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Sent via email

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Re: Public Comments on Notice of Intent to Prepare an Environmental Impact Statement

On behalf of the Center for Biological Diversity ("Center") and Everglades Law Center, Inc. thank you for the opportunity to prepare scoping comments in anticipation of the Federal Aviation Administration's Environmental Impact Statement analyzing the potential environmental impacts of the issuance of a Launch Site Operator License to Space Florida for the construction and operation of the Shiloh Launch Complex. The Center is an environmental nonprofit organization whose mission is to protect and conserve endangered and threatened species. The Center has thousands of members who live and recreate in Florida and would likely be impacted by the Shiloh Launch Complex. The Everglades Law Center, Inc. is a nonprofit public interest law firm that specializes in environmental and land use matters in Florida.

The proposed Shiloh Launch Complex ("project") is partially located on approximately 200 acres of land in Merritt Island National Wildlife Refuge ("MINWR"), which is managed by the United States Fish and Wildlife Service ("Service") and is home to endangered and threatened species. The project could impact MINWR management, public use and enjoyment of MINWR, wetlands, and imperiled species. Given the extreme and unavoidable impacts the project would have to dozens of protected species, a national wildlife refuge, and the surrounding communities and ecosystems, MINWR does not make a good siting location for the proposed project and the Federal Aviation Administration ("FAA") should seriously consider alternative sites.

I. Merritt Island National Wildlife Refuge

On August 28, 1963, the Service and NASA entered into an Interagency Agreement whereby the Service would manage all lands within the Kennedy Space Center that are not used for NASA operations. This established MINWR. This administrative designation of the MINWR was primarily to preserve lands and waters for migratory birds to use as an inviolate sanctuary.[1] Presently, the refuge's objective are to provide habitat for migratory birds, endangered and threatened species, and natural wildlife diversity, and to provide opportunities for wildlife-dependent recreation.[2]

[1] 16 U.S.C. 715(d).
[2] http://www.fws.gov/merrittisland/Objectives.html.

In 1975, Congress established the Canaveral National Seashore in order to preserve and protect the outstanding natural, scenic, scientific, ecologic, and historic values of its land, shoreline, and waters, and to provide for public outdoor recreation.[3] This designation included parts of NASA's Kennedy Space Center that were being managed as part of MINWR. It ordered that the Secretary of the Department of the Interior "shall retain such lands in their natural and primitive condition, shall prohibit vehicular traffic on the beach except for the administrative purposes, and shall develop only those facilities which he deems essential for public health and safety."

In 1979 Florida designated the refuge as an Outstanding Florida Water. In 1994, Brevard Court designated the refuge an Honorary Historic Landmark. In 1997, the National Marine Fisheries Service designated the refuge as Essential Fish Habitat under the Magnuson-Stevens Act. In 2000, Florida designated the refuge as a gateway to the eastern section of the Great Florida Birding Trail. Canaveral National Seashore receives over one million annual visitors annually. These tourists come to the east coast to enjoy pristine beaches, exciting fishing, nesting and hatching sea turtles, and unspoiled nature. Congress gave NASA until 1979 to claim lands within Canaveral for the national space program. None of the enabling statutes mention anything about commercial launch operations.

Section 4(f) of the Department of Transportation Act requires that the Secretary of the Department of Transportation approve a transportation project within park, wildlife refuge, or historic sites, only if "there is no prudent alternative to using that land."[4] As a federally approved project, the FAA will also have to consult under the National Historic Preservation Act and the Endangered Species Act.

II. Endangered Species Act

The Endangered Species Act ("ESA") is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[5] "The plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost."[6] The ESA reflects "an explicit congressional decision to require agencies to afford first priority to the declared national policy of saving endangered species" and "a conscious decision by Congress to give endangered species priority over the 'primary missions' of federal agencies."[7] Section 7(a)(1) requires that all federal agencies utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered species and threatened species. Section 7(a)(2) requires that each federal agency insure that any action authorized, funded, or carried out is not likely to jeopardize the continued existence of species or result in the adverse modification of their habitat. If, after consultation, the wildlife management agency determines that the project will result in jeopardy or adverse modification, it shall suggest reasonable and prudent alternatives to help avoid the violation. The

[3] Public Law 93-626 (H.R. 5773) 88 Stat. 2121 Jan. 3, 1975.
[4] 49 U.S.C. 303.
[5] *TVA v. Hill*, 437 U.S. 153, 180 (1978).
[6] *Id.*
[7] *TVA v. Hill*, 437 U.S. 153, 185 (1978).

agency must then adopt the RPAs, abandon the project, or seek an exemption from the Endangered Species Committee.[8]

This duty to consult and protect against jeopardy is triggered whenever a federal agency proposes to take discretionary action that "may affect" threatened or endangered species. Agency action includes those "actions directly or indirectly causing modifications to the land, water, or air" where federal agencies exercise discretionary control.[9] FAA exercises discretionary control over its permitting activities, therefore the consideration of the project is an agency action subject to ESA consultation.[10]

The U.S. Fish and Wildlife Service in its January 13, 2013 technical assistance letter states that "[m]any of the impacts that are anticipated to occur from the Proposed Project are likely unavoidable and would prove difficult to mitigate due to the unusually high value of the Project Site to the public, plants, and wildlife, including, but not limited to, federally listed endangered, threatened species, and candidate species; migratory bird species; species of concern; wetlands; and cultural resources…[and] its proximity to Mosquito Lagoon and other portions of the MINWR."[11] Species include 20 federally listed endangered, threatened, or candidate species, and 47 state listed species.

We share the Service's concern for potential impacts to listed species in the area, including the Florida scrub-jay, eastern indigo snake, piping plover, roseate tern, southeastern beach mouse, Atlantic salt marsh snake, listed sea turtles, West Indian manatee, wood stork, smalltooth sawfish, shortnose sturgeon, and Atlantic sturgeon. In general the greatest threat to most of these species is historic and ongoing habitat fragmentation and degradation. Indeed, the "biggest problem facing the North Florida Ecosystem [of which MINWR is a part of] is the loss of habitat through direct destruction and fragmentation, as well as through impacts from human activities."[12] The project would further destroy remaining habitat, railroading conservation efforts that for some species span more than four decades.

- As the Service's 2013 letter states, the project would "make it difficult, if not impossible, to maintain suitable habitat conditions for the scrub-jay and thus result in decreased breeding success, population decline, and possible extirpation" to one of the most important scrub-jay populations.
- The project site also has documented eastern indigo snake use. A species whose primary threat is the destruction and fragmentation of critical habitat cannot withstand further habitat loss. The implementation of the Service's Standard Protection Measures for the Eastern Indigo Snake alone will be insufficient to protect against the harm and harassment to the species as the project will destroy its habitat and expose it to increase motor vehicle traffic.

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[8] *Nat'l Assn. of Home Builders v. Defenders of Wildlife*, 127 S. Ct. 2518, 2526 (2007).
[9] 50 C.F.R. § 402.02(d).
[10] *Florida Key Deer v. Paulison*, 522 F.3d 1133 (11th Cir. 2008), *National Wildlife Federation v. FEMA*, 345 F.Supp.2d 1151 (W.D. Wash. 2004), Florida *Key Deer v. Stickney*, 864 F.Supp. 1222 (S.D. Fla. 1994).
[11] USFWS ltr to FAA Jan.3, 2013, p. 4-5.
[12] http://www.fws.gov/southeast/planning/PDFdocuments/MerrittIslandFinal/Final_Merritt_Island_Final_CCP.pdf.

- The protection and enhancement of piping plover wintering habitat is critical to the species' recovery nationwide. All three breeding populations utilize the project site for up to eight months of the year. The additional habitat destruction and introduction of additional attractant lights in the area will have an adverse impact on the species.
- The roseate tern also uses the project site and depends on open spaces removed from human activity. The project would impact the tern by diminishing its habitat.
- Many listed species are highly sensitive to artificial lighting. For the southeastern beach mouse it reduces its foraging and exposes it to predators; for sea turtles it causes hatchlings to disorient; for birds it attracts them away from habitat. The lights from the project may impact listed species.
- Other important, non-listed species, like the bald eagle, Florida sandhill crane, black rail, Duke's skipper, eastern diamondback rattlesnake, Florida mouse, gopher frog, Florida pine snake, painted bunting, swallow-tailed kite, mangrove rivulus, and migratory birds, use the project site and may also be adversely impacted by the project.

Sea turtles

Moreover, the project site and surrounding area is important for nesting sea turtles. Florida supports high density nesting for loggerhead and green sea turtles. The project site and nearby areas represent some of the last remaining undeveloped beaches in Florida. On March 25, 2013, the Service proposed designating critical habitat for a unit called the Canaveral National Seashore South-Merritt Island NWR-Kennedy Space Center, which runs approximately 17.6 miles.[13] The Service characterized this unit as high density and containing all the primary constituent elements necessary for loggerhead survival and recovery. If finalized, the FAA will have to ensure that its approval of the project does not destroy or adversely modified loggerhead critical habitat.

Manatees

More than 1,000 manatees use the estuaries of the MINWR as a warm water refuge during the winter. Recent algal blooms, possibly coupled with other factors, have led to the die off of submerged aquatic vegetation and manatees deaths in the Indian River lagoon, including in MINWR. Also, manatee mortality due to collisions with watercrafts is among the highest in the vicinity of the project site. Therefore, this area is both highly important for manatees but also highly stressed. Any impacts to wetlands on the project site could further degrade this important marine habitat.

Gopher tortoise

While the gopher tortoise is not a listed species, it is recognized by the Service as a candidate for listing under the Endangered Species Act and is protected under Florida state law. Approximately 3,000-5,000 gopher tortoises use MINWR. Gopher tortoises are present in the project site. Changes to this habitat that would preclude the use of prescribed burns might diminish the quality of the habitat and impact the gopher tortoise's basic life functions like feeding and reproducing.

[13] 78 Fed. Reg. 18000, *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Northwest Atlantic Ocean Distinct Population Segment of the Loggerhead Sea Turtle (Caretta caretta)*, (Mar. 25, 2013).

A. Best Available Science

In evaluating the proposed alternatives, FAA must analyze: biological resources (including threatened and endangered species and critical habitat, essential fish habitat, special status species like migratory bird, state species of concern); climate change; cultural resources; land use; public safety; socioeconomic considerations; water resources (including wetlands, water quality, water quantity); geophysical features (including floodplains, stream channels, erosion-prone areas, soils, subsidence); and coastal resources (including coastal uses, coastal barrier resources, coastal hazard areas). For each of these elements FAA must identify and utilize the best available science. Through formal consultation with the Service and the National Marine Fisheries Service, FAA will be required to use the best scientific and commercial data available to make findings regarding the effects of the proposed action on species and critical habitat and in the determination of jeopardy to listed species and adverse modification to designated critical habitat.[14] Where there are significant data gaps, either sufficient information must be developed or the agencies must use the existing best available data giving the benefit of the doubt to the species.[15]

III. National Environmental Policy Act

The purpose of National Environmental Policy Act ("NEPA") is "[t]o declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation."[16] "[I]t is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."[17]

NEPA requires federal agencies to take a "hard look" at environmental consequences of proposed actions and to broadly disseminate relevant environmental information.[18] The fundamental objective of NEPA is to ensure that an "agency will not act on incomplete information only to regret its decision after it is too late to correct."[19] When preparing an environmental impact statement, agencies have an affirmative duty to obtain the information necessary to evaluate significant environmental impacts when obtaining such information is "essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant."[20] Federal agencies have an affirmative duty to "insure the professional integrity,

[14] 50 C.F.R. § 402.14(d).
[15] H.R. Conf. Rep. No. 697, 96th Cong., 2nd Sess. 12 (1979); Interagency Cooperation Under the Endangered Species Act: information standards; Section 9 prohibitions; recovery plan participation and implementation; ecosystem approach; role of the States. 59 Fed. Reg. 34271 (July 1, 1994).
[16] 42 U.S.C. § 4321.
[17] 42 U.S.C. § 4331(a).
[18] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).
[19] *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 371 (1990).
[20] 40 C.F.R. § 1502.22.

including scientific integrity, of the discussions and analyses in environmental impact statements."[21]

A. Alternatives Analysis

To determine the scope of environmental impact statements, the FAA must consider 3 types of alternatives: (1) no action alternative; (2) other reasonable courses of action; and (3) mitigation measures not otherwise analyzed in the proposed action.[22] To that end NEPA requires agencies to "study, develop, and describe appropriate alternatives to recommend courses of action."[23] This alternatives analysis shall:

> (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
> (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
> (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
> (d) Include the alternative of no action.
> (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
> (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

The alternatives analysis is "the heart of the environmental impact statement."[24] The agency must not only identify and study reasonable alternatives on its own initiative, but also analyze and consider significant alternatives that are called to its attention by other agencies, organizations, communities, members of the public.[25] Reasonable alternatives to the proposed action are those that meet the agency's purpose and need.

The Service has determined that the project site is of unusually high value given its proximity to Mosquito Lagoon, MINWR, and its value to the public and plants and wildlife. Therefore, the FAA is under particularly high pressure to investigate alternative sites. The use of existing nearby launch sites and developed land would be preferable to the FAA's proposal to use national wildlife refuge land.

B. Environmental Impacts

All major federal actions significantly affecting the quality of the human environment require an Environmental Impact Statement ("EIS").[26] "Significantly" involves a judgment of both context

[21] 40 C.F.R. § 1502.24.
[22] 40 C.F.R. § 1508.25(b).
[23] 42 U.S.C. § 4332(E), 40 C.F.R. § 1508.9.
[24] 40 C.F.R. § 1502.14.
[25] *Seacoast Antipollution League vs. Nuclear Regulatory Commission*, 598 F.2d 1221, 1330 (1st Cir. 1979); *Natural Resources Defense Council v. Morton*, 458 F.2d 827 (D.C. Cir. 1972).
[26] 40 C.F.R. § 1508.18.

and intensity of a particular proposal, and "significant impacts" may be either beneficial or adverse for purposes of NEPA.[27] "Effects" and "impacts" are synonymous terms under NEPA and are to be included in the EIS analysis. FAA's analysis should include direct, indirect and cumulative effects.[28] The FAA must address the direct, indirect, and cumulative impacts of the project, this includes the impacts of nearby projects and NASA programs. For example, FAA must evaluate the cumulative effect of its proposed project and launches and NASA's proposed low orbital launches and other NASA activities. FAA must analyze the noise, air, and water pollution impacts of these species on the more than four dozen imperiled species that call MINWR home. It must also assess the effects of the project to hydrology and habitat in nearby wetlands, estuaries, lagoons, and Aquatic Resources of National Importance. The FAA should also consider the impacts of any additional security zones that might be necessary.

The impacts to plant and wildlife resources, national historic resources, and the impacts to the more than one million annual MINWR visitors will be significant, warranting an Environmental Impact Statement to evaluate the impacts.

C. Incomplete Information

In analyzing the factors above, FAA may find that some information is difficult to obtain or otherwise uncertain. FAA must either obtain incomplete information, or, if the overall costs of obtaining are exorbitant or the means to obtain it are not known, FAA must include within its EIS a statement explaining what information is incomplete or unavailable, an explanation of why that missing information is relevant to the evaluation of reasonably foreseeable significant adverse effects, a summary of the existing credible scientific evidence relevant to the issue, and FAA's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.[29] "Reasonably foreseeable" includes impacts which have catastrophic consequences, even if their probability of occurrence is low, so long as the analysis is supported by credible scientific evidence, is not based on pure conjecture and is within the "rule of reason." Additionally, FAA is obligated to use the best available science in evaluating impacts to endangered and threatened species. Therefore, FAA has a high burden of obtaining and analyzing this information in assessing which alternatives to pursue.

IV. Information on Climate Change

In evaluating the project under ESA and NEPA, the FAA will have to take into account the best available science regarding climate change, particularly as it relates to sea level rise. The effects of climate change including sea level rise, increased storms, storm surge, and flooding activity threaten coastal ecosystems, including the potential site of the project. In the coming decades, our shorelines will continue to change – through these natural systems and through human-made response to these changes – and these changes will impact coastal species. FAA must use the best available science in anticipating these changes and mapping areas that will be increasingly vulnerable to flood damage. FAA's issuance of the permit for the project must take into account

[27] 40 C.F.R. § 1508.27(b)(1).
[28] 40 C.F.R. § 1508.7, 1508.8.
[29] 40 C.F.R. § 1502.22.

the certainty that coastal species' habitat will be lost to climate change impacts and new development in response to it.

A. Sea level rise of 1 to 2 meters is highly likely within this century

Global average sea level rose by roughly eight inches over the past century, and sea-level rise is accelerating in pace.[30] Global average sea level rose at an average rate of 3.3 ± 0.4 mm per year between 1993 and 2006,[31] compared with 1.6 ± 0.2 mm per year between 1961 and 2003.[32] Although the Intergovernmental Panel on Climate Change's ("IPCC") Fourth Assessment Report projected a global mean sea-level rise in the 21st century of 18–59 cm (7 to 23 inches), the IPCC acknowledged that this estimate did not represent a "best estimate" or "upper bound" for sea-level rise because it assumed a negligible contribution from the melting of the Greenland and west Antarctic ice sheets.[33] Recent studies documenting the accelerating ice discharge from these ice sheets indicate that the IPCC projections are a substantial underestimate.[34] Studies that have improved upon the IPCC estimates have found that a mean global sea-level rise of at least 1 to 2 meters is highly likely within this century.[35] Rahmstorf (2007) used the tight, observed relationship between global average temperature rise and sea-level rise over the recent observational record (~120 years) to project a global mean sea-level rise of 0.5 to 1.4 m by 2100. Other studies estimate a global mean sea-level rise by 2100 at 0.75 to 1.90 m,[36] 0.8 to 2.0 m,[37] 0.8 to 1.3,[38] and 0.6 to 1.6 m.[39] Moreover, studies that have reconstructed sea level rise based on the geological record, including oxygen isotope and coral records, have found that larger rates of 2.4 to 4 m per century are possible.[40]

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[30] Karl, T. R., J. M. Melillo, and T. C. Peterson. 2009. Global Climate Change Impacts in the United States, Cambridge University Press.

[31] Rahmstorf, S. 2007. A semi-empirical approach to projecting future sea-level rise. Science 315:368-370.

[32] Domingues, C. M., J. A. Church, N. J. White, P. J. Gleckler, S. E. Wijffels, P. M. Barker, and J. R. Dunn. 2008. Improved estimates of upper-ocean warming and multi-decadal sea-level rise. Nature 453:1090-1094.

[33] IPCC. 2007. Climate Change 2007: Synthesis Report. An Assessment of the Intergovernmental Panel on Climate Change. Available at www.ipcc.ch.

[34] Hansen, J., M. Sato, R. Ruedy, K. Lo, D. W. Lea, and M. Medina-Elizade. 2006. Global temperature change. Proceedings of the National Academy of Sciences of the United States of America 103:14288-14293; Pritchard, H. D., R. J. Arthem, D. G. Vaughan, and L. A. Edwards. 2009. Extensive dynamic thinning on the margins of the Greenland and Antarctic ice sheets. Nature 461:971-975; Rignot, E., I. Velicogna, M. R. van den Broeke, A. Monaghan, and J. T. M. Lenaerts. 2011. Acceleration of the contribution of the Greenland and Antarctic ice sheets to sea level rise. Geophysical Research Letters 38, L05503.

[35] Rahmstorf 2007; Pfeffer, W. T., J. T. Harper, and S. O'Neel. 2008. Kinematic constraints on glacier contributions to 21st-century sea-level rise. Science 321:1340-1343; Vermeer, M., and S. Rahmstorf. 2009. Global sea level linked to global temperature. Proceedings of the National Academy of Sciences of the United States of America 106:21527-21532; Grinsted, A., J. C. Moore, and S. Jevrejeva. 2010. Reconstructing sea level from paleo and projected temperatures 200 to 2100 AD. Climate Dynamics 34:461-472; Jevrejeva, S., J. C. Moore, and A. Grinsted. 2010. How will sea level respond to changes in natural and anthropogenic forcing by 2100. Geophysical Research Letters 37:L07703.

[36] Vermeer and Rahmstorf. 2009.

[37] Pfeffer et al. 2008.

[38] Grinsted et al. 2010.

[39] Jevrejeva et al. 2010.

[40] Milne, G. A., W. R. Gehrels, C. W. Hughes, and M. E. Tamisiea. 2009. Identifying the causes of sea-level change. Nature Geoscience 2:471-478.

B. Storms and storm surge are increasing in intensity

Increasingly intense storms and storm surge in this century will exacerbate the effects of sea level rise. Several studies have found that the frequency of high-severity hurricanes is increasing in the Atlantic,[41] along with hurricane-generated wave heights which pose severe threats to the US east coast.[42] High winds, waves, and surge from these storms can cause significant damage to coastal communities. When storm surges coincide with high tides, the chances for coastal damage are greatly heightened.[43] As sea level rises, storm surges will be riding on a higher sea surface which will push water further inland and upland.[44] For example, one study estimated that hurricane flood elevations along the Texas coast will rise by an average of 0.3 meters by the 2030s and 0.8 meters by the 2080s, with severe flood events reaching 0.5 meters and 1.8 meters by the 2030s and 2080s, respectively.[45] Another study estimated that the rising frequency of high-severity storms will increase economic damages by $25 billion by 2100 in the United States alone.[46]

C. Flooding events are increasing in frequency

Extreme weather events, including extreme rainfall events leading to flooding, are also occurring with increasing frequency.[47] In the United States in 2011, a record 14 weather and climate disasters occurred that cost at least $US 1 billion each in damages and loss of human lives, including four major flooding events—Mississippi River flooding, Upper Midwest flooding, and flooding from Hurricane Irene and Tropical Storm Lee.[48]

D. Threats of sea level rise to coastal systems

More than half (52%) of US residents live in coastal counties,[49] while an estimated 40% of U.S. endangered species inhabit coastal ecosystems,[50] highlighting the threats of sea level rise to

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[41] Elsner, J. B., J. P. Kossin, and T. H. Jagger. 2008. The increasing intensity of the strongest tropical cyclones. Nature 455:92-95; Bender, M. A., T. R. Knutson, R. E. Tuleya, J. J. Sirutis, G. A. Vecchi, S. T. Garner, and I. M. Held. 2010. Modeled impact of anthropogenic warming on the frequency of intense Atlantic hurricanes. Science 327:454-458; Kishtawal, C. M., N. Jaiswal, R. Singh, and D. Niyogi. 2012. Tropical cyclone intensification trends during satellite era (1986–2010). Geophysical Research Letters 39:L10810, 6pp.

[42] Komar, P. D., and J. C. Allan. 2008. Increasing hurricane-generated wave heights along the U.S. east coast and their climate controls. Journal of Coastal Research 24:479-488.

[43] Cayan, D. R., P. D. Bromirski, K. Hayhoe, M. Tyree, M. D. Dettinger, and R. E. Flick. 2008. Climate change projections of sea level extremes along the California coast. Climatic Change 87:857-873.

[44] Tebaldi, C., B. H. Strauss, and C. E. Zervas. 2012. Modeling sea level rise impacts on storm surges along US coasts. Environmental Research Letters 7:014032.

[45] Mousavi, M. E., J. L. Irish, A. E. Frey, F. Olivera, and B. L. Edge. 2011. Global warming and hurricanes: the potential impact of hurricane intensification and sea level rise on coastal flooding. Climatic Change 104:575-597.

[46] Mendelsohn, R., K. Emanuel, S. Chonabayashi, and L. Bakkensen. 2012. The impact of climate change on global tropical cyclone damage. Nature Climate Change 2:205-209.

[47] IPCC. 2012. Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D; Coumou, D., and S. Rahmstorf. 2012. A decade of weather extremes. Nature Climate Change. doi: 10.1038/nclimate1452.

[48] National Oceanic and Atmospheric Administration, *Extreme Weather 2011*, http://www.noaa.gov/extreme2011/.

[49] http://stateofthecoast.noaa.gov/population/welcome.html.

[50] LeDee, O. E., K. C. Nelson, and F. J. Cuthbert. 2010. The challenge of threatened and endangered species management in coastal areas. Coastal Management 38:337-353.

coastal ecosystems, species, and human communities. Many studies have forecast the impacts of sea level rise on the US coastline.[51] For example, a nation-wide study estimated that approximately 3.7 million Americans live within one meter of high tide and are at extreme risk of flooding from sea level rise in the next few decades, with Florida as the most vulnerable state followed by Louisiana, California, New York and New Jersey.[52] Regional studies have also projected significant impacts. Rates of sea level rise are increasing three-to-four times faster along portions of the U.S. Atlantic Coast than globally.[53] In Louisiana, rising seas will lead to the permanent flooding of the Mississippi River delta and the loss of 10,000 to 13,500 km^2 of coastal lands by 2100.[54] In California, sea level rise of 1.4 meters by 2100 would put 480,000 people and $100 billion worth of property at risk of flooding,[55] and an earthquake magnitude 8 or larger in this region could cause sea level to rise suddenly by an additional meter or more.[56] Studies that have focused on sea level rise impacts to coastal species and ecosystems (i.e., wetlands and sandy beaches) have predicted significant risks of habitat loss and of entrapment between rising sea levels and human developments that prevent landward movement, leading to "coastal squeeze".[57] Human responses to sea level rise including coastal armoring and landward migration pose significant risks to the ability of species and ecosystems to move inland.

[51] Titus, J. G., and C. Richman. 2001. Maps of lands vulnerable to sea level rise: modeled elevations along the U.S. Atlantic and Gulf coasts. Climatic Research 18:205-228; Cayan et al 2008; Wu, S.-Y., R. Najjar, and J. Siewert. 2008. Potential impacts of sea-level rise on the Mid- and Upper-Atlantic Region of the United States. Climatic Change 95:121-138; Yin, J., M. E. Schlesinger, and R. J. Stouffer. 2009. Model projections of rapid sea-level rise on the northeast coast of the United States. Nature Geoscience 2:262-266; Blum, M. D., and H. H. Roberts. 2009. Drowning of the Mississippi Delta due to insufficient sediment supply and global sea-level rise. Nature Geoscience 2:488-491; SE FL Working Group. 2011. A Unified Sea Level Rise Projection for Southeast Florida. A document prepared for the Southeast Florida Regional Climate Change Compact Steering Committee, Southeast Florida Regional Climate Change Compact Technical Ad hoc Work Group, 27 p; Weiss, J. L., J. T. Overpeck, and B. Strauss. 2011. Implications of recent sea level rise science for low-elevation areas in coastal cities of the conterminous U.S.A. Climatic Change 105:635-645; Heberger, M., H. Cooley, P. Herrera, P. H. Gleick, and E. Moore. 2011. Potential impacts of increased coastal flooding in California due to sea-level rise. Climatic Change 109:229-249; Strauss, B. H., R. Ziemlinski, J. L. Weiss, and J. T. Overpeck. 2012. Tidally adjusted estimates of topographic vulnerability to sea level rise and flooding for the contiguous United States. Environmental Research Letters 7:014033.

[52] Strauss et al 2012.

[53] Sallenger, A.H. 2012. Hotspot of accelerated sea-level rise on the Atlantic coast of North America. Nature Climate Change. June 24, 2012.

[54] Blum and Roberts 2009.

[55] Herberger et al 2011.

[56] Committee on Sea Level Rise in California, Oregon, Washington. 2012. Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. National Academy of Sciences.

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CONCLUSION

Thank you for considering our scoping comments on FAA's scoping process for an EIS evaluating the Shiloh project. We have provided the above comments regarding the potential scope of the EIS process as well as viable alternatives in the hope that FAA will use its authority to prevent the further reduction or destruction of species' habitat. Please do not hesitate to contact me with any questions or comments about these comments at jlopez@biologicaldiversity.org or (727)490-9190.

Sincerely,

Jaclyn Lopez
Staff Attorney