



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

December 20, 2024

Eric J. Brunnemann
Superintendent
Padre Island National Seashore
National Park Service
600 E. Harrison Street Room 1006
Brownsville, TX 78520
Submitted to: eric_brunnemann@nps.gov

Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship-Super Heavy Launch Operations, Boca Chica TX

Dear Eric Brunnemann:

The purpose of this letter is to notify you of the Federal Aviation Administration's (FAA's) initiation of a Section 4(f) consultation addressing the eligible properties in the study area under consideration for an application to modify Space Exploration Technologies Corporation's (SpaceX's) existing vehicle operator license. SpaceX has applied to the FAA to increase the number of licensed annual launches and landings at the Boca Chica vertical launch area (VLA) in Cameron County, Texas. Eligible properties under National Park Service (NPS) jurisdiction include the Palmito Ranch Battlefield National Historic Landmark (NHL). The NHL is managed by the U.S. Fish and Wildlife Service (USFWS) because it is largely contained within the Lower Rio Grande Valley National Wildlife Refuge (see Attachment 1). The NHL is highlighted because access to the resource would be restricted during launch-related activities. The FAA is also conducting Section 4(f) consultation with the USFWS.

The affected environment and environmental impacts of Starship-Super Heavy operations at the Boca Chica Launch Site were analyzed in the 2022 Final Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas (2022 PEA).¹ The FAA issued a Mitigated Finding of No Significant Impact (FONSI)/Record of Decision (ROD) based on the 2022 PEA on June 13, 2022. The 2022 analysis included consultation with NPS regarding Section 4(f) properties in the study area and considered their comments and those of the public in making the final 4(f) determinations identified in the 2022 PEA.² At that time, FAA determined that the proposed action would not result in more than a minimal (i.e., *de minimis*) *physical use* of any Section 4(f) resources and would not constitute a *constructive use*. Mitigation measures were incorporated to avoid, minimize, compensate, or mitigate potential Section 4(f) concerns. SpaceX conducted six launch tests in 2023 and 2024 and analyzed the effects of each launch in comparison to anticipated effects, which have been considered in proposing the modifications and subsequent analyses. The FAA is in the process of preparing a Tiered Environmental Assessment to assess the

¹ FAA. 2022. Final Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas. Available at: https://www.faa.gov/space/stakeholder_engagement/spacex_starship. Accessed October 2023.

² NPS final comment letter received April 27, 2022 and FAA response dated May 26, 2022.

potential environmental impacts of an increase in launch and landing cadence and changes to the Starship-Super Heavy vehicles.

Summary of Issues for Discussion

Increased number of orbital launches and landings:

- a. The FAA seeks input as to whether an increased number of licensed launches and landings would substantially impair the activities, features, or attributes of the Section 4(f) properties under NPS jurisdiction. Note that the increase in launches and landings are not anticipated to require any changes in contemplated access restriction hours.
- b. FAA is also considering whether the increased number of orbital launches and landings would constitute a *constructive use* under Section 4(f) related to an increase in noise or diminishment of attributes that contribute to the enjoyment or quality of the Section 4(f) properties under NPS jurisdiction because of the short-term and intermittent nature of the noise generated by launches and landings.
- c. The FAA is including potential anomaly impacts in its Section 4(f) analysis although they are unlikely to occur.

The following sections of this letter include a summary of the proposed action, details of the changes to the proposed action from the previous analysis, pertinent regulatory background, and further information about the Section 4(f) determination issues.

Proposed Action

The FAA's proposed action is to modify SpaceX's vehicle operator license, which would allow SpaceX to conduct up to 25 orbital launches of the stacked Starship-Super Heavy vehicles from the VLA and up to 50 landings of the individual Starship or Super Heavy vehicles at the VLA annually. The modifications would not result in changes to estimated access restrictions.

Discussion of Proposed Modifications

Increased Mission Cadence: The FAA's proposed action is to modify SpaceX's vehicle operator license, which would allow SpaceX to conduct up to 25 orbital launches of the stacked Starship-Super Heavy vehicles from the VLA and up to 50 landings of the individual Starship or Super Heavy vehicles at the VLA annually. The number of annual launch events would increase by 150% and the number of annual landings would increase by 233% over the previously analyzed mission cadence.

SpaceX no longer anticipates performing sub-orbital launches of the Starship vehicle. Therefore, no Starship-only launches are proposed. The proportion of annual launches that involve the Super Heavy vehicle would double from 50% to 100%.

Decreased Total Duration of Static Fire Testing: SpaceX anticipates conducting static fire engine tests of the Starship and Super Heavy vehicles as described below:

- Starship Static fire engine tests: 90 total seconds of static fire per year
- Super Heavy static fire engine tests: 70 total seconds of static fire per year

In total, SpaceX estimates that it will conduct static fire tests for a combined total duration of 160 seconds per year, which is a 44% decrease from 285 seconds per year assessed in the 2022 PEA.

Regulatory Background

The FAA's procedural requirements for complying with Section 4(f) are set forth in Department of Transportation Order 5610.1C, Procedures for Considering Environmental Impacts. The FAA also considers Federal Highway Administration (FHWA) regulations (23 Code of Federal Regulations [CFR] part 774) and FHWA guidance (e.g., Section 4(f) Policy Paper) when assessing the potential for *use* of Section 4(f) properties. These requirements are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to FAA projects.

A *use* under Section 4(f) can occur when: 1) land from a Section 4(f) property is permanently incorporated into a transportation project; 2) there is a *temporary occupancy* of a Section 4(f) property; or 3) the transportation project's proximity to a Section 4(f) property results in impacts that would substantially impair the activities, feature, or attributes that qualify the property for protection under Section 4(f). The first two types of *use* are referred to as a *physical use*. The latter type of *use* is identified as *constructive use*.

Physical Use

A permanent incorporation would involve an actual physical taking of Section 4(f) property as part of a transportation project either as a purchase of land or a permanent easement.

Temporary occupancy occurs when a transportation project results in activities that require a temporary easement, right-of-entry, project construction, or another short-term arrangement involving a Section 4(f) property. A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed in Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied:

1. Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
4. The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

A *physical use* may be considered *de minimis* if, after taking into account avoidance, minimization, mitigation, and enhancement measures, the result is either: 1) a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or wildlife or

waterfowl refuge for protection under Section 4(f); or 2) a Section 106 of the National Historic Preservation Act finding of no adverse effect or no historic properties affected.

A *de minimis* impact determination requires agency coordination and public involvement. For parks, recreation areas, and wildlife and waterfowl refuges, the officials with jurisdiction over the property must be informed of the FAA's intent to make a *de minimis* impact determination, after which the FAA must provide an opportunity for public review and comment. The public notice and opportunity for comment may be combined with similar public involvement efforts for the National Environmental Protection Act (NEPA) process. After considering any public comments and if the officials with jurisdiction concur in writing that the project would not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, the FAA may finalize a *de minimis* impact determination. For historic sites under Section 106, the FAA must consult with the consulting parties identified in accordance with 36 CFR part 800 (Section 106's implementing regulations) and inform the officials with jurisdiction of the intent to make a *de minimis* impact determination. The officials with jurisdiction must concur in a finding of no adverse effect or no historic properties affected. Compliance with 36 CFR part 800 satisfies the public involvement and agency coordination requirement for *de minimis* findings for historic sites.³

Constructive Use

In order for a *constructive use* to occur, a transportation project must result in substantial impairment to the property's activities, features, or attributes to the extent that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. As noted in FHWA's Section 4(f) Tutorial,⁴ "[c]onstructive use involves an indirect impact to the Section 4(f) property of such magnitude as to effectively act as a permanent incorporation." Per the FAA 1050.1F Desk Reference,⁵ which provides guidance for FAA NEPA practitioners and is used to help FAA integrate applicable special purpose laws and requirements, a proximity-related impact's consequences must amount to "taking" a property or a portion of a property in order for a constructive use determination to be made.

A *de minimis* impact determination is not appropriate for *constructive use* of a Section 4(f) property because *constructive use* is defined as substantial impairment, and substantial impairment cannot be considered a *de minimis* impact.

Section 4(f) Determination Issues

The FAA is in the process of evaluating whether the changes to the proposed action would result in a *use* of Section 4(f) properties through permanent incorporation, *temporary occupancy*, or *constructive use*. There would be no physical use to a Section 4f property from this proposed project. A brief summary of the FAA's initial understanding of the proposed action's Section 4(f) impacts is presented in the following section. The FAA invites NPS to provide further information to help the FAA make a final determination.

³ The FAA will consult with the Texas Historical Commission to determine the potential impacts of the proposed action to historic properties under its jurisdiction, in compliance with Section 106. The FAA will use information from its Section 106 process to help inform its determinations regarding Section 4(f) and to define mitigation measures which will be enforceable on SpaceX as a term and condition of its FAA-issued permit(s) or license(s), if appropriate.

⁴ Available online at: <https://www.environment.fhwa.dot.gov/section4f/default.aspx>.

⁵ Available online at:

https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_policy_guidance/policy/faa_nepa_order/desk_ref/.

FAA previously made a determination that the original Proposed Action would not result in a *constructive use* of the NHL, including consideration of access restrictions, visual impacts, and noise. The FAA, Texas State Historic Preservation Officer, NPS, Advisory Council on Historic Preservation, and other parties executed a Programmatic Agreement (PA) as part of National Historic Preservation Act Section 106 consultation. The PA includes mitigation measures to resolve adverse effects to the NHL.

The FAA has determined the data and analyses in the PEA and FONSI/ROD regarding effects on Section 4(f) properties remain relevant. Pertinent conditions and requirements of the prior analysis and approval, including Section 4(f) considerations previously agreed to with your agency, will be met in the current action.

Increased number of orbital launches and landings

The FAA seeks input as to whether an increased number of licensed launches and landings would substantially impair the activities, features, or attributes of the NHL. Issues of concern related to the total number and pattern of launches and landings focus on the potential for access restrictions and the potential for noise levels to substantially impair the activities, features, or attributes of the NHL, including impacts to historic properties.

The previous analysis evaluated a potential of up to 500 hours per year access restrictions for licensed activities at the VLA and up to 300 hours for response activities in the event of anomalies. The current modifications would not change the anticipated number of access restriction hours and would conform to previously agreed upon mitigation regarding such issues as predictive scheduling and avoidance of specific holiday and date access restrictions.

The quiet, natural setting of the NHL is a notable feature of the resources. Updated noise modeling has been conducted to evaluate potential noise-related changes associated with static fire engine tests, launches, landings, and potential for structural damage. The results indicate that noise impacts would be comparable to those discussed in the 2022 PEA. The 2022 PEA contemplated the noise associated with Starship-Super Heavy orbital launches and landings, ultimately determining that no residents or members of the public would experience noise above Occupational Safety and Health Administration's (OSHA's) 115-dBA threshold⁶ during an orbital launch and there was no significant risk of structural damage. When these operations are not occurring, the normal daily sound levels in the NHL would persist.

According to the land use compatibility guidelines in FAA's 14 CFR part 150, an increase of Day-night average sound level (DNL) of 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase would be considered a significant impact. Order 1050.1F also notes that special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas within Section 4(f) properties. The DNL 65 dB contour for the Proposed Action is located within approximately 3.5 miles of the VLA entirely in areas that are unpopulated, except for Boca Chica Village, and overlaps with a small easternmost portion of the NHL. SpaceX would enforce the access restriction area during launch operations, as discussed in the 2022 PEA. Thus, no visitors or village

⁶ Chapter 11 of the FAA Order 1050.1F Desk Reference states the FAA should evaluate whether the Occupational Safety and Health Administration (OSHA) hearing damage criteria from 29 CFR 1910.95 and the National Academy of Sciences' 1977 guidelines for structural damage may be exceeded for a project. Guidelines on permissible noise exposure limits from OSHA are designed to protect human hearing from long-term, continuous exposures to high noise levels and aid in the prevention of noise-induced hearing loss.

residents would be present at noise sensitive areas within the 3.5-mile radius during launch operations to experience the elevated noise. Furthermore, the launch operations would be short-term and temporary and spread out over time. Noise from activities such as construction at the VLA and increases to truck traffic are not anticipated to add meaningfully to the noise in the area, and are thus not quantitatively assessed. Although portions of the NHL would be located within the 62 CDNL contour for sonic booms from Super Heavy landings at the VLA, no members of the public would be present to experience the sonic booms in the NHL. Additionally, because there are no above ground components to the NHL, there would be no damage to the NHL due to sonic booms.

The FAA made a finding of *adverse effect* for 17 historic properties (i.e., historic sites, objects, structures, and buildings), because they could experience visual, auditory, and vibration effects or falling debris from an anomaly directly striking the historic properties that could diminish their integrity. To resolve these adverse effects, the FAA, Texas State Historical Preservation Office, National Parks Service, USFWS, Texas Parks and Wildlife Department, Advisory Council on Historic Preservation, and SpaceX executed a Programmatic Agreement in April 2022⁷ that stipulated the process for minimizing and mitigating adverse effects to historic properties. SpaceX would continue to mitigate impacts to cultural resources by implementing the mitigation measures established in the 2022 PEA and the 2022 Programmatic Agreement and would not cause any new access restrictions, visual impacts or changes to the original 10-mile APE are anticipated. Although there would be more launches and landings under the proposed action, the NHL would continue be restricted to visitors during launch operations, and no new adverse visual impacts are anticipated.

The FAA is considering whether the modifications to the proposed action would substantially diminish the attributes that contribute to the enjoyment or quality of the NHL. Therefore, the FAA seeks input as to whether the noise generated by the proposed action would constitute a *constructive use*.

Anomalies

As described in detail in the 2022 PEA, a Starship/Super Heavy test operation or launch could cause something unexpected (referred to as an anomaly), which could result in the spreading of debris. Although anomalies are unlikely to occur,, the FAA nonetheless provides the Section 4(f) analysis of anomaly impacts to enable fuller environmental review. While the number of orbital launches and landings would increase under the proposed action, the total duration of access restrictions would still not exceed 500 hours annually. As the number of launches increases, the reliability of the vehicle would increase, and the risk of an anomaly would be below what was described in the 2022 PEA. Therefore, SpaceX anticipates to continue the need for up to 300 hours per year of access restrictions, in addition to 500 hours for nominal operations. An anomaly response access restriction would start immediately at the time the launch ends and last until the area is deemed safe for the public. Additional access restrictions in the event of an anomaly are not anticipated to affect the NHL due to the distance of the NHL from the VLA. SpaceX would reduce the size of the restricted area based on the debris field, as was performed following the April 20, 2023, anomaly at the launchpad. The public would be able to access the NHL while SpaceX conducts debris removal efforts.

⁷ Available online at:

https://www.faa.gov/sites/faa.gov/files/space/stakeholder_engagement/spacex_starship/Appendix_C_National_Historic_Preservation_Act_Section_106_Consultation.pdf

The FAA is considering whether the need for access restrictions for launch activities would substantially impair the activities, features, or attributes of the NHL and therefore constitute a *constructive use* under Section 4(f).

Please provide input on the issues discussed above by January 31, 2025, to Ms. Amy Hanson, FAA Environmental Specialist, via email at Amy.Hanson@faa.gov. If you have questions or concerns, please contact Ms. Hanson at (847) 243-7609 or via email at Amy.Hanson@faa.gov.

Sincerely,

STACEY
MOLINICH ZEE

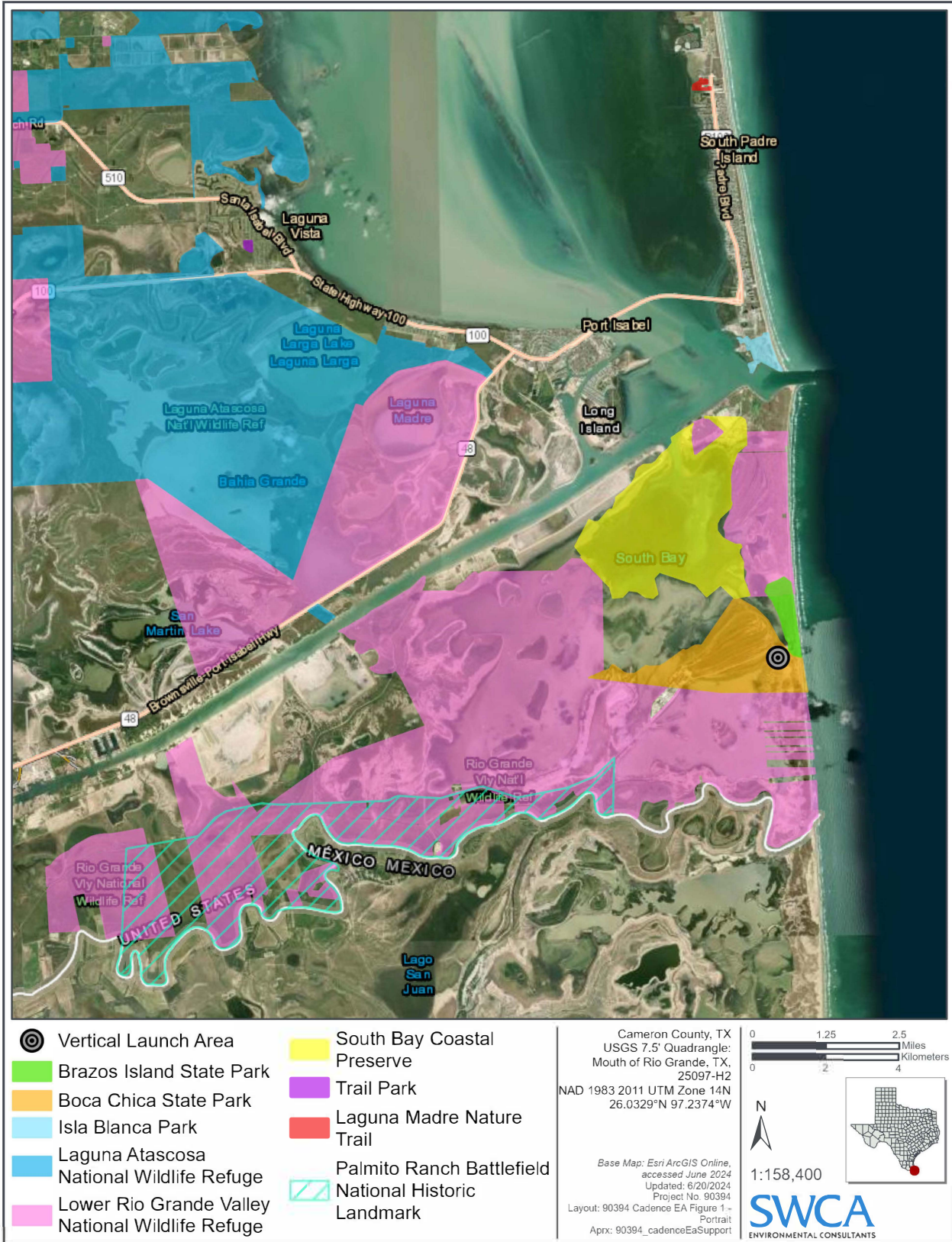


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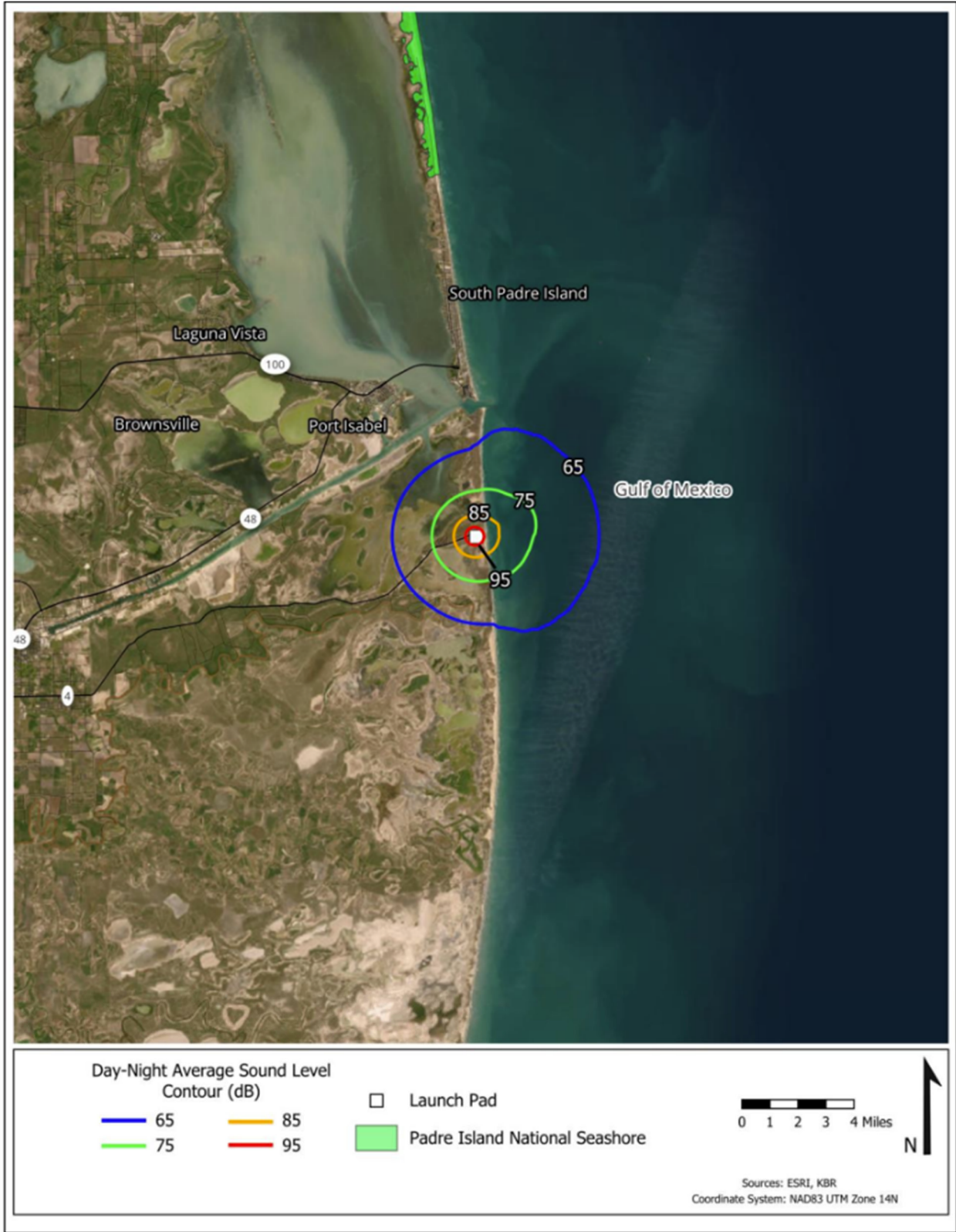
Stacey M. Zee
Manager
Operations Support Branch

Attachment 1: Section 4(f) Properties Under NPS Jurisdiction

Attachment 2: Annual Operations Day Night Average Sound Level (DNL)



Attachment 1. Section 4(f) Property Under NPS Jurisdiction – Palmito Ranch Battlefield National Historic Landmark



Attachment 2. Annual Operations Day Night Average Sound Level (DNL)



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

NO HARD COPY TO FOLLOW

January 31, 2025

Ms. Amy Hanson, Environmental Specialist
Federal Aviation Administration (FAA)
Amy.Hanson@faa.gov
847.243.7609
800 Independence Avenue, SW Washington, D.C. 20591

Re: Section 4(f) of the Department of Transportation Act Consultation for the FAA SpaceX Starship/Super Heavy Vehicle Increased Cadence at the Boca Chica Launch Site in Cameron County, Texas

The National Park Service (NPS) appreciates the opportunity to preliminarily consult with the FAA on the U.S. Department of Transportation Act (49 U.S.C. § 303) Section 4(f) consultation initiation for the FAA SpaceX Starship/Super Heavy Vehicle Increased Cadence at the Boca Chica Launch Site in Cameron County, Texas project. At this time, the NPS understands that the letter dated December 20, 2024, from the FAA is initiating the consultation process and does not indicate a Section 4(f) evaluation document or determination of *use* has been made.

The FAA previously in 2022 outlined Section 4(f) determination issues pertaining to the use of State Highway 4 (SH4), the Lower Rio Grande Wildlife Refuge, and Palmito Ranch Battlefield National Historic Landmark (NHL). The affected environment and environmental impacts of Starship-Super Heavy operations at the Boca Chica Launch Site were analyzed in the 2022 Final Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas (2022 PEA). The 2022 analysis and final 4(f) evaluation determined that the proposed action would not result in more than a minimal (i.e., *de minimis*) *physical use* of any Section 4(f) resources and would not constitute a *constructive use*. NPS provided comments to FAA regarding the 4(f) determination issues in letters dated August 20, 2021, November 1, 2021, and April 27, 2022, disagreeing with FAA's determination.

To date, and with the available information from previous Section 4(f) consultation, the NPS's 2022 response to the FAA stands. NPS appreciates FAA's efforts to address adverse effects but notes that adverse visual effects of structures greater than 100 feet tall at the VLA have nonetheless continued to represent a long-term diminishment of the setting and feeling of the NHL.

NPS does not concur with FAA’s previous 4(f) determination that access restrictions would not result in a constructive use of the NHL. Relevant implementing regulations for Section 4(f) determinations state that a constructive use occurs when the project results in a restriction of access which substantially diminishes the utility of a significant publicly owned park, recreation area, or a historic site (23 CFR 774.15(e)(3)). Section 5.3.2 of the FAA Desk Reference similarly states:

Constructive use occurs when the impacts of a project on a Section 4(f) property are so severe that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the Section 4(f) property that contribute to its significance or enjoyment are substantially diminished. This means that the value of the Section 4(f) property, in terms of its prior significance and enjoyment, is substantially reduced or lost.

Neither the implementing regulations for Section 4(f) nor the FAA Desk Reference include a definition of “substantial.” However, as an official with jurisdiction and special expertise, NPS believes that access restrictions, including the duration and increasing frequency of full closures will continue to substantially diminish access, substantially reduce the NHL’s prior public enjoyment, and thus constitute a substantial impairment of the utility of the NHL (visitor use, education, and enjoyment) that will result in a constructive use of Palmito Ranch Battlefield NHL.

In addition to the impacts of increased and more frequent access restrictions and adverse visual effects of the proposed action, NPS continues to have concerns that the impacts to natural sounds resulting from the proposed action will substantially impair the protected features and attributes of Palmito Ranch Battlefield NHL, resulting in a constructive use of the property.

We appreciate your inclusion of the NPS in Section 4(f) consultation efforts, and we look forward to continuing discussion as a Cooperating Agency under NEPA and Official with Jurisdiction under Section 4(f) to further refine the analysis of potential effects from the proposed project and for the opportunity to review any future Section 4(f) documentation for this project. If you have any questions, please contact me at (432) 207.2078 or at Eric_Brunnemann@nps.gov.

Sincerely,

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Eric J. Brunnemann
Superintendent, Padre Island National Seashore

Review comments are for the purpose of providing assistance to the requesting agency and do not represent the views and comments of the Department of the Interior (516 DM 4).



U.S. Department
of Transportation

**Federal Aviation
Administration**

Office of Commercial Space Transportation

800 Independence Ave., SW.
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March 11, 2025

Eric J. Brunnemann
Superintendent, Padre Island National Seashore
National Park Service
600 E. Harrison Street Room 1006 Brownsville, TX 78520
Submitted to: eric_brunnemann@nps.gov

Re: Section 4(f) of the Department of Transportation Act Consultation for the FAA SpaceX Starship/Super Heavy Vehicle Increased Cadence at the Boca Chica Launch Site in Cameron County, Texas

Dear Mr. Brunnemann:

The Federal Aviation Administration (FAA) has received your January 31, 2025 letter responding to the FAA's December 20, 2024 initiation of consultation with the National Park Service (NPS) under Section 4(f) of the Department of Transportation Act. The FAA asked for NPS's input on whether temporary access restrictions, visual impacts, and noise, would result in a constructive use of the Palmito Ranch Battlefield National Historic Landmark (NHL).

The FAA had previously concluded in the 2022 Programmatic Environmental Assessment (PEA) and Finding of No Significant Impact / Record of Decision (FONSI/ROD) for Starship/Super Heavy launches that SpaceX's operations at Boca Chica would not result in a physical or constructive use of the NHL. The FAA also imposed numerous mitigation measures to address the concerns raised by NPS regarding the effects of increased noise, temporary access restrictions, and visual effects. Your January 31, 2025 letter again expresses concerns about temporary access restrictions, visual impacts, and noise impacts.

Temporary Access Restrictions

Your letter expresses concern that "the duration and increasing frequency of full closures will continue to substantially diminish access, substantially reduce the NHL's prior public enjoyment, and thus constitute a substantial impairment of the utility of the NHL." The cadence increase proposed by SpaceX is not anticipated to require changes or increase the overall number of contemplated access restriction hours evaluated in the PEA, FONSI/ROD, and prior Section 4(F) consultation. This is because SpaceX has, since Flight 1, increased the efficiency of launch operations and reduced the projected duration of access restrictions on a per operation basis. Additionally, SpaceX would continue to adhere to mitigation measures listed in the 2022 PEA and FONSI/ROD and incorporated into its FAA vehicle operator license as required terms and conditions. These requirements include:

- Providing the public and land management agencies a forecast of planned access restrictions 1-2 weeks in advance, notifications 48 hours before a launch, and real-time status updates as plans finalize.
- Releasing the closure areas west of the “All Hard Checkpoint” following an anomaly to ensure access to the NHL while anomaly response occurs.
- Not imposing access restrictions on the following holidays, or on weekends where these holidays fall on a Monday or Friday: Memorial Day, Labor Day, July 4th, Martin Luther King Jr. Day, Presidents’ Day, Texas Independence Day, Cesar Chavez Day, Emancipation Day in Texas (also referred to as Juneteenth), Veteran’s Day, Good Friday, Easter, Father’s Day, Mother’s Day, Thanksgiving Day, Christmas Day, and New Year’s Day.
- Not imposing access restrictions on Fridays or weekends from Memorial Day to Labor Day, or on weekends the rest of the year.

SpaceX has adhered to these requirements over the past three years.

SpaceX has also taken steps to enhance recreational opportunities and visitors’ experiences of the NHL, at NPS’s request. SpaceX has constructed a viewing platform and interpretive signage to give visitors a better view and greater understanding of the NHL and local wildlife occurring there. SpaceX has also prepared a historical context report and funded educational outreach to inform visitors about the area’s cultural and historical heritage.

Noise

Your letter also raised concerns that noise from the launch cadence increase would substantially impair the quiet setting of the NHL. During launches and landings, humans will not be present in the vicinity of the NHL because of temporary access restrictions necessary to protect public safety, so human enjoyment of the NHL will not be impacted by launch noise. In any event, launch noise effects in the vicinity of the NHL will continue to be only intermittent and of short duration.

Visual Effects

Your letter also raised concerns that “adverse visual effects of structures greater than 100 feet tall at the VLA have nonetheless continued to represent a long-term diminishment of the setting and feeling of the NHL.” SpaceX’s launch towers, the only structures over 100 feet tall at the VLA, were assessed as a part of a previously approved action. SpaceX is not proposing to add any additional launch-related infrastructure as a part of this proposed action. SpaceX’s manufacturing structures are not part of the Federal action or the proposed action. NHL. Although there would be more launches and landings under the proposed action, the NHL would continue be restricted to visitors during launch operations, and no new adverse visual impacts are anticipated.

Moreover, SpaceX will continue to implement the measures in the PEA and FONSI/ROD to minimize visual effects, including minimizing launch site lighting, turning off lights when not needed, and using low-pressure sodium and/or amber LED lighting to the extent practicable. While nighttime visitation to the NHL is low, these measures help ensure that any lighting effects that may disrupt the nighttime viewshed from the NHL are mitigated.

The FAA appreciates your continued coordination on this project. Please contact Ms. Amy Hanson, FAA Environmental Specialist, via email at Amy.Hanson@faa.gov or at (847) 243-7609 with any questions.

Sincerely,

STACEY
MOLINICH ZEE



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Stacey M. Zee
Manager
Operations Support Branch



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

December 20, 2024

Leslie Koza
Federal Consistency Coordinator
Texas General Land Office
602 N. Staples Street
Corpus
Christi, TX 78401
Submitted to: Federal.Consistency@glo.texas.gov

Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship-Super Heavy Launch Operations, Boca Chica TX

Dear Leslie:

The purpose of this letter is to notify you of the Federal Aviation Administration's (FAA's) initiation of a Section 4(f) consultation addressing the eligible properties in the study area under consideration for an application to modify Space Exploration Technologies Corporation's (SpaceX's) existing vehicle operator license. SpaceX has applied to the FAA to increase the number of licensed annual launches and landings at the Boca Chica vertical launch area (VLA) in Cameron County, Texas. The eligible property is the South Bay Coastal Preserve (Preserve), which the FAA understands is managed by the Texas Government Land Office (TGLO) and Texas Parks and Wildlife Department (TPWD) (see Attachment 1).

The affected environment and environmental impacts of Starship-Super Heavy operations at the Boca Chica Launch Site were analyzed in the 2022 Final Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas (2022 PEA).¹ The FAA issued a Mitigated Finding of No Significant Impact (FONSI)/Record of Decision (ROD) based on the 2022 PEA on June 13, 2022. The 2022 analysis included consultation with TGLO regarding Section 4(f) property in the study area and considered TGLO's comments and those of the public in making the final 4(f) determinations identified in the 2022 PEA.² At that time, FAA determined that the proposed action would not result in more than a minimal (i.e., *de minimis*) physical use of any Section 4(f) resources and would not constitute a *constructive use*. Mitigation measures were incorporated to avoid, minimize, compensate, or mitigate potential Section 4(f) concerns. SpaceX conducted six launch tests in 2023 and 2024 and analyzed the effects of each launch in comparison to anticipated effects, which have been considered in proposing the modifications and subsequent analyses. The FAA is in the process of preparing a Tiered Environmental Assessment to assess the potential environmental impacts of an increase in launch and landing cadence and changes to the Starship-Super Heavy vehicles.

¹ FAA. 2022. Final Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas. Available at: https://www.faa.gov/space/stakeholder_engagement/spacex_starship. Accessed October 2023.

² TGLO provided comments in a letter received September 9, 2021.

Summary of Issues for Discussion

Increased number of orbital launches and landings:

- a. The FAA seeks input as to whether an increased number of licensed launches and landings would substantially impair the activities, features, or attributes of the Section 4(f) property under TGLO jurisdiction. Note that the increase in launches and landings are not anticipated to require any changes in contemplated access restriction hours.
- b. FAA is also considering whether the increased number of orbital launches and landings would constitute a *constructive use* under Section 4(f) related to an increase in noise or diminishment of attributes that contribute to the enjoyment or quality of the Section 4(f) property under TGLO jurisdiction because of the short-term and intermittent nature of the noise generated by launches and landings.
- c. The FAA is including potential anomaly impacts in its Section 4(f) analysis although they are unlikely to occur.

The following sections of this letter include a summary of the proposed action, details of the changes to the proposed action from the previous analysis, pertinent regulatory background, and further information about the Section 4(f) determination issues.

Proposed Action

The FAA's proposed action is to modify SpaceX's vehicle operator license, which would allow SpaceX to conduct up to 25 orbital launches of the stacked Starship-Super Heavy vehicles from the VLA and up to 50 landings of the individual Starship or Super Heavy vehicles at the VLA annually. The modifications would not result in changes to estimated access restrictions.

Discussion of Proposed Modifications

Increased Mission Cadence: The FAA's proposed action is to modify SpaceX's vehicle operator license, which would allow SpaceX to conduct up to 25 orbital launches of the stacked Starship-Super Heavy vehicles from the VLA and up to 50 landings of the individual Starship or Super Heavy vehicles at the VLA annually. The number of annual launch events would increase by 150% and the number of annual landings would increase by 233% over the previously analyzed mission cadence.

SpaceX no longer anticipates performing sub-orbital launches of the Starship vehicle. Therefore, no Starship-only launches are proposed. The proportion of annual launches that involve the Super Heavy vehicle would double from 50% to 100%.

Decreased Total Duration of Static Fire Testing: SpaceX anticipates conducting static fire engine tests of the Starship and Super Heavy vehicles as described below:

- Starship Static fire engine tests: 90 total seconds of static fire per year
- Super Heavy static fire engine tests: 70 total seconds of static fire per year

In total, SpaceX estimates that it will conduct static fire tests for a combined total duration of 160 seconds per year, which is a 44% decrease from 285 seconds per year assessed in the 2022 PEA.

Regulatory Background

The FAA's procedural requirements for complying with Section 4(f) are set forth in Department of Transportation Order 5610.1C, Procedures for Considering Environmental Impacts. The FAA also considers Federal Highway Administration (FHWA) regulations (23 Code of Federal Regulations [CFR] part 774) and FHWA guidance (e.g., Section 4(f) Policy Paper) when assessing the potential for *use* of Section 4(f) properties. These requirements are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to FAA projects.

A *use* under Section 4(f) can occur when: 1) land from a Section 4(f) property is *permanently incorporated* into a transportation project; 2) there is a *temporary occupancy* of a Section 4(f) property; or 3) the transportation project's proximity to a Section 4(f) property results in impacts that would substantially impair the activities, feature, or attributes that qualify the property for protection under Section 4(f). The first two types of *use* are referred to as a *physical use*. The latter type of use is identified as *constructive use*.

Physical Use

A *permanent incorporation* would involve an actual physical taking of Section 4(f) property as part of a transportation project either as a purchase of land or a permanent easement.

Temporary occupancy occurs when a transportation project results in activities that require a temporary easement, right-of-entry, project construction, or another short-term arrangement involving a Section 4(f) property. A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed in Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied:

1. Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
4. The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

A *physical use* may be considered *de minimis* if, after taking into account avoidance, minimization, mitigation, and enhancement measures, the result is either: 1) a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or wildlife or waterfowl refuge for protection under Section 4(f); or 2) a Section 106 of the National Historic Preservation Act finding of no adverse effect or no historic properties affected.

A *de minimis* impact determination requires agency coordination and public involvement. For parks, recreation areas, and wildlife and waterfowl refuges, the officials with jurisdiction over the property must be informed of the FAA's intent to make a *de minimis* impact determination, after which the FAA must provide an opportunity for public review and comment. The public notice and opportunity for comment may be combined with similar public involvement efforts for the National Environmental Protection Act (NEPA) process. After considering any public comments and if the officials with jurisdiction concur in writing that the project would not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, the FAA may finalize a *de minimis* impact determination. For historic sites under Section 106, the FAA must consult with the consulting parties identified in accordance with 36 CFR part 800 (Section 106's implementing regulations) and inform the officials with jurisdiction of the intent to *make a de minimis* impact determination. The officials with jurisdiction must concur in a finding of no adverse effect or no historic properties affected. Compliance with 36 CFR part 800 satisfies the public involvement and agency coordination requirement for *de minimis* findings for historic sites.³

Constructive Use

In order for a *constructive use* to occur, a transportation project must result in substantial impairment to the property's activities, features, or attributes to the extent that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. As noted in FHWA's Section 4(f) Tutorial,⁴ "[c]onstructive use involves an indirect impact to the Section 4(f) property of such magnitude as to effectively act as a permanent incorporation." Per the FAA 1050.1F Desk Reference,⁵ which provides guidance for FAA NEPA practitioners and is used to help FAA integrate applicable special purpose laws and requirements, a proximity-related impact's consequences must amount to "taking" a property or a portion of a property in order for a *constructive use* determination to be made.

A *de minimis* impact determination is not appropriate for *constructive use* of a Section 4(f) property because *constructive use* is defined as substantial impairment, and substantial impairment cannot be considered a *de minimis* impact.

Section 4(f) Determination Issues

The FAA is in the process of evaluating whether the changes to the proposed action would result in a *use* of Section 4(f) properties through *permanent incorporation*, *temporary occupancy*, or *constructive use*. There would be no physical use to a Section 4f property from this proposed project. A brief summary of the FAA's initial understanding of the proposed action's Section 4(f) impacts is presented in the following section. The FAA invites TGLO to provide further information to help the FAA make a final determination.

³ The FAA will consult with the Texas Historical Commission to determine the potential impacts of the proposed action to historic properties under its jurisdiction, in compliance with Section 106. The FAA will use information from its Section 106 process to help inform its determinations regarding Section 4(f) and to define mitigation measures which will be enforceable on SpaceX as a term and condition of its FAA-issued permit(s) or license(s), if appropriate.

⁴ Available online at: <https://www.environment.fhwa.dot.gov/section4f/default.aspx>.

⁵ Available online at:

https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_nepa_order/desk_ref/.

TGLO previously offered input on Section 4(f) issues of concern and requested notification of any anomalies and SpaceX added the TGLO to the list of stakeholders contained in SpaceX's Anomaly Response Plan, which was shared with the TGLO on July 23, 2021.

The FAA has determined the data and analyses in the PEA and FONSI/ROD regarding effects on Section 4(f) properties remain relevant. Pertinent conditions and requirements of the prior analysis and approval, including Section 4(f) considerations previously agreed to with your agency, will be met in the current action.

Increased number of orbital launches and landings

The FAA seeks input as to whether an increased number of licensed launches and landings would substantially impair the activities, features, or attributes of the three properties. Issues of concern related to the total number and pattern of launches and landings focus on the potential for access restrictions and the potential for noise levels to substantially impair the activities, features, or attributes of the Section 4(f) property under TGLO jurisdiction, including impacts to historic properties.

The previous analysis evaluated a potential of up to 500 hours per year of access restrictions for licensed activities at the VLA and up to 300 hours of response activities in the event of anomalies. The current modifications would not change the anticipated number of access restriction hours and would conform to previously agreed upon mitigation regarding such issues as predictive scheduling and avoidance of specific holiday and date access restrictions.

The quiet, natural setting of the Preserve is a notable feature. Updated noise modeling has been conducted to evaluate potential noise-related changes associated with static fire engine tests, launches, landings, and potential for structural damage. The results indicate that noise impacts would be comparable to those discussed in the 2022 PEA. The 2022 PEA contemplated the noise associated with Starship-Super Heavy orbital launches and landings, ultimately determining that no residents or members of the public would experience noise above Occupational Safety and Health Administration's (OSHA's) 115-dBA threshold⁶ during an orbital launch and there was no significant risk of structural damage. When these operations are not occurring, the normal daily sound levels in the Section 4(f) properties would persist.

The FAA made a finding of *adverse effect* for 17 historic properties (i.e., historic sites, objects, structures, and buildings), because they could experience visual, auditory, and vibration effects or falling debris from an anomaly directly striking the historic properties that could diminish their integrity. To resolve these adverse effects, the FAA, Texas State Historical Preservation Office, National Parks Service, USFWS, Texas Parks and Wildlife Department, Advisory Council on Historic Preservation, and SpaceX executed a Programmatic Agreement in April 2022⁷ that stipulated the process for minimizing and mitigating adverse effects to historic properties. SpaceX would continue to mitigate impacts to cultural resources by implementing the mitigation measures established in the 2022 PEA and the 2022 Programmatic

⁶ Chapter 11 of the FAA Order 1050.1F Desk Reference states the FAA should evaluate whether the Occupational Safety and Health Administration (OSHA) hearing damage criteria from 29 CFR 1910.95 and the National Academy of Sciences' 1977 guidelines for structural damage may be exceeded for a project. Guidelines on permissible noise exposure limits from OSHA are designed to protect human hearing from long-term, continuous exposures to high noise levels and aid in the prevention of noise-induced hearing loss.

⁷ Available online at:

https://www.faa.gov/sites/faa.gov/files/space/stakeholder_engagement/spacex_starship/Appendix_C_National_Historic_Preservation_Act_Section_106_Consultation.pdf

Agreement and no new access restrictions, visual impacts or changes to the original 10-mile APE are anticipated.

According to the land use compatibility guidelines in FAA's 14 CFR part 150, an increase of day-night average sound level (DNL) of 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase would be considered a significant impact. Order 1050.1F also notes that special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas within Section 4(f) properties. The DNL 65 dB contour for the Proposed Action is located within approximately 3.5 miles of the VLA entirely in areas that are unpopulated, except for Boca Chica Village. A small portion of the Preserve is within the DNL 65 dB contour. SpaceX would enforce access restrictions to this area during launch operations, as discussed in the 2022 PEA. Thus, no visitors at the Preserve would be present at noise sensitive areas within the 3.5-mile radius during launch operations to experience the elevated noise. Furthermore, the launch operations would be short-term and temporary and spread out over time. Noise from activities such as construction at the VLA and increases to truck traffic are not anticipated to add meaningfully to the noise in the area, and are thus not quantitatively assessed. Although the South Bay Coastal Preserve would be located within the 65 CDNL contour for sonic booms from Super Heavy landings at the VLA, no members of the public would be present to experience the sonic booms in the Preserve.

The FAA is considering whether the proposed action would substantially diminish the attributes that contribute to the enjoyment or quality of the South Bay Coastal Preserve. Therefore, the FAA seeks input as to whether the noise generated by the proposed action would constitute a *constructive use*.

Anomalies

As described in detail in the 2022 PEA, a Starship/Super Heavy test operation or launch could cause something unexpected (referred to as an anomaly), which could result in the spreading of debris. Although anomalies are unlikely to occur, the FAA nonetheless provides the Section 4(f) analysis of anomaly impacts to enable fuller environmental review. While the number of orbital launches and landings would increase under the proposed action, the total duration of access restrictions would still not exceed 500 hours annually. As the number of launches increases, the reliability of the vehicle would increase, and the risk of an anomaly would be below what was described in the 2022 PEA. Therefore, SpaceX anticipates to continue the need for up to 300 hours per year of access restrictions, in addition to 500 hours for nominal operations, which may preclude visitor access to the Preserve. For launch and anomaly response activities, the Section 4(f) resources may be restricted from access by the public for up to 800 hours per year, or approximately 9% of the year.

In addition, an anomaly may result in debris from pieces of the launch vehicle or launchpad leaving the paved VLA area, however it is not anticipated that debris will enter the South Bay Coastal Preserve.

The FAA is considering whether potential anomalies and the need for access restrictions that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the Preserve and therefore constitute a *constructive use* under Section 4(f).

Please provide input on the issues discussed above by January 31, 2025, to Ms. Amy Hanson, FAA Environmental Specialist, via email at Amy.Hanson@faa.gov. If you have questions or concerns, please contact Ms. Hanson at (847) 243-7609 or via email at Amy.Hanson@faa.gov.

Sincerely,

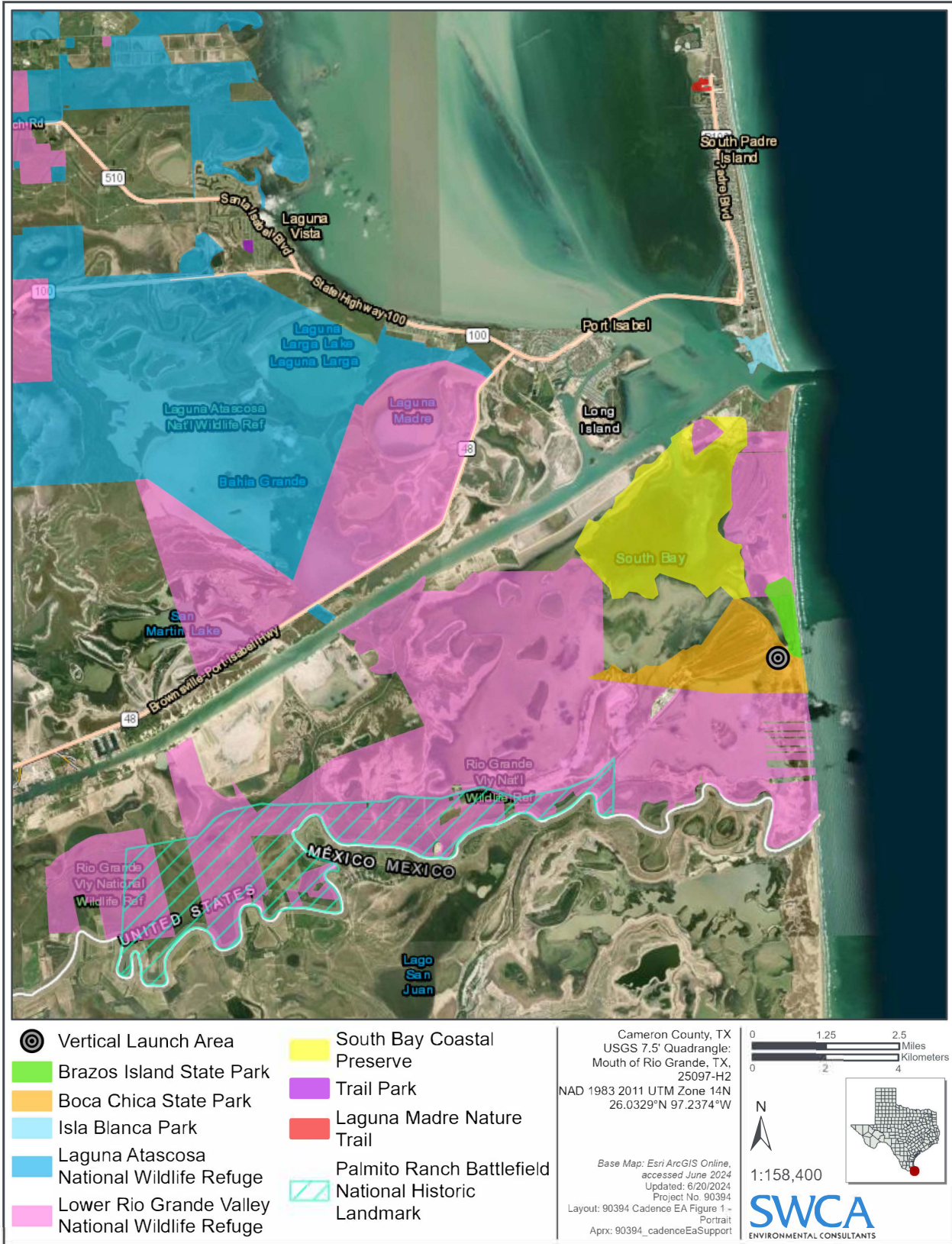
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MOLINICH ZEE

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STACEY MOLINICH ZEE
Date: 2024.12.20
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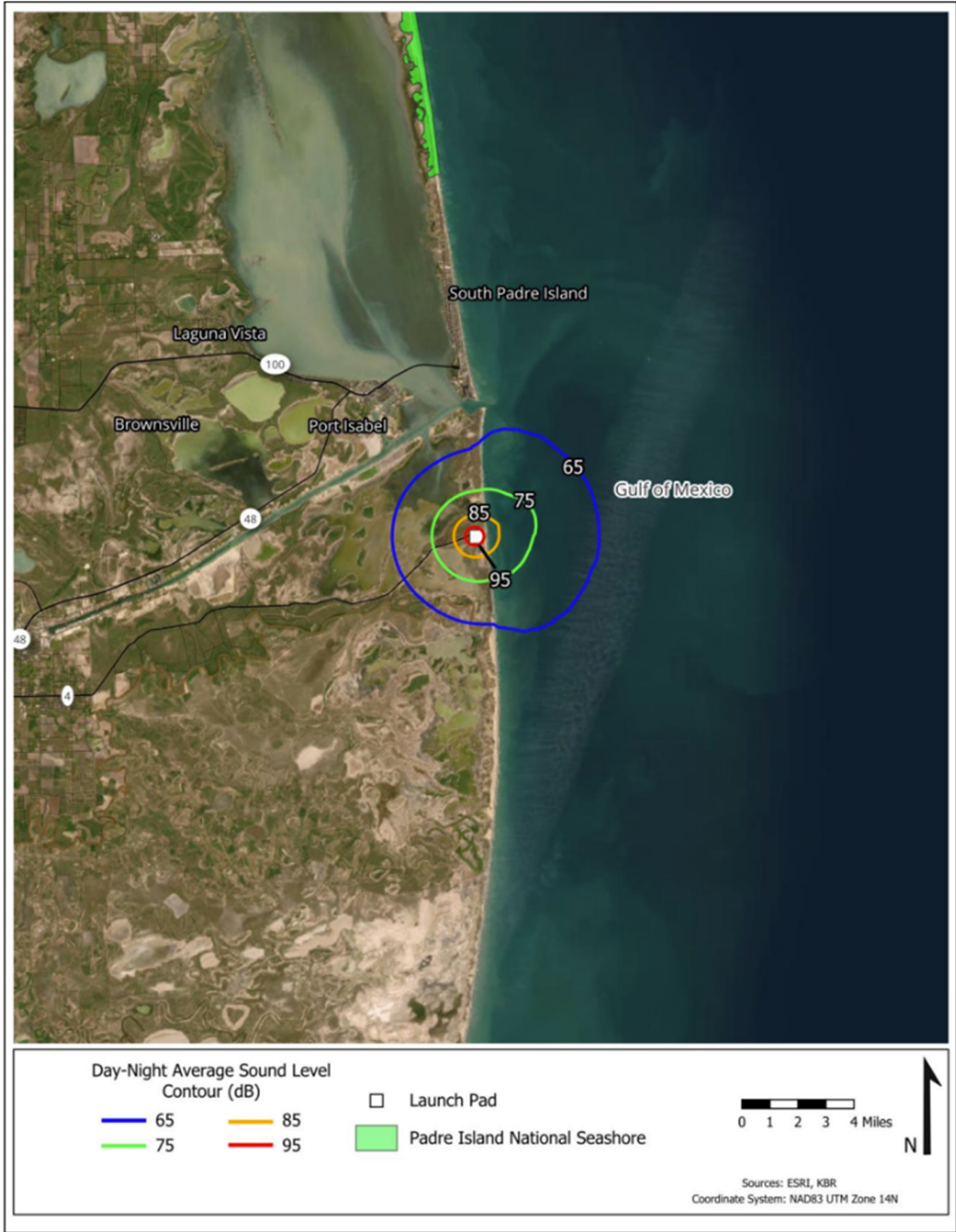
Stacey M. Zee
Manager
Operations Support Branch

Attachment 1: Section 4(f) Properties Under TGLO Jurisdiction

Attachment 2: Annual Operations Day Night Average Sound Level (DNL)



Attachment 1. Section 4(f) Property Under TGLO Jurisdiction – South Bay Coastal Preserve.



Attachment 2. Annual Operations Day Night Average Sound Level (DNL)



TEXAS GENERAL LAND OFFICE
COMMISSIONER DAWN BUCKINGHAM, M.D.

February 3, 2025

Ms. Stacey M. Zee
Office of Commercial Space Transportation
Federal Aviation Administration
800 Independence Ave., SW
Washington, DC 20591

RE: Response to FAA Consultation Initiation Letter Regarding Section 4(f) of the Department of Transportation Act of 1966, SpaceX Starship/Super Heavy Launch Operations, Boca Chica

Dear Ms. Zee:

On December 20th, the General Land Office (GLO) received your letter requesting input on Federal Aviation Administration's (FAA) Section 4(f) consultation regarding an application to modify Space Exploration Technologies Corporation's (SpaceX) existing vehicle operator license, by increasing the number of licensed annual launches and landings at the Boca Chica vertical launch area (VLA) in Cameron County, Texas.

The GLO is responsible for managing state-owned submerged land dedicated to the Permanent School Fund. The Coastal Public Lands Management Act, TNRC Section 33.001, charges the GLO to preserve the natural resources of the surface estate within the coastal public land, including the natural aesthetic values of these areas in their natural state for the protection and nurture of all types of marine life and wildlife. To further recognize these areas, in 1984, the GLO and Texas Parks and Wildlife Department created a Coastal Preserve System, which includes the South Bay Coastal Preserve, to recognize the invaluable role of the Texas coastal region in providing a broad array of natural resources that benefit local, state, national and international communities.

The GLO would like to provide the following comments regarding potential anomalies. As stated in our 2021 response letter, following an anomaly, immediate notification of impacts to the Preserve should be reported to the GLO. Coordination and approval by

GLO will be required to move forward with clean-up and restoration of this highly sensitive and critical habitat. Furthermore, per 31 Texas Administrative Code §155.3 (g)(3) Easements: Mitigation and Compensation, unavoidable impacts or damages to coastal public land will require mitigation and/or a resource impact fee as set forth in §155.15(b)(3).

To the extent any anomalies cause impacts or damage to coastal public lands and restoration or mitigation is needed, the restoration or mitigation would be required to be located on coastal public land. A Lease authorized by the Commissioner under §51.291 of the Natural Resources Code with commercial rates may be required for the restoration or mitigation on coastal public land. This applies to not only South Bay Coastal Preserve, but all Coastal Public Land that may be impacted by these events.

In addition, Land Commissioner Dawn Buckingham recently sent a letter to Ms. Hanson regarding Docket No. FAA-2024-2006 recognizing both the significance of space exploration and importance of good stewardship to coastal and public lands, and the environment as a whole.

If you have any questions or concerns, please contact Jesse Solis at 361-886-1630 or jesse.solis@glo.texas.gov.

Sincerely,

Signed by:

E70CDF09B56540E...

Jennifer Jones
Chief Clerk / Deputy Land Commissioner
c: Amy Hanson (FAA); Amy.Hanson@faa.gov

Attachments: GLO response – FAA Consultation Letter Section 4f -9-9-21
GLO response – Docket No. FAA-2024-2006 -1-17-25



TEXAS GENERAL LAND OFFICE
GEORGE P. BUSH, COMMISSIONER

September 9, 2021

Ms. Stacey M. Zee
Office of Commercial Space Transportation
Federal Aviation Administration
800 Independence Ave., SW
Washington, DC 20591

Re: Response to FAA Consultation Initiation Letter Regarding Section 4(f) of the Department of Transportation Act of 1966, SpaceX Starship/Super Heavy Launch Operations, Boca Chica

Dear Ms. Zee:

On August 2nd, the General Land Office (GLO) received your letter requesting GLO to provide input on Federal Aviation Administration's (FAA) Section 4(f) consultation for eligible properties under consideration as part of Space Exploration Technologies Corporation (SpaceX) proposed Starship/Super Heavy launch operations in Boca Chica, Texas. More specifically, you requested GLO provide input on impact and occupation from SpaceX's construction, normal launch operations, and anomalies to GLO state-owned submerged lands known as South Bay Coastal Preserve.

The GLO is responsible for managing state-owned submerged land dedicated to the Permanent School Fund. The Coastal Public Lands Management Act, TNRC Section 33.001, charges the GLO to preserve the natural resources of the surface estate in the coastal public land, including the natural aesthetic values of those areas and the value of the areas in their natural state for the protection and nurture of all types of marine life and wildlife. To further recognize these areas, in 1984, the GLO and Texas Parks and Wildlife Department created a Coastal Preserve System, which includes the South Bay Coastal Preserve, to recognize the invaluable role of the Texas coastal region in providing a broad array of natural resources that benefit local, state, national and international communities.

The GLO would like to provide the following specific comments regarding information presented on anomalies. Following an anomaly, immediate notification of impacts to the Preserve should be reported the GLO as soon as identified. Coordination and approval by GLO will be required to move forward with clean-up and restoration of this highly sensitive and critical habitat. Furthermore, per 31 Texas Administrative Code §155.3(g)(3) Easements: Mitigation and Compensation, unavoidable impacts or damages to coastal public land will require mitigation and/or a resource impact fee as set forth in §155.15(b)(3).

To the extent any anomalies cause impacts or damage to coastal public lands and restoration or mitigation is needed, the restoration or mitigation would be required to be located on coastal public land. A Lease authorized by the Commissioner under §51.291 of the Natural Resources Code with commercial rates may be required for the restoration or mitigation on coastal public land. This applies to not only the South Bay Coastal Preserve, but all Coastal Public Land that may be impacted by these events.

GLO has also offered comments on matters of similar nature, including a letter on January 22, 2021 regarding the scope of issues for the Programmatic Environmental Assessment that raised concerns pertaining to: (1) the evaluation of impacts to state-owned land; (2) evaluation of impacts to critical dunes; (3) evaluation of significant unavoidable adverse impacts and measures to avoid, minimize, and mitigate effects of the proposal; (4) evaluation of and alternatives to extensive closures of the public beach and state-owned land; (5) access by resource agencies and research organizations; (6) and protection of coastal natural resource areas.

If you have any questions or concerns, please contact me at (361) 886-1630 or at federal.consistency@glo.texas.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jesse Solis Jr.', with a stylized flourish at the end.

Jesse Solis Jr.
Coastal Resources - Federal Consistency
Texas General Land Office



TEXAS GENERAL LAND OFFICE
COMMISSIONER DAWN BUCKINGHAM, M.D.

January 17, 2025

FILED ELECTRONICALLY AND VIA CERTIFIED MAIL, R.R.R

Ms. Amy Hanson
FAA Environmental Specialist
SpaceX EA, c/o ICF
1902 Reston Metro Plaza
Reston, VA 20190

RE: Docket No. FAA-2024-2006: *Revised Draft Tiered Environmental Assessment for SpaceX Starship/Super Heavy Launch Vehicle Program Increased Cadence at the Boca Chica Launch Site*

Dear Ms. Hanson:

As someone who grew up on the Texas coast and as Commissioner of the Texas General Land Office (GLO), which safeguards and manages more than 3,400 miles of Texas coastline, I care deeply about the stewardship of our coastal and public lands and ensuring the public's right of access to Texas' beaches.

However, I also recognize the significance of space exploration for Texas and the United States and SpaceX is working to ensure the United States remains the world's leader in space. SpaceX is quite literally reaching for the stars and in doing so, inspiring generations of Texans, especially our youth, to do the same – exploring, learning, and seeking new possibilities. As such, I continue to support SpaceX's operations at the Boca Chica Launch Facility in Cameron County, Texas and its commitment to be good stewards of the environment.

Sincerely,

DAWN BUCKINGHAM, M.D.
Commissioner, Texas General Land Office



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

March 11, 2025

Jennifer Jones
Chief Clerk / Deputy Land Commissioner
Texas General Land Office
602 N. Staples Street Corpus
Christi, TX 78401

Submitted to: Federal.Consistency@glo.texas.gov

Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship-Super Heavy Launch Operations, Boca Chica TX

Dear Jennifer Jones:

The Federal Aviation Administration (FAA) has received and reviewed your letter dated February 3, 2025, which responded to the FAA's December 20, 2024, initiation of consultation under Section 4(f) of the Department of Transportation Act in regard to an application under consideration by FAA to modify Space Exploration Technologies Corporation's (SpaceX's) existing vehicle operator license.

The Texas General Land Office (TGLO) provided comments specific to potential launch anomalies as a result of SpaceX's operation of Starship/Super Heavy launch vehicles and potential impacts on the South Bay Coastal Preserve (Preserve), the property the FAA identified in the study area that is managed by TGLO and the Texas Parks and Wildlife Department (TPWD). Specifically, the TGLO requested that, following an anomaly, immediate notification of impacts to the Preserve should be reported to the TGLO. Your letter noted that coordination and approval by the TGLO will be required to move forward with clean-up and restoration of the Preserve if any impacts occurred and that, per 31 Texas Administrative Code §155.3(g)(3) Easements: Mitigation and Compensation, unavoidable impacts or damages to coastal public land would require mitigation and/or a resource impact fee as set forth in §155.15(b)(3).

As noted in our previous consultation, TGLO has been included in the list of stakeholders contained in SpaceX's Anomaly Response Plan, which was originally shared with the TGLO on July 23, 2021. If an anomaly affected the Preserve or any other Coastal Public Land as defined by Texas Natural Resources Code Section 33.004(6), SpaceX would be responsible for contacting the TGLO (and the Texas Parks and Wildlife Department, as appropriate) immediately to discuss debris clean-up and any required mitigation. Consistent with the terms and conditions it is subject to under its vehicle operator license, SpaceX has indicated it is committed to working with the TGLO to consider a restoration or mitigation plan for any such damages resulting from an anomaly. SpaceX would be responsible for complying with the

state requirements noted in your letter if a launch anomaly resulted in damages to any Coastal Public Land, including the Preserve.

The FAA appreciates your continued coordination on this project. Please contact Ms. Amy Hanson, FAA Environmental Specialist, via email at Amy.Hanson@faa.gov or at (847) 243-7609 with any questions.

Sincerely,

Stacey M. Zee
Manager
Operations Support Branch



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

December 20, 2024

Edward Lengel
Executive Director
State Historic Preservation Officer
Texas Historical Commission
108 W 16th Street Austin, Texas 78701
Submitted to: Edward.Lengel@thc.texas.gov

Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship-Super Heavy Launch Operations, Boca Chica TX

Dear Edward:

The purpose of this letter is to notify you of the Federal Aviation Administration's (FAA's) initiation of a Section 4(f) consultation addressing the eligible properties in the study area under consideration for an application to modify Space Exploration Technologies Corporation's (SpaceX's) existing vehicle operator license. SpaceX has applied to the FAA to increase the number of licensed annual launches and landings at the Boca Chica vertical launch area (VLA) in Cameron County, Texas. Eligible properties under Texas Historical Commission (THC) jurisdiction include Palmito Ranch Battlefield National Historic Landmark (NHL); 1846 Cypress Pilings, 1865 Palmetto Pilings (Pilings); and Palmetto Pilings Texas Centennial Historical Marker (Marker, Attachment 1).

The affected environment and environmental impacts of Starship-Super Heavy operations at the Boca Chica Launch Site were analyzed in the 2022 Final Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas (2022 PEA).¹ The FAA issued a Mitigated Finding of No Significant Impact (FONSI)/Record of Decision (ROD) based on the 2022 PEA on June 13, 2022. The 2022 analysis included consultation with THC regarding Section 4(f) properties in the study area and considered their comments and those of the public in making the final 4(f) determinations identified in the 2022 PEA.² At that time, FAA determined that the proposed action would not result in more than a minimal (i.e., *de minimis*) physical use of any Section 4(f) resources and would not constitute a *constructive use*. Mitigation measures were incorporated to avoid, minimize, compensate, or mitigate potential Section 4(f) concerns. SpaceX conducted six launch tests in 2023 and 2024 and analyzed the effects of each launch in comparison to anticipated effects, which have been considered in proposing the modifications and subsequent analyses. The FAA is in the process of preparing a Tiered Environmental Assessment to assess the potential environmental impacts of an increase in launch and landing cadence and changes to the Starship-Super Heavy vehicles.

¹ FAA. 2022. Final Programmatic Environmental Assessment for the SpaceX Starship/Super Heavy Launch Vehicle Program at the SpaceX Boca Chica Launch Site in Cameron County, Texas. Available at: https://www.faa.gov/space/stakeholder_engagement/spacex_starship. Accessed October 2023.

² THC concurrence letter received April 25, 2022.

Summary of Issues for Discussion

Increased number of orbital launches and landings:

- a. The FAA seeks input as to whether an increased number of licensed launches and landings would substantially impair the activities, features, or attributes of the Section 4(f) properties under THC jurisdiction. Note that the increase in launches and landings are not anticipated to require any changes in contemplated access restriction hours.
- b. FAA is also considering whether the increased number of orbital launches and landings would constitute a *constructive use* under Section 4(f) related to an increase in noise or diminishment of attributes that contribute to the enjoyment or quality of the Section 4(f) properties under THC jurisdiction because of the short-term and intermittent nature of the noise generated by launches and landings.
- c. The FAA is including potential anomaly impacts in its Section 4(f) analysis although they are unlikely to occur.

The following sections of this letter include a summary of the proposed action, details of the changes to the proposed action from the previous analysis, pertinent regulatory background, and further information about the Section 4(f) determination issues.

Proposed Action

The FAA's proposed action is to modify SpaceX's vehicle operator license, which would allow SpaceX to conduct up to 25 orbital launches of the stacked Starship-Super Heavy vehicles from the VLA and up to 50 landings of the individual Starship or Super Heavy vehicles at the VLA annually. The modifications would not result in changes to estimated access restrictions.

Discussion of Proposed Modifications

Increased Mission Cadence: The FAA's proposed action is to modify SpaceX's vehicle operator license, which would allow SpaceX to conduct up to 25 orbital launches of the stacked Starship-Super Heavy vehicles from the VLA and up to 50 landings of the individual Starship or Super Heavy vehicles at the VLA annually. The number of annual launch events would increase by 150% and the number of annual landings would increase by 233% over the previously analyzed mission cadence.

SpaceX no longer anticipates performing sub-orbital launches of the Starship vehicle. Therefore, no Starship-only launches are proposed. The proportion of annual launches that involve the Super Heavy vehicle would double from 50% to 100%.

Decreased Total Duration of Static Fire Testing: SpaceX anticipates conducting static fire engine tests of the Starship and Super Heavy vehicles as described below:

- Starship Static fire engine tests: 90 total seconds of static fire per year
- Super Heavy static fire engine tests: 70 total seconds of static fire per year

In total, SpaceX estimates that it will conduct static fire tests for a combined total duration of 160 seconds per year, which is a 44% decrease from 285 seconds per year assessed in the 2022 PEA.

Regulatory Background

The FAA's procedural requirements for complying with Section 4(f) are set forth in Department of Transportation Order 5610.1C, Procedures for Considering Environmental Impacts. The FAA also considers Federal Highway Administration (FHWA) regulations (23 Code of Federal Regulations [CFR] part 774) and FHWA guidance (e.g., Section 4(f) Policy Paper) when assessing the potential for *use* of Section 4(f) properties. These requirements are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to FAA projects.

A *use* under Section 4(f) can occur when: 1) land from a Section 4(f) property is *permanently incorporated* into a transportation project; 2) there is a *temporary occupancy* of a Section 4(f) property; or 3) the transportation project's proximity to a Section 4(f) property results in impacts that would substantially impair the activities, feature, or attributes that qualify the property for protection under Section 4(f). The first two types of *use* are referred to as a *physical use*. The latter type of *use* is identified as *constructive use*.

Physical Use

A permanent incorporation would involve an actual physical taking of Section 4(f) property as part of a transportation project either as a purchase of land or a permanent easement.

Temporary occupancy occurs when a transportation project results in activities that require a temporary easement, right-of-entry, project construction, or another short-term arrangement involving a Section 4(f) property. A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed in Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F are satisfied:

1. Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
4. The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
5. There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

A *physical use* may be considered *de minimis* if, after taking into account avoidance, minimization, mitigation, and enhancement measures, the result is either: 1) a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or wildlife or waterfowl refuge for protection under Section 4(f); or 2) a Section 106 of the National Historic Preservation Act finding of no adverse effect or no historic properties affected.

A *de minimis* impact determination requires agency coordination and public involvement. For parks, recreation areas, and wildlife and waterfowl refuges, the officials with jurisdiction over the property must be informed of the FAA's intent to make a *de minimis* impact determination, after which the FAA must provide an opportunity for public review and comment. The public notice and opportunity for comment may be combined with similar public involvement efforts for the National Environmental Protection Act (NEPA) process. After considering any public comments and if the officials with jurisdiction concur in writing that the project would not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, the FAA may finalize a *de minimis* impact determination. For historic sites under Section 106, the FAA must consult with the consulting parties identified in accordance with 36 CFR part 800 (Section 106's implementing regulations) and inform the officials with jurisdiction of the intent to make a *de minimis* impact determination. The officials with jurisdiction must concur in a finding of no adverse effect or no historic properties affected. Compliance with 36 CFR part 800 satisfies the public involvement and agency coordination requirement for *de minimis* findings for historic sites.³

Constructive Use

In order for a *constructive use* to occur, a transportation project must result in substantial impairment to the property's activities, features, or attributes to the extent that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. As noted in FHWA's Section 4(f) Tutorial,⁴ "[c]onstructive use involves an indirect impact to the Section 4(f) property of such magnitude as to effectively act as a permanent incorporation." Per the FAA 1050.1F Desk Reference,⁵ which provides guidance for FAA NEPA practitioners and is used to help FAA integrate applicable special purpose laws and requirements, a proximity-related impact's consequences must amount to "taking" a property or a portion of a property in order for a *constructive use* determination to be made.

A *de minimis* impact determination is not appropriate for *constructive use* of a Section 4(f) property because *constructive use* is defined as substantial impairment, and substantial impairment cannot be considered a *de minimis* impact.

Section 4(f) Determination Issues

The FAA is in the process of evaluating whether the changes to the proposed action would result in a *use* of Section 4(f) properties through permanent incorporation, *temporary occupancy*, or *constructive use*. There would be no physical use to a Section 4f property from this proposed project. The A brief summary of the FAA's initial understanding of the proposed action's Section 4(f) impacts is presented in the following section. The FAA invites THC to provide further information to help the FAA make a final determination. THC previously concurred with FAA's Section 4(f) findings with implementation of mitigation in the 2022 PEA and applicable measures from the final Programmatic Agreement.

³ The FAA will consult with the Texas Historical Commission to determine the potential impacts of the proposed action to historic properties under its jurisdiction, in compliance with Section 106. The FAA will use information from its Section 106 process to help inform its determinations regarding Section 4(f) and to define mitigation measures which will be enforceable on SpaceX as a term and condition of its FAA-issued permit(s) or license(s), if appropriate.

⁴ Available online at: <https://www.environment.fhwa.dot.gov/section4f/default.aspx>.

⁵ Available online at: https://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_policy_guidance/policy/faq_nepa_order/desk_ref/.

The FAA has determined the data and analyses in the PEA and FONSI/ROD regarding effects on Section 4(f) properties remain relevant. Pertinent conditions and requirements of the prior analysis and approval, including Section 4(f) considerations previously agreed to with your agency, will be met in the current action.

Increased number of orbital launches and landings

The FAA seeks input as to whether an increased number of licensed launches and landings would substantially impair the activities, features, or attributes of the Section 4(f) properties. Issues of concern related to the total number and pattern of launches and landings focus on the potential for access restrictions and the potential for noise levels to substantially impair the activities, features, or attributes of the Section 4(f) properties, including impacts to historic properties.

The previous analysis evaluated a potential of up to 500 hours per year of access restrictions for licensed activities at the VLA and up to 300 hours for response activities in the event of anomalies. The current modifications would not change the anticipated number of access restriction hours and would conform to previously agreed upon mitigation regarding such issues as predictive scheduling and avoidance of specific holiday and access restrictions.

The quiet, natural setting of the NHL is a notable feature of the resource. Updated noise modeling has been conducted to evaluate potential noise-related changes associated with static fire engine tests, launches, landings, and potential for structural damage. The results indicate that noise impacts would be comparable to those discussed in the 2022 PEA. The 2022 PEA contemplated the noise associated with Starship-Super Heavy orbital launches and landings, ultimately determining that no residents or members of the public would experience noise above Occupational Safety and Health Administration's (OSHA's) 115-dBA threshold⁶ during an orbital launch and there was no significant risk of structural damage. When these operations are not occurring, the normal daily sound levels in the Section 4(f) properties under THC jurisdiction would persist.

According to the land use compatibility guidelines in FAA's 14 CFR part 150, an increase of Day-night average sound level (DNL) of 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase would be considered a significant impact. Order 1050.1F also notes that special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas within Section 4(f) properties. The DNL 65 dB contour for the Proposed Action is located within approximately 3.5 miles of the VLA entirely in areas that are unpopulated, except for Boca Chica Village. SpaceX would enforce the access restriction area, as discussed in the 2022 PEA, and no visitors would be present at the Marker or the Pilings during engine ignition activities to experience elevated noise levels. Enforcement of the access restriction area would also preclude visitors from experiencing launch-related noise at the NHL during launches and landings. Furthermore, the launch operations would be short-term and temporary and spread out over time. Noise from activities such as construction at the VLA and increases to truck traffic are not anticipated to add meaningfully to the noise in the area, and are thus not quantitatively assessed. Although the Pilings and the Marker would be located within

⁶ Chapter 11 of the FAA Order 1050.1F Desk Reference states the FAA should evaluate whether the Occupational Safety and Health Administration (OSHA) hearing damage criteria from 29 CFR 1910.95 and the National Academy of Sciences' 1977 guidelines for structural damage may be exceeded for a project. Guidelines on permissible noise exposure limits from OSHA are designed to protect human hearing from long-term, continuous exposures to high noise levels and aid in the prevention of noise-induced hearing loss.

the 65 CDNL contour for sonic booms from Super Heavy landings at the VLA, no members of the public would be present to experience the sonic booms.

SpaceX evaluated the potential for damage to historic resources due to sonic booms from Starship or Super Heavy landings at the VLA. Updated sonic boom modeling for the booster landings at the VLA under the Proposed Action predict overpressure events up to 21 psf extending approximately 2 miles from launch site. This represents an overpressure level where prevailing literature indicates window breakage becomes possible for standard condition windows, though the prediction of specific window breakage still depends on size, age, orientation, surrounding structure, and other effects^{7,8}. The Palmetto and Cypress Bridge Pilings as well as the Palmetto Pilings Historical Marker are both located within the 21 psf contour. Due to the materials of the pilings and the marker, no damage is anticipated due to these levels of sonic booms. No historic properties with above ground features are located within the 15 psf or 10 psf contours. Historic properties with above ground features are located within the 6psf contour. Windows in poor condition may exhibit progression of damage over multiple exposures to sonic booms at 6 psf magnitude. If such damage occurred, SpaceX would adhere to the terms of the 2022 PA to restore the damaged property, including hiring a qualified professional to make recommendations for restoration of the historic property and following the Secretary of the Interior's Standards for the Treatment of Historic Properties.

The FAA made a finding of *adverse effect* for 17 historic properties (i.e., historic sites, objects, structures, and buildings), because they could experience visual, auditory, and vibration effects or falling debris from an anomaly directly striking the historic properties that could diminish their integrity. To resolve these adverse effects, the FAA, Texas State Historical Preservation Office, National Parks Service, USFWS, Texas Parks and Wildlife Department, Advisory Council on Historic Preservation, and SpaceX executed a Programmatic Agreement in April 2022⁹ that stipulated the process for minimizing and mitigating adverse effects to historic properties. SpaceX would continue to mitigate impacts to cultural resources by implementing other mitigation measures established in the 2022 PEA and the 2022 Programmatic Agreement and would not cause any new access restrictions, visual impacts or changes to the original 10-mile APE are anticipated. Although there would be more launches and landings under the proposed action, the NHL would continue be restricted to visitors during launch operations, and no new adverse visual impacts are anticipated.

The FAA is considering whether the proposed action would substantially diminish the attributes that contribute to the enjoyment or quality of these Section 4(f) properties. Therefore, the FAA seeks input as to whether the noise generated by the proposed action would constitute a *constructive use*.

Anomalies

As described in detail in the 2022 PEA, a Starship/Super Heavy test operation or launch could cause something unexpected (referred to as an anomaly), which could result in the spreading of debris. Although anomalies are unlikely to occur, the FAA nonetheless provides the Section 4(f) analysis of

⁷ Maglieri et al. 2014 Sonic Boom: Six Decades of Research. NASA Technical Reports Server. <https://ntrs.nasa.gov/citations/20150006843>

⁸ National Oceanic and Atmospheric Administration, Overpressure Levels of Concern (April 17, 2019), <https://response.restoration.noaa.gov/oil-and-chemical-spills/chemical-spills/resources/overpressure-levels-concern.html>.

⁹ Available online at:

https://www.faa.gov/sites/faa.gov/files/space/stakeholder_engagement/spacex_starship/Appendix_C_National_Historic_Preservation_Act_Section_106_Consultation.pdf

anomaly impacts to enable fuller environmental review. While the number of orbital launches and landings would increase under the proposed action, the total duration of access restrictions would still not exceed 500 hours annually. As the number of launches increases, the reliability of the vehicle would increase, and the risk of an anomaly would be below what was described in the 2022 PEA. Therefore, SpaceX anticipates to continue the need for up to 300 hours per year of access restrictions, in addition to 500 hours for nominal operations. An anomaly response access restriction would start immediately at the time the launch ends and last until the area is deemed safe for the public. Additional access restrictions in the event of an anomaly is not anticipated to affect the NHL due to the distance of the NHL from the VLA. SpaceX would reduce the size of the restricted area based on the debris field, as was performed following the April 20, 2023 anomaly at the launchpad. The public would be able to access the NHL while SpaceX conducts debris removal efforts. In the event of an anomaly, the public would likely not be able to access the Pilings and the Marker. Due to their location in mudflats, the Pilings are not readily accessible to the public when the area is accessible for visitation. The Marker, located near State Highway 4, is more readily available for public visitation. For launch and anomaly response activities, the Pilings and the Marker may be restricted from access by the public for up to 800 hours per year, or approximately 9% of the year.

In addition, an anomaly could result in the spread of debris, which may land on or near the Pilings and/or Marker. It is not anticipated that the debris from an anomaly would reach the NHL. The FAA has considered the anomaly-related activities and extended access restriction hours associated with anomalies for potential *temporary occupancy* under Section 4(f). SpaceX would continue to implement the measures specified in the 2022 Programmatic Agreement⁷ and SpaceX's Unanticipated Discoveries Plan to assess and restore any impacts from anomalies. The Programmatic Agreement provides a protocol for responding to events, recovering debris, and implementing, monitoring, and adapting restoration efforts to restore impacts. By continuing to adhere to the requirements of the Programmatic Agreement and the Unanticipated Discoveries Plan, it is anticipated that potential effects of the Proposed Action will continue to be assessed and resolved.

The FAA is considering whether potential anomalies and the need for access restrictions that may be required in the event of an anomaly would substantially impair the activities, features, or attributes of the four Section 4(f) properties and therefore constitute a *constructive use* under Section 4(f).

Please provide input on the issues discussed above by January 31, 2025, to Ms. Amy Hanson, FAA Environmental Specialist, via email at Amy.Hanson@faa.gov. If you have questions or concerns, please contact Ms. Hanson at (847) 243-7609 or via email at Amy.Hanson@faa.gov.

Sincerely,

STACEY
MOLINICH ZEE



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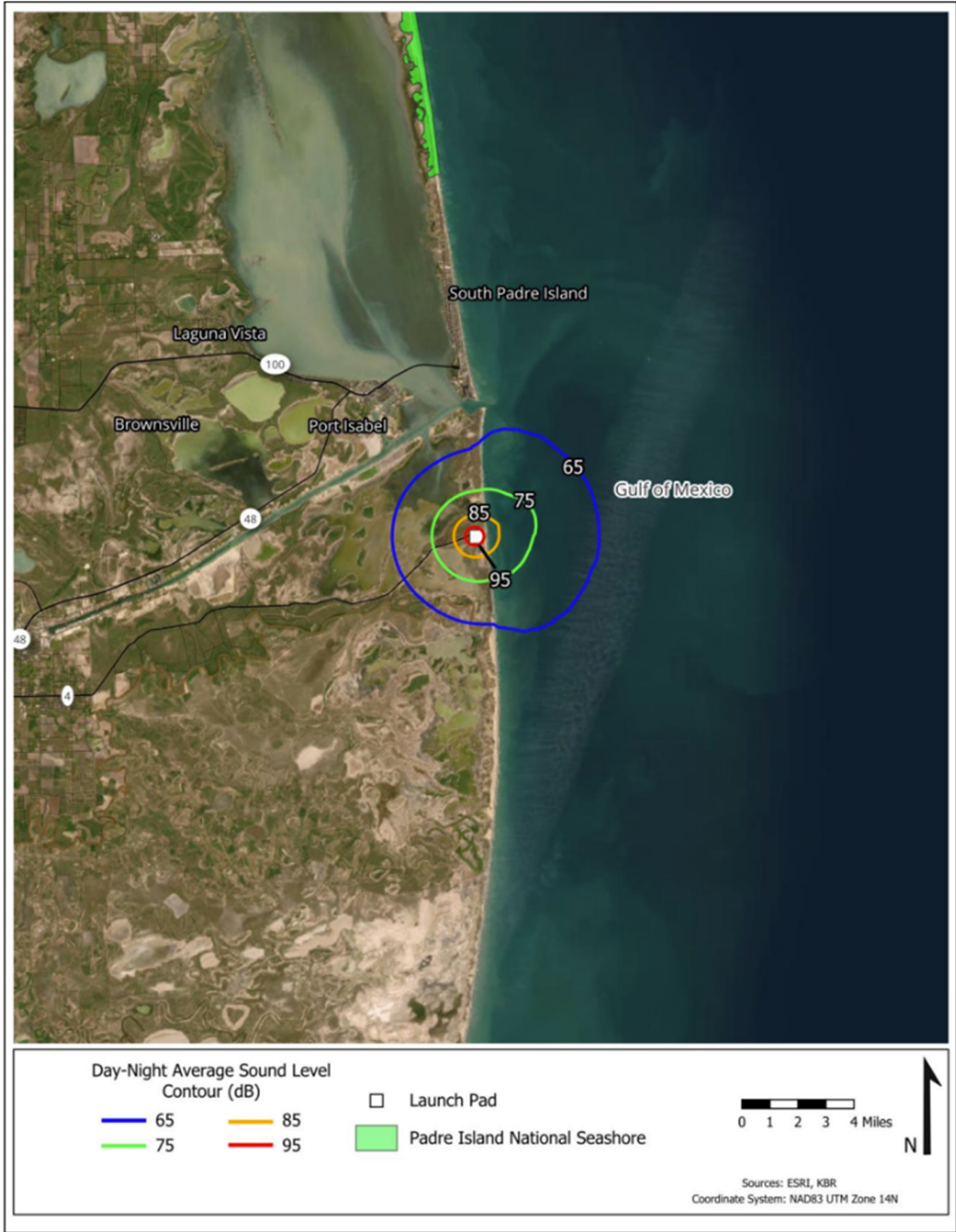
Stacey M. Zee
Manager
Operations Support Branch

Attachment 1: Section 4(f) Properties Under THC Jurisdiction

Attachment 2: Annual Operations Day Night Average Sound Level (DNL)



Attachment 1. Section 4(f) Properties Under THC Jurisdiction.



Attachment 2. Annual Operations Day Night Average Sound Level (DNL)

This Correspondence sent to amy.hanson@faa.gov on 01-31-2025



Re: Project Review under Section 106 of the National Historic Preservation Act
THC Tracking #202504595

Date: 01/31/2025

SpaceX Starship/Super Heavy Increased Cadence
Highway 4, Boca Chica Beach
Brownsville, TX

Description: Section 4(f) evaluation of physical and constructive uses of up to 25 launches (50 landings) per year on historic properties.

Dear Amy Hanson:

Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act.

The review staff, led by Justin Kockritz, Amy Borgens, Emily Dylla, Alexander Shane, Claudia Espinosa and Mary Galindo, has completed its review and has made the following determinations based on the information submitted for review:

Above-Ground Resources

- THC/SHPO concurs with information provided.

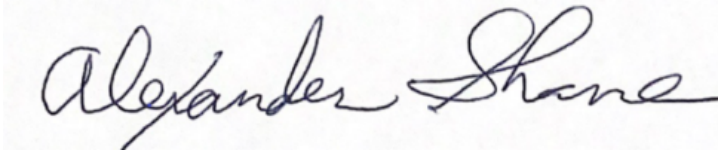
We have the following comments: The Texas Historical Commission Review Staff concurs that normal launch operations will have no physical use on historic Section 4(f) properties. Because the anticipated access restrictions during launches will conform to the previously agreed upon limitations, THC concurs that the increased cadence of launches will have no constructive use on historic Section 4(f) properties. THC has no objection to a finding that potential access restrictions due to anomaly response operations be considered a temporary occupancy exception. In the unlikely event that an anomaly causes physical damage to a historic Section 4(f) property, additional consultation and coordination should be conducted in accordance with the 2022 Final Programmatic Environmental Assessment. As the Official with Jurisdiction for historic Section 4(f) properties, THC looks forward to reviewing the Final Tiered Environmental Assessment, when available.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: justin.kockritz@thc.texas.gov, amy.borgens@thc.texas.gov,

emily.dylla@thc.texas.gov, Alexander.Shane@thc.texas.gov, claudia.espinosa@thc.texas.gov,
Mary.Galindo@thc.texas.gov.

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit <http://thc.texas.gov/etrac-system>.

Sincerely,

A handwritten signature in black ink that reads "Alexander Shane". The signature is written in a cursive style with a large initial 'A' and 'S'.

for Joseph Bell, State Historic Preservation Officer
Executive Director, Texas Historical Commission

Please do not respond to this email.



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

March 11, 2025

Joseph Bell, State Historic Preservation Officer
Alexander Shane, Executive Director, Texas Historical Commission
108 W 16th Street Austin, Texas 78701

Submitted to: justin.kockritz@thc.texas.gov, amy.borgens@thc.texas.gov, emily.dylla@thc.texas.gov,
Alexander.Shane@thc.texas.gov, claudia.espinosa@thc.texas.gov, Mary.Galindo@thc.texas.gov

Re: Section 4(f) of the Department of Transportation Act Consultation, SpaceX Starship-Super Heavy Launch Operations, Boca Chica TX

Dear Joseph Bell and Alexander Shane:

The Federal Aviation Administration (FAA) has received and reviewed your letter dated January 31, 2025, which responded to the FAA's December 20, 2024, initiation of consultation under Section 4(f) of the Department of Transportation Act in regard to an application under consideration by FAA to modify Space Exploration Technologies Corporation's (SpaceX's) existing vehicle operator license. The Texas Historical Commission (THC) concurred that normal launch operations will have no physical use on historic Section 4(f) properties and that the proposed increased cadence of launches will have no constructive use on Section 4(f) properties. THC did not raise new concerns. SpaceX will continue to follow the procedures related to closure notification and temporary access restrictions outlined in the SpaceX Launch Site Security Plan and Closure Notification Plan and will conduct additional consultation and coordination in accordance with the 2022 Final Programmatic Environmental Assessment in the event that an anomaly causes physical damage to a historic Section 4(f) property.

The FAA appreciates your continued coordination on this project. Please contact Ms. Amy Hanson, FAA Environmental Specialist, via email at Amy.Hanson@faa.gov or at (847) 243-7609 with any questions.

Sincerely,

STACEY
MOLINICH ZEE

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Stacey M. Zee
Manager
Operations Support Branch