

(b) (6)

To the FAA under the email address provided for public response

### **Comments on FAA Programmatic Environmental Assessment SpaceX**

My family and I have owned property at Boca Chica village since 1987.

I share the concerns raised in the following paragraphs. It is clear that the FAA has not monitored compliance, nor sought input from affected stakeholders.

In addition to the issues raised below, two personal reflections. The traffic situation has been appalling with wildlife destroyed by careless late night drivers, and state highways and private roadways ruined by reckless use of unsuitable vehicles, as well as at least one human fatality. Second, the environmental impact is not confined to large-scale depredations and burn-offs, but also to disregard for public and private property on a small scale. Only the past two years have I had to clean my property of plastic bottles, cans, and other debris: SpaceX personnel and workers have shown no respect for anyone's property but their own.

The FAA's public announcement that they are "in the beginning stages of conducting an environmental review" is a misstatement of fact. The FAA actually began their review in February 2020 and had a partial Draft Environmental Assessment done in May 2020. Furthermore, the FAA has allowed SpaceX to determine which level of new environmental review is needed, a violation of the National Environmental Policy Act (NEPA) and FAA's own written NEPA-implementation policies, per the U.S. Department of Transportation, Federal Aviation Administration Order 1050.1F.

First, we very strongly urge the FAA to do the more thorough Environmental Impact Statement rather than an EA. The actions of SpaceX are now significantly different and greater in scope than the original project the FAA authorized in its 2014 Record of Decision (ROD). We contend that these actions have, and will continue to have, increasingly more significant human and environmental impacts.

The SpaceX project that the FAA authorized in 2014 was to allow the permitting of up to 12 launches of the Falcon 9 and Falcon Heavy rockets per year, and "smaller reusable suborbital launch vehicles." The SpaceX footprint in the area was limited; a 21-acre launch site and two launch control sites approximately 2 miles away. The project now is much larger and different in purpose and scope. This is particularly important as the SpaceX sites are essentially (except for a few small private inholdings) surrounded to the south and the west by the Boca Chica Unit of the Lower Rio Grande Valley National Wildlife Refuge, to the north by Boca Chica State Park and South Bay (the first Texas Coastal Preserve), and to the east by Boca Chica Beach and the Gulf of Mexico. *Biologically this is a very productive and sensitive area, with one of the highest levels of plant and animal diversity of any national wildlife refuge in North America, and with more federally and state listed endangered, threatened, rare, and species of concern than any other refuge.* The following is a list of proposed SpaceX actions that were not part of their 2014 EIS, all of which are adding additional environmental impacts and therefore warrant a new EIS. They include but are not limited to:

1. The development, fabrication and testing of an entirely new rocket (Starship/Super Heavy) which will be the largest and most powerful rocket ever built, using 50% more fuel than the Saturn V, fuel that is more volatile and explosive (liquid oxygen and liquefied methane) than that of the Falcon 9 and Falcon Heavy, on which the 2014 EIS was predicated.
2. SpaceX's manufacturing and production facilities were not part of the 2014 EIS, and their overall environmental "footprint" of both the Launch Control Center Area (LCCA) and the Vertical Launch Area (VLA) has expanded greatly. VLA personnel has gone from "30 to 100" in 2019 to

- 450, with 24/7 lighting and activity. This is occurring in an area surrounded by state park, national wildlife refuge, public beach, and endangered & threatened species and critical habitat.
3. The 2014 EIS and ROD allowed for up to 12 launches per year of the Falcon 9 or Falcon Heavy, rockets already tested and in use. The new SpaceX plan calls for the following:
    - a. 10 Super Heavy static fire engine tests per year. Super Heavy has 37 raptor engines.
    - b. 50 Starship static fire engine tests per year. Starship has up to 6 raptor engines.
    - c. 20 Starship suborbital flights per year.
    - d. 8 Starship/Super Heavy orbital launches per year.
    - e. And quoting the May 2020 FAA Draft EA, “As flight tests become more successful SpaceX anticipates increasing orbital launch events...” meaning that testing and launch frequency of events are open-ended.
  4. Not included in the 2014 EIS was the present plan to drill 5 natural gas wells, to then collect, purify, liquefy (liquefied natural gas), store and use the methane. At 5.5 acres each, and adjacent to state and federal wildlife refuge land, the impacts and potential hazards of these operations in themselves warrant an EIS.
  5. A desalination plant.
  6. SpaceX plans to vent methane into the atmosphere, both from its facilities and from its launch vehicles. There was no mention of methane in the 2014 EIS. Now there will be methane production, storage and fuel. Will the methane fuel be piped in, trucked in, or produced onsite? What will be the cumulative greenhouse gas (GHG) emissions from the testing, launching, burning and venting of methane and other fuels?
  7. SpaceX plans on greatly increasing closures, (from 180 hours/year to 500 hours/year) of the entire area which includes much of State Hwy 4, Boca Chica beach, Boca Chica State Park, the Boca Chica Unit of the Lower Rio Grande Valley National Wildlife Refuge, South Bay Coastal Preserve, and Palmito Ranch National Battlefield. These are public lands and are not to be de-facto privatized. Further, *we note that SpaceX has already exceeded the 180 hours/year (over 180 hours in just one month, March 2020), without any apparent enforcement effort by FAA.*
  8. There was no launch failure safety analysis in the 2014 EIS that included a rocket of Starship/Super Heavy in size.
  9. There was no environmental analysis of possible impact on South Bay Coastal Preserve of a rocket coming down (whole or in pieces) with up to 5,200 metric tons of rocket fuel. The consequences could be catastrophic and unmitigable.
  10. There was no cumulative impact analysis that included the three permitted liquefied natural gas export terminals within 5 miles of the launch site, including larger debris field, greater and more frequent explosion & fire risks, greater noise, light, vibration, sonic booms, and release (intentional or accidental) of hazardous fuels and vapors. What will be the risks to South Padre Island, Port Isabel and Long Island Village, 5 miles away? Cumulative impact analysis also needs to evaluate safety of the Jupiter LLC plan for a light crude refinery and offshore oil terminal.
  11. The vastly greater amount of traffic-related wildlife mortality on Highway 4, fourteen miles of which is surrounded on both sides by national wildlife refuge. 11,000 dump trucks have already moved material from Southmost to the VLA for building up the launch site base, causing impacts to Hwy 4, refuge fences due to vehicle crashes, and wildlife mortality from traffic volume. Traffic volume continues to be excessive due to continuous construction that was never evaluated in the NEPA process.
  12. Significant decline in Snowy Plover nests (federally threatened species) in the mud flats around the VLA in 2020, the first year of significant SpaceX testing and launching. Other wading and shorebird species are also at risk (e.g., Piping Plover, a federally endangered species), as are migrating passerines that “fall out” in the area during weather events.

13. Possible deleterious effects of the dramatic increase in number and size of static engine testing and launches on sea turtles and their nesting on Boca Chica beach, particularly the critically endangered Kemp's Ridley.
14. The 2014 EIS is approximately seven years old.
15. Unlike an EA, an EIS guarantees maximum public input and participation

The FAA's NEPA procedures implementing the National Environmental Policy Act define when a Supplemental EIS is needed, or not. By all three criteria the new and expanded SpaceX plan warrants an EIS. The following was cited in the FAA's 2014 SpaceX EIS. [FAA Order 1050.1F, Section 9-2] **“A Supplemental EIS is not needed if:**

1. **“The proposed Action conforms to plans or projects for which a prior EIS has been filed and there are no substantial changes in the Proposed Action that are relevant to environmental concerns.”**

SpaceX has in fact never launched a Falcon 9 or Falcon Heavy rocket from Boca Chica and now has no plans to do so. It has instead turned its site and activities into something unrecognizable in the original EIS and ROD; a large and expanding complex to manufacture, fabricate, assemble and test the Starship/Super Heavy rocket. These are substantial changes not addressed in the Proposed Action.

The Starship and Super Heavy booster together will be larger than the approved Falcon 9 and Falcon Heavy by an order of magnitude, standing 39 stories tall, with nine million lbs. of propellants, nearly 50% more than NASA's Saturn V rocket used to launch moon-landing Apollo missions.

Round-the-clock experimental testing has already increased significantly SpaceX's footprint by enlarging its acreage, its number of buildings, its number of employees and contractors, its hours of beach and refuge closure, and its number of test firings and pressure tests. All these things significantly increase environmental and public use impacts and none them are in the original EIS.

In addition, in the short time since SpaceX has conducted operations at the Boca Chica site, there have been multiple accidental explosions that disrupted people's lives, scattered rocket debris and caused wildfires that have consumed more than 100 acres of native habitat on national wildlife refuge land. These serious impacts are likely to continue to occur and illustrate how critical it is for the FAA to initiate a new EIS process, and for federal regulators to exercise meaningful, legally required oversight. There are major and unanticipated changes from the activities proposed in the 2014 EIS because no testing of engines for the Falcon rocket family was planned or needed. Now, with the development of raptor engines, Starship and Super Heavy, testing will be frequent and accidents to some degree will continue. Impacts are now much more significant.

2. **“Data and analysis contained in the previous EIS are still substantially valid and there are no significant new circumstances or information relevant to environmental concerns and bearings on the Proposed Action or its impacts.”**

The construction, testing and firing of the massive Starship and Heavy Booster will have much greater impacts. Because of the very substantial changes to the actions taking place at this site, virtually all the impact analysis in the 2014 EIS is now out of date, inaccurate and misleading.

Specifically, new analysis needs to be prepared for the significant effects that are occurring, such as noise, light, frequency of events, fires & explosions, larger areas of direct and indirect impacts (likely to include the towns of South Padre Island, Port Isabel, Long Island Village.

The permitted liquefied natural gas (LNG) liquefaction export terminals on the Brownsville Ship Channel), the storage of much more rocket propellant that is more volatile and explosive,

impacts to wildlife, wetlands, vegetation and endangered and threatened species, and public access to recreation, South Bay, Palmito Ranch Battlefield Site, and Boca Chica beach all require a new and more complete analysis. In other words, an EIS is necessary.

Under economic impacts another issue is missing entirely. The latest license for the Starship tests requires \$198 million in third party liability, and federal indemnification for losses beyond that. This is higher than is required for any Falcon 9 or Falcon Heavy launch from Vandenberg AFB or Kennedy/Cape Canaveral, suggesting a far larger risk zone than was included in the EIS or ROD. And this probably doesn't include liability for the potential \$20 billion LNG terminals and LNG tankers that will likely be in the expanded risk zone.

**3. "All pertinent conditions and requirements of the prior approval have, or will be, met in the current actions."**

The FAA has done an inadequate job in ensuring SpaceX compliance with many of the conditions in its 2014 Record of Decision. An example is the closure of Highway 4 and Boca Chica beach, which was to be limited to no more than 180 hours per year. In just the past 3 months of this year closures have exceeded 225 hours, often with confusing and inadequate prior notifications and last-minute changes and revocations. Nevertheless, SpaceX now wants to nearly triple its beach closure "quota."

To increasingly deny access to eight miles of public beach, state park land, national wildlife refuge & national park is a significant human impact and needs to be addressed, particularly as much of the experimental engine and rocket testing could be done at a safer and less public testing location elsewhere.

Given the wholly different purpose of the project, FAA needs, as part of the Supplemental EIS, to revisit the alternatives evaluation. Alternatives should include 1) launching and re-landing Starship & Heavy Booster on floating offshore platform off the South Texas coast, a possibility Elon Musk has publicly mentioned and for which job positions have been listed, and 2) launching Starship/Heavy Booster from Cape Canaveral, and re-landing on an offshore platform, a technology which was developed by SpaceX and used often for its Falcon 9 rocket. NASA supports SpaceX using Kennedy Space Center Launch Complex 39-A for Starship/Super Heavy.

FAA's May 2020 Draft EA states, under Alternatives, "Constructing a new site for Starship/Super Heavy would result in extensive environmental impacts, and so was not analyzed further." "Extensive environmental impacts" is an apt description of what SpaceX is doing to Boca Chica.

One further scoping recommendation. The FAA needs to delineate a clear and unambiguous enforcement mechanism to ensure compliance with whatever mitigation measures are required. Given its role in facilitating the U.S. space program, the FAA appears ill-suited or unwilling to the task of ensuring that environmental resources are respected and protected. FAA enforcement of the 2014 ROD conditions was marginal at best. Because SpaceX's impacts are certain to be significant, an Environmental Assessment is insufficient. A new EIS with a vigorous public input process is not just warranted by NEPA and the FAA's own criteria; it is required and urgently needed. Until that is done the FAA should prohibit any expansion in either SpaceX's footprint or testing and launching activities at the Boca Chica site.

Respectfully submitted,

Electronically signed by

(b) (6)

Dear FAA,

I am deeply concerned about the SpaceX launch site expansion and its economic, cultural, & environmental impacts on the region. I am a daughter of the Texas border, was born and raised in Laredo and have resided in Brownsville for the past 5 years. I am an artist, cultural worker, and professor at the local university. I am a first generation american, a Mexican woman, a fulbright scholar and a Harvard Graduate.

Amidst border surveillance, detention facilities, mass deportations, separation of families, the expansion of a border wall, covid 19 in a region with one of the highest poverty rates in the nation... a billionaire has settled with his dream here and has built his own playground. Elon Musk just became the wealthiest human being on earth. This billionaire set eyes on our region, our land, our home... jumped to buy "cheap property" and swayed local politicians to support bypassing state environmental policy.

As I watch my community struggle, now more than ever, laboring to put food on the table, a billionaire is in our periphery, buying up sacred land, displacing communities (Boca Chica village), and failing to monitor local wildlife and vegetation. SpaceX's vision is to colonize mars, making this planet habitable for humans in the anticipation that Earth could no longer support human life. SpaceX has colonized Boca Chica. In a place where both Spanish and English is spoken in a sea of brownness, I observe white male SpaceX employees in binoculars savoring the landscape and commodifying our sacred land. SpaceX navigates unaware and entitled in their new playground. What will our future look like? Why does one person, with the most money in the world, get to imagine and dictate what the future should look like for us?

Boca Chica is sacred, and the community is slowly losing access. People are connected to land, culturally & spiritually. The Estok' gna Tribe is native to this land. We cannot separate land, people, and culture. Access to this beach is important. When I go to Boca Chica beach, I see brown joy, I see working class laborers enjoy the ocean with their families. I see my community happy, being nourished by the water and embraced by the sunlight.

I will always hold in my memory the first time I visited the delta. The river flowing into the ocean, it was almost like the river was releasing all its tension and pain into the vastness of the sea. This is a healing place. Boca Chica provides us an oasis, a point to dream for a better future, amid border & immigration policy chaos & tragedy. We continue to survive in a militarized system that continually calls us criminals, who thinks nothing of us, who only uses us as labor, who profits off of our bodies and deaths. That water embraces us, it tells us we belong. This water, this delta connects us to our loved neighbors, and for some of us, our mother land. As I dip my feet into the gulf coast delta, feel the river water moving into the ocean, I feel at home. Losing this precious place will mean losing life, losing our soul, losing what deeply keeps us grounded.

SpaceX is painful to experience. The colonization of land and resources is repeated history. As I watch the developments, my anxiety grows. What are the economic benefits for the working

class folks? Can my working class community members also have the opportunity to dream? I am not thankful to SpaceX for those cleaning staff positions. I am not thankful to SpaceX for those day laborer positions. I want to see my community, the families, their children be set up in a place where they can pursue their purpose, their dream, and what they love.

We are at a critical point in our history, where we can change the course of our future here on earth. Why are we not working and placing our resources into preserving our planet, this home of ours that gives us everything we need to survive. We have oxygen here. The extraction of our planet is violent and forced, and so will the building of technology to make it possible for humans to survive on Mars. Brownsville is full of natural resources and nature, and this makes it possible, in very difficult circumstances, for us to survive. Border policy and militarization continuously threatens our life. The land, our nature, makes it so that we are able to breath and sustain ourselves in this harsh political climate.

Could we possibly apply those genius engineer brains into figuring out how to not compromise local land and natural habitat for many living species, including humans? Could we possibly expand our reach & knowledge of the universe, without destroying homes and displacing brown people?

There has been talk of privatizing Boca Chica Beach. I am against any commercialization or privatization of Boca Chica Beach. I am against any further expansion of the SpaceX facility. I am against SpaceX having the power to restrict access to Boca Chica beach and the delta .I am against Boca Chica employees exerting dominant energy over that land and beach entrance, further restricting access. I am against SpaceX employees feeling or claiming ownership over Boca Chica Beach.

Thank you for your attention. If you have any further questions or inquiry, you can reach me at (b) (6) and/or (b) (6)

Sincerely,

(b) (6)

(b) (6)

&

(b) (6)

(b) (6)

Phone: (b) (6)

Phone: (b) (6)

21 January 2021

**Subject:** Submittal of Comments

*Nota Bene:* These comments are prepared in response to the FAA's Solicitation of Feedback during Public Scoping Period as Part of a Draft EA of SpaceX's Plans to Launch of Starship-Super Heavy Prototypes from SpaceX Facility at Boca Chica, Texas. (Valley Morning Star 24 December 2020).

**Submitted to:** [spacexbocachica@icf.com](mailto:spacexbocachica@icf.com)

**Applicable Regulatory Agency:** Federal Aviation Administration

**Activity Proposed:** Launch of Starship-Super Heavy Prototypes from SpaceX Facility at Boca Chica, Texas.

**Abbreviations:**

EIS: Environmental Impact Statement

EA: Environmental Assessment

FAA: Federal Aviation Administration

FONSI: Finding of No Significant Impact

LNG: Liquefied Natural Gas

NEPA: National Environmental Policy Act

**Comment 1:** The FAA be removed as the lead agency to administer the National Environmental Policy Act for actions at the SpaceX Boca Chica launch site.

We strongly believe that the FAA should not be in a position to govern this particular National Environmental Policy Act's action. The FAA's track record on

overseeing SpaceX's work at the Boca Chica Launch Facility is, in our opinion, a failure. In this matter, it seem to us that the FAA has lacked the public's best interests, the political independence, and the managerial wisdom to properly and safely control SpaceX's work to date. The leadership and staff at the FAA seem to view the NEPA process as a sort of "game", or a dodge. The FAA appears to work to avoid public input and/or involvement into SpaceX operations by fulfilling only the letter of the Act---not the intent of the Act. It is relatively simple for an agency to "hide" key documents from the public, limit information available to the public, or make routes to public involvement obscure or difficult. For example, the FAA has openly demonstrated its unwillingness, or inability, to manage the SpaceX EIS process or operation at the Boca Chica site as witnessed by the following findings:

- 1.1 It is not clear why the FAA is the regulatory oversight. To our knowledge, no governmental body has explained how the Boca Chica Launch site was converted from a State of Texas Park, to a Cameron County Park, thus allowing the site's takeover by SpaceX (a private company). What occurred was unknown to the public and appears highly suspicious.
- 1.2 The site is adjacent to environmentally-sensitive federal lands, which have been impacted by fire from the launches. The FAA has failed to disclose this fact openly. This failure is further highlighted by the fact that no SpaceX employee was criminally charged for destruction of a wildlife sanctuary.
- 1.3 The FAA failed to shut down the SpaceX operations at the Boca Chica launch site after SpaceX's failure caused the burning of over one hundred acers of wildlife refuge. People living near the site have already been seriously impacted and inconvenienced by the launches. If SpaceX is allowed to launch heavier rockets and increase the frequency of launches the impact of residents will worsen. This strongly underlines the FAA's inability or reluctance to properly oversee, and manage the SpaceX operations at Boca Chica in the public, the tax payer, and the environment's best interests.



1.4 The original SpaceX Boca Chica EIS leading to a FONSI determination by the FAA does not exist in any public format available to us. Thus, for purposes of the current NEPA process this FONSI does not exist and should not be referred to or relied upon. By law and regulation, a NEPA document must be widely and readily available to any member of the public that wishes to review the document. However, we have searched for and requested this document since 2014 and have not received even a notice that it existed, let alone where to find it. We have formally requested information to where the document exists, either in paper format or electronic format, but have not even received recognition of our request let alone an answer. We therefore submit that the oft-cited original 2014 SpaceX Boca Chica Launch Facility EIS must be imaginary and consequently should not be cited or referred to in any manner or for any purpose—legal or bureaucratic.

1.5 To us the evidence shows that the FAA's management in this action is either to sloppy or to politically compromised to effectively protect the citizens or natural resources of the United States via the NEPA process. In our opinion, this yields two (2) courses of action:

- First, the FAA must prove it is technically competent, independent, and not politically compromised in order to manage the NEPA process in this matter. If it cannot,
- Second, the NEPA regulatory oversight should be handed over to a competent, independent, and non-politically compromised regulatory agency.

**Comment 2:** An independent grand jury should be impaneled to investigate and review the public and private actions and all the steps taken to turn taken to convert the Boca Chica site from State Park to a County Park into a private facility overseen by an absentee Federal agency (FAA).

A grand jury should be impaneled to investigate this transformation and insure that all administrative action required were legal and accomplished without bribes, kickbacks, or intimidation of the public officials involved, whether county, State or Federal. The grand jury scope should include the production and

approval of the 2014 EIS and that lands subsequent approval of dangerous activities of questionable value and risk to the surrounding human population, the environment, United States' security, and humanity.

**Comment 3:** The FAA should publically, and openly, publish its intentions and guidelines for use in fulfilling its duties under the National Environmental Policy Act.

The intent of the EA should be published by the FAA. For Example: is the intent to protect the citizens and natural resources of the United States from potential harm from the proposed action, or is the intent of the EA to quickly fulfill the paperwork requirements necessary for SpaceX to continue operations? Please note that referring to laws (Federal and State) that require the EA's adherence does NOT fulfill the requirement to clearly state the intent of the EA.

The names and positions of people tasked to read and respond to the comments should be made available to commenters along with each reviewer's resume and proof of technical and scientific competence to address the comments. In addition, a certification of independence and absence of untoward influence should be made publically available for each reviewer.

**Comment 4:** SpaceX should immediately halt all activities at the Boca Chica launch site until all safety concerns have been addressed to the satisfaction of all concerned public citizens.

The Keystone Cops inspired Boca Chica SpaceX Launch team seems determined to burn up all vegetation, wildlife, and peoples of Deep South Texas. Plus, the team thinks it is humorous when their incompetence causes deflagration of wildlife refuges, county roads, beaches, and structures. SpaceX obviously has no regard for the natural resources or peoples of the Boca Chica area or Cameron County. They act as though they are free to destroy everything in the Boca Chica area without apology or remuneration---in short we and what we treasure are expendable to SpaceX.

The proven total disregard for the citizens and natural resources of Cameron County Texas is evident in all aspects of SpaceX's Boca Chica operations. SpaceX

has proven that they do not possess the professional responsibility or competence to conduct potentially- dangerous actions safely or successfully. All actions at the Boca Chica Launch Site should first be proven to be safe to conduct elsewhere---for example on Long Island, New York. Once that is proven and accepted by New York authorities, then and only then, should the action should be considered at Boca Chica and be presented to the citizens of Texas for consideration.

**Comment 5:** The Boca Chica Launch Site is located on the border with the Republic of Mexico. As such, it seems to us that the interests (both environmental and public health and safety) of the State of Tamaulipas and Mexico should be considered and addressed. Has any contact been made with their regulatory authorities?

**Comment 6:** The writers of the proposed NEPA document EA should review and consider the documents (permit applications, public comments, technical releases, etc.) related to the proposed Liquefied Natural Gas (LNG) facilities planned for locations near Port Isabel, Texas on the Brownsville Ship Channel. These locations are within five (5) miles or less of the existing SpaceX Launch site.

Please note that the regulatory record and public comments for these proposed LNG facilities address many concerns of the public and environmental considerations that are directly applicable to the proposed SpaceX operations. There are three (3) proposed LNG facilities, each requiring multiple (Federal and State of Texas) permits, and thus contain multiple sets of public comments.

**Comment 7:** The FAA's inability to oversee this NEPA action is underscored by the fact that the wrong email address for the submittal of comments was published in the local newspapers (See Valley Morning Star 24DEC2020), with no subsequent errata published. The email address (although incorrect) appears to belong to SpaceX. Where is the FAA oversight here? Or, is FAA relying on SpaceX to give them the public input? In addition, the newspaper listed no physical mailing address to use for comment submittal. Consequently, a prospective commenter is forced to have access to the internet and even so would be using an erroneous email address. In other words, no one would take delivery of submitted

comments. In addition, there has been a total lack of information about the proposed action appearing in Spanish.

If competent people were in control of this operation, then the error of publishing a fraudulent email would have been detected and an immediate correction (errata) published. This did not happen. Accordingly, either publishing the erroneous email was intentional or the people managing the operation are careless.

Further, and of deeper concern, is the fact that no notification about the proposed action was made in Spanish. Cameron County is over 98 percent Hispanic and sits on the border with Mexico. The majority of the public are Spanish-language dominant. These failings and omissions are akin to planning an operation in Hawaii and being surprised that there is an ocean nearby. In our opinion, they set a new low point of incompetence, or obfuscation, by both the FAA and SpaceX employees.

We were ultimately able to access other online out-of-town newspaper articles and finally obtain the correct email address. This took luck and additional time on our part.

Sincerely,

(b) (6)

(b) (6)

(b) (6)  
(b) (6)

January 21, 2021

Via Email to: [spacexbocachica@icf.com](mailto:spacexbocachica@icf.com)

Re: Scoping Comments on SpaceX activities in and near Boca Chica, TX

Dear Sir or Madam:

I submit the following comments in response to the Federal Aviation Authority (“FAA”) scoping notice regarding SpaceX activities in and near Boca Chica, TX.

## I. Introduction

I would like to preface these comments by noting that I am not opposed to space exploration in general or to SpaceX undertaking rocket launch activities at other locations. To the contrary, for a long time, I have supported the importance of space exploration activities. However, the selection by SpaceX of the Boca Chica area for rocket launch activities is a mistake of epic proportions that has been aided and abetted by the Federal Aviation Authority’s (“FAA”) deficient National Environmental Policy Act (“NEPA”) review process.

In a “SpaceX Update” (May 7, 2020 Via Microsoft Teams), which was released via a Freedom of Information Act request, Elon Musk, is quoted as stating: “We’ve got a lot of land with nobody around, and so if it blows up, it’s cool. – Elon Musk, 2018”.<sup>1</sup> The slide with this quotation also contains 2 pictures which show destroyed rocket parts that have fallen outside of the developed launch pad area and into shorebird habitat. I have worked on environmental conservation issues for 30 years and have been involved in the review of dozens of projects and the level of arrogance and ignorance displayed by Mr. Musk’s statement is mindboggling. While the FAA’s environmental impact review process of SpaceX activities may be not quite as “in your face” as Mr. Musk’s claim, it nonetheless suffers from a similar inability to disclose, address, and mitigate for the numerous adverse impacts associated with SpaceX’s rocket activities.

The rocket activities are taking place next to one of the most important wintering areas in the world for the threatened Piping Plover (*Charadrius melodus*). The proposed activities raise significant concerns about take of the threatened Piping Plover and adverse modification and

---

<sup>1</sup> According to the EIS, “[a]ll facilities would be constructed through private funding, on 68.9 acres of currently undeveloped, privately-owned property that would be purchased or leased by SpaceX” FAA 2014 at 2-1. It is unclear how much land has been purchased by SpaceX since the EIS was issued in 2014.

destruction of critical habitat for the Piping Plover. While the proposed rocket activities are just outside of the nearby Rio Grande National Wildlife Refuge (“National Wildlife Refuge” or “Refuge”) and Brazos Island State Park Boca Chica State Park and Brazos Island State Park (“Parks”), they are incompatible with and threaten the integrity of the National Wildlife Refuge and Parks. In addition, the arbitrary and growing list of SpaceX closures forced on the Parks and Refuge raise serious issues with Section 4(f). I request the FAA and other federal agencies not issue any permit or other regulatory authorization allowing SpaceX to continue or increase rocket research, construction, launch, landing, and all associated direct, indirect, and cumulative actions including explosions associated with failed launch or landing actions (“rocket activities”) that take place in or near the area of Boca Chica, Texas. I also would note that the activities clearly are a major federal action significantly affecting the human environment within the meaning of NEPA and thus preparing only a “programmatic Environmental Assessment” as mentioned in the FAA scoping notice would be inadequate and unlawful.

My comments are based on the following background. I originally worked as an attorney, including on issues involving the conservation of endangered and threatened species under the Endangered Species Act (“ESA”) and NEPA. I no longer practice law but instead focus on shorebird research and conservation. I have done field research on non-breeding Piping Plovers since 2002. My field work with non-breeding Piping Plover has been for a range of agencies, universities, and non-profit groups, including as a contractor for the Canadian Wildlife Service, Environment Canada, and the United States Geological Survey; an employee for the National Audubon Society, Virginia Tech (which was working on a NRDA study for the United States Fish and Wildlife Service (“USFWS”) for the Deepwater Horizon Oil Spill), and the University of Houston-Clearlake; and a volunteer for the National Park Service.<sup>2</sup> I have done professional surveys for wintering PIPL on the Gulf and Atlantic coasts of the United States (Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina), the Bahamas (including over 100 sites ranging from Grand Bahama in the North to Great Inagua in the South), and the Turks and Caicos (including multiple sites from Providenciales to Ambergris Cay). I am a co-author of five published, peer-reviewed journal articles on wintering PIPL. I have spoken at a Piping Plover training conference sponsored by the USFWS at the National Conservation Training Center and was a technical reviewer of the USFWS Comprehensive Conservation Strategy for the Piping Plover in its Coastal Migration and Wintering Range. I was appointed by the Department of the Interior as an alternate member for the National Park Service formal rulemaking process regarding off-road vehicle use at Cape Hatteras National Seashore.

I have worked on breeding shorebirds and colonial waterbirds as a part time seasonal field worker for the North Carolina Wildlife Resources Commission one season and as an employee for the National Audubon Society. I also have been a volunteer for the Cape Hatteras National Seashore and Cape Lookout National Seashore, with permission from the Nation Park Service to enter shorebird and waterbird nesting areas closed to the public to conduct fall migration Piping Plover surveys during which I had to use my awareness of shorebird and waterbird

---

<sup>2</sup> These comments are submitted as an individual, and not on behalf of any the agencies, universities, or non-profit groups mentioned above.

breeding behaviors to prevent any adverse impacts to breeding birds during surveys conducted in July, August, and early September.

In three different non-breeding seasons, I have visited South Bay, the flats south of HWY 4, and Boca Chica Beach (two winter: 2008-2009, 2010-2011 and one fall (2011-2012) to conduct non-breeding surveys for Environment Canada or for Virginia Tech and I visited only Boca Chica beach (2006-2007). I also visited on several occasions where I did not do a survey due to challenging water levels or weather conditions. During another winter, I also visited South Bay as part of a shorebird training course and observed Piping Plovers during that visit. As a result of these visits, I am familiar with non-breeding Piping Plover use of the project area and adjoining habitats during a range of water levels. While I have visited over multiple winters, these surveys each winter were limited: one or two surveys at each subsite, due to time limitations. As I have visited the area over multiple winters and one fall migration period (when wintering birds also may have been present), I have seen the site during a range of habitat conditions. I also have reviewed more recent Google Earth satellite images of the area before writing these comments. As a result of planning and conducting Piping Plover surveys over a range of habitats, I am familiar with how satellite images can help a researcher evaluate habitat conditions for Piping Plovers. In addition, as noted above, through my monitoring work during the breeding season, I am familiar with the breeding behaviors of multiple shorebird and colonial waterbird species.

In 2014, the FAA issued a “Final Environmental Impact Statement SpaceX Texas Launch Site” (2014)(“2014 EIS”) that purports to address activities proposed by SpaceX at Boca Chica. The EIS contains so many deficiencies, omissions, and inaccurate statements that it does not comply with the requirements of NEPA. In addition, the FAA has issued 8 additional project re-evaluations that do not adequately address impacts from SpaceX as required by NEPA and other federal environmental laws. However, this scoping comment mostly will focus on items regarding the threatened Piping Plover while briefly addressing other issues.

## II. Inadequate NEPA review of rocket activities on nonbreeding Piping Plover

### A. Number of Piping Plovers using the flats and beaches within several miles of the launch facility.

There is a lack of acknowledgement of the significant importance of the area surrounding the rocket activities and an inadequate review of the impacts of the rocket activities on the threatened Piping Plover. The 2014 EIS has one page (2014:3-75) that briefly discusses general information about the Piping Plover and just three sentences on surveys at Boca Chica Beach, “Boca Chica Flats” and South Bay. One page is a map of the (2014: 3-76) of the Piping Plover Critical Habitat. In addition, there is less than a page in total of discussion (2014 4-61 – 4-62) in the Environmental Consequences section. One conclusion in particular deserves to be highlighted: “Based on recent migratory and wintering surveys for piping plovers conducted within the Lower Laguna Madre region in south Texas, the piping plover is not known to use the

areas within the ROI in large numbers (Zdravkovic and Durkin 2010)” (2014: 4-62). “ROI” is defined as “Region of Influence” (2014: xii).

I reviewed Zdravkovic and Durkin (2011).<sup>3</sup> The 2014 EIS does not accurately cite the conclusions of Zdravkovic and Durkin, who note: “South Bay also supported significant concentrations of Piping Plovers, with 59 birds during migratory surveys and 30 during winter surveys” (2010: 12). Table 1 lists migrating Piping Plover survey results including 59 at “South Bay”, 2 at “Boca Chica, Gulf Beach”, 5 at “Boca Chica Flats”, and 23 at “Mouth of the Rio Grande”. 2010: 13. Table 2 lists wintering Piping Plover survey results including 30 at “South Bay”, 0 at “Boca Chica, Gulf Beach”, 11 at “Boca Chica Flats”, and 0 at “Mouth of the Rio Grande”. Zdravkovic and Durkin stated that there were “significant concentrations” of Piping Plovers at South Bay while the 2014 EIS claimed they found that the Piping Plover is “not known to use the areas within the ROI in large numbers.” The 2014 EIS misrepresents the findings of Zdravkovic and Durkin and then ignores, in the Environmental Consequences analysis (2014:4-62), other Piping Plover survey results which found much higher numbers of Piping Plovers in the area (2014 EIS at 3-75). The misrepresentation and omissions throw into question the integrity of the entire FAA NEPA analysis.

In reality, based on surveys that I and others have done, the Boca Chica/South Bay/flats south of HWY 4 area is one of the most important areas in the world for wintering Piping Plovers. During a February 23, 2009 survey for Environmental Canada, I observed 239 Piping Plovers using the flats of the South Bay area (Maddock 2010). For Piping Plovers, that is an extremely large number. Most of those Piping Plovers that were counted that day were visible in one area while they were feeding during one continuous scan of the spotting scope. In addition, due to running out of time to complete the survey that day, I was not able to cover all visible available habitat to the south; it is likely Piping Plovers were missed during my count. It also should be noted that those birds were seen in an area that is less than two miles long. To some people, and of more relevance, the FAA staff conducting the NEPA analysis, the area may not look like much. In reality, it has extraordinary value.

#### B. Damage to the Refuge and Parks from SpaceX Rocket Activity Explosions

I am very concerned about the inadequate NEPA review of the impacts of SpaceX’s activities involved in constructing, moving, launching, flying, and landing rockets from the Boca Chica facility. There is a multi-decade history that undoubtably establishes that launching rockets into space is an inherently dangerous activity. That said, the recent activities of SpaceX at Boca Chica seem to demonstrate a unique ability to have spectacular failures with massive explosions.<sup>4</sup> We already know that rocket failures at the SpaceX facility have resulted in debris landing outside of the launch pad area, as demonstrated in the photographs referenced above in the

---

<sup>3</sup> The EIS “References” section uses 2011, not 2010, for the Zdravkovic and Durkin report so it appears the 2010 citation date in the text of the EIS is a typo.

<sup>4</sup> For example, videotape of the explosion of the SN8 rocket can be seen at [https://www.youtube.com/watch?v=ap-BkkrRg-o&feature=emb\\_logo](https://www.youtube.com/watch?v=ap-BkkrRg-o&feature=emb_logo)



“SpaceX Update” (May 7, 2020). Additional crashes and explosions are not only foreseeable; they unfortunately are likely. In the context of the South Bay area, significant adverse impacts may include:

1. Damage to the Refuge or Parks from explosions or damaged parts landing on the Refuge or Parks.
2. Damage to the Refuge or Parks from fires caused by rocket activities
3. Damage to the Refuge or Parks from cleaning up crashed rockets debris. SpaceX is launching massive rockets to very high altitudes from the Boca Chica facility. If rocket debris land in the Refuge or Parks, the debris may land in locations where it is very difficult to clean up and remove the debris. In many areas, a person can't just drive a dump truck out to pick up the debris. Much of the South Bay area near the launch area as well as the area south of Hwy 4 is a muddy substrate that is so sinky that it is not possible in certain areas or under certain conditions for an ATV, UTV, or an automobile or truck even using four-wheel drive to travel across that substrate without getting deeply stuck in the mud. Anyone with experience operating a vehicle in coastal Texas knows this.

Issues regarding the cleanup of debris from SpaceX crashes are not hypothetical and as late as March 2020 have not been adequately addressed. In a March 9, 2020, email from the USFWS to SpaceX, released in response to a FOIA request, the USFWS noted:

“Would it be possible to meet you at Boca Chica this Thursday sometime to take a look at the debris removal from the refuge/Boca Chica State Park, from the February 28, 2020 10pm explosion?”

I would like to assess the level of impact to the vegetation and alkaline flats resulting from dragging the debris to the road.

When we met on-site (Monday, March 2, 2020 at 10:30am), we viewed the 3 pieces of metal debris, and recommended that the 2 smaller pieces (closest to the road), be dragged out carefully over the vegetation, and that the largest piece be cut into pieces and removed by helicopter, as was originally recommended by you, Randy.

On Friday, March 6, 2020 at about 4:15pm I received a call from you stating the helicopter option was not going to be feasible due to high winds, uncertainty of debris weight, and because additional refuge lands would be needed for the helicopter to take off/land from, and because bird nesting has already begun, this would likely cause an unacceptable level of disturbance. So, during this call, I gave you permission to proceed with using a winch truck or cable to drag the pieces of debris from within the refuge. I viewed this "cheaper" "faster" option as beneficial to both Space-X and the refuge because of the unneeded attention the debris was causing. The rationale was to expedite the removal, before bird nesting occurred in the vicinity of the debris.

Now that there have been 2 explosions, with debris both times in pretty much the same area, I want to meet with you and discuss remedies for the damage to vegetation and

ruts created in the alkaline flats. I would also like to see the refuge cable fence damaged during the removal process repaired.”

(Email from Bryan Winton, USFWS, to Randy Rees, SpaceX and others, March 9, 2020). This email provides evidence not only of the damage caused by SpaceX activities but also the difficulty associated with cleaning up the mess. What happens when SpaceX launches a much larger rocket, and it crashes? What happens when SpaceX launches a rocket and the debris lands at a greater distance where a winch truck or cable are not able to be used?

Even after the correspondence referenced above, SpaceX employees apparently have not learned about the habitats in which they have chosen to work. A satellite image released by the USFWS in response to a FOIA request shows, at 26.003382 -97.158092, the gps location for “SpaceX stuck Vehicles”. The file date on the saved file is “4-21-2019” which is five years since the 2014 EIS was issued. It is extraordinary that SpaceX would allow vehicles to travel out into these locations. Such activities demonstrate at best a basic lack of understanding of the ecology and geology of the area and at worst a complete disregard for the environmental values of the area.

I also am concerned that any vehicles that are used to recover crash debris or that travel into the flats near South Bay or the flats south of Highway 4 without an understanding of the area could travel over and damage ecologically significant algal mat flats. This type of habitat is very valuable to feeding Piping Plovers; is very easily damaged by ORV activity; and takes years if not decades to recover. For this reason, the Department of the Interior, National Park Service, Padre Island National Seashore does not allow any recreational vehicle use on the algal mats at the Laguna Madre side of the barrier island. Will the USFWS protect valuable algal mat substrates if a huge rocket explodes during launch or landing and a large amount of rocket debris is scattered across algal flats habitats?

4. Potential take of Piping Plovers (and other shorebirds) from falling rocket debris. SpaceX takes actions to remove people from near the launch area during rocket launches, as it should. No such protective measures can take place with the large number of Piping Plovers and thousands of other shorebirds using the Refuge and Parks. SpaceX may say it is not likely, but such take cannot be ruled out given the massive size of the rockets, the speed at which debris may fall from the sky, the large number of shorebirds using the nearby flats, and the continuing multiple failures/explosions of SpaceX rockets at Boca Chica.

### C. Human Disturbance Associated with the Rocket Activities

After the Piping Plover was listed federally under the provisions of the ESA, there was an increased understanding of how human disturbance could adversely affect productivity which

in turn influenced if the population was increasing or decreasing. Across the breeding range, in areas with high disturbance, there were efforts to manage that disturbance in many ways by installing symbolic fencing around nesting areas to keep humans away from nests and chicks, limiting or prohibiting dogs, not allowing feral cat colonies to be located near nesting areas, restricting or prohibiting recreational off-road vehicle use, prohibiting fireworks displays near nesting areas, as discussed in the Piping Plover (*Charadrius melodus*) Atlantic Coast Population Revised Recovery Plan (USFWS 1996) and other conservation documents issued by the USFWS.

Over the last 15 years, however, there has been a growing understanding by agencies, scientists, and resource managers of the risks posed by human disturbance to nonbreeding Piping Plovers and an increased effort to address the adverse impacts caused by such disturbance. In a study of Piping Plovers wintering on Atlantic Coast beaches, Gibson et al. (2018) note:

“Our study provides evidence that anthropogenic disturbance is negatively associated with body condition, non-breeding demographic rates (e.g., local population growth rates), and annual demographic processes (e.g., survival) for piping plovers. During the non-breeding season, the southeastern Atlantic Coast hosts > 50% (relative to post-breeding abundance) of critically endangered Great Lakes breeding population of piping plovers, with > 30% occurring within our study system (Gratto-Trevor et al. 2012). Thus, anthropogenic disturbance in this system may disproportionately influence the population trajectory or sustainability of the Great Lakes piping plover population. Although site fidelity was slightly lower in disturbed areas relative to less disturbed areas, fidelity to their non-breeding grounds was high, and largely similar to estimates of breeding site fidelity (Cohen et al. 2006; Cohen and Gratto-Trevor 2011; Catlin et al. 2015). Therefore, management objectives based on the expectation that piping plovers will move to better non-breeding habitats if their current habitat is disturbed will not be successful, despite the apparent benefits to survival of moving. However, management actions that identify and limit anthropogenic access to critical foraging or roosting areas during the non-breeding season may increase functionally available habitat, and potentially improve body condition and survival rates of non-breeding piping plovers. Annual survival rates at certain wintering sites were extremely low for piping plovers ( $S < 0.50$ ) relative to published estimates of true survival ( $S = 0.71-0.76$ ; LeDee et al. 2010; Cohen et al. 2006; Catlin et al. 2015). Additionally, because new individuals consistently recruit into these low survivability sites, these areas apparently remain attractive sinks to piping plovers. Thus, conservation actions may be required to reduce the impact of these sink habitats on overall population dynamics.

Finally, the associations among non-breeding conditions, body condition, and demography highlight the importance of non-breeding habitats on annual population dynamics of a migratory species. Conservation strategies focused solely on breeding season dynamics for migratory species are potentially not accounting for some of the mechanisms influencing individual demographic rates and, ultimately, population trajectory.”

Gibson et al. considered pedestrians, dogs, and vehicles as potential sources of disturbance, so it is not exactly comparable to launching, landing, and blowing up rockets. What is worse, however, remains to be answered. In addition, the study is important as it provided evidence that human disturbance is associated with body condition and survival rates for non-breeding Piping Plovers. It also is important for the observation that low survivability sites may continue to have recruitment of piping plovers and remain population sinks. SpaceX and the FAA can no longer ignore direct and indirect disturbance issues to shorebirds from rocket activities.

The 2014 EIS (4-20) contains a chart indicating that modeled noise contours include levels from 130 to 105 dbA in areas near Boca Chica depending on the distance from the launch site. The chart does not include available satellite imagery so precise habitat boundaries are not clear. Yet it appears from the chart that that high quality Piping Plover habitat will be directly impacted by very loud levels of noise from launches. One area where I have observed wintering Piping Plovers resting on the Boca Chica Gulf beach appears to be impacted by 125-130 dbA noise levels. Another area where I have observed large numbers of Piping Plover feeding and resting in South Bay appears to be impacted by 125-115 dbA noise levels. The 2014 EIS outlines purported "hearing protection measures" for residents of Boca Chica Village (2014 EIS at 4-22 – 4-23). I am not aware of any measures to protect shorebirds and waterbirds using public conservation lands from noise from rocket launches or explosions.

There has not been an adequate discussion in the NEPA documents whether extremely loud noise from launch activities or failed launches or landings will adversely affect or take Piping Plovers due to hearing impacts. Piping plovers use a range of calls to communicate. Piping Plovers use "Peep-lo" or "Peep Peep Peep" alarm calls alert other Piping Plovers and warn of threats. These alarm calls allow Piping Plovers to take protective action such as crouching in a flat posture to the ground. In addition, there are various calls that are associated with breeding activity, such as territorial calls or calls that are given during horizontal threat displays. The FAA should conduct additional review of whether the extremely high noise levels associated with rocket activities may result in harm to Piping Plovers due to loss or degradation of hearing ability.

I also am very concerned about the inadequate SpaceX funded Piping Plover monitoring effort to identify and address other impacts associated with SpaceX activities. Unfortunately, inadequate funding levels have resulting in monitoring methods that cannot answer the relevant questions that need to be addressed. These flaws are compounded by arbitrary and increasing access restrictions that make it almost impossible to carry out adequate field research activities.

I have reviewed the Pre-Construction Species Monitoring Survey report (Hicks et al. 2015) and have several concerns about the methodology and implementation of the monitoring effort:

1. "Each survey, covered a specified route, took place over 1-2 days, and was separated by ca. 8 days to avoid autocorrelation." (Hicks et al. 2015 at 1). The report also states "[a]ctual survey routes tracked the water's edge, while avoiding damage to algal flats." (At 2). In the context of existing habitat conditions at South Bay Route and the Las Palomas survey routes where the water's edge quickly can move over a mile in response to wind driven water levels over the flats, I do not understand how these statements are consistent. I have seen the area of standing water over a mile to the north of HWY 4 and other times a mile to the south against the HWY 4 and the nearby upland vegetation line, depending on the wind direction, wind intensity, and amount of time the was blowing. Either a survey route was followed, or it was not. As discussed below, this issue influences the detection levels of Piping Plovers using the area.
2. The area of South Bay where I saw the largest number of Piping Plovers is not included in the monitoring transects or even close to a monitoring transect. This raises concerns about the adequacy of the survey transect locations to accurately represent Piping Plover use of the area.
3. The "Las Palomas" and South Bay survey routes "were surveyed by all-terrain-vehicle (ATV), given the large areas and inaccessibility of the area by truck." Hicks et al. 2015 at 2. It is unclear from the report from the biologists if ATV use may have resulted in disturbance that flushed Piping Plovers and affected the number of Piping Plovers that was observed.
4. It is unclear if practical limitations on ATV use - to keep the ATV from getting stuck in muddy substrate in South Bay and Las Palomas - allowed the observer to get close enough to detect Piping Plovers in the area. I used an ATV for only one survey on the South Bay flats and I kept having to leave the ATV in drier areas and walk, sometimes hundreds of yards from the AVT, through the sinky muddy areas to get safely close enough to the feeding Piping Plovers for accurate observation with a spotting scope. After that one experience I didn't use an ATV again at South Bay. The possibility of increased coverage distance on the ATV was outweighed by concerns about much lower detectability levels for Piping Plovers in the area.
5. The report notes that "[g]iven our optics, we were usually able to identify target species within a 150m radius of the actual route traveled and thus a significant portion of each 500m[squared]quadrat was sampled with our protocol." Hicks et al. 2015 at 4. Depending on the type of habitat the Piping Plovers are using in South Bay, that statement may not be accurate. During one survey of South Bay that I walked, I observed a flock of Piping Plovers resting between the curled-up pieces of desiccated (dry) algal mat. These Piping Plovers were almost invisible even with the high-power Swarovski spotting scope that I use: only the top of the heads of a few birds was visible. And unless Piping Plovers resting under similar conditions were disturbed by the ATV, the birds probably would not be visible at 75m and it is highly unlikely they would be observed at 150 meters unless the observer was highly skilled, knew exactly where to look, took the time to look carefully, and carefully approached the resting Piping Plovers to get a more accurate count.

6. The report notes that the observer looked for banded Piping Plovers and recorded band information. Early Piping Plover banding efforts used unique or non-unique combinations of a color flag, metal band, and color bands or spit or triple split bands. More recently, most banders (other than the Great Lakes and SUNY) have gone to using a flag on the upper leg (tibia) with an alphanumeric code, with some of those banders also using color bands and some not using any bands on the lower legs (tarsus). The coded flags are much more difficult and often take more time to read accurately, and even old-style flags/band combinations are difficult to read accurately on wintering Piping Plovers at more than about 40-45 yards. The level of detection of banded Piping Plovers and accurate observation of the bands/codes will be influenced by how far the observer is away from the bird. 50 to 150 meter observation distances are clearly not adequate to detect and read most Piping Plover flags/color bands under field conditions.
7. "These preliminary surveys yielded observations of banded Piping Plovers and Red Knots within the impact area (Figs 2-3) that were excluded from the main statistical analysis presented in the Results, but are nonetheless noteworthy." At 4. It would have been much more helpful to have an analysis that includes counting of unbanded Piping Plovers, banded Piping Plovers (with color flags/bands recorded), and Piping Plovers that could not be fully scanned for color bands. Such an approach would have allowed a more accurate estimate of the population of Piping Plovers of the area using modeling efforts.
8. The survey transects received dramatically different levels of monitoring efforts, with interior flats survey routes north and south of HWY 4 being subject to much lower levels of observer effort than the beach route. In the 2016-2017 surveys, the beach survey route was surveyed 20 times between December 2, 2016 and June 7, 2017. Over the same period, the Boca Chica-South Bay and Las Palomas survey routes each were surveyed 7 times. (2017: at 3, 2). In the 2017 surveys, which were conducted between July 17, 2017 and September 25, 2018, the beach was surveyed 20 times and the Las Palomas, South Bay, and Boca Chica routes each were surveyed 3 times (2018 at 3, 2).
9. Under the monitoring conducted by Hicks, Alexander, and Berg, it appears that there was no banding of Piping Plovers in the project area; no use of radio-telemetry transmitters to track Piping Plover movements inside or outside of the project area; and no use of a control area which would allow comparisons to the study area. Using these methods before and after the initiation of rocket activities would have cost more money than the limited monitoring effort that was performed but it would have allowed more accurate analyses of apparent number, survival, detectability, and disturbance issues that are related to better understanding the impacts of rocket activities.

I want to note that I am not questioning the integrity or effort of the biologists who have done the monitoring studies. Rather, I am questioning whether SpaceX has given the biologists who are conducting the monitoring effort sufficient funds and enough time to allow them to properly and accurately address the impacts of SpaceX on Piping Plovers and other shorebirds.

If SpaceX provides inadequate funding, we should not be surprised that the existing monitoring activities do not adequately address the significant issues raised by the rocket activities.

SpaceX has received more than 3.1 billion dollars in federal funds so far for its commercial crew program (“Elon Musk’s SpaceX Launches Four Astronauts Into Orbit in NASA Mission”, Wall Street Journal, accessed 1/21/2021). Likewise, Elon Musk is one of the richest persons in the world. Mr. Musk’s “net worth totaled around \$195 billion Thursday night [January 7, 2021], up from roughly \$30 billion a year ago and topping Mr. Bezo’s wealth by about \$10 billion, according to the Bloomberg Billionaires Index” (“Tesla’s Elon Musk Overtakes Amazon’s Jeff Bezos as World’s Wealthiest Person, Wall Street Journal, January 8, 2021, Accessed January 20, 2021). Any objections by SpaceX to providing adequate funding for research activities required by federal environmental laws are completely unfounded. My preference is for the rocket activities at Boca Chica to immediately stop (and certainly not be extended beyond the end of the existing permit) but in the event SpaceX does go forward, SpaceX should be required to massively increase funding to conduct necessary research to answer questions which should have been addressed years ago and which still have not been adequately answered.

### III. Inaccurate review of rocket activities on breeding shorebirds

There is extensive literature regarding the adverse impacts of human disturbance on breeding shorebirds and colonial waterbirds. These impacts include abandonment of nests, which results in take of eggs; take of unfledged chicks; and modification and abandonment of habitat use by shorebirds. These impacts should be explored in additional detail.

The fact that SpaceX may not be physically located on the Refuge and Parks does not allow the FAA to ignore direct and indirect impacts to protected avian resources that utilize Refuge and Park lands from SpaceX activities. As discussed in this letter, I am concerned that SpaceX activities may result in the illegal take of birds that are protected under the Migratory Bird Treaty Act.<sup>5</sup>

---

<sup>5</sup> The Migratory Bird Treaty Act (MBTA) broadly applies, by its plain terms, to the killing of any migratory bird “at any time, by any means or in any manner.” 16 U.S.C. § 703(a). Under the U.S. Fish and Wildlife Service’s longstanding policy, consistent with the plain language of the statute, this language has been understood to include incidental take. Although the Trump administration attempted to construe the MBTA in a legal memorandum known as the “Jorjani Opinion” as applying only to actions that are specifically directed at taking or killing migratory birds, this interpretation was struck down by a federal court in August 2020. The court held that Trump administration’s interpretation—which eliminated protections for birds that would be “incidentally” killed by industrial activities in the course of their regular operations—violated the unambiguous language and overriding conservation purpose of the MBTA. See *NRDC v. U.S. Dep’t of the Interior*, -- F. Supp. 3d --, 2020 U.S. Dist. LEXIS 143920 (S.D.N.Y. Aug. 11, 2020). Although the Trump administration then tried to codify their illegal interpretation in regulations,

On January 7, 2021, FWS published a final regulation in the Federal Register. 86 Fed. Reg. 1134 (Jan. 7, 2021). The regulation, which was set to take effect on February 8, 2021, codifies the vacated and unlawful Jorjani Opinion by providing that the MBTA’s prohibitions “apply only to actions directed at migratory birds, their nests, or their eggs. Injury to or mortality of migratory birds that results from, but is not the purpose of, an action (i.e., incidental taking

#### IV. Impacts of Hurricanes on Rocket Activities

I reviewed a photograph of the launch pad area. The pad appears to have been elevated to approximately the height of the surrounding fence, possibly somewhere around 6 to 8 feet above ground level. This facility is only about 4/10<sup>th</sup> of a mile away from the Gulf of Mexico, and almost directly open to the path of storm surge waters due to the ORV access road to the Gulf beach. In addition, there are multiple industrial buildings associated with SpaceX activities in Boca Chica Village.

The Gulf of Mexico is known for high levels of hurricane activity. Unfortunately, hurricanes in the Gulf can result in a 10 to 20 foot storm surge that destroys almost all human built structures that are in the path. From my work doing nonbreeding Piping Plovers, I regrettably have come face to face with the horrendous impacts hurricanes can cause, having seen the impacts from multiple storms including Hurricane Ike on the Bolivar Peninsula, TX, which destroyed most of the homes in the town of Gilchrest, TX. Ike was a category 2 storm when it hit, not a category 4 or 5. Almost all people who have lived through such storms say that they “can’t believe” how horrible the devastation is, and they “never thought it would happen” to them.

From the picture of the launch pad area, it appears a 15 to 20 foot storm surge would destroy the launch pad and associated facilities. In addition, I am concerned such a storm surge would severely damage or destroy the associated SpaceX industrial and residential buildings in Boca Chica Village. The NEPA review process should fully evaluate the storm surge and wind impacts from various strength hurricanes to the SpaceX facilities; any hazardous or toxic wastes as well as non-toxic debris that would be discharged from storm surge or high winds associated with hurricane landfall; and any steps that would be necessary to conduct cleanup activities from the damage caused by a hurricane.

#### V. Impacts of Erosion and Sea Level Rise on rocket activities

I live on a barrier island off the mainland of North Carolina. An area about two miles from my house has lost over 1,000 feet of ocean beach to erosion in the last 130 years. I have seen high erosion levels in many areas of my winter Piping Plover surveys. Erosion levels at places that are at low elevation are facing increasing pressure due to sea level rise. Even if the launch pad facility somehow manages to stay above the rising sea level, the road to the facility will be subject to overwash and go under water much sooner due to its low elevation. The SpaceX Boca Chica facilities remind me of another area on the Gulf where I did Piping Plover surveys, specifically the areas of Grand Isle and Port Fourchon, LA. A long elevated bridge that cost of

---

or killing) is not prohibited by the [MBTA].” Id. Because the Biden administration has by executive order frozen all rules not yet effective, this rule is not applicable. Accordingly, this administration must assume that the MBTA’s restrictions on incidental take have full force and effect. Any analysis of this project must, therefore, consider and account for potential MBTA liability that could result from impacts to migratory birds.



millions of dollars had to be constructed to replace the increasingly lower elevation LA 1 road which was becoming increasingly unusable from flooding events. The road reminds me of HWY 4 near Boca Chica Village, where I have seen water a few feet from the roadway on days with a hard north wind. Likewise, expensive beach renourishment projects costing millions of dollars had to be constructed to protect properties and infrastructure in those areas in LA that I am mentioning. For both the road and the beach renourishment, taxpayer funding was used. In the future, what activities will have to be taken to protect the SpaceX facilities? How will those activities affect Piping Plover habitats, which rely on dynamic coastal forces to maintain habitat characteristics? Will there be efforts to stabilize the area around SpaceX facilities using seawalls or rip-rap? I am concerned that SpaceX is embarking on a path that eventually will result in huge sums of taxpayer money having to be spent to protect a private industrial facility that never should have been built in such a high risk coastal location.

#### VI. Impacts of rocket activities on public access to the Parks and Refuge and Section 4(f).

The FAA originally stated that public access to Boca Chica State Park, Lower Rio Grande Valley NWR, and Brazos Island State Park would be closed for safety and security reasons during launch operations for up to 15 hours per launch for a maximum of 180 hours per year... Due to the short duration and limited number of launches, direct impacts to nearby recreational land use are not considered to be significant” (2104 EIS: 4-6).

In December 2020, in a Project Re-evaluation, the FAA authorized SpaceX to increase the amount of closure hours to 300 per year. The environmental impact analysis for this change is inadequate, for the reasons outlined in this comment letter. In addition, I would note that these closures raise serious issues regarding compliance with Section 4(f) of Department of Transportation Act. Three additional issues pertaining to closures also should be addressed:

1. Is proper procedure always being followed to issue closure orders? Is the Cameron County Commissioners Court always issuing a closure order first? Or is SpaceX issuing closure notices by emails before the County has properly issued a closure order? The FAA should address in a detailed manner the consistency of County and SpaceX closure notices. Specific dates and times for closure notices from both entities should be analyzed and the total amounts released to the public.
2. Is there transparency and consistency in how closure orders are being counted? I am concerned that by manipulating closure timing, SpaceX can claim lower hours of closure. In reality, for regular people who are not glued to their computer waiting for the latest closure notice, the beach has been closed for far longer than what SpaceX is claiming.
3. I am concerned about how shifting closure times adversely impact efforts to conduct scientific research efforts in the Refuge and Parks. Arbitrary closure announcements with insufficient prior public notice and last-minute changes to closure times make it very difficult for field research activities to be conducted.

## VII. Segmentation of NEPA Analysis

The SpaceX project at Boca Chica is one of the most tortured NEPA analysis processes I have ever seen, certainly for a project where under 7 years have passed since the release of the EIS in May 2014. SpaceX has modified plans for the launch site and vehicle multiple times. In addition to the EIS and Record of Decision, the FAA's SpaceX Launch Site Environmental Impact Statement web page has 8 different written re-evaluations that purportedly address SpaceX's ever continuing modifications.

These repeated modifications do not demonstrate NEPA compliance. If anything, they establish a record of SpaceX not disclosing relevant information at the appropriate time to allow the cooperating agencies the ability to adequately review the impacts of SpaceX activities. These repeated re-evaluations also establish a record of the FAA allowing SpaceX to modify proposed activities – such as increasing the allowed hours of beach closures to 300, as happened in December 2020 – without appropriate NEPA review.

Under NEPA, SpaceX is not allowed to segment activities. Yet SpaceX appears to continue to do just that, even as the current scoping notice comment period is open. A recent Marine Link article notes that “according to multiple reports this week, a company linked to billionaire Elon Musk bought two deepwater semi-submersible drilling rigs last year, with plans – reportedly – to convert them into floating launch pads for Musk's SpaceX rockets.” (Bartolomej Tomic, “Elon Musk's Firm Buys Two Offshore Rigs to Serve as Launchpads for SpaceX Rockets” January 20, 2021, accessed January 22, 2021, [https://www.marinelink.com/news/elon-musks-firm-buys-two-offshore-rigs-484690?utm\\_source=MaritimeToday-ENews-2021-01-20&utm\\_medium=email&utm\\_campaign=MaritimeToday-ENews&fbclid=IwAR3\\_nFeM9KeoYcJ4DSpYMmdnlLpd1e84ioKzA4HC1Qv6aVlc9kyHcypjK7o](https://www.marinelink.com/news/elon-musks-firm-buys-two-offshore-rigs-484690?utm_source=MaritimeToday-ENews-2021-01-20&utm_medium=email&utm_campaign=MaritimeToday-ENews&fbclid=IwAR3_nFeM9KeoYcJ4DSpYMmdnlLpd1e84ioKzA4HC1Qv6aVlc9kyHcypjK7o)).

The article notes that “According to CNBC, a company named Lone Star Mineral Development, linked to Musk's SpaceX firm, in July 2020 bought two semi-submersible drilling rigs....Lone Star reportedly Paid a total of \$7 million, so \$3.5 million a piece.” The article further notes that CNBC “dug up” a 2020 tweet where Musk said, “SpaceX is building a floating, superheavy-class spaceports for Mars, moon & hypersonic travel around Earth.” The article further notes that Musk's tweet “was a reply to a tweet by Gavin – SpaceXFleet.com, who had reported that SpaceX was hiring offshore operations engineers in Brownsville, TX.”

A few things about this article deserve emphasis. First, Musk's firm already has spent \$7 million dollars on the rigs, so this is not a hypothetical activity that may or may not take place. Second, the firm “was hiring offshore operations engineers in Brownsville, TX” – again showing that this is not a hypothetical activity, and showing that, because of the location in Brownsville, which is just a short distance away from Boca Chica, the activities likely are connected. Finally, the rigs would be used for a “superheavy-class of spaceports for Mars, moon & hypersonic travel around Earth” indicating that Musk is activity and currently involved in moving forward with activities that go far beyond the recent scoping notice released by the FAA.

In another article recently released, Bloomberg News notes:

“The billionaire’s SpaceX intends to drill wells close to the company’s Boca Chica launchpad, it was revealed during a Friday hearing before the Railroad Commission of Texas, the state’s energy regulator.

Production has yet to start because of a legal dispute between the SpaceX subsidiary Lone Star Mineral Development and another energy company. Tim George, an attorney representing Lone Star, said at the hearing that SpaceX plans to use the methane it extracts from the ground “in connection with their rocket facility operations.”

(Sergio Chapa, “SpaceX Plans to Drill for Natural Gas Near Texas Launchpad”, Bloomberg News, January 22, 2021, accessed January 22, 2021, <https://www.bloomberg.com/news/articles/2021-01-22/spacex-plans-to-drill-for-natural-gas-next-to-texas-launchpad> ). Drilling natural gas wells “close” to the launchpad? And the company attorney admits the drilling is “in connection with their rocket facility operations”? Once again, more activities come to light that need to be addressed.

These articles raise more questions regarding the disclosures SpaceX has provided to the FAA and if FAA is following NEPA requirements. The review process appears designed to keep the public in the dark and justify decisions that already have been made rather than accurately disclose the impacts under NEPA before decisions have been made.

#### VIII. Conclusion

SpaceX is a company I would like to admire. They are sending rockets into space, an activity I usually would associate with words like “bravery” and “cutting edge science” and “the future of humanity.” Unfortunately, the more I learn about SpaceX activities at Boca Chica, the more disappointed I become. Simply put, this environmental review process is one of the most deficient I have seen in 30 years of being involved with conservation issues. A private company knowingly purchases a small amount of private lands that are surrounded by State Parks and a National Wildlife Refuge and then uses those private lands to engage in environmentally damaging industrial activities that impact hundreds of acres of ecologically valuable publicly owned Parks and a Refuge. How has this been allowed to go on for so long? And should SpaceX really be surprised if concerns finally are raised? The FAA and the USFWS need to follow the existing laws and regulations and protect one of the most beautiful and incredible shorebird habitats in the United States.

Sincerely,

(b) (6)

CC: Lower Rio Grande NWR Manager (by email)

### References

Hicks, D.W., H Alexander, and K. Berg. 2015. Commercial Launch Site Pre-Construction Species Monitoring Survey, University of the Texas Rio Grande Valley, prepared for Space Exploration Technologies.

K. Gibson, D., M.K. Chaplin, K.L. Hunt, M.J. Friedrich, C.E. Weithman, L.M. Addison, V. Cavalieri, S. Coleman, F.J. Cuthbert, J.D. Fraser, W. Golder, D. Hoffman, S.M. Karpanty, A. Van Zoren, D.H. Catlin. Impacts of anthropogenic disturbance on body condition, survival, and site fidelity of nonbreeding Piping Plovers. 2018. *The Condor*, 120: 566-580.  
<https://academic.oup.com/condor/article/120/3/566/5153037>

Maddock, S.B., Wintering Piping Plover Surveys 2008-2009, Boca Chica, Texas to Marco Island, Florida, December 2, 2008 to March 13, 2009, Final Report. Unpublished report prepared for Environment Canada, Saskatoon, Saskatchewan. vi +34 pp.

U.S. Fish and Wildlife Service. 1996. Piping Plover (*Charadrius melodus*), Atlantic Coast Population, Revised Recovery Plan. Hadley, Massachusetts. 258 pp.

Zdravkovic, M.G. and M. M. Durkin. 2011. Abundance, Distribution and Habitat Use of Nonbreeding Piping Plovers and other Imperiled Coastal Birds in the Lower Laguna Madre of Texas. Unpublished report submitted to U.S. Fish and Wildlife Service and National Fish and Wildlife Foundation by Coastal Bird Conservation/Conservian, Big Pine Key, FL.

January 22, 2021

**RE: Response to Request for Public Comments**

To Whom It May Concern:

We are writing in response to the Federal Aviation Administration's ("FAA") request for public comments on the SpaceX Starship/Super Heavy Project at the Boca Chica Launch Site in Cameron County, Texas, and "potential alternatives and impacts ... affecting the quality of the human environment." Reference is also made to that letter to the FAA, dated July 3, 2020, and signed by multiple interested parties – including NextDecade Corporation ("NextDecade") – concerning the SpaceX Boca Chica Launch Site.

We understand that the FAA is undertaking the License Review Process and the Environmental Review Process to assess a range of issues and concerns related to public safety, national security, foreign policy, insurance requirements, and potential environmental impacts.

Additionally, we understand that FAA is utilizing a "Programmatic" Environmental Assessment ("EA") given that the proposed Starship/Super Heavy launch operations from the SpaceX Boca Chica Launch Site will be conducted on a recurring basis and that each launch operation is likely to result in substantially similar impacts. According to guidance issued by the Council on Environmental Quality ("CEQ"), the Programmatic EA "must [therefore] provide sufficient detail to foster informed decision-making that reflects broad environmental consequences from a wide-ranging federal program."<sup>1</sup>

In light of SpaceX testing and other activities at the Boca Chica Launch Site, which are already causing near-daily closures of area recreational facilities and roadways (including, for example, every day this week)<sup>2</sup> and appear to be expanding significantly, we appreciate FAA's consideration of the below which pertain to the safe and secure construction and operation of NextDecade's fully permitted Rio Grande LNG facility to be constructed in the nearby Port of Brownsville, as well as to the sustainment of the human environment and indigenous flora and fauna for those who live, work, and recreate in Cameron County, Texas.<sup>3</sup>

It is important that SpaceX be required to provide regular and reliable information regarding its planned operations at the Boca Chica Launch Site. This will ensure the safe and efficient construction and operations of critical infrastructure in the region, including Rio Grande LNG. As it relates to the FAA's scoping of issues for analysis in the draft EA, we suggest that particular focus be placed on: (1) frequency and scope of launch operations and consistency with maximum number of launches assessed in the FAA's June 2014 final EIS; (2) Emergency response and planning; (3) offshore area clearing and facility closures; and (4) storage and handling of propellant fuel.

NextDecade's Rio Grande LNG project was the subject of an extensive, multi-year, multi-agency review pursuant to the National Environmental Policy Act of 1969 ("NEPA"). The entirety of the Rio Grande LNG NEPA review, which was managed by the Federal Energy Regulatory Commission ("FERC"), was

---

<sup>1</sup> [https://www.energy.gov/sites/prod/files/2016/05/f31/effective\\_use\\_of\\_programmatic\\_nepa\\_reviews\\_18dec2014.pdf](https://www.energy.gov/sites/prod/files/2016/05/f31/effective_use_of_programmatic_nepa_reviews_18dec2014.pdf)

<sup>2</sup> <https://www.cameroncounty.us/spacex/>

<sup>3</sup> [https://www.faa.gov/about/office\\_org/headquarters\\_offices/ast/environmental/nepa\\_docs/review/launch/spacex\\_texas\\_launch\\_site\\_environmental\\_impact\\_statement/](https://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/launch/spacex_texas_launch_site_environmental_impact_statement/)  
[https://www.faa.gov/about/office\\_org/headquarters\\_offices/ast/environmental/nepa\\_docs/review/launch/spacex\\_texas\\_launch\\_site\\_environmental\\_impact\\_statement/media/Final\\_BO\\_FA\\_A\\_SpaceX\\_sm.pdf](https://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/launch/spacex_texas_launch_site_environmental_impact_statement/media/Final_BO_FA_A_SpaceX_sm.pdf)



conducted after the SpaceX environmental impact statement (“EIS”) had been completed and made public. Indeed, the plans and conclusions of multiple federal agencies and community stakeholders as they relate to the safe coexistence of SpaceX with Rio Grande LNG were formulated in reliance on FAA’s statements regarding the “maximum 12 annual launch operations ... including launches of the Falcon 9, a maximum of two Falcon Heavy launches, and/or associated mission rehearsals and static fire engine testing, through the year 2025.”<sup>4</sup>

For example, as set out in the Rio Grande LNG final EIS,<sup>5</sup> the construction schedule for Rio Grande LNG contemplates carefully integrated and phased interruptions based specifically on information provided by SpaceX to the FAA pertaining to the 2016-2025 period. FERC has approved our project siting, construction and operations, based on these representations by FAA and SpaceX. It is our expectation that any alterations to the SpaceX launch program will result in no greater impacts to Rio Grande LNG or the community than contemplated in the SpaceX EIS.

There is little doubt that the U.S. Space Program – and the agencies and companies that support it – contribute significantly to enhancing our national security, not to mention national pride and patriotism, and we appreciate the FAA’s characterization of its own goals as they relate to commercial space transportation: “encourage, facilitate, and promote.” However, to permit boundless extension of the radius of impact of SpaceX’s experimental activities in South Texas without sufficient consideration of the substantial potential impacts on international commerce and community safety and vitality would be inconsistent with the authority delegated to FAA under the Commercial Space Launch Act of 1984, as amended and codified.

For the past several years, the FAA has collaborated with federal agencies to ensure SpaceX may safely coexist with other industries and communities, and we are confident the FAA will uphold its standard of constructive stakeholder engagement in response to this latest Starship/Super Heavy proposal.

Respectfully submitted,

(b) (6)

Senior Vice President

---

<sup>4</sup> [https://www.faa.gov/about/office\\_org/headquarters\\_offices/ast/environmental/nepa\\_docs/review/launch/spacex\\_texas\\_launch\\_site\\_environmental\\_impact\\_statement/](https://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/launch/spacex_texas_launch_site_environmental_impact_statement/)  
<sup>5</sup> [https://www.ferc.gov/sites/default/files/2020-05/FEIS-volume-1\\_0.pdf](https://www.ferc.gov/sites/default/files/2020-05/FEIS-volume-1_0.pdf)



## **Background**

NextDecade is a liquefied natural gas (“LNG”) development company focused on LNG export projects. NextDecade is developing the largest LNG export solution linking Permian Basin and Eagle Ford Shale natural gas to the global LNG market. NextDecade’s marquee project, Rio Grande LNG, is to be constructed on a 984-acre site on the north embankment of the Brownsville Ship Channel. NextDecade’s common stock is listed on the Nasdaq Stock Market under the symbol “NEXT.” NextDecade is headquartered in Houston, Texas.

NextDecade and its stakeholders – including but not limited to global LNG customers, U.S. gas producers, midstream companies, vendors, contractors, shareholders, and employees – have an interest in the outcome of the FAA’s proceedings in this matter.

Rio Grande LNG comprises the largest privately funded infrastructure project in the State of Texas. The project will be constructed pursuant to a lump-sum turnkey engineering, procurement, and construction contract executed with Bechtel Oil, Gas, and Chemicals in May 2019. Bechtel is the world’s leading LNG EPC contractor, having constructed more than 30 percent of the liquefaction capacity in the world, including seven liquefaction trains to-date on the U.S. Gulf Coast.

Rio Grande LNG is expected to contribute more than \$35 billion to U.S. GDP during the construction phase, and more than \$550 million per year during operations. At full scale, the facility will be capable of producing 27 million metric tonnes of LNG per year for export to markets around the world. Rio Grande LNG will create thousands of direct and indirect jobs during construction and ongoing operations, driving increased revenues to local businesses in Cameron County and throughout the Rio Grande Valley. In addition to maximizing local hiring, NextDecade has committed to enhancing youth education, utilizing local training facilities, promoting safe work environments, and supporting improvements to the Brownsville Ship Channel.

## **FERC NEPA Review**

LNG facilities in the United States are subject to extensive federal and state regulatory standards. To satisfy NEPA requirements, FERC evaluated the potential environmental impacts of Rio Grande LNG in an environmental impact statement (“EIS”) issued in April 2019. In addition to the FAA, several other agencies cooperated with FERC in the preparation of the EIS: U.S. Army Corps of Engineers, U.S. Coast Guard, Pipeline and Hazardous Materials Safety Administration, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, National Park Service, National Oceanic Atmospheric Administration (National Marine Fisheries Service), and U.S. Department of Energy.

Cooperating agencies – including the FAA – have jurisdiction by law or special expertise with respect to resources potentially affected and thus participated in the NEPA analysis of Rio Grande LNG. As part of the NEPA analysis, the FAA assisted FERC in “evaluating impacts on and from the SpaceX rocket launch facility in Cameron County ... Specific recommends [were] included [in the final EIS] to address potential impacts from rocket launch failures on [Rio Grande LNG].”

In March 2017, and as requested by FERC, NextDecade filed a third-party analysis of “potential future space launch missions at the SpaceX ... launch site.” This analysis was completed by ACTA, Inc., a recognized subject matter expert in the evaluation of a range of safety hazards and risks from launch vehicle debris, blasts, and toxic gases, for the FAA, U.S. Department of Defense, the National



Aeronautics and Space Administration (“NASA”), and a variety of international companies and agencies. The ACTA analysis considered a full range of launch vehicles that met the threshold criteria for realness and relevance at the time and concluded that the risk (including likelihood and consequence) of a potential launch failure leading to an impact to the Rio Grande LNG facility boundary or the Brownsville Ship Channel was insignificant.

Additionally, a Letter of Recommendation issued in December 2017 by the U.S. Coast Guard featured consideration of SpaceX-related safety and security matters through consultation with “a variety of stakeholders including representatives from the Brownsville Navigation District, Port Isabel – San Benito Navigation District, local facility security, the Brazos Santiago Pilots Association, and Signet Maritime.”

At the conclusion of the extensive NEPA review, FERC issued an order granting authorization under Section 3 of the Natural Gas Act to site, construct, and operate the Rio Grande LNG facility.

### **Frequency and Scope of Launch Operations and Planned Interruptions**

The FAA completed a final EIS pertaining to the SpaceX Boca Chica Launch Site in June 2014. The EIS covers a 10-year period from 2016 to 2025 and “assesses a maximum of 12 annual launch operations during this time period, which would include orbital and suborbital launches.” The FAA notes that SpaceX had not, at the time, “identified proposed operations beyond this time ... As necessary, for any activity that is outside the scope of [the] EIS and falls under the FAA’s purview, a new or supplemental NEPA analysis would be conducted.”

As noted above, the entirety of FERC’s NEPA review of NextDecade’s Rio Grande LNG project was conducted in the years following the completion of the SpaceX EIS. The plans and conclusions of multiple federal agencies and community stakeholders as they relate to the safe coexistence of SpaceX with other interests were formulated, relying on FAA’s statements regarding the “maximum 12 annual launch operations ... including launches of the Falcon 9, a maximum of two Falcon Heavy launches, and/or associated mission rehearsals and static fire engine testing, through the year 2025.”<sup>6</sup>

Additional interruptions due to unplanned experimental events may cause our EPC contractor, operations staff, and other personnel to take shelter with an unknown frequency, resulting in substantial impact to cost and schedule, as well as potential interference with vessel operations. We request the FAA consider the potential consequential effect to other industries should SpaceX be permitted to meaningfully exceed previously disclosed maximums.

### **Other Considerations**

It is important that SpaceX be required to provide regular and reliable information regarding its planned operations at the Boca Chica Launch Site. This will ensure the safe and efficient construction and operations of critical infrastructure in the region, including our Rio Grande LNG facility.

### *Emergency Response and Planning*

In accordance with various federal standards and to ensure the safety and security of our personnel, NextDecade has established an Emergency Response Plan (“ERP”) which accounts for all anticipated

---

<sup>6</sup> [https://www.faa.gov/about/office\\_org/headquarters\\_offices/ast/environmental/nepa\\_docs/review/launch/spacex\\_texas\\_launch\\_site\\_environmental\\_impact\\_statement/](https://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/launch/spacex_texas_launch_site_environmental_impact_statement/)



events, including those resulting from planned rocket launch and recovery efforts. As a good corporate citizen, SpaceX must include industrial interests within impact zones in emergency response planning. Reliable communications will help to minimize disruption to industrial and marine activities in the region and mitigate potential impact to the liability of the federal government due to indemnification by the federal government for losses above \$3.1 billion.<sup>7</sup> FAA should note that NextDecade's Health, Safety, Security, and Environment ("HSSE") team is keen to engage with SpaceX counterparts to promote the health and safety of the human environment and sustainment of indigenous flora and fauna.

#### *Offshore Area Clearing and Facility Closures*

On the day of a launch, Boca Chica Beach and portions of State Highway 4 are closed to the public. While closures are only on to the south of the Brownsville Ship Channel and do not impact the Channel itself, such closures have become near-daily (including, for example, every day this week) and have indeed disrupted access to recreational facilities frequented by those who live, work, and recreate in Cameron County. As part of a coastal management plan, SpaceX was to develop a plan for clearing offshore areas to ensure public health and safety. Clearing activities include boat patrol and helicopter sweeps conducted by the U.S. Coast Guard. Increased scope and frequency of SpaceX's disruptive activities may also have implications for the extent and duration of offshore area clearing.

#### *Storage and Handling of Propellant Fuel*

Energy infrastructure projects in South Texas have been subjected to appropriate regulatory scrutiny to ensure compliance and consistency with standards maintained by the Pipeline and Hazardous Materials Safety Administration and the National Fire Protection Association ("NFPA"), among others. While it is standard practice that facilities that store and utilize flammable liquids be required to model vapor cloud dispersion and design for blast overpressure, it is unclear to what extent NFPA reviews have been required of the SpaceX facility. It is also unclear what Process Safety Management guidelines have been incorporated in the design of the storage facility to accommodate requisite fuel quantities and conditions. Given the potential for now even larger quantities of fuel to be stored at the Boca Chica Launch Site, further modeling, review, and approval protocols must be applied to ensure the health and safety of the local community.

---

<sup>7</sup> [https://www.ferc.gov/sites/default/files/2020-05/FEIS-volume-I\\_0.pdf](https://www.ferc.gov/sites/default/files/2020-05/FEIS-volume-I_0.pdf)



## United States Department of the Interior



### NATIONAL PARK SERVICE

#### INTERIOR REGION 6

Padre Island National Seashore

P.O. Box 181300

20301 Park Road 22

Corpus Christi, Texas 78418

### **NPS Comments on FAA *Starship/Super Heavy Launch* Environmental Assessment (EA)** (To Be Transmitted to FAA on January 22<sup>nd</sup>, 2021)

To Stacy Zee: Federal Aviation Administration (FAA)

Re: Scoping for FAA *Starship/Superheavy Environmental Assessment* (EA)

The National Park Service (NPS) appreciates the opportunity to review and provide comments during the public scoping period for the *Starship/Super Heavy Launch Operations Environmental Assessment* (EA) for the Boca Chica Launch Site in Cameron County, Texas. The NPS supports efforts by the Federal Aviation Administration to create a fully reusable space transportation system while minimizing impacts to the region's natural and cultural resources. NPS has benefitted from long-term interagency collaboration with FAA to identify and implement best management practices to minimize impacts from associated launch activities, and we look forward to the future successes of our Cooperating Agency relationship to protect resources administered and protected by the NPS.

#### **National Historic Landmarks**

The proposed launch operations in the EA include suborbital launches (flight tests) and orbital launches, encompassing pre-flight operations (tank tests, mission rehearsals, and static fire engine tests) and construction activities including expansion of the solar farm and increased construction at the vertical launch area (VLA). Three National Historic Landmarks (NHLs) designated by the Secretary of Interior are located in the project vicinity: Palo Alto Battlefield, Resaca de la Palma Battlefield, and Palmito Ranch Battlefield NHL. NHLs are so designated because they constitute nationally significant historic places possessing exceptional value or quality in illustrating or interpreting the heritage of the United States.

Palmito Ranch Battlefield NHL, the location of the last battle of the American Civil War, is approximately 1.6 miles from the project site. Quoting from the 1997 designation documentation, "Palmito Ranch Battlefield retains exceptional integrity of setting, feeling, association and location, nearly 130 years after the battle which occurred on May 12 and 13, 1865." Palmito Ranch Battlefield NHL is within the boundary of the US Fish and Wildlife Service (FWS) Lower Rio Grande National Wildlife Refuge. The National Park Service serves as the steward of the Palo Alto and Resaca de la Palma Battlefield NHLs which are within the Palo Alto National Historical Park managed by the National Park Service.

Due to the proximity to the above NHLs and Palo Alto National Historical Park, NPS looks forward to continued participation in National Environmental Policy Act and National Historic

Preservation Act consultation relating to SpaceX proposed activities. NPS has pursued mitigations with the FAA since 2012 to address any adverse impacts the project may have on these specially designated properties. As such, the proposed Starship/Super Heavy Launch Operations do have potential to create adverse effects to cultural resources, including potentially significant visual and auditory impacts to Palmito Ranch Battlefield NHL and Palo Alto Battlefield National Historic Park. Due to this, and given our status as a cooperating agency, the NPS would appreciate the opportunity to work with FAA and SpaceX to analyze and mitigate these potentially significant impacts. And if such impacts cannot be avoided, it is possible that an environmental impact statement may be the more appropriate NEPA pathway for this proposed action.

### **Other NPS Resources**

In addition to the site-specific needs of the three NHLs listed, the NPS looks forward to engaging with the FAA to continue to mitigate effects to other cultural and natural resources protected within NPS jurisdiction. Through review of the FAA 2020 Semi-Annual Report for Section 106 Compliance, NPS appreciates the mitigation measures included to help protect natural sounds and night skies. We also appreciate the continued attention to these resources, in addition to other resources at nearby Padre Island National Seashore (PAIS). The NPS will continue to provide data and information related to all potentially affected resources under our jurisdiction and for which we have recognized special expertise, including, but not limited to: cultural landscapes, scenic views, wildlife, and visitor use.

Please contact Karen Skaar, Regional NEPA External Review Coordinator, at (b) (6) or Karen\_Skaar@nps.gov with any questions or for clarification on these scoping comments. For questions or clarification about mitigation measures and coordination for specific natural and cultural resource issues, please contact:

- Eric Brunnemann, PAIS Superintendent, at (b) (6) or [Eric\\_Brunnemann@nps.gov](mailto:Eric_Brunnemann@nps.gov);
- Shelley Todd, PAIS Science and Resource Management Division Chief, at (361) 949-8173 x 223 or [Shelley\\_Todd@nps.gov](mailto:Shelley_Todd@nps.gov);
- Dr. Donna Shaver, PAIS Sea Turtle Science and Recovery Division Chief, at (361) 949-8173 x 226 or [Donna\\_Shaver@nps.gov](mailto:Donna_Shaver@nps.gov).
- Justin Henderson, Heritage Partnerships Program Manager, at (303) 969-2540 or [Justin\\_Henderson@nps.gov](mailto:Justin_Henderson@nps.gov)
- Gina Pearson, NPS Night Skies and Natural Sounds Program, at (559) 936-1785 or [Gina\\_Pearson@nps.gov](mailto:Gina_Pearson@nps.gov)

Thank you again for the opportunity to comment, and we look forward to working with you throughout the development of future drafts and into the project implementation phase(s).

Sincerely,

Eric Brunnemann  
Superintendent, Padre Island National Seashore  
National Park Service

Cc:

Lisa Carrico, Deputy Regional Director, Protection Partnerships & Interpretation, DOI Region 6, 7, & 8

Karen Skaar, Regional External Review Coordinator, DOI Region 6, 7, & 8

Michael Reynolds, Regional Director, DOI Region 6, 7, & 8

(b) (6)  
(b) (6)

Comment of (b) (6)

SpaceX Scoping

---

**Before The  
Federal Aviation Administration  
Washington, D.C. 20591**

In the Matter of:

SpaceX Boca Chica Launch and  
Manufacturing Site: Public Scoping  
of Issues for Analysis in  
Environmental Assessment.

---

**Comment of (b) (6)**

Publication encouraged, please attribute properly.

20-January-2021

## 1 Overview

**In this comment, I introduce the Rocket Launch, Operations, and Recovery Observer (“Launch Observer”) as a stakeholder, a beneficial public influence, an environmental impactor and (when managed appropriately) an environmental impact mitigator.**

I request a Supplemental Environmental Analysis dealing with the issues of the Launch Observer near the Boca Chica site, which would be applied programmatically regarding all further environmental assessments of the facility.

I discuss issues of the Launch Observer and their environmental impact at and around SpaceX Boca Chica. As applicable examples of future activity at Boca Chica, I discuss Launch Observers at Kennedy Space Center and Cape Canaveral Space Force Station, and the Vandenberg Air Force Base.

I present a suggested policy and process framework for appropriately managing and accommodating the Launch Observer and their environmental impact in planning rocket manufacture, ground support, launch, and recovery operations. I present suggested requirements concerning Launch Observers to be used in future Environmental Impact Assessments.

---

# 1 Request for Supplemental Environmental Analysis

The 2014 Environmental Impact Statement for the SpaceX Boca Chica facility and all subsequent written re-evaluations through December, 2020 have not sufficiently taken into account the environmental impact of the Launch Observer and their issues. The locations where observers are likely to congregate, their numbers, their potential environmental impact and processes for mitigation are not mentioned in those documents.

Recent operations by SpaceX at Boca Chica *have* involved a significant number of Launch Observers, and they have had an environmental impact. Fortunately the impact appears to have been favorable this time, due to a cleanup operation organized by the Launch Observers themselves. Further operations are expected to have greater environmental impact. Thus, the 2014 EIS is no longer current nor substantially valid without the addition of a supplemental EIS regarding Launch Observers.

## 2 The Launch Observer

People have been entranced by rocket viewing for the two millenia that fireworks have existed, a trait that evolved into us as primitive humans sat around a community fire. The modern Rocket Launch, Operations, and Recovery Observer (“Launch Observer”) includes the same motivations, as well as an appreciation of science, of astronauts as heroes, and of the hope for an interplanetary, and even interstellar, human race as passenger space vehicles become a reality.

### 2.1 The Launch Observer Has Standing In Space-Related Environmental Proceedings

This is a proceeding under the National Environmental Protection Act. That act establishes the purpose of encouraging *productive and enjoyable harmony between man and his environment*.

Obvious in the idea of *managing* the environment is the fact that it is *not* simply the natural space and resources around us, but the impingement upon that space and those resources of human beings and all of their works.

Thus, **the Launch Observer has standing** under this proceeding as someone who simply wishes to view a launch *for their own enjoyment*. *However*, the Launch Observer is not *merely* someone out for a good time:

### 2.2 The Launch Observer is a Stakeholder

---

Both private and government rocketry are taxpayer-funded, the private ones through various research and development programs and the support of many and various facilities, including the FAA itself, the launch sites, the International Space Station, and the *Eastern and Western Ranges*, launch telemetry ranges managed by the 30<sup>th</sup> and 45<sup>th</sup> Space Wings of the United States Space Force and NASA.

The Federal Aviation Act of 1958 establishes the FAA as an entity operating *in the public interest*. The 1<sup>st</sup> amendment of the Constitution guarantees the right of citizens to peacefully assemble, observe, and (when necessary) seek redress to the operation of their government. More generally, the citizen has a right to *know what their government is doing*, and of course this is necessary if they are to be informed voters.

Voluminous case law interpreting the 1<sup>st</sup> amendment (to a great extent concerning the observation of police officers, but applying equally to other government departments and their functionaries) supports the right of the public to be present to observe, and to photograph and make video recordings and other records.

The Launch Observer, as taxpayer, voter, and citizen; thus has a *constitutional right* to observe the operation of FAA regulated and/or government funded rocketry and space operations, within sensible limits of safety, privacy, and national security. **Launch Observers are thus stakeholders whose rights must be considered by the FAA and other authorities.** But their rights are often ignored, even thwarted, by poorly-informed authorities where many space operations take place, since of all such facilities *only* Kennedy Space Center has any reasonable plan and accommodation for Launch Observers.

## 2.3 The Launch Observer Performs a Public Benefit

FAA is fundamentally a science-based organization: Aircraft aren't held aloft by politics or the power of crystals. This is evident as FAA acts upon the results of scientific investigations such as those carried out by NTSB.

Increase in the scientifically-educated portion of the electorate is in the interest and mission of FAA: these are the people who will operate, advance, and patronize aviation and space travel; and operate the FAA itself. More generally, science is critical to the Federal Government and all citizens: It is only through science that we will solve public issues such as COVID-19 and the effects of pollution and global warming upon our nation and people.

Launch Observers in general encourage science and particularly science education. They are, to a great extent, there because they are excited by the science of rocketry and its potential for the human race. They transmit this to their children, who grow up to be excited by science.

---

**Launch Observers perform a public benefit: they promote science, technology, engineering, and mathematics; and education in those fields, supporting our national security and competitiveness.** They should be supported and encouraged.

## 2.4 The Launch Observer Has an Environmental Impact

Launch Observers, by their presence at a launch, space operation, or recovery, can have a significant environmental impact. This impact can be easily mitigated *if planned for*, but at facilities other than Kennedy Space Center, *no entity takes responsibility* for Launch Observers, and *there is no budget* for their accommodation.

This means that Launch Observers are handled as a general policing problem, staffed by small-town police or soldiers, neither of whom have much training or experience in crowd management. With no good policies or processes in place, and no financial responsibility for the accommodation of Launch Observers, the sole extent of the policing effort is to block them, move them on, and to in general harass them.

Just outside of Vandenberg Air Force Base in the City of Lompoc, I witnessed a significant environmental impact due to the unacceptable lack of preparation for the thousands of Launch Observers for the October 8, 2018 launch and landing of the Falcon 9 at the base. This was the first landing of a Falcon first stage there, and a dramatic just-past-sunset launch (see Section 4.1.5: *The Twilight Phenomenon*).

The base operates an inadequate facility called “Hawk’s Nest”, 10.5 miles from the launch pad, as their only official observation site. This site did not have a view of the launch or landing pad and was much too far away. The first 300 vehicles through the gate to Hawks Nest were admitted, and then the gates were closed, leaving many thousands of people to find an unofficial observing location.

I observed from Ocean Avenue in the City of Lompoc, at a site approximately 5 miles from the launch pad, an appropriate distance considering both safety and what could be observed. There is no nice way to say this: thousands of people were there for as long as 10 hours, with not one potty. The few City of Lompoc police present, restricting their activity to traffic-management, were quick to render their only response to complaints: “We didn’t invite you to come here”. Human waste was inappropriately deposited around the site. After the launch and landing, there was an hours-long traffic jam during which many people left their cars, in panic, to run into farmers fields in pursuit of the few potties left out for the harvesters. They trampled revenue crops and in general created a mess for the farmers.



---

This ugly and even dangerous situation could have been avoided with a score of potties placed in likely locations and appropriately serviced. It wasn't, because no appropriate policies and processes were in place, and nobody was told to foot the relatively small bill.

The SpaceX Boca Chica launch facility is in an ecologically sensitive area including South Padre Island, Texas, and its surrounding wetlands, Boca Chica State Park and Brazos Island State Park, the Las Palomas Wildlife Management Area; Playa Bagdad and the adjacent wetlands of Matamoros, Mexico. **There must be a plan to properly manage and accommodate tens of thousands of Launch Observers who are likely to come to such events as the first orbital flight attempt of the Starship / Super Heavy combination.** Similarly, management and accommodation of Launch Observers at sites like Vandenberg Air Force Base and the surrounding City of Lompoc must be improved.

## **2.5 The Launch Observer Is An Environmental Impact Mitigator, When Properly Managed**

At the December 9, 2020 first 12.5 kilometer flight test of the SpaceX Starship, Emmett Osborne, a 19-year-old engineering student, was disquieted by the condition of Isla Blanca park, which was to be the - entirely unofficial - site of hundreds or thousands of observers for the Starship flight. It was a mess. With the help of internet influencers, Osborne organized a park cleanup before the launch, leaving the park in much better shape than before the Launch Observers arrived.

This event received news coverage at <https://www.mysanantonio.com/sa-inc/article/SpaceX-Starship-chasers-converge-in-South-Texas-15813022.php>

**When properly managed, Launch Observers are an effective cleanup crew for the areas they visit.**

## **2.6 The Launch Observer is a Safety and Security Issue To Be Managed**

The SpaceX Boca Chica launch site, though private, will inevitably be the site of government missions, and is presently the home of much information restricted under the International Traffic in Arms Regulations and the Export Administration Regulations, and subject to industrial and national espionage. Like any launch or construction site, it's a dangerous place for the staff, and worse for uninvited interlopers.

Vandenberg Air Force Base ("VAFB") is no amusement park. There are nuclear-weapon-related facilities and much more of a National Security nature that is not disclosed. Rockets and satellites kept there carry

---

hypergolic fuels that are intensely toxic. A brush fire at the huge base shut down our nation's polar launch capability for months.

Adjacent to VAFB is a Federal prison with its own security issues, and a reserve for the endangered Snowy Plover that can not tolerate more than a handful of entrances by untrained people during the breeding season. The beach and wetlands within the base and around it are sites for marine mammal haul-out and breeding, waterbird nesting, and are in general animal habitat.

In contrast, the Kennedy Space Center Visitor Center is an amusement park (as well as a historical and educational center) and manages tourists and launch viewing events within controlled areas at Kennedy Space Center and the adjacent Canaveral Space Force Base. Visitor management and operations are contracted to Delaware North Corporation as a for-profit activity.

The more interesting events at Kennedy Space Center and Canaveral easily overflow the base, with viewers for 10 miles in every direction *and* in vessels within protected wetlands and navigable waterways, making them a management problem for many different agencies.

### **3 Who Should Pay?**

The failure of Vandenberg Air Force Base and the City of Lompoc stated in Section 2.4, above, is due to several factors:

- No FAA, nor environmental, proceeding placed responsibility for managing Launch Observers and their impact upon any entity.
- The successive Commanders of Vandenberg Air Force Base have obviously not considered the management and accommodation of Launch Observers to be within their mission, or there would be more provided for the observers than a single, inappropriately-distant and too-small viewing site. It is probable that Launch Observers are considered to be a low-priority issue within the public-relations budget for the base, and no more.
- By default, management fell to mere traffic control and exclusion from areas by the base and the City of Lompoc.

The first step in preventing future failures is to determine who shall pay for management and accommodation of Launch Observers.

Obviously, there is money: The Kennedy Space Center Visitor Center is operated at no government expense, and produces 300 Million dollars a year in income. Launch is an *extremely* lucrative business, with SpaceX, the least-expensive vendor per kilogram to various orbits; charging around 66

---

Million dollars for commercial launches of the *Falcon 9*, and approximately 120 Million dollars for Government launches mainly operated on behalf of the National Reconnaissance Organization by the Space Force.

Somewhere in there, we can find money to pay for potties.

Of course, accommodating the Launch Observer also means operation and management of appropriate viewing sites and the visitors to them. But the first priority must be reducing their environmental impact, and not subjecting them to unnecessary indignity.

**Managing and accommodating Launch Observers and their environmental impact should be billed to the launch customer by the launch facility, and should be an item for consideration in each Environmental Impact Assessment concerning the launch facility.** No Environmental Impact Statement for a launch facility should be considered complete without an appropriate statement of the expected attendance by Launch Observers for various sorts of launch or recovery, the accommodation that will be provided for them, and how their environmental impact is to be managed.

Accommodation of Launch Observers is potentially a profitable opportunity, as it is today for Delaware North Corporation at the Kennedy Space Center Visitor Center. I gladly paid \$200 to be hosted at the Saturn V Center during the first Falcon Heavy launch and double-landing, and tickets for that venue quickly sold out. Delaware North also offered less expensive viewing venues which all sold out, and viewing overflowed onto roads, shorelines, and waterways for 10 miles in every direction and hotel rooms were full all up and down the Florida coast. Launch Observers provided significant income to the area.

It is an unfortunate fact that many military families live at the edge of poverty. This is coupled with social ills and suicide among them. Perhaps paid viewing opportunities at military launch sites like Vandenberg Air Force Base, Canaveral Space Force Station, and Patrick Air Force Base can be operated to benefit military families in need.

## **4 Process Framework**

This section is a suggested process framework for launch facilities, which would help them to satisfy future Environmental Impact Assessments that include concerns regarding Launch Observers.

### **4.1 Identify The Interest and Potential Attendance**

---

For each launch, it is necessary to identify the public interest in the mission and the potential attendance resulting from that interest. These factors should be considered:

#### **4.1.1 Historical Attendance Data**

Attendance data should be collected for each launch and other space operation, carefully noting the type of mission (as explained below), since that is the main factor influencing overall interest in the mission. Keeping this information at hand will help to forecast future attendance. Potential sources of this information are:

- Photos showing attendance at viewing sites. There are software applications and published methodologies for calculating attendance from photographic data.
- Ticket sales at paid viewing sites, local park ticket sales and admissions.
- Lodging occupancy reports generated from the payment of lodging taxes; from hotels, motels; Air B&B and VRBO for home-sharing; heavily-used travel agencies such as Travelocity, Orbitz, Hotels.com; the local Chamber of Commerce and Tourism Bureau.
- Flight occupancy reports from the airports, air carriers, and ticketing agencies.
- Rental car usage reports from the various car rental companies, ticketing agencies, and from taxes paid on car rentals.
- Parking lot or structure occupancy data.
- Traffic sensor data from the local agencies operating highways and roads, and from commercial traffic data reporting companies such as Idealspot.
- Cell phone location data sold by Google, Apple, etc.

#### **4.1.2 Crewed Missions**

The presence of a crew on the space vehicle will always increase interest, due to the perception of astronauts as heroes who are risking their lives to advance science and the future prospects of the human race.

#### **4.1.3 First-Time Missions**

Firsts generate interest. The first crewed flight on the SpaceX Dragon, the first launch and landing of Falcon Heavy, the first landing of a Falcon 9 at Vandenberg Air Force Base, these all generated very large crowds. Future heavily-attended events will include the first orbital flight and stage

---

recoveries of the SpaceX Starship / Super Heavy combination, the first crewed flight and stage returns of that combination, the launches of various crewed missions

#### **4.1.4 Space Company Identity**

Today, SpaceX generates interest far exceeding other space companies. Their daring technical achievements, appearing to outpace NASA and every other aerospace company at a fraction of the cost; have captured the hearts of many, providing hope of an interplanetary future for humanity when good news was in short supply. There is also the interest in Elon Musk as an innovator, and as the most wealthy person in the world. Blue Origin could join SpaceX in generating this sort of interest, if their New Glenn vehicle succeeds and they are able to scale up flights. As new technical achievements are made, other companies may take a turn as the momentary darlings of space enthusiasts.

#### **4.1.5 The Twilight Phenomenon**

An article explaining the Twilight Phenomenon is on Wikipedia at [https://en.wikipedia.org/wiki/Twilight\\_phenomenon](https://en.wikipedia.org/wiki/Twilight_phenomenon). Twilight launches can exceed the beauty of any firework show. Thus, expect greater attendance at launches occurring just before dawn or after sunset.

#### **4.1.6 Weather**

Good weather and, especially, clear sky will increase attendance.

The presence of fog will cause Launch Observers to relocate to fog-free vantages. These will often be at higher altitudes or outside of prevailing breezes that bring fog ashore.

#### **4.1.7 Other Ambient Influences**

The amount of media coverage of the mission has a very strong influence on attendance. Launch Observers are probably more influenced by internet sources today than television and radio.

#### **4.1.8 Offshore Launch and Recovery**

The distance of offshore space operations from land will encourage Launch Observers to embark upon sea observation voyages, which will sail to viewing positions just outside of the range safety zone. These voyages must then be managed by the Coast Guard.

### **4.2 Identify The Viewing Areas**

---

Once the potential attendance is estimated, the areas that will be used by Launch Observers should be identified, and the number of observers at each site must be estimated.

It is best to provide sufficient officially-sanctioned observing areas to accommodate all Launch Observers, but observers are likely to eschew inappropriate locations like Hawk's Nest at VAFB. An appropriate observing site should be as close as possible to the launch or recovery area while outside of the range safety zone, and should have an unobstructed line of sight to the launch or recovery area if that is possible. The better the view, the easier it will be to attract Launch Observers to your official location.

### **4.3 Provide Mitigation of Environmental Impact At The Viewing Areas**

The first concern will be providing sufficient porta-potties at the viewing areas, to prevent the environmental impact of human waste. This will also reduce the impact of those who would otherwise be motivated to trample environmentally fragile areas in order to find a private place to relieve themselves. Secondly, impacts such as parking and litter should be managed.

Communication channels to the Launch Observers should be established. These will in general take the form of press releases or internet media sites which regularly carry information about opportunities for launch or recovery observation. Short-range AM or FM radio broadcasts are sometimes used to inform crowds as they approach a facility. Where tickets are issued or admission fees are collected, a paper handout with instructions is appropriate.

Attendees should always be asked to bring a garbage bag, to pack out their own trash and to remove other trash that is evident, and to always take the garbage bag with them when they leave. Launch Observers *will* leave an area cleaner than when they arrived, if organized properly.

Launch Observers should be informed of the potential for environmental damage and how they can avoid it, for example by keeping to established trails, or by staying away from bird nesting areas.

### **4.4 Receive and Report Feedback**

Launch and recovery sites that bear a responsibility to mitigate environmental concerns associated with Launch Observers should operate a means of receiving feedback regarding that impact. Such feedback might include reports of the intrusion of Launch Observers into ecologically sensitive land, the failure of facilities provided for Launch Observers

---

(perhaps within sufficient time to resolve them) and ideas and concerns of locals and the observers. Feedback should be acted upon, and should be a topic of all subsequent environmental assessments and re-evaluations.

## **5 Concerns Regarding Offshore Launch Observation**

### **5.1 SpaceX Offshore Platforms**

SpaceX has purchased two offshore oil platforms to be repurposed for offshore launch and recovery of the Starship / Super Heavy combination. Operations using these platforms are likely to be sited about 20 miles from populated land, due to noise and range safety concerns. I surmise that one or both platforms might eventually be sited in the Gulf of Mexico, offshore of Brownsville, Texas, as far South as practical within the 24-mile Contiguous Zone of the United States.

Such platforms would be close to Starship / Super Heavy manufacturing in Boca Chica and could be serviced from the Brownsville Ship Harbor. There will be an environmental impact from operation of these platforms and transport to and from them. The platforms may eventually offload launch and recovery of rockets from the Boca Chica site, reducing chemical and noise impact at that site, but perhaps requiring channelization of the South Bay and Boca Chica Bay to the Brownsville Ship Channel for SpaceX barge operations.

Once in operation, sea voyages for observation of launches from the platforms will be an issue for management by the Coast Guard.

### **5.2 DM-1 Toxic Incident**

There was an intrusion of unauthorized boaters into the range safety zone of the SpaceX DM-1 recovery. This occurred offshore of Pensacola, Florida on August 3, 2020. Boaters were exposed, at an apparently sub-clinical level, to highly toxic hypergolic or pyrophoric fuel. This fuel was still evident in the atmosphere around the Dragon vehicle for another half hour, including after it was hoisted onto its recovery vessel. To protect themselves from the chemicals, the recovery crew were required to withdraw from around the Dragon, except for persons equipped with the proper personal protective equipment who continued to monitor the chemical presence. The astronauts were required to sequester themselves within the sealed Dragon vehicle and to make use of its independent air supply until the chemicals dissipated.

This exposure of unauthorized persons to toxic chemicals was a result of an inaccurate estimation of the interest in the mission and the resources necessary to establish an interdiction zone, probably by the Coast Guard.

---

The Coast Guard also appears to have inadequately informed its officers of their jurisdiction to carry out an interdiction effort within the United States 24-mile Contiguous Zone or international waters, even though the boats involved bore US registry and were thus subject to US law.

The intruding boaters were, of course, at fault. The Coast Guard appeared to bear most of the blame, although certainly NASA and SpaceX were also involved.

I suggest specific rules for Launch Observation voyages, most of which overlap rules already in place for larger vessels:

- The vessels must be documented with the National Vessel Documentation Center.
- The vessels must carry AIS Class A transceivers, and must configure them to continuously beacon their documented vessel name and port of call, and their location, and to respond to digital selective calling (“DSC”). The crew must respond to DSC hails appropriately.
- The vessels must carry a second radio transceiver which is set to continuously monitor marine channel 16. The crew must respond to channel 16 hails appropriately.
- The vessels must, before departure, download from an official source on the internet a map of the range safety zone (this would be a Local Notice to Mariners today), and use it in conjunction with a GPS moving map during the entire voyage to ensure that they do not inadvertently enter the range safety zone.
- There should be a second, larger range safety zone which would exclude all vessels that are not equipped to comply with the above rules. A vessel that enters this zone without beaconing the proper AIS information would be turned away.

## **6 Requirements for Environmental Assessments, Environmental Impact Statements, and Re-Evaluations**

In the above, I have established the right of Launch Observers to be present under the applicable laws and the Constitution. I have laid out a process for managing their accommodation and mitigating their environmental impact.

Every Environmental Impact Statement of a rocket launch or recovery facility should include a plan to accommodate Launch Observers and to mitigate their environmental impact, in a similar manner to the process framework I have laid out in Section 4 of this comment. Thus, these issues must be examined as part of Environmental Assessments. The facility



---

should be required to report upon their continuing implementation of accommodation and mitigation of Launch Observers as part of each successive re-evaluation of the EIS.

I suggest that launch and recovery facilities use Section 4 of this comment as a template in creating their plan.

## **7 Service, Standing and Filing**

There appears to be no requirement for service in this informal public scoping. But if requested, I will acknowledge service of replies via email to [bruce@perens.com](mailto:bruce@perens.com)

This comment is timely filed, having been served via email to the address indicated in FAA's solicitation during the period that this issue was open for comment.

While FAA appears to use the Regulations.gov web site for NPRM comments, this scoping is confusingly being carried out using an email address at ICF, a for-profit consultancy that acts like an NGO. A more formal framework for submission of comments which would facilitate public viewing of comments, and replies to comments by the public, would be appreciated. I like the example of FCC's Electronic Comment Filing System, which provides a view of all proceedings, comments, and replies for the past 30 years.

Since the address given for comments is at ICF rather than FAA itself, I have also served this comment directly via email to relevant parties at FAA and commercial space vendors.

As a taxpayer, citizen, interested and impacted party: I claim standing under, but not limited to, the following laws:

- Federal Aviation Administration Act of 1958
- National Environmental Protection Act of 1969
- National Environmental Improvement Act of 1970



CITY OF PORT ISABEL  
"An Equal Opportunity Provider, Lender and Employer"  
305 East Maxan Street  
Port Isabel, Texas 78578  
(956) 943-2682  
(956) 943-2029 Facsimile

---

January 22, 2021

RE: SpaceX Starship Super Heavy Project at the Boca Chica Launch Site

To Whom It May Concern,

Please consider the following the comments of the City of Port Isabel regarding the above-captioned project. These comments are made as part of the scoping process for the prospective preparation of a programmatic Environmental Assessment (EA) for this project.

*The City of Port Isabel Concurs with the Proposed Scope of the EA*

The EA should include all elements listed under the proposed scope, including: "air quality; biological resources (including fish, wildlife, and plants); climate; coastal resources; Department of Transportation Act, Section 4(f); farmlands; hazardous materials, solid waste, and pollution prevention; historical, architectural, archaeological and cultural resources; land use; natural resources and energy supply; noise and noise-compatible land use; socioeconomics, environmental justice, and children's health and safety risks; visual effects; and water resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)."<sup>1</sup>

In particular, the City of Port Isabel desires that consideration be given to the hazards posed by a potential explosion or the impact of falling debris; the potential impact of overpressure events; the potential for environmental degradation; and, the potential impact of the launch activities on the economy.

*The Proposed Activity Will Significantly Impact the City of Port Isabel*

The current launch site, and location of proposed activities, is approximately 5 miles from the city limits of the City of Port Isabel.

*The Proposed Activity Poses Significant Hazards to the City of Port Isabel*

The launch site is approximately 5.5 miles from three proposed LNG facilities, which are in turn closely situated to the City of Port Isabel and major transportation infrastructure, including the Port Isabel-San Benito Navigation District, the Port of Brownsville, the

---

<sup>1</sup> [Environmental Review \(faa.gov\)](#) (retrieved 1-22-21)

Brownsville Ship Channel and SH 48. These facilities have already been permitted by the Federal Energy Regulatory Commission, and have completed the environmental review process. The potential for impact of debris from a spacecraft on these facilities is very high, and should such an impact occur, a fire or explosion could pose a severe risk to the citizens of Port Isabel.

The prevailing wind in Port Isabel is from the South. The launch facility is located upwind from the city, and therefore, the potential exists for airborne emissions to be carried to the city by the prevailing wind.

The terrain between the launch site and Port Isabel consists mostly of coastal plains and open water. Therefore, little exists to shield the citizens of Port Isabel from noise and changes in air pressure generated by launch activities or malfunctions.

#### *The Proposed Activity has the Potential for Significant Environmental Degradation*

The launch facility is located in a wild and scenic location, and is adjacent to a State park, and numerous important archeological sites. Habitat for threatened and endangered species, including the Kemp's Ridley Sea Turtle, the Hawksbill Sea Turtle, the Jaguarundi and the Ocelot are located in proximity to the launch site.<sup>2,3</sup>

Additionally, Boca Chica Beach is also a recognized archeological site.<sup>4</sup> Launch operations impede access to, and may threaten, archeological resources.

#### *The Proposed Activity has the Potential to Negatively Impact the Economy of City of Port Isabel*

The City of Port Isabel's economy is based on nature tourism, transportation and fishing. Degradation of the environment, generation of noise or other unpleasant conditions and the perception of danger have the potential to damage nature tourism. Any restrictions of movement of vessels required as part of the launch operations have the potential to disrupt commercial fishing activities, as well as the shipment of goods through the city's port.

#### *Environmental Justice Must Be Considered*

According to the US Census, 81 percent of the population of the City of Port Isabel is of Hispanic descent, and 27.1 percent of residents live in poverty.<sup>5</sup>

#### *Significant Negative Impacts Are Already Occurring Under the Current Permit*

In March of 2020, a malfunction at the launch site generated a blast force that impacted the City of Port Isabel. Citizens of Port Isabel were given no warning of the impending blast force, which occurred in the evening hours. As a result of the blast force, store shelves were toppled, doors of structures were blown open and police officers reported

---

<sup>2</sup> [https://www.fws.gov/uploadedFiles/FederallyListedT-E\\_LRGV-508.pdf](https://www.fws.gov/uploadedFiles/FederallyListedT-E_LRGV-508.pdf) (retrieved 1-22-21)

<sup>3</sup> <https://tpwd.texas.gov/gis/rtest/> (retrieved 1-22-21)

<sup>4</sup> <https://scholarworks.sfasu.edu/ita/vol2019/iss1/46/> (retrieved 1-22-21)

<sup>5</sup> <https://www.census.gov/quickfacts/portisabelcitytexas> (retrieved 1-22-21)

that their ears popped. Numerous callers to the city's 911 line reported that their homes were shaken and items within the homes were dislodged.

In recent months, the frequency of operations at the launch site has increased. As a result of the increased operations, SH 4, which leads to Boca Chica Beach State Park, is now frequently closed to the public. This is the only road to this park, making it inaccessible to the public for days at a time.

During 2020, numerous explosions occurred at the launch site. As a result of these explosions, debris were deposited across a wide area, unburned fuel was released, and high heat, loud sounds and a sudden change in atmospheric pressure were observed in the launch area. Given the sensitive location of the launch site, there is a high likelihood for these explosions to affect archeological resources or threatened or endangered species.

In December of 2020, SN8 departed the launch site. During flight, the spacecraft appeared to deviate from its planned trajectory, and subsequently crash-landed, generating a large explosion.

In January of 2021, a letter was distributed to residents of Long Island, which is within the City of Port Isabel's extra-territorial jurisdiction, warning them of a potential overpressure event and advising them to evacuate their homes during launch operations. If the cadence of launches increases, or if the size of the launch vehicles or motors increases, then the potential exists for repeated need for these residents to evacuate their homes, or for the overpressure hazard zone to be expanded to within the city limits.

*An Environmental Impact Statement Should be Prepared*

Given the significant impacts on the City of Port Isabel, surrounding communities, the economy and the natural environment, at a minimum, an Environmental Impact Statement (EIS) should be prepared following the EA. This statement should identify the means by which the applicant intends to mitigate the significant impacts already occurring as a result of the launch site. If these significant impacts cannot be mitigated, then the city requests that the No Action Alternative be adopted.

The City of Port Isabel is particularly desirous that consideration be given within the EIS to the hazards posed by a potential explosion or the impact of falling debris (including impacts on already-permitted LNG facilities); the potential impact of overpressure events; the potential for environmental degradation; and, the potential impact of the launch activities on the economy.

The City of Port Isabel does not oppose economic development or scientific research, and welcomes inward investment to Cameron County for the development of advanced technologies. At the same time, these activities cannot be permitted to occur if they will result in hazards to public safety, environmental degradation or negative impacts to the local economy.

Thank you in advance for your consideration of our comments.

Sincerely,

JARED HOCKEMA  
City Manager

(b) (6)

Blackburn  
Chambers

(b) (6)

(b) (6)

4 January 2021

Federal Aviation Administration  
United States Department of Transport  
Public Submissions – SpaceX Starship Super Heavy Project at the Boca Chica Launch Site

By Email [spacexbocachica@icf.com](mailto:spacexbocachica@icf.com)

**ENVIRONMENTAL REVIEW - DRAFT ENVIRONMENTAL ASSESSMENT – SPACEX BOCA  
CHICA TEXAS – PUBLIC SUBMISSION**

1. I refer to the request for public comments on potential alternatives and impacts and identification of any relevant information studies, or analysis of any kind concerning impacts of the quality of the human environment.
2. I submit the following public comment.

**The Purpose of the NEPA Act**

3. Section 2 of the *National Environmental Policy Act 1969 (US) (the NEPA Act)* as amended, provides that the purpose of the NEPA Act is to **encourage** productive and enjoyable harmony between man and his environment and includes to “stimulate the health and welfare of man”.
4. SpaceX’ facility at Boca Chica in Texas is being used by SpaceX to develop and build SpaceX’s Starship and Super Heavy rocket, “a reusable transportation system designed to carry both crew and cargo to Earth orbit, the Moon, Mars and beyond.”<sup>1</sup>
5. There can be no greater goal for “the health and welfare of man” to **encourage** “the productive and enjoyable harmony between man and his environment” than for the

---

<sup>1</sup> <https://www.spacex.com/vehicles/starship/>

human race to explore, settle, and develop a human civilisation on other celestial bodies within our solar system and beyond. The purpose and goal of the SpaceX Boca Chica facility of interplanetary travel is at the heart of the purpose of the NEPA Act.<sup>2</sup> See also United Nations Resolution 2222 (XXI) *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*.<sup>3</sup>

### **The 2014 Environmental Impact Study**

6. On 7 September 2014 the Department of Transport Federal Aviation Administration Office of Commercial Space Transportation made a decision under the NEPA Act to approve the SpaceX EIS at Boca Chica.<sup>4</sup> The approval followed an extensive consultation and review process and included the approval of the necessary permits and approvals, approvals with regard to land use, closures relating to section 4(f) properties, noise, light emissions and visual impacts, historical architect archaeological and cultural resources, air quality, water resources, biological resources, hazardous material, pollution prevention and solid waste, socioeconomics, environmental justice, children's environmental health risks and safety risks, natural resources, energy supply and secondary impacts (public service demands, land use, changes to the regional economy, induced growth and shifts in population).

### **Approval by the FAA of "A Variety of Reusable Launch Vehicles" by SpaceX**

7. The decision by Dr George C Nield (on behalf of the FAA) in the approved EIS dated 7 September 2014 was:
  - a. In relation to the land owned by SpaceX at Boca Chica in Cameron County for reusable suborbital launch vehicles; and
  - b. Included a variety of reusable suborbital launch vehicles, which by definition includes the SpaceX Starship.
8. The proposed environmental review cannot be a reconsideration of the approved determined under the EIS on 7 September 2014. Any attempt to undo or review the 2014 EIS is unlawful and cannot be permitted by the FAA.

---

<sup>2</sup> SpaceX has proven its capability to develop and produce reusable orbital spacecraft<sup>2</sup> and has been awarded multiple NASA contracts. At its Boca Chica facility SpaceX has proven the concept of the starship having conducted 3 successful flights.

<sup>3</sup> <https://unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html>

<sup>4</sup> [http://images.spaceref.com/docs/2014/20140709\\_SpaceX\\_EIS\\_ROD.pdf](http://images.spaceref.com/docs/2014/20140709_SpaceX_EIS_ROD.pdf)

## The Unlawful Requirement for a New Licence/Experimental Permit

9. The FAA states on its website at

[https://www.faa.gov/space/stakeholder\\_engagement/spacex\\_starship/](https://www.faa.gov/space/stakeholder_engagement/spacex_starship/)

*“SpaceX must apply for and obtain an experimental permit(s) and or vehicle operator licence from the FAA Office of Commercial Space Transportation to operate the Starship/Super heavy launch vehicle. The FAA’s evaluation of a permit or license application includes a review of 1) public safety issues (such as overflight of populated areas and payload contents); 2) national security or foreign policy concerns; 3) insurance requirements for the launch operator; and 4) potential environmental impact.*

10. The action by the FAA requiring SpaceX to apply for and obtain new experimental permits and licences for the Starship/Super heavy launch vehicle is unlawful. On 7 September 2014 Dr George C Nield on behalf of the FAA, after considering the FAA’s goals and objectives in relation to issuing launch licences and or experimental permits, made a determination allowing SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles, **and a variety of reusable suborbital launch vehicles** from its site in Cameron County Texas.
11. The Starship and Super heavy are both a variety of reusable suborbital launch vehicles owned and developed by SpaceX at Boca Chica in Cameron County. Therefore, SpaceX currently holds licences and experimental permits from the FAA with regard to its suborbital reusable Starship and the Super Heavy Rocket.
12. The FAA issued NOTAM’s (FAA Notice to Airman) for Starship launches on a number of occasions in 2020. The FAA by issuing NOTAMs in relation to experimental flights for the Starship has by implication accepted that the SpaceX 2014 EIS granted approval for the Starship as part of its licence/experimental permits. The SpaceX website defines the Starship to include the Super Heavy Rocket.
13. The 2014 EIS included 14 proposed launches, being 12 Falcon 9 launches and 2 Super Heavy launches. This is in consistent with approval for SpaceX to launch *a variety of reusable launch vehicles*. The EIS approval was primarily an EIS approval for SpaceX’s suborbital launches and any inconsistency with the proposed type of launches can be overcome by reading the proposed *Operations* within the EIS to limit approval to 14 suborbital launches per year regardless of the type or variety of orbital spacecraft. There is also the further requirement for a maximum of 180 hours of road closures per year.

## The Proposed FAA Evaluation – Public Safety, National Security, Insurance Requirements and Potential Environmental Impact

14. If the proposed new Application is found to be lawful, which in my submission would be inconsistent with the original Determination by Dr George C Nield on 7



September 2014, any variation of the EIS by way of an Environmental Assessment should be restricted only to actual changes resulting from the variation.

15. The only identifiable change that may require a new Environmental Assessment is if SpaceX requires a licence/experimental permit to launch more than 14 launches per year. However, even if this the case, the requirements on the FAA website regarding an assessment of Public Safety, National Security, Insurance Requirements and Potential Environmental <sup>5</sup>Impact seems inconsistent with such a change and inconsistent with the 2014 EIS approval.
16. Public safety was considered under the 2014 EIS. The environmental impact was considered under the 2014 EIS. This leaves National Security and Insurance requirements, neither of which appear to fall within the NEPA Act. In summary, there cannot be a reconsideration of public safety or a reconsideration of environmental impacts which were approved in the 2014 EIS, and National Security and insurance requirements appear to fall outside of the NEPA Act.

## SUMMARY OF THIS SUBMISSION

17. There can be no greater goal for “the health and welfare of man”<sup>6</sup> to **encourage** “the productive and enjoyable harmony between man and his environment”<sup>7</sup> than for the human race to explore, settle, and develop a human civilisation on other celestial bodies within our solar system and beyond.
18. SpaceX obtained EIS approval on 7 September 2014 for a licence/experimental permit to launch reusable suborbital launch vehicles (which includes its Starship and Super Heavy Rocket) at its Boca Chica Cameron County space operations. In 2020 the FAA granted a number of NOTAM’s which granted approval for SpaceX to launch its Starship, an experimental launch vehicle from its Boca Chica Cameron County space operations, confirming its 2014 EIS approval. The Starship is defined publicly by SpaceX to include the Super Heavy Rocket. The FAA is either aware of this, or should be aware of this given it is publicly displayed on the SpaceX website. In any event the Super Heavy Rocket, as is the Starship, is a reusable orbital launch vehicle and falls within the approved licence/experimental permit in FAA’s 2014 EIS.
19. Given the above, the FAA has no lawful authority under the NEPA Act to require SpaceX to submit a new application for a licence/experimental permit to launch its Starship at its Boca Chica Cameron County operations. Finally, the requirement by the FAA for SpaceX to apply for and obtain an experimental permit or vehicle operator’s licence is by implication the FAA unlawfully revoking its determination to approve the licence/experimental permit in the 7 September 2014 EIS.

---

<sup>5</sup> [https://www.faa.gov/space/stakeholder\\_engagement/spacex\\_starship/](https://www.faa.gov/space/stakeholder_engagement/spacex_starship/)

<sup>6</sup> Section 2 of the NEPA Act

<sup>7</sup> Ibid.

20. The decision by the FAA to require SpaceX to apply for licences or experimental permits to launch its Starship and Super Heavy Rocket from Boca Chica Cameron County Texas should be revoked as SpaceX currently holds the necessary licences and experimental permits under the 2014 EIS.

(b) (6)  
Barrister at Law



613 West St. Charles Street  
Brownsville, Texas 78520  
January 22, 2021

## **Scoping Comments on FAA Programmatic Environmental Assessment SpaceX**

Copy: Wayne R. Monteith  
Associate Administrator for Commercial Space Transportation  
Federal Aviation Administration  
[Wayne.monteith@faa.gov](mailto:Wayne.monteith@faa.gov)

Brian Rushforth  
Chief of Staff  
Office of Commercial Space Transportation  
Federal Aviation Administration  
[Brian.rushforth@faa.gov](mailto:Brian.rushforth@faa.gov)

Katherine B. Andrus  
Manager, Environmental Policy and Operations (AEE-400)  
Office of Environment and Energy  
Federal Aviation Administration  
[Katherine.andrus@faa.gov](mailto:Katherine.andrus@faa.gov)

Edward Boling  
Associate Director for NEPA Compliance  
Council on Environmental Quality  
[Edward\\_a\\_boling@ceq.eop.gov](mailto:Edward_a_boling@ceq.eop.gov)

We the undersigned organizations submit the following scoping comments to the Federal Aviation Administration (FAA) for their Environmental Assessment (EA) on the massive expansion of SpaceX activity at Boca Chica, Texas. The FAA's public announcement that they are "in the beginning stages of conducting an environmental review" is a misstatement of fact. The FAA actually began their review in February 2020 and had a partial Draft Environmental Assessment done in May 2020. Furthermore, the FAA has allowed SpaceX to determine which level of new environmental review is needed, a violation of the National Environmental Policy Act (NEPA) and FAA's own written NEPA-implementation policies, per the U.S. Department of Transportation, Federal Aviation Administration Order 1050.1F.

First, we feel very strongly that the FAA must require the more thorough Environmental Impact Statement rather than an EA. The actions of SpaceX are now significantly different and greater in scope

than the original project the FAA authorized in its 2014 Record of Decision (ROD). We contend that these actions have, and will continue to have, increasingly more significant human and environmental impacts.

The SpaceX project that the FAA authorized in 2014 was to allow the permitting of up to 12 launches of the Falcon 9 and Falcon Heavy rockets per year, and “smaller reusable suborbital launch vehicles.” The SpaceX footprint in the area was limited; a 21-acre launch site and two launch control sites approximately 2 miles away. The project now is much larger and different in purpose and scope. This is particularly important as the SpaceX sites are essentially (except for a few small private inholdings) surrounded to the south and the west by the Boca Chica Unit of the Lower Rio Grande Valley National Wildlife Refuge, to the north by Boca Chica State Park and South Bay ( the first Texas Coastal Preserve), and to the east by Boca Chica Beach and the Gulf of Mexico. Biologically this is a very productive and sensitive area, with one of the highest levels of plant and animal diversity of any national wildlife refuge in North America, and with more federally and state listed endangered, threatened, rare, and species of concern than any other refuge. The following is a list of proposed SpaceX actions that were not part of their 2014 EIS, all of which are adding additional environmental impacts and therefore warrant a new EIS. They include but are not limited to:

1. The development, fabrication and testing of an entirely new rocket (Starship/Super Heavy) which will be the largest and most powerful rocket ever built, using 50% more fuel than the Saturn V, fuel that is more volatile and explosive (liquid oxygen and liquefied methane) than that of the Falcon 9 and Falcon Heavy, on which the 2014 EIS was predicated. Starship/Super Heavy is over 3.5 times more massive than the heaviest of the originally permitted rockets (Falcon Heavy), requiring many times greater thrust.
2. SpaceX’s manufacturing and production facilities were not part of the 2014 EIS, and their overall environmental “footprint” of both the Launch Control Center Area (LCCA) and the Vertical Launch Area (VLA) has expanded greatly. VLA personnel has gone from “30 to 100” in 2019 to 450, with 24/7 lighting and activity. This is occurring in an area surrounded by state park, national wildlife refuge, public beach, and endangered & threatened species and critical habitat.
3. The 2014 EIS and ROD allowed for up to 12 launches per year of the Falcon 9 or Falcon Heavy, rockets already tested and in use. The new SpaceX plan calls for the following:
  - a. 10 Super Heavy static fire engine tests per year. Super Heavy has 37 raptor engines.
  - b. 50 Starship static fire engine tests per year. Starship has up to 6 raptor engines.
  - c. 20 Starship suborbital flights per year.
  - d. 8 Starship/Super Heavy orbital launches per year.
  - e. And quoting the May 2020 FAA Draft EA, “As flight tests become more successful SpaceX anticipates increasing orbital launch events...” meaning that testing and launch frequency of events are open-ended.
4. Not in the 2014 EIS was the present plan to drill 5 natural gas wells, to then collect, purify, liquefy (liquefied natural gas), store and use the methane. At 5.5 acres each, and adjacent to state and federal wildlife refuge land, the impacts and potential hazards of these operations in themselves warrant an EIS.
5. A desalination plant. Zero information is provided in the Scoping announcement on which to evaluate the impacts of this component. Given the major ecological impacts that could be generated by this plant alone, far more detail must be provided as to the source of the water and the disposal of briny discharge.

6. SpaceX plans to vent methane into the atmosphere, both from its facilities and from its launch vehicles. There was no mention of methane in the 2014 EIS. Now there will be methane production, storage and fuel. Will the methane fuel be piped in, trucked in, or produced onsite?
7. What will be the cumulative greenhouse gas (GHG) emissions from the testing, launching, burning and venting of methane and other fuels?
8. SpaceX plans on greatly increasing closures, (from 180 hours/year to 500 hours/year) of the entire area which includes much of State Hwy 4, Boca Chica beach, Boca Chica State Park, the Boca Chica Unit of the Lower Rio Grande Valley National Wildlife Refuge, South Bay Coastal Preserve, and Palmito Ranch National Battlefield. These are public lands and are not to be de-facto privatized. Further, we note that SpaceX has already exceeded the 180 hours/year (over 180 hours in just one month, March 2020), without any apparent enforcement effort by FAA.
9. There was no launch failure safety analysis in the 2014 EIS that included a rocket of Starship/Super Heavy in size.
10. There was no environmental analysis of possible impact on South Bay Coastal Preserve of a rocket coming down (whole or in pieces) with up to 5,200 metric tons of rocket fuel. The consequences could be catastrophic and unmitigable.
11. There was no cumulative impact analysis that included the three permitted liquefied natural gas export terminals within 5 miles of the launch site, including larger debris field, greater and more frequent explosion & fire risks, greater noise, light, vibration, sonic booms, and release (intentional or accidental) of hazardous fuels and vapors. What will be the risks to South Padre Island, Port Isabel and Long Island Village, 5 miles away? Cumulative impact analysis also needs to evaluate safety of the Jupiter LLC plan for a light crude refinery and offshore oil terminal.
12. The vastly greater amount of traffic-related wildlife mortality on Highway 4, fourteen miles of which is surrounded on both sides by national wildlife refuge. 11,000 dump trucks have already moved material from Southmost to the VLA for building up the launch site base, causing impacts to Hwy 4, refuge fences due to vehicle crashes, and wildlife mortality from traffic volume. Traffic volume continues to be excessive due to continuous construction that was never evaluated in the NEPA process.
13. Significant decline in Snowy Plover nests in the mud flats around the VLA in 2020, the first year of significant SpaceX testing and launching. Other wading and shorebird species are also at risk (e.g. Piping Plover, a federally endangered species), as are migrating passerines that “fall out” in the area during weather events.
14. Possible deleterious effects of the dramatic increase in number and size of static engine testing and launches on sea turtles and their nesting on Boca Chica beach, particularly the critically endangered Kemp’s Ridley.
15. The 2014 EIS is approximately seven years old.
16. Unlike an EA, an EIS guarantees maximum public input and participation. With the increasing loss of public access and use of the area this becomes more critical.

The FAA’s NEPA procedures implementing the National Environmental Policy Act define when a Supplemental EIS is needed, or not. By all three criteria the new and expanded SpaceX plan warrants an EIS. The following was cited in the FAA’s 2014 SpaceX EIS. [FAA Order 1050.1F, Section 9-2] **“A Supplemental EIS is not needed if:**

**1. “The proposed Action conforms to plans or projects for which a prior EIS has been filed and there are no substantial changes in the Proposed Action that are relevant to environmental concerns.”**

SpaceX has in fact never launched a Falcon 9 or Falcon Heavy rocket from Boca Chica and now has no plans to do so. It has instead turned its site and activities into something unrecognizable in the original EIS and ROD; a large and expanding complex to manufacture, fabricate, assemble and test the Starship/Super Heavy rocket. These are substantial changes not addressed in the Proposed Action.

The Starship and Super Heavy booster together will be larger than the approved Falcon 9 and Falcon Heavy by an order of magnitude, standing 39 stories tall, with nine million lbs. of propellants, nearly 50% more than NASA’s Saturn V rocket used to launch moon-landing Apollo missions.

Round-the-clock experimental testing has already increased significantly SpaceX’s footprint (and they plan to expand further) by enlarging its acreage, its number of buildings, its number of employees and contractors, its hours of beach and refuge closure, and its number of test firings and pressure tests. All these things significantly increase environmental and public use impacts and none them are in the original EIS.

In addition, in the short time since SpaceX has conducted operations at the Boca Chica site, there have been multiple accidental explosions that disrupted people’s lives, scattered rocket debris and caused wildfires that have consumed more than 100 acres of native habitat on national wildlife refuge land. These serious impacts are likely to continue to occur, and illustrate how critical it is for the FAA to initiate a new EIS process, and for federal regulators to exercise meaningful, legally required oversight. There are major and unanticipated changes from the activities proposed in the 2014 EIS because no testing of engines for the Falcon rocket family was planned or needed. Now, with the development of raptor engines, Starship and Super Heavy, testing will be frequent and accidents to some degree will continue. Impacts are now much more significant.

**2. “Data and analysis contained in the previous EIS are still substantially valid and there are no significant new circumstances or information relevant to environmental concerns and bearings on the Proposed Action or its impacts.”**

The construction, testing and firing of the massive Starship and Heavy Booster will have much greater impacts. Because of the very substantial changes to the actions taking place at this site, virtually all the impact analysis in the 2014 EIS is now out of date, inaccurate and misleading.

Specifically, new analysis needs to be prepared for the significant effects that are occurring, such as noise, light, frequency of events, fires & explosions, larger areas of direct and indirect impacts (likely to include the towns of South Padre Island, Port Isabel, Long Island Village).

The permitted liquefied natural gas (LNG) liquefaction export terminals on the Brownsville Ship Channel), the storage of much more rocket propellant that is more volatile and explosive, impacts to wildlife, wetlands, vegetation and endangered and threatened species, and public access to recreation, South Bay, Palmito Ranch Battlefield Site, and Boca Chica beach all require a new and more complete analysis. In other words, an EIS is necessary.

Under economic impacts another issue is missing entirely. The latest license for the Starship tests requires \$198 million in third party liability, and federal indemnification for losses

beyond that. This is higher than is required for any Falcon 9 or Falcon Heavy launch from Vandenberg AFB or Kennedy/Cape Canaveral, suggesting a far larger risk zone than was included in the EIS or ROD. And this probably doesn't include liability for the potential \$20 billion LNG terminals and LNG tankers that will likely be in the expanded risk zone.

**3. "All pertinent conditions and requirements of the prior approval have, or will be, met in the current actions."**

The FAA has done an inadequate job in ensuring SpaceX compliance with many of the conditions in its 2014 Record of Decision. An example is the closure of Highway 4 and Boca Chica beach, which was to be limited to no more than 180 hours per year. In just the past 3 months of this year closures have exceeded 225 hours, often with confusing and inadequate prior notifications and last-minute changes and revocations. Nevertheless, SpaceX now wants to nearly triple its beach closure "quota."

To increasingly deny access to eight miles of public beach, state park land, national wildlife refuge & national park is a significant human impact and needs to be addressed, particularly as much of the experimental engine and rocket testing could be done at a safer and less public testing location elsewhere.

Given the wholly different purpose of the project, FAA needs, as part of the Supplemental EIS, to revisit the alternatives evaluation. Alternatives should include 1) launching and re-landing Starship & Heavy Booster on floating offshore platform off the South Texas coast, a possibility Elon Musk has publicly mentioned and for which job positions have been listed, and 2) launching Starship/Heavy Booster from Cape Canaveral, and re-landing on an offshore platform, a technology which was developed by SpaceX and used often for its Falcon 9 rocket. NASA supports SpaceX using Kennedy Space Center Launch Complex 39-A for Starship/Super Heavy.

FAA's May 2020 Draft EA states, under Alternatives, "Constructing a new site for Starship/Super Heavy would result in extensive environmental impacts, and so was not analyzed further." "Extensive environmental impacts" is an apt description of what SpaceX is doing to Boca Chica.

We have one further scoping recommendation. The FAA needs to delineate a clear and unambiguous enforcement mechanism to ensure compliance with whatever mitigation measures are required. Given its role in facilitating the U.S. space program, the FAA appears ill-suited or unwilling to the task of ensuring that environmental resources are respected and protected. FAA enforcement of the 2014 ROD conditions was marginal at best. This is not acceptable. Because SpaceX's impacts are certain to be significant, an Environmental Assessment is insufficient. A new EIS with a vigorous public input process is not just warranted by NEPA and the FAA's own criteria; it is required and urgently needed. Until that is done the FAA should prohibit any expansion in either SpaceX's footprint or testing and launching activities at the Boca Chica site.

Respectfully submitted,

**(b) (6)** Board member  
Save RGV

(b) (6)  
Texas Representative  
Defenders of Wildlife

(b) (6)  
Friends of the Wildlife Corridor

(b) (6)  
Frontera Audubon Society

(b) (6)  
LRGV Group, Sierra Club

(b) (6)  
Climate Law Institute  
Center for Biological Diversity