INDICATORS</b>					
Demographic Index	91%	83%	67	35%	99
Supplemental Demographic Index	54%	43%	78	14%	99
People of Color	99%	96%	25	39%	96
Low Income	83%	70%	67	31%	98
Unemployment Rate	20%	15%	69	6%	95
Limited English Speaking Households	77%	67%	67	5%	99
Less Than High School Education	33%	21%	81	12%	93
Under Age 5	5%	4%	74	6%	54
Over Age 64	22%	22%	50	17%	72
Low Life Expectancy	N/A	N/A%	N/A	20%	N/A

\*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: <https://www.epa.gov/haps/air-toxics-data-update>.

**Sites reporting to EPA within defined area:**

Superfund .....	0
Hazardous Waste, Treatment, Storage, and Disposal Facilities .....	0
Water Dischargers .....	17
Air Pollution .....	5
Brownfields .....	13
Toxic Release Inventory .....	4

**Other community features within defined area:**

Schools .....	5
Hospitals .....	0
Places of Worship .....	0

**Other environmental data:**

Air Non-attainment .....	Yes
Impaired Waters .....	Yes

Selected location contains American Indian Reservation Lands* .....	No
Selected location contains a "Justice40 (CEJST)" disadvantaged community .....	Yes
Selected location contains an EPA IRA disadvantaged community .....	Yes

Report for 1 mile Ring Centered at 18.438088,-66.116066

# EJScreen Environmental and Socioeconomic Indicators Data

## HEALTH INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	N/A	N/A	N/A	20%	N/A
Heart Disease	N/A	N/A	N/A	6.1	N/A
Asthma	N/A	N/A	N/A	10	N/A
Cancer	N/A	N/A	N/A	6.1	N/A
Persons with Disabilities	22.5%	21.6%	54	13.4%	91

## CLIMATE INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	N/A	N/A	N/A	12%	N/A
Wildfire Risk	N/A	N/A	N/A	14%	N/A

## CRITICAL SERVICE GAPS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	59%	32%	89	14%	99
Lack of Health Insurance	7%	7%	55	9%	49
Housing Burden	No	N/A	N/A	N/A	N/A
Transportation Access	No	N/A	N/A	N/A	N/A
Food Desert	No	N/A	N/A	N/A	N/A

Footnotes

Report for 1 mile Ring Centered at 18.438088,-66.116066

APPENDIX B

Expert Declaration of Rachel Silverstein, Ph.D.  
(October 12, 2023)

ORAL ARGUMENT NOT YET SCHEDULED

No. 23-5189

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**UNITED STATES COURT OF APPEALS  
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

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EL PUENTE DE WILLIAMSBURG, CORALATIONS,  
CENTER FOR BIOLOGICAL DIVERSITY,  
*Plaintiffs-Appellants,*

v.

U.S. ARMY CORPS OF ENGINEERS, LIEUTENANT GENERAL SCOTT A.  
SPELLMON, NATIONAL MARINE FISHERIES SERVICE, GINA  
RAIMONDO, U.S. FISH AND WILDLIFE SERVICE, DEBRA HAALAND,  
*Defendants-Appellees.*

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**EXPERT DECLARATION OF RACHEL SILVERSTEIN, PH.D.**

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I, RACHEL SILVERSTEIN, Ph.D., pursuant to 28 U.S.C. § 1746, hereby declare as follows:

1. I submit this declaration in support of the Amicus Curiae briefing in the above-captioned matter.

2. Since 2014, I have been Executive Director and Waterkeeper of Miami Waterkeeper, a Florida not-for-profit 501(c)(3) organization that works tirelessly to protect South Florida's environment and community through advocacy and outreach rooted in sound science. Miami Waterkeeper's mission is to ensure clean water, thriving habitats, and a resilient future for all. As Executive Director and Waterkeeper, I lead and oversee all of Miami Waterkeeper's programs and initiatives, utilizing my expertise in marine biology and deep working knowledge of South Florida's waterways, wetlands, and ecosystems.

3. I hold a Ph.D. in Marine Biology and Fisheries from the University of Miami and a B.S. degree (*cum laude*) in Ecology, Evolution, and Environmental Biology from Columbia University. I have been appointed to and served on multiple civic boards, including Miami-Dade County's Biscayne Bay Shoreline Development Review Board and the City of Miami's Sea Level Rise Resiliency Board.

4. I have been quoted in hundreds of media articles and interviews on the topic of environment and conservation, including in the New York Times, CNN,

The Today Show, NBC Nightly News, The Guardian, and National Geographic.

Many of these articles specifically covered corals and dredging. I have also published multiple op-eds, including on the topic of corals and dredging, in the Miami Herald and Sun Sentinel.

5. I have been studying coral reef ecology for 20 years, since I was an undergraduate at Columbia University in the Ecology, Evolution, and Environmental Biology Department, where I conducted my undergraduate thesis on coral reef ecology. In 2012, I completed my doctorate in Marine Biology and Fisheries from the University of Miami's Rosenstiel School of Marine and Atmospheric Science, where I studied the effects of stress, specifically bleaching, on reef corals using physiological and molecular genetic methods. The majority of my doctoral work focused on bleaching and recovery of corals after exposure to various stressors, but mainly heat exposure. My work has been published in multiple, international journals, including the *Proceedings of the Royal Society of London* and *Global Change Biology*, and has been presented at multiple, international coral reef conferences.

6. As a graduate student, I was awarded a National Science Foundation Graduate Research Fellowship, University of Miami's Reitmeister-Abess Center Environmental Stewardship Award, University of Miami's Graduate Research Fellowship, Rowlands Research Fellowship, and Rosenstiel School of Marine and



Atmospheric Science Alumni Fellowship. Since graduating, I have been awarded a Knauss Sea Grant Fellowship, for which I served on the U.S. Senate Commerce Committee's subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard. I have been awarded the Elevate Prize, a global competition for non-profit leaders; Water Conservationist of the Year award from the Florida Wildlife Federation; the Mayor's Pioneer Award by the Miami-Dade County Mayor Daniella Levine Cava; the Diatom Award by the Mayor of Miami Beach; and the Miami Herald Visionary Award. I was named as one of the top 20 environmentalists in South Florida by the New Times. I have been a featured or keynote speaker at many high-profile meetings and conferences, including the American Academy of Arts and Sciences and the Aspen Institute's climate conference.

7. I have extensively researched the impacts of dredging on coral reefs. I have authored several scientific papers and peer-reviewed studies on corals, including those documenting the harm from dredging on coral reefs. These include:

- a. Cunning, R., Silverstein, R. N., Barnes, B. B., & Baker, A. C., Extensive coral mortality and critical habitat loss following dredging and their association with remotely-sensed sediment plumes, 145 Marine Pollution Bulletin 185 (2019).

b. Barnes B.B., Hu C., Kovach C., Silverstein R., Sediment plumes induced by the Port of Miami dredging: Analysis and interpretation using Landsat and MODIS data, 170 Remote Sensing of the Environment 328 (2015).

8. I have also submitted at least 8 technical comment letters on various National Environmental Policy Act (NEPA) or Endangered Species Act (ESA) processes connected to the impact of dredging on corals and other regulatory decisions. Additionally, I have submitted technical comment letters about state-level regulations governing the risks of high turbidity levels on corals.

9. In addition to having a Ph.D. studying coral reef ecology, publishing about the impacts of dredging projects on coral reefs, and participating in the regulatory processes surrounding dredging projects, I have also been a representative of my organization, Miami Waterkeeper, as a plaintiff in litigation against the National Marine Fisheries Service (NMFS) and the U.S. Army Corps of Engineers (Corps) for violations of NEPA and the ESA in dredging projects proposed near coral reef ecosystems in Florida at PortMiami and at Port Everglades. I am, therefore, extremely familiar with the standards required for Environmental Assessments, Environmental Impact Statements, and Biological Opinions, particularly on the “best available science” standard. These experiences have helped me to gain valuable expertise with and experience in the exact issues

raised in this legal challenge and make me ideally suited to provide this expert declaration in support of amicus curiae's briefing.

10. In preparing this declaration, I reviewed the complaint and lower court's opinion in this case, the environmental assessment, finding of no significant impact, and concurrence letter, as well as relevant literature on corals and dredging. This case concerns the environmental review of a port expansion dredging project in San Juan Bay, Puerto Rico. At issue is the Corps' analysis of impacts to corals under NEPA and NMFS's consultation on threatened corals under the ESA.

11. In my expert opinion, the agencies dramatically underestimated the harm to corals that is likely to be caused by dredging and failed to consider the best available scientific information. This is particularly urgent because harm can come to corals exposed to even a few days of dredging. The purpose of this Declaration is to describe the conservation status of corals, threats corals presently face, and the irreparable harm that dredging would cause to corals if dredging were to commence without proper protections and considerations. The failure of the Corps and NMFS to analyze and apply the lessons learned from PortMiami Phase III dredging project, to apply relevant published scientific papers, and to adjust protections for the reefs near San Juan Harbor, puts the corals in San Juan Bay at immediate risk.

### **Introduction to Threatened Corals**

12. All seven ESA-listed threatened corals have been documented on the reef within a mile offshore of the San Juan metropolitan area. Designated critical habitat for all seven corals exists on the reef fringing the north coast of San Juan and in San Juan Bay to varying extents. 50 C.F.R. § 226.216; 88 Fed. Reg. 54,026 (August 9, 2023) (to be codified at 50 C.F.R. § 226.230).

13. Fringing reefs on San Juan's north coast have been significantly stressed or affected from sedimentation and organic pollution coming from the San Juan Bay estuary. A "remarkably high frequency" of coral colonies on the north coast are impacted by black band disease, which suggests poor water quality.

14. Elkhorn coral (*Acropora palmata*) was once the dominant species in shallow water throughout the Caribbean. It is a large, branching coral with thick and sturdy antler-like branches. In the 1980s, a white band disease outbreak killed elkhorn coral throughout its range (National Oceanic and Atmospheric Administration (NOAA) Species Directory, Elkhorn Coral, <https://www.fisheries.noaa.gov/species/elkhorn-coral>). Now elkhorn coral numbers less than three percent of its former abundance. *Id.* Although previously thought to be rare on the north shore of Puerto Rico, prior to critical habitat designation, scientists discovered reefs along the north coast of the main island that support large thickets of elkhorn coral. 73 Fed. Reg. 72,210 (Nov. 26, 2008). Designated

critical habitat occurs around outer Bar Channel Cuts 1 and 2 in San Juan Bay and on fringing reefs to 30 meters in depth. 50 C.F.R. § 226.216.

15. Staghorn coral (*Acropora cervicornis*) is a branching coral that occurs in back reef and fore reef environments. Until the mid-1980s, extensive single-species stands of staghorn coral dominated fore reef zones at intermediate depths of 15–60 feet (NOAA Species Directory, Staghorn Coral, <https://www.fisheries.noaa.gov/species/staghorn-coral>; Weil et al. 2002). The branches of these corals form thickets and provide key habitat for marine animals. However, like elkhorn coral, white band disease has now decimated staghorn coral, and successful reproduction is now very rare (NOAA Species Directory, *supra*). Designated critical habitat occurs around outer Bar Channel Cuts 1 and 2 in San Juan Bay and on fringing reefs to 30 meters in depth. 50 C.F.R. § 226.216.

16. Pillar coral (*Dendrogyra cylindrus*) colonies form numerous, heavy cylindrical spires growing upwards from an encrusting base mass that can reach 10 feet tall. Pillar coral can propagate by fragmentation following storms or other physical disturbance (NOAA 5 Caribbean Coral Species Recovery Outline, Mar. 19, 2015, <https://www.fisheries.noaa.gov/resource/document/5-caribbean-coral-species-recovery-outline>). While traditionally present at relatively low populations, this species has been heavily impacted by stony coral tissue loss disease and has experienced local extinctions in some areas. It is thought that this species is

functionally extinct in Florida, for example. On August 29, 2023, NMFS issued a proposed rule to change the status of pillar coral from threatened to endangered based on population declines and susceptibility to a recently emerged coral disease. 88 Fed. Reg. 59,494 (Aug. 29, 2023). Designated critical habitat occurs around all Puerto Rico islands from 1–25 meters (3.3–82 feet) in depth, including in San Juan Bay except in navigation channels. 88 Fed. Reg. at 54,050, 54,075.

17. Rough cactus coral (*Mycetophyllia ferox*) is one of the least common coral species observed in monitoring studies (NOAA 5 Caribbean Coral Species Recovery Outline, *supra*). The colony size must be greater than 100 centimeters to reach maturity and reproduce. *Id.* Its intrinsically low reproductive rate limits its capacity to recover after mortality from threats like dredging. *Id.* Designated critical habitat occurs around all Puerto Rico islands from 5–90 meters (16.4–295 feet) in depth, which extends into San Juan Bay adjacent to outer Bar Channel Cuts 1 through 6 but not further south. 88 Fed. Reg. at 54,050, 54,080.

18. Star corals (*Orbicella* spp.) have slow growth and late maturity but grow very large and can live for centuries, allowing them to support complex reef habitats and structure with their large size (NOAA 5 Caribbean Coral Species Recovery Outline, *supra*).

- a. Mountainous star coral (*Orbicella faveolata*) designated critical habitat occurs around all Puerto Rico islands from 0.5–90 meters

(1.6–295 feet) in depth, including in San Juan Bay except in navigation channels. 88 Fed. Reg. at 54,049, 54,063.

- b. Lobed star coral (*Orbicella annularis*) designated critical habitat occurs around all Puerto Rico islands from 0.5–20 meters (1.6–65.6 feet) in depth, including in San Juan Bay except in navigation channels. 88 Fed. Reg. at 54,049, 54,057.
- c. Boulder star coral (*Orbicella franksi*) designated critical habitat occurs around the main island from 0.5–90 meters (1.6–295 feet) in depth, including in San Juan Bay except in navigation channels. 88 Fed. Reg. at 54,049, 54,069.

### **Threats to Corals**

19. Corals face similar threats around the world, including climate change, fishing, pollution, disease, deforestation, and coastal construction. Global threats like climate change are exacerbated by local threats like nutrient and sediment pollution that result from dredging, run-off, and construction (Gove et al. 2023). Curtailment of local threats will increase these corals' resiliency to more severe global threats.

20. In recent decades, because of climate change, episodes of coral bleaching—or stress-induced breakdown of symbiosis with algal partners—have contributed to dramatic declines in coral cover worldwide (approximately 50–80

percent declines since the 1970s). Record-smashing high temperatures during the summer of 2023, for example, have devastated coral reefs in the Florida Keys. Some reefs have had 100 percent mortality as a result. To reverse this decline and survive in warmer oceans, corals will need to rapidly increase their tolerance to more frequent episodes of anomalously high temperatures that underlie most coral bleaching events. Even assuming this occurs, additional stressors that combine with high temperatures to exacerbate coral decline—like sediment, nutrient pollution, and disease—may still limit corals' ability to avoid mortality and population decline.

21. Unprecedented ocean temperatures from April through early August 2023 caused heat stress conditions in areas of the North Atlantic Ocean and Caribbean Basin. Water temperatures throughout the Gulf of Mexico and in the Caribbean Sea were approximately 1.8–5.4°F (1–3°C) warmer than normal (NOAA, *The ongoing marine heat waves in U.S. waters, explained*, July 14, 2023, <https://www.noaa.gov/news/ongoing-marine-heat-waves-in-us-waters-explained>). Not only do elevated temperatures increase the likelihood of coral mortality due to bleaching, but they may also strengthen storms in the region and cause further damage to corals.



### **Impacts of Dredging on Corals**

22. Based on my full review of scientific literature covering the impact of dredging and sedimentation on corals, in-depth study of the dredging projects at PortMiami and Port Everglades, and review of the Environmental Assessment, Biological Opinion, and other relevant documents here, it is my expert opinion that corals near San Juan Bay will suffer irreparable sedimentation damage—within days—if dredging were to commence.

23. Sedimentation can impact almost every biological function of corals, from feeding through reproduction. It is energetically costly for corals to self-clean, meaning to remove sediment from their surfaces through ciliary action, mucus production, and/or hydrostatic polyp inflation). Ongoing sedimentation may reduce corals' feeding because of the energy costs of self-cleaning and inability to open their polyps. This reduced feeding plus low light levels indirectly from turbidity or directly from smothering can lead to coral starvation and reduced growth.

24. Sediment inhibits coral sexual reproduction at several stages: spawning, fertilization, settlement, and recruitment. Sediment may directly remove space for corals by covering hard surfaces required for larval settlement or it may harm the algae that is a key settlement cue. Recently settled coral recruits have lower tolerance to sedimentation than adult corals by an order of magnitude

(Fabricius, 2005). Thus, even relatively low sedimentation rates ( $16.6 \text{ mg cm}^{-2} \text{ d}^{-1}$ ) can result in mortality. Even sediment that is not deposited on the seabed, but that is moving through the system, is likely to abrade and kill newly settled coral recruits and block photosynthetically active radiation.

25. Enough sedimentation exhausts corals' removal ability, partially or completely buries the corals, and results in mortality. At first corals—particularly those with mounding morphologies—accumulate rejected sediment in “berms,” or piles of sediment around the colony perimeter. As the berm increases in height, coral sediment removal becomes more difficult. Mortality commonly occurs first under sediment berms that pile up at colony bases, producing partial mortality in a “halo” pattern.

26. Dredging activities can be even more harmful to corals than other events that cause sedimentation. The rapid escalation in sediment load created by dredging may prevent typical behavioral, acclimatory, and adaptive coral responses that protect corals from naturally high sedimentation. Hurricanes generate sediment over hours to days, while dredging can generate high sediment conditions for months to years—exceeding the corals' energetic reserves. Sediment from dredging is often more fine-grained than natural coarse sediment, and these fine particles are more harmful to corals because they can cause higher turbidity, take longer to settle out of the water column, and be distributed further.

27. Dredging suspends sediment from deeper strata than typically is disturbed in reef environments, which can result in acute acidification and/or eutrophication. In areas such as shipping channels or ports the dredging may release unwanted contaminants, sediment-borne pathogens, or related immune impairment agents.

28. Exposure to dredging plumes has been correlated with a doubling in the prevalence of white syndromes in corals on the Great Barrier Reef, suggesting that dredging can either release potential pathogens and/or decrease coral health and compromise immunity. A recent NOAA publication shows that sediment is a vector for what is now known as stony coral tissue loss disease (SCTLD). At least one species of coral, pillar coral, became locally extinct in Miami-Dade County as a result of SCTLD, and possibly more species in other areas too. This is explained in detail below.

29. The diverse and varied impacts of dredging to coral reefs mean comprehensive monitoring data, including measured impacts on corals and seabed habitat that can be correlated with satellite observations of sediment plumes, are necessary to evaluate dredging impacts.

**Dredging can cause permanent harm to corals within days to weeks, as seen at PortMiami**

30. As stated above, in my expert opinion, the commencement and operation of dredging in San Juan Bay, Puerto Rico, will irreparably harm corals, including threatened corals and their critical habitat in that area. Once the San Juan dredging commences, permanent harm to corals can occur within days to weeks due to sediment deposition, based on the data I analyzed from PortMiami.

31. At PortMiami, significant buildup of sediment was observed on nearby reefs in a matter of days to weeks. An official NMFS sediment impact assessment from PortMiami, released August 2023, also states, “Observations recorded by divers during the permit-required monitoring also suggest deep pockets of standing sediment over the reef as early as four weeks into dredging” (NMFS, *Examination of Sedimentation Impacts to Coral Reef along the Port Miami Entrance Channel, December 2015 and April 2016*, Aug. 29, 2023) [hereafter, “NMFS Impact Assessment 2023”]. The assessment further notes that “[d]uring compliance events completed in mid-January 2014, (nine weeks into dredging), sediment accumulation was present on 100% of sediment assessment sites north of the channel and 96% of sediment assessment sites south of the channel.” *Id.*

32. This sediment buildup covered a substantial percentage of the seafloor in the area of the dredging, which buried and shaded corals and inhibited or smothered coral recruits (i.e. coral babies). Severe and permanent harm befell 560,000 to one million Miami corals due to dredging, as well as an untold number of coral recruits. Sedimentation impacted the reef well beyond 1000 meters from the dredging site and severely impacted over 278 acres of reef critical habitat.

33. For PortMiami, data reveal that even at monitoring locations over 1,250–2,500 meters from the dredged channel, both the percentage of sediment covering the seafloor (i.e. benthos) and the presence of a sediment plume on the surface increased almost immediately once dredging commenced. As expected from a dredging-related impact, locations closer to the channel (50 meters or less from the channel), exhibited the highest percentage of sediment cover. However, even at 1,000 meters or more from the channel where dredging was occurring, impacts could be clearly observed.

34. Increases in sediment cover and the presence of a sediment plume over the reef occurred from the start of dredging and persisted through the entirety of dredging, declining only after dredging ended. Even after dredging, however, sediment cover has not returned to baseline levels at most sites, underscoring the lasting impact on coral reefs.

35. With respect to San Juan Bay, the Corps reports suitable hardbottom habitat existing just 456 meters from the dredging area, and based on my expertise and the data from PortMiami, that is *easily* within the expected zone of dredging impacts. In my opinion, any corals on that hardbottom habitat will be impacted by dredging sediment and potentially killed, and the sediment would likely prevent corals from settling on the hardbottom habitat.

36. Moreover, at San Juan Bay, designated coral critical habitat is 762 meters north of the dredging area and occurs adjacent to the transit route to the offshore disposal site. Based on my expertise and the data from PortMiami, designated coral critical habitat is *easily* within the zone of dredging impacts. Therefore, the reefs where corals occur will be in harm's way from the commencement and operation of dredging in San Juan Bay.

### **Inadequacy of Existing Analysis**

37. It is my expert opinion that the Corps' Finding of No Significant Impact (FONSI) is deeply inappropriate for an expansion dredging of this severity and ignores clear risks to corals. The Corps' determination was based on disproven and unsubstantiated assumptions, a dearth of scientific analysis, and a failure to consider existing literature and PortMiami's lessons learned.

38. Importantly, the Corps perpetuates the same errors—*verbatim* in the EA—that were the root cause of the massive, unpermitted damage to reefs at

PortMiami. Based on my experience with the analyses for PortMiami, it is my opinion that the San Juan Harbor EA and the NMFS Concurrence are repeating a terrible history. These errors are compounded by a failure to require monitoring of coral conditions during dredging, an inadequate turbidity monitoring program, and loosely defined adaptive management measures, all of which failed in protecting coral resources at PortMiami and are likely to fail to protect corals near San Juan.

39. A robust coral monitoring program would assess before, during, and after the project whether corals are impacted by the dredging project. Yet, no monitoring of coral resources or critical habitat is currently required for the dredging project. I provide more details on these failings in the sections below.

**A. The PortMiami and San Juan dredging projects are similar enough to warrant concern for coral survival**

40. The Corps must incorporate lessons learned from the PortMiami dredging, given the similarity of both projects as large-scale dredging projects near ecologically sensitive coral reefs. These lessons include the relative success or failure of adaptive management; turbidity monitoring; disease monitoring; data collection and analysis; data management; estimates of the geographic scope and intensity of sediment impacts; and more. NMFS's sediment impact assessment specifically stated that the PortMiami impact predictions compared to the during-dredging observations show "the need to carefully evaluate existing practices to

plan for and detect impacts from large scale dredging projects in coral reef environments” (NMFS Impact Assessment 2023). Further, “[s]everal substantial lessons learned from the Port Miami dredging have been memorialized in planning documents associated with Port Everglades expansion, including USACE commitments to prohibit rock chopping, prohibit or restrict of overflow, and adaptive management based on near real-time measurements of water quality and environmental conditions).” *Id.* For the future, NMFS recommended the “development of additional lessons learned and translation to dredging project best practices near coral reefs or other sensitive habitats.” *Id.*

41. Instead of providing a robust consideration of PortMiami’s dredging impacts to corals, the Corps and NMFS differentiated PortMiami. While potential differences among dredging projects should be considered, the reliance on the differences between the San Juan and PortMiami dredging projects to avoid harm to corals is not warranted. Certain principles of dredging projects are applicable and highly translatable between projects—like monitoring methods, adaptive management, and coral disease. I address each of the alleged differences below.

**B. The relative location of ESA-listed corals and critical habitat to the respective project areas**

42. Defendants argue that ESA-listed corals are further from the site of dredging than at PortMiami. The San Juan EA states that corals are 456 meters



from the dredging area and designated coral critical habitat is 762 meters north of the dredging area, and therefore are not likely to experience harm. This conclusion is predicated on two erroneous assumptions: (1) sedimentation from dredging will only occur within 150 meters of the project and have a temporary and insignificant impacts, and (2) sediment from the project comes primarily from the dredging itself and not the transport to the ocean disposal site.

43. The first assumption has been disproven. In reality, dredging sediment travels farther than 150 meters and impacts corals far beyond that distance, as discussed previously. . The PortMiami dredging, including during dredging within the “semi-enclosed” Biscayne Bay, created vast turbidity plumes, extending even out onto the reef area. Based on satellite analysis of these plumes, they can cover a 25 kilometer area.



*Figure 1. A turbidity plume can be observed to be leaving Biscayne Bay through Government Cut at PortMiami during dredging. Currents transported the sediment over the reef habitat offshore, even though dredging was occurring in Biscayne Bay and not offshore at this time. June 12, 2015.*

44. Based on this improper assumption that sedimentation can only reach 150 meters from the dredging, the Corps and NMFS required *no monitoring* of coral conditions or sedimentation on reef areas, and irrationally relied on unreliable turbidity monitoring. Consequently, there are inadequate protections in place to prevent harm to these corals during dredging.

45. In response to the documentation of coral mortality occurring during the PortMiami dredging, NMFS wrote to the Corps on March 17, 2015, that it was “concerned by the continued lack of acknowledgment by the Corps that the

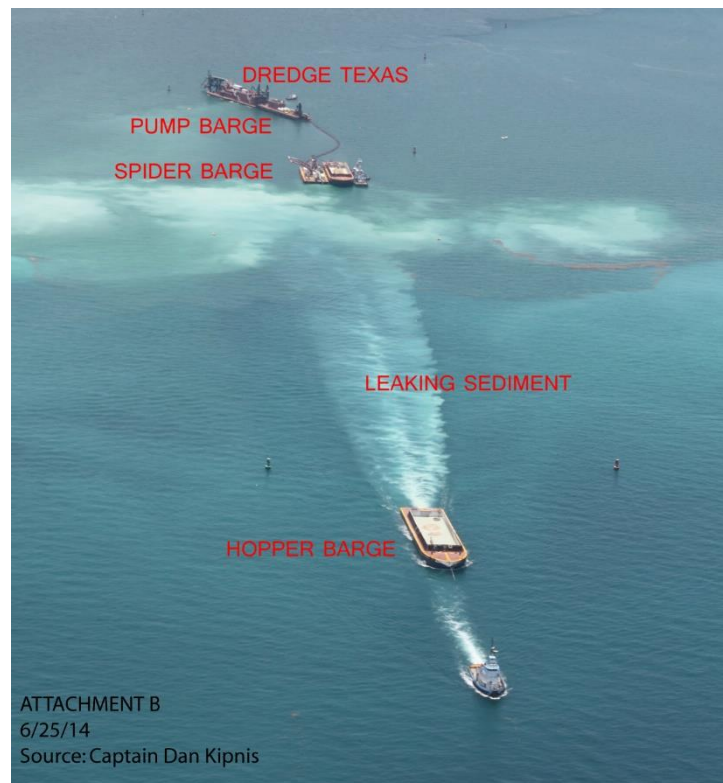
impacts that have actually occurred to listed corals and their habitats, are vastly different than those that were predicted and authorized in the 2011 biological opinion.”. On May 14, 2015, NMFS wrote to the Corps that it

unequivocally reiterates that the sedimentation actually experienced at the Port of Miami greatly exceeds the amount that we predicted in our [biological opinion], both in area affected and environmental consequences, and that reinitiation of consultation was required to consider these unanticipated sedimentation effects. Our [biological opinion] only considered possible sedimentation impacts within the 150 meter “indirect” impact zone adjacent to the federal channel and predicted that those impacts would be temporary and insignificant. . . . The partial and total mortality of coral colonies caused by the dredging-induced sedimentation at Miami Harbor is not an insignificant effect, it is take, and it was not predicted in our 2011 [biological opinion] and not included in the incidental take statement.

46. As a result, the Corps had to reinitiate consultation mid-project for PortMiami. Based on this realization and litigation brought by my organization, the Corps also updated their supplemental EIS for the planned Port Everglades dredging project to anticipate potentially severe impacts out to 1000 meters from the channel—at least. In San Juan, however, the Corps is obstinately clinging to false narratives and repeating the error of assuming only temporary and insignificant impacts will occur within 150 meters of the dredging channel. But this time, neither the Corps nor NMFS can claim that they did not know the risks, as they have been acknowledged repeatedly by their own agencies.

47. To protect corals, the indirect impact area finding should be based on modelling, a robust assessment of past projects, and published data. Instead, this finding was based on superficial analyses that were already documented to be irretrievably false.

48. Second, the assumption that dredging sediment comes only from the dredging itself is wrong because the barges that transport the spoils to the offshore dumping site leak a slurry of sediment-filled water along the way. Barge and scow leakage can have significant impacts on reef resources, as can dewatering and overflow. The photo below of PortMiami dredging shows a sediment plume trailing a barge as a tug pulls it away.



49. In Miami, the process of dewatering and overflow of sediment-laden water from the hopper barge deposits fine particles of dredged material into the water column (Jones et al., 2016), which created sediment plumes with a spatial extent up to approximately 228 square kilometers around the PortMiami dredging.

50. Despite having alarms on transport scows to prevent leakage at PortMiami, the EPA still found 125 violations of improper disposal of materials. The PortMiami dredging contractor did not appear willing to prevent the leakage of scows in transit. Therefore, in my expert opinion, depending on scow leakage alarms to protect coral resources will fail to prevent harm and mortality to corals.

51. As discussed above, designated critical habitat for seven ESA-listed corals is adjacent to the outer Bar Channel at the mouth of San Juan Bay. In my opinion, the designated coral critical habitat will be adversely affected from the dewatering and leaking of sediment from barges on the way to the offshore disposal site. [NMFS Impact Assessment 2023]

52. Similarities between the PortMiami and San Juan dredging like these—namely, a reliance on sediment leakage alarms to prevent harm to corals entirely—are reasons to view critically the agencies’ assertions that the dredging project is not likely to adversely affect corals,

53. Another reason to skeptically view the Corps’ analyses is that it was written by Terri Jordan-Sellers, a former Corps biologist. The San Juan EA lists

Ms. Jordan-Sellers as one of the contributors/authors and the 2011 PortMiami EA lists her as an author. In July 2019, Ms. Jordan-Sellers pled guilty to making false statements to law enforcement agents. U.S. Attorney's Office Press Release, *Former Army Corps Employee Pleads Guilty to Lying to Law Enforcement*, dated July 12, 2019, <https://www.justice.gov/usao-sdfl/pr/former-army-corps-employee-pleads-guilty-lying-law-enforcement>. Her false statements related to undisclosed outside employment, in which she was accepting payment from an environmental monitoring firm while overseeing their work as a part of a large dredging project in South Florida. During Miami Waterkeeper's litigation, Ms. Sellers also provided a photo to the Department of Justice on behalf of the Corps, which was filed in federal court with Judge Moreno, allegedly showing healthy staghorn corals near the PortMiami dredging project site post-dredging. However, I found the photo online, and confirmed that it had been taken in 1992 in the Virgin Islands. Ms. Sellers then submitted an affidavit in federal court in Miami stating she had "inadvertently" provided a false photo.

54. Just a few weeks later at a public meeting, Ms. Sellers again provided another false photo. The Corps distributed a photo of a staghorn coral that was labelled as having been taken post-dredging at PortMiami. However, I recognized it as having been taken pre-dredging.

55. The Corps had to publicly retract this document as well. Given Ms. Sellers' documented track record of lying on behalf of the Corps and conflicts of interest in these matters, any work produced by Ms. Jordan-Sellers should be closely scrutinized and reanalyzed by the Corps and NMFS, and it should not be relied upon in making resource decisions.

**C. Stony coral tissue loss disease was not considered in the EA or the Concurrence**

56. Dredging is expected to last a year in San Juan Bay, which is a long time for corals to experience the chronic stress of sedimentation and will include coral spawning periods. Chronic stress can weaken corals' immunity to disease and the dredging sediment itself could be a vector of disease. Yet disease was not considered an impact of dredging by the Corps or NMFS.

57. A catastrophic coral disease outbreak—now known stony coral tissue loss disease, or SCTLD—began immediately next to the PortMiami dredging project in 2014. This disease pandemic has since killed tens of millions of corals throughout Florida and the Caribbean. SCTLD has already contributed to local extinctions, such as pillar corals in Miami-Dade County, and is hypothesized to lead to more. Interagency task forces are launching rescue missions to intervene and even to create “coral arks” to bring corals into land-based facilities to save their genetic material before the disease wipes them out. This is a highly

significant event, which occurred before, during, and after the preparation of the San Juan EA and the Concurrence, but which was not analyzed or considered. Even if SCTLD had not yet hit Puerto Rico's reefs, its prevalence and rapid spread through Caribbean reefs since 2014 should have warranted a close consideration of its role in risk to coral health in the region. This is an incredibly significant oversight. In August 2023, in fact, NOAA's PortMiami sediment impact assessment notes specifically that it "is possible that concurrent stressors, including sedimentation from Port Miami dredging, contributed to the emergence of this disease (Aeby et al. 2019)."

58. In my expert opinion, the increased risk of SCTLD adds a jeopardy concern to this consultation. There is strong scientific evidence that dredging and SCTLD may act synergically, and this must be considered, as explained below.

59. Sediment has recently proven to be a vector for SCTLD. In a recent study, corals in a tank with sediment became infected within 24 hours of exposure, as opposed to corals without sediment, which took one to two weeks, highlighting the clear additional disease risk of dredging near corals.

60. The press release for the study quoted author Ian Enochs, who heads the NOAA Atlantic Oceanographic and Meteorological Laboratory's Coral Program, saying "[w]e hope this new information will provide managers with critical information needed to respond to the SCTLD outbreak, especially in the



context of mitigating further disease spread with coastal construction activities like dredging and beach renourishment.”

<https://www.sciencedaily.com/releases/2022/01/220125112540.htm>. Taken together with the first observation of SCTL D near the PortMiami dredging, it has been theorized that the impact of dredging may have acted synergistically to initiate, accelerate, or otherwise exacerbate the disease outbreak.

61. Omitting an analysis of SCTL D ignores the best available science and puts threatened corals near San Juan at risk of disease outbreaks with potentially catastrophic consequences, including jeopardy. The current documents do not appear to include a disease analysis or monitoring plan.

#### **D. Adaptive management fails corals after dredging has started**

62. The EA relies on potential adaptive management measures to protect coral resources. At PortMiami, the Corps made identical promises of vaguely described “adaptive management” to protect corals from harm. However, as I show here, this did not protect corals from dredging impacts.

63. When corals were being stressed and killed by the dredging sediment at PortMiami, the Corps failed to enact meaningful adaptive management to protect corals because of the high economic cost of a pause in dredging after the project had already begun, as explained below.

64. Miami Waterkeeper, NMFS, the Florida Department of Environmental Protection, Miami-Dade County, and the Environmental Protection Agency all flagged massive violations of permits and requirements and coral impacts due to sedimentation from dredging—while the project was underway.

65. For example, for months the Corps refused to relocate the threatened staghorn corals that were clearly being buried in dredging sediment, even at the strong request of NMFS. Then, on the eve of an emergency injunction hearing responding to a motion that Miami Waterkeeper and our co-plaintiffs filed, the Corps finally promised to fund NMFS to rescue ESA-listed corals from areas where severe dredging impacts were occurring. However, when NMFS divers showed up for the rescue, the dredging ship was dredging at the site of the rescue. The Corps refused to relocate or stop dredging to allow the rescue to proceed, despite pleading from NMFS staff. The Corps specifically cited the cost per day of moving or relocating the dredging ship. Only when the ship had to come in for repairs were NMFS divers allowed to access the imperiled corals. This is corroborated by multiple communications I have copied and pasted below.

66. An emailed update from NMFS staff, Miles Croom, former Deputy Regional Administrator, explained the details of this problem at PortMiami on October 29, 2014:

[I] asked if the Corps had any flexibility in scheduling the dredge to allow the NMFS team clear access for 2 to 4 days to complete the

coral rescue. I also said we believed take may be occurring that has not been authorized. The Corps said the only way to locate the dredge out of the work area would be extremely expensive (I think Jason Spinning said it would be on the order of \$570K per day), and that is an expense they are not willing to incur... Bottom line, no agreement to relocate the dredge for the purpose of allowing clear access to the NMFS field team to complete the coral harvest as quickly as possible.

67. Corps attorneys told Judge O'Sullivan at an emergency injunction hearing for PortMiami that ordering their contractors to stop the sedimentation would cost millions of dollars, despite claiming that they were avoiding sedimentation in the first place:

THE COURT: I mean, you know, like I said the other day, this—we will just go ahead with the hearing. You know, if at the end I decide I'm going to order you to insure—order the Corps to insure that there's minimal or no overflow for the life of the project as you have told NMFS you were going to do, you know, I don't understand, does that cost you any money then if I order that or Judge Moreno orders that? Since that's what you already agreed to do anyway, so just tell them you'll do what you agreed to do.

MR. BROWN: To just tell the contractor to do what they are already doing, it's my understanding it would cost millions of dollars.

THE COURT: Okay. So what if I tell them to do it? It could cost nothing then, right?

MR. BROWN: In order to insure that there is an order in place to do what you're telling the Corps to do, it would cost millions of dollars because it would entail an amendment to the contract.

*Biscayne Bay Waterkeeper v. U.S. Army Corps of Engineers*, Case. No. 14-23632-cv-FAM (S.D. Fla. Oct. 23, 2014) Evidentiary Hearing Transcript at 41.

68. The agencies cannot dismiss the similarity of economic burden associated with adaptive management and the Corps' unwillingness to adopt these measures when necessary to protect corals.

69. It is for this reason that it is imperative to address insufficiencies and inaccuracies in adaptive management measures in the EA *before the project begins and harm has occurred*. The dredging contractors did claim to have made some "adaptive management" changes in response to reports of elevated coral stress, but they were so minor so as to be negligible in terms of any meaningful protections for corals. This is clearly evidenced by the poor outcomes for corals.

#### **E. The Project includes no coral health monitoring**

70. At San Juan Bay, the Corps and NMFS require no monitoring of coral conditions and rely instead almost exclusively on turbidity monitoring. Therefore, if there is harm to reefs, there will be no documentation of coral conditions to show that the dredging harmed corals at all.

71. The overreliance on only monitoring for turbidity is problematic for several reasons:

- a. Turbidity monitoring takes place in the water column, but corals are at the seafloor (benthos) and may be experiencing different sedimentation conditions;

- b. Turbidity monitoring is required to take “background” samples in clean water to compare to “compliance” samples in the densest part of the plume. The EA states that this will be 200 meters from dredging. However, at PortMiami, this was not far enough from the dredging to access true “background” samples, and the difference between background and compliance was artificially minimized. Therefore, if the assumption that plumes will only spread 150 meters is, indeed, incorrect, as I assert that it is, turbidity monitoring will not accurately reflect actual turbidity levels. Because the only required monitoring will be inaccurate, the project is essentially entirely unmonitored and the assumptions implemented in the EA entirely untested.
- c. NMFS’s Concurrence states that a turbidity monitoring plan will be developed and approved before dredging begins and that this is the basis for their FONSI opinion. As a scientist and coral expert, a major construction dredging project should not be approved with only one monitoring requirement, and that one requirement should not be a monitoring plan that is not yet developed and/or shared with the public.
- d. Adaptive management and reinitiation of consultation will occur only if turbidity levels persist above 7 NTUs (nephelometric turbidity units), but it is not clear how this data would be communicated to NMFS or the

public while the project is underway, nor does it include a definition of “persist” or a clear shut-down plan if this condition is violated. And if such measures exist, NMFS and the Corps should have established those prior to the project’s approval.

- e. A study published by NMFS scientists just this year concluded that corals had impeded tissue regeneration after a 96-hour exposure to 4 NTUs of turbidity from PortMiami dredging sediment (May et al. 2023).

Therefore, in San Juan, even 96 hours of exposure within the 7 NTU limit is likely not protective and will impede coral tissue regeneration .

- f. There will be no data reported on actual stress on the protected resources, including critical habitat and ESA-listed corals.
- g. There will also be no disease monitoring of corals, so an outbreak would go undetected.
- h. NMFS and the Corps are not testing their assumptions, and therefore may be perpetuating false assumptions and poor monitoring techniques on a large scale.
- i. There is no restriction on dewatering or overflow, yet the Army Corps has agreed to eliminate overflow at Port Everglades due to the harm resulting from these practices. The NMFS Impact Assessment states, “USACE committed to prohibiting rock chopping and overflow (in

dredge areas in close proximity to coral reef habitat) or restricting overflow (in dredge areas more distant from reefs) in a separate port expansion being planned in southeast Florida at Port Everglades.”Here, San Juan Bay area corals do not receive the same protective measures implemented by the Corps at another, similar dredging project.

72. While NMFS acknowledges the potential impact of dredging on coral reproduction, the Corps’ EA does not. At Port Everglades, after our litigation and a revision of the environmental assessments, the Corps recognized the potential impact of dredging sediments on coral reproduction and agreed to NMFS’s recommendation to pause dredging operations during coral spawning. Yet, here again, corals in and around San Juan Bay are left out of these latest protective measures. It would be inappropriate for dredging to proceed in San Juan Bay without evaluating a spawning window.

#### **F. Failure to utilize best available science in the EA**

73. There are dozens of studies examining the impact of dredging and/or sedimentation on corals. However, the EA only cites four studies, the most recent of which is a review paper summarizing other papers from 1990. One of the other studies, Rogers 1983, specifically states that it should not be used in evaluating projects with chronic sedimentation, such as dredging projects. This analysis plainly omits decades of research advances and dozens of highly relevant studies

that must be evaluated to meet the regulatory standard of “best available science.” This failure has led to clear misjudgments of the relative risks to corals and major gaps in the proposed protections and monitoring.

74. By 2017, the Corps also had access to all the data showing impacts of the PortMiami dredging, including multiple agency reports and a study published by NMFS staff. Yet the Corps failed to analyze that data and incorporate it into this EA.

75. In my expert opinion, the degree to which the Corps failed to incorporate the best available science amounts to an intentional disregard of available and relevant data.

**Conclusion: San Juan Bay corals face immediate and irreparable damage from dredging**

76. In summary, based on the materials that I have reviewed as well as my knowledge of coral science, I conclude that threatened corals, including ESA-listed corals, will suffer irreparable and imminent damage from dredging activities in San Juan Bay that are planned to commence soon. The sedimentation and turbidity resulting from the dredging will block light, smother corals, and hinder their growth and reproduction—and possibly spread disease—all within days or weeks of the commencement of dredging.



77. The best available science indicates that these impacts should be expected to extend at least 1000 meters from the dredging site, where corals and critical habitat are present. The multitude of impacts from sedimentation, coupled with increased disease vulnerability and compromised settlement of new coral larvae, poses long-term implications for their survival and the overall health of coral reef ecosystems. The proposed monitoring and mitigation measures are insufficient to either detect or prevent harm to resources. Effective and improved practices and mitigation measures proposed for similar projects have not been adopted at San Juan Bay.

78. As stated above, the impact of dredging can permanently destroy coral reefs. These long-term impacts further contribute to the degradation and decline of coral reef ecosystems, affecting the overall biodiversity and ecological functions they provide.

I declare under penalty of perjury that the foregoing is true and correct.

Executed in Miami, Florida, on October 12, 2023

/s/ Rachel Silverstein  
Dr. Rachel Silverstein