

DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
Office of Commercial Space Transportation

**Mitigated Finding of No Significant Impact and Record of Decision
for the SpaceX Starship/Super Heavy Launch Vehicle Program at the
SpaceX Boca Chica Launch Site in Cameron County, Texas**

Summary

The Federal Aviation Administration (FAA) prepared the attached final Programmatic Environmental Assessment (PEA) to analyze the potential environmental impacts of issuing an experimental permit(s) and/or a vehicle operator license to SpaceX for Starship/Super Heavy launch operations at its existing Boca Chica Launch Site in Cameron County, Texas. The Federal Action also includes the FAA's issuance of temporary airspace closures. The PEA was prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA; 42 United States Code [U.S.C.] § 4321 et seq.); Council on Environmental Quality NEPA-implementing regulations (40 Code of Federal Regulations [CFR] parts 1500–1508); and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*.

After reviewing and analyzing all available data and information on existing conditions and potential impacts, as well as the mitigation identified in the PEA which SpaceX must implement, the FAA has determined the Proposed Action would not significantly affect the quality of the human environment. Therefore, the preparation of an Environmental Impact Statement (EIS) is not required, and the FAA is issuing this Mitigated Finding of No Significant Impact (FONSI). The FAA has made this determination in accordance with applicable environmental laws and FAA regulations. The PEA is incorporated by reference into this Mitigated FONSI.

For any questions or to request a printed copy of the PEA, contact the following FAA Environmental Specialist. A digital copy of the PEA may also be obtained from the FAA's website:

https://www.faa.gov/space/stakeholder_engagement/spacex_starship/.

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Purpose and Need

The FAA's authority with respect to SpaceX's license application is stated in PEA Section 1.2. The purpose of SpaceX's proposal is to provide greater mission capability to the National Aeronautics and Space Administration (NASA), Department of Defense, and commercial customers. SpaceX's activities would continue to fulfill U.S. expectation that space transportation costs are reduced to make continued exploration, development, and use of space more affordable. The Space Transportation section of the National Space Transportation Policy of 1994 addressed the commercial launch sector, stating that "assuring reliable and affordable access to space through U.S. space transportation capabilities is fundamental to achieving National Space Policy goals."

SpaceX's proposal is needed to increase operational capabilities and cost effectiveness of space flight programs. Satisfaction of these needs benefits government and public interests and reduces operation costs. Demand for launch services has continued to increase over the past 20 years and the space industry growth projections indicate this will continue into the foreseeable future. The proposed Starship/Super Heavy launch capability would provide necessary redundancy and allow SpaceX to prove the capability and reliability of Starship in support of commercial, NASA, and national security missions with minimal disruption to critical Falcon 9, Falcon Heavy, and Dragon missions that must continue from other launch sites.

SpaceX is now developing a multi-mission, fully reusable, super heavy-lift launch vehicle (Starship/Super Heavy). Starship/Super Heavy would reduce the cost of access to space, exceeding the capabilities of the Falcon 9 and Falcon Heavy launch vehicles, enabling cost-effective delivery of cargo and people to the Moon and Mars. SpaceX's proposal would satisfy requirements for more efficient and effective space transportation methods and continue the U.S. goal of encouraging activities by the private sector to strengthen and expand U.S. space transportation infrastructure.

Proposed Action

The FAA's Federal Action is to issue an experimental permit(s) and/or a vehicle operator license to SpaceX that would allow SpaceX to take its Proposed Action, the launching of Starship/Super Heavy from the Boca Chica Launch Site. Launches include landings of each stage of the launch vehicle (Super Heavy and Starship). Landings may occur at the Boca Chica Launch Site (the Vertical Launch Area [VLA]), on a floating platform in the Gulf of Mexico, or in the water in the Pacific Ocean (near Hawaii). SpaceX's proposed Starship/Super Heavy program consists of tank tests, pre-flight operations, suborbital launches, and orbital launches. The Proposed Action also includes the development of additional launch-

related infrastructure at the Boca Chica Launch Site, as described in PEA Chapter 2. All elements of the Proposed Action and SpaceX's proposal are identified in PEA Table 2-1.

Alternatives

Alternatives analyzed in detail in the EA include (1) the Proposed Action and (2) the No Action Alternative. Under the No Action Alternative, the FAA would not issue new experimental permits or licenses to SpaceX for any test or launch operations at the Boca Chica Launch Site. SpaceX's non-licensed production and manufacturing would continue in the Boca Chica area and infrastructure would expand at its production facility. Non-licensed testing operations, including tank tests and static fire engine tests, would also continue at the VLA. In addition, SpaceX could conduct missions of the Starship prototype launch vehicle as authorized by the current license (LRLO 20-119), and the FAA would close airspace to allow the missions to proceed. The license expires on May 27, 2023. This alternative provides the basis for comparing the environmental consequences of the Proposed Action. The PEA also includes alternative locations that SpaceX considered for Starship/Super Heavy launch operations based on defined criteria, but these locations were dismissed for the reasons explained in the PEA (see PEA Section 2.3).

Public Involvement

Following a scoping period (see PEA Section 1.4.1), the FAA released the draft PEA for a 30-day public review on September 17, 2021. After receiving requests for an extension, the FAA extended the public review period to 45 days. The 45-day public comment period ended on November 1, 2021. The FAA received approximately 17,000 public comment submissions. In response to public comments, the FAA revised the draft PEA, as appropriate, and prepared the final PEA. Additional information regarding public involvement is available in PEA Section 1.4.2.

Environmental Impacts

The potential environmental impacts from the Proposed Action and No Action Alternative were evaluated in the PEA for each environmental impact category identified in FAA Order 1050.1F. Chapter 3 of the PEA describes the affected environment and regulatory setting and identifies the environmental impact categories that are not analyzed in detail since there are no resources in the study area: farmlands and wild and scenic rivers.

Chapter 3 of the PEA also provides evaluations of the potential environmental consequences of the Proposed Action for each of the environmental impact categories and documents the finding that no significant environmental impacts would result from the Proposed Action.

A summary of the environmental analysis for each impact category is presented below.

- **Air Quality**, PEA Section 3.3. Air quality impacts from proposed construction activities would be minimal and of short duration and would not cause any National Ambient Air Quality Standards (NAAQS) to be exceeded. Emissions during static fire engine tests and launches would consist of water vapor, carbon dioxide (CO₂), carbon monoxide (CO), hydrogen, methane, nitrogen oxides (NO_x), and oxygen. No toxic air pollutant emissions are anticipated from launch operations. Launches would be expected to reach the upper limit of the mixing height (vertical region of the atmosphere where pollutant mixing occurs; nominally 3,000 feet above ground level), within approximately 31 seconds, after which emissions are not expected to affect ambient air quality. Static fire engine tests are also of limited duration; engines are ignited for approximately 5–15 seconds for each test. The Proposed Action’s total maximum estimated annual operation emissions are summarized by criteria pollutant in PEA Table 3-2. The Proposed Action emission levels are well below the General Conformity Rule *de minimis* thresholds and would be expected to have little or no impact on regional air quality. A Conformity Evaluation is not required because Cameron County is not designated by the U.S. Environmental Protection Agency as a nonattainment area. Therefore, the Proposed Action would not result in significant impacts on air quality.
- **Climate**, PEA Section 3.4. Proposed construction and operations would involve mobile source fuel combustion that would generate greenhouse gas (GHG) emissions from associated construction equipment, test operations, and launches (including landings). The estimated total GHG emissions under the Proposed Action is 43,892 metric tons of CO₂ equivalent per year. The estimated emissions are significantly less than the total GHG emissions generated by the United States (approximately 5,140 x 10⁶ metric tons of CO₂ per year). At present, no methodology exists that would enable estimating the specific impacts (if any) that this change in GHGs would produce locally or globally. The project’s estimated GHG emissions is not likely to have any impact on global climate change, sea level rise, or any potential impacts of climate change. Therefore, the Proposed Action is not expected to result in significant climate impacts.
- **Noise and Noise-Compatible Land Use**, PEA Section 3.5. The Proposed Action would result in short-term increases in noise from the use of heavy equipment during construction and

modification of the launch site. Potential noise impacts from construction would vary widely, depending on the phase of construction and specific activities being undertaken. However, all construction related noise impacts would be of short duration and would not result in significant noise impacts per the FAA's land use compatibility guidelines.

Noise (including engine noise and sonic booms) from individual launch (including landing) events and static fire engine tests is expected to be heard by people in the surrounding communities, including Brownsville, Laguna Vista, Port Isabel, South Padre Island, and parts of Mexico. These individual noise events are not expected to cause general annoyance or pose health concerns due to the sound levels and expected frequency of events, though noise complaints may occur. Based on noise modeling for the project (see PEA Appendix B), cumulative noise in these surrounding communities, whether from multiple events of a single operation type or from all these individual events combined, is estimated to be below levels associated with adverse noise exposure. That is, the Proposed Action would not increase noise by day-night average sound level (DNL) 1.5 decibels (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, when compared to the no action alternative for the same timeframe. Therefore, the Proposed Action is not expected to result in significant noise impacts.

- **Visual Effects (including Light Emissions)**, PEA Section 3.6. Potential visual impacts to the landscape in the study area include glare from the proposed infrastructure and Starship/Super Heavy launch vehicles at the Boca Chica Launch Site and light emissions during nighttime launch and testing operations. During nighttime construction, SpaceX would use spotlights to illuminate areas under construction to maintain safe lighting levels for workers. This lighting is expected to be visible along State Highway 4 (SH 4) approximately five miles away and not visible ten miles away. All of SpaceX's lighting at the VLA would comply with SpaceX's Lighting Management Plan, which was originally developed and continues to be revised in collaboration with the National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), Texas Parks and Wildlife Department (TPWD), and Texas Historical Commission (THC). Adherence to this plan, existing preclusion of nighttime visitors to the Lower Rio Grande Valley National Wildlife Refuge (NWR) and Boca Chica State Park, and presumably low nighttime visitation to the nearby state parks and the Palmito Ranch Battlefield National Historic Landmark (NHL) would minimize the potential for annoyance or interference from light emissions and potential effects on the visual character of the area.

The Starship/Super Heavy launch vehicle and proposed infrastructure, plus temporary construction equipment, at the VLA would be visible from some vantage points along SH 4 (the primary travel route to the launch site). The proposed infrastructure would be hardly visible and indistinguishable from the existing infrastructure at 5 miles away, to the extent that such existing infrastructure was in the viewshed. The proposed infrastructure would not be visible 10 miles away. The addition of tall new structures, such as the integration towers and the launch vehicle, may affect the nature of the visual character of the area, including the uniqueness, and the aesthetic value of the nearby public lands by adding tall structures to the landscape, but the impact is not expected to be significant.

SpaceX operations under the Proposed Action would have little to no impact on the light emissions in the area during daylight hours. Nighttime launch operations and construction would result in higher levels of light emissions than when the VLA is not under construction or in operation; however, SpaceX would minimize these impacts through compliance with the Lighting Management Plan. Therefore, the Proposed Action is not expected to result in significant visual effects.

- **Historical, Architectural, Archeological, and Cultural Resources**, PEA Section 3.7. Potential effects on historic properties could result from visual, auditory, or vibration effects. Other potential effects could result from increased visitation and use of the area due to SpaceX's presence and, for some properties, potential effects from debris from anomalies. In accordance with Section 106 of the National Historic Preservation Act (NHPA), the FAA conducted consultation with the State Historic Preservation Officer (SHPO) and other consulting parties. The FAA made a *finding of adverse effect* for 17 historic properties, because the effects could diminish the integrity of the properties, which is one of the criteria for listing on the National Register of Historic Places. The SHPO concurred with the FAA's identification and evaluation of historic properties. The FAA, SHPO, NPS, Advisory Council on Historic Preservation (ACHP), TPWD, USFWS, and SpaceX executed a Section 106 Programmatic Agreement (PA), which includes stipulations (mitigation measures) for resolving the adverse effects (see PEA Appendix C for a copy of the PA). Given the adverse effects are resolved through the Section 106 PA, the Proposed Action would not result in significant impacts on historical, architectural, archeological, or cultural resources.
- **Department of Transportation Act, Section 4(f)**, PEA Section 3.8. Construction of the proposed launch-related facilities and expansion of the solar farm would not involve a permanent

incorporation of any Section 4(f) properties, because the activity would occur on SpaceX property. The FAA determined that construction would not result in *temporary occupancy* of any Section 4(f), because the project does not involve any temporary construction activities in Section 4(f) properties. The FAA determined that construction activities would not constitute a *constructive use* on nearby Section 4(f) properties, because construction noise would be short-term and temporary. The FAA also determined that visual effects associated with the Proposed Action would not substantially impair the protected activities, features, or attributes of Section 4(f) properties, and therefore, the Proposed Action would not result in a *constructive use* of Section 4(f) properties from visual effects.

The FAA considered whether the proposed utility installation within the SH 4 right-of-way (ROW) would result in a *temporary occupancy* if the USFWS owns this portion of the ROW. SpaceX is required to restore the ROW to a condition that is at least as good as the condition prior to installation. The FAA considered public comments received on the draft PEA, including a comment letter from the U.S. Department of Interior, and the FAA has determined that SpaceX's installation of utilities within the SH 4 ROW would involve a *temporary occupancy* of the NWR and the impacts would be *de minimis*. The USFWS concurred with this determination (see PEA Appendix E for Section 4(f)-related documentation).

The proposed Starship/Super Heavy launch operations would have temporary, intermittent impacts on public access to Boca Chica State Park, Brazos Island State Park, the South Bay Coastal Preserve, Palmetto and Cypress Bridge Pilings, Palmetto Pilings Historical Marker, and large portions of the NWR and NHL. The FAA determined that temporary access restrictions associated with launch operations and anomalies would not substantially impair the activities, features, or attributes that qualify these properties for protection under Section 4(f), and therefore, would not result in a *constructive use* of these properties.

The FAA considered whether the noise generated by the Proposed Action would constitute a *constructive use* via substantial impairment of the attributes that contribute to the enjoyment or quality of the NWR and NHL. Because of the short-term and intermittent nature of the noise generated by static fire engine tests and launches, the FAA determined that noise from launch operations would not constitute a *constructive use* of these Section 4(f) properties.

An anomaly is not expected to result in parts of the launch vehicle landing in the NWR or NHL, but debris could land in Boca Chica State Park and/or Brazos Island State Park. The FAA considered whether debris from launch anomalies would lead to *temporary occupancy* of these

two state parks, which are owned by the state of Texas. Boca Chica State Park is leased to the federal government and managed by the USFWS as part of the NWR. SpaceX and TPWD signed a Memorandum of Agreement (MOA) dated September 2, 2021, in which TPWD and SpaceX acknowledge the need to restore park lands and commit to implementing, monitoring, and learning from restoration efforts in order to develop adaptive management strategies to minimize or offset long-term impacts to park lands. In addition, in the event of an anomaly that creates debris on NWR fee-owned or managed lands, SpaceX will be required to obtain a Special Use Permit on an emergency basis from USFWS as applicable, prior to clean-up activities. The FAA determined that, through the implementation of the terms of the MOA and the obtaining of a Special Use Permit, the debris and response activities would not adversely affect the activities, features, or attributes that make the two state parks eligible for Section 4(f) protection and any such impacts are expected to be *de minimis* because debris and debris-response activities would be temporary and there would be no permanent effects to the property. The TPWD and USFWS concurred with this determination (see PEA Appendix E).

Also, anomalies could generate debris that may impact the Palmetto and Cypress Bridge Pilings and Palmetto Pilings Historic Marker. As part of the NHPA Section 106 consultation, the FAA made a *finding of no adverse effect* for the pilings and marker regarding anomalies because SpaceX would restore the pilings and marker to pre-disturbed conditions following the Secretary of Interior's Standards for the Treatment of Historic Properties, resulting in no adverse effects (refer to the Section 106 PA in PEA Appendix C). Accordingly, the FAA determined that a potential anomaly may constitute a *temporary occupancy* of one or more of the pilings, but any such impacts would be *de minimis*. THC concurred with this determination (see PEA Appendix E).

Small increases in noise levels from delivery trucks and personnel vehicles would be expected along SH 4, which is adjacent to the NWR, NHL, and Boca Chica State Park. The FAA has determined that noise from daily operations traffic would not substantially diminish the quiet setting of the NWR, NHL, and Boca Chica State Park. Therefore, the FAA has determined the noise generated by daily operations would not constitute a *constructive use* of these Section 4(f) properties.

In summary, after considering public comments and consultation with officials that have jurisdiction over Section 4(f) properties in the study area, the FAA has determined the Proposed Action would not result in more than a minimal (i.e., *de minimis*) physical use of a Section 4(f)

resource and would not constitute a *constructive use*. Therefore, the Proposed Action would not result in significant impacts on Section 4(f) properties.

- **Water Resources (including Wetlands, Floodplains, Surface Waters, and Groundwater)**, PEA Section 3.9. Construction activities could affect surface waters through ground disturbance activities and use of construction equipment. SpaceX would manage surface water discharges from runoff during construction and operations according to the requirements of the Texas Pollutant Discharge Elimination System (TPDES). SpaceX would update its facility Construction and Industrial Stormwater Pollution Prevention Plans (SWPPPs) prior to conducting FAA-permitted or -licensed operations to maintain compliance with the TPDES permit, the state equivalent of a National Pollutant Discharge Elimination System (NPDES) permit. Operations with the most potential to affect surface waters include testing and launches. The Proposed Action is not expected to result in significant impacts on surface waters because of the capture, containment, and treatment of surface water runoff during construction and operations; required water quality permitting measures; insignificant amounts of hazardous materials in launch clouds; inert vehicle components; and adherence to marine vessel operating procedures and best management practices (BMPs).

Construction activities would not require significant quantities of groundwater. Potential impacts to groundwater quality during construction include contamination from spills or leaks from construction vehicles and machinery. Impacts to groundwater from spills or leaks would be avoided or minimized by SpaceX compliance with its Spill Prevention, Control, and Countermeasures (SPCC) Plan, proper design redundancies of commodity storage facilities, containment around all hydraulic systems, safety measures included in launch vehicle processes, and spill response and clean-up measures. Therefore, the Proposed Action would not result in significant impacts on groundwater.

Construction of the proposed project is anticipated to permanently fill 17.16 acres of wetlands. SpaceX is required to obtain a Clean Water Act (CWA) Section 404 permit from the U.S. Army Corps of Engineers (USACE) for the wetland impacts. The USACE's review of SpaceX's permit application would ensure wetland functions of permanently filled wetlands are adequately replaced per CWA Section 404 requirements. Wetland mitigation for permanently filled wetlands is expected to include in-kind mitigation for both mudflats and estuarine wetland impacts through creation and enhancement of wetlands within the watershed, and wetland preservation. Operational impacts would be limited to a potential increase in stormwater

discharges to adjacent wetlands from new impervious surfaces. SpaceX would implement its SPCC Plan to minimize the potential for accidental releases of polluting substances. Therefore, the Proposed Action would not result in significant impacts on wetlands.

SpaceX would fill 23 acres of floodplain at the VLA, 0.6 acres at the parking lot parcel, and 2 acres at the solar farm. SpaceX must coordinate the proposed construction with the Cameron County floodplain administrators to obtain a development permit. Cameron County is a participating community in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP), so SpaceX's proposed development in the 100-year flood zone requires SpaceX to comply with the FEMA-approved floodplain development requirements that are part of Cameron County's floodplain development requirements. Compliance with the NFIP as well as county regulations would ensure that the construction will have no significant impacts on floodplain storage and base flood elevations. The Proposed Action would not have a considerable probability of loss of human life, would not have substantial, encroachment-associated costs or damage, and would not cause a notable adverse impact on natural and beneficial floodplain values. Therefore, the Proposed Action would not result in significant floodplain encroachment per Department of Transportation (DOT) Order 5650.2 and would not result in a significant impact on floodplains.

- **Biological Resources (including Fish, Wildlife, and Plants)**, PEA Section 3.10. Construction activities would affect terrestrial habitats and wildlife, including a permanent loss of upland and wetland vegetation and habitat. The affected area represents a small fraction of the total amount of vegetation and habitat available in the Lower Rio Grande Valley. Overall, impacts to these habitats are not anticipated to adversely affect local or regional habitat availability. Operational activities also have the potential to impact terrestrial habitats and wildlife through increased vehicle traffic and presence of humans, and launch-related noise and vibration impacts, exhaust plumes, and potential fires from an anomaly. There may be temporary adverse effects to Essential Fish Habitat (EFH), particularly in the event of launch failure involving the spread of debris and release of hazardous material (e.g., liquid propellant). The FAA consulted the National Marine Fisheries Service (NMFS) regarding potential adverse effects to EFH, and NMFS provided two Conservation Recommendations pursuant to 50 CFR §600.920, which are identified in the PEA as required mitigation measures (see PEA Section 3.10.4.2).

In accordance with Section 7 of the Endangered Species Act (ESA), the FAA conducted consultation with NMFS and USFWS. NMFS concurred with the FAA's determination that the

Proposed Action *may affect, but would not likely adversely affect*, ESA-listed species and designated critical habitat under NMFS jurisdiction. The FAA determined the Proposed Action *may affect and is likely to adversely affect* ESA-listed species and designated critical habitat under USFWS jurisdiction and conducted formal consultation with the USFWS. The USFWS issued a Biological Opinion (BO), which concluded the Proposed Action is not likely to jeopardize the continued existence of any federally listed species or adversely modify designated critical habitat. The BO contains reasonable and prudent measures and associated terms and conditions to avoid, minimize, and mitigate the effects on listed species and critical habitat. SpaceX must implement the terms and conditions. See PEA Appendix D for ESA-related documentation, including the NMFS Letter of Concurrence and USFWS BO. Given the results of the ESA consultations, the anticipated effects to unlisted species, and the mitigation measures that SpaceX must implement, the Proposed Action is not expected to result in significant impacts on biological resources.

- **Coastal Resources**, PEA Section 3.11. The Proposed Action would take place in the coastal zone but does not include any coastal construction or seafloor-disturbing activities and would be consistent with commonly occurring Gulf of Mexico maritime operations. Downrange landings would occur no closer than 19 miles offshore. Landing and recovery operations would not take place in intertidal areas, salt marshes, estuaries, or coral reefs. The Texas General Land Office (TGLO) did not conduct a federal consistency review because the Proposed Action (i.e., issuance of a commercial space experimental permit or license) is not a listed activity and is not subject to review under the Texas Coastal Management Program (TCMP). However, TGLO stated that the Texas Commission on Environmental Quality (TCEQ) would conduct a federal consistency review for any USACE modification of SpaceX's CWA Section 404 permit (see PEA Appendix J for TGLO correspondence). The Proposed Action would not result in significant impacts on coastal resources because it would not 1) be inconsistent with the TCMP, 2) impact a coastal barrier resources system unit, 3) pose an impact on coral reef ecosystems, 4) cause an unacceptable risk to human safety or property, or 5) cause adverse impacts on the coastal environment that cannot be satisfactorily mitigated.
- **Land Use**, PEA Section 3.12. The Proposed Action is consistent with existing uses of land, would not change land use, and would occur according to existing plans and procedures in place. The Texas Natural Resources Code Section 61.132 permits TGLO and Cameron County to enter into a MOA under the terms of which Boca Chica Beach may be closed temporarily for space launches. The 2013 MOA between Cameron County and TGLO delineates the circumstances under which

the County is authorized to close the beach and beach access points for the limited purpose of protecting public health and safety during spaceflight activities.¹ The Texas Department of Transportation (TxDOT) authorized a SpaceX Roadway Closure Traffic Control Plan to perform road access restrictions on SH 4. Public access to the Boca Chica area would be closed for safety and security reasons during launch operations, with advanced notice provided to the public for planning purposes. These access restrictions would be limited to up to 500 hours per year for nominal operations and up to an additional 300 hours per year to address anomalies. SpaceX has established a hotline for real time status and updates on access restrictions through a text message alert service. Subscribers can text “BEACH” to 1-866-513-3475 to receive updates and public notices will also be available on the Cameron County webpage. Given the agreements and plans in place, the Proposed Action would not result in significant impacts related to land use.

- **Hazardous Materials, Solid Waste, and Pollution Prevention**, PEA Section 3.13. The Proposed Action includes the use and disposal of hazardous materials. Most of the hazardous materials would be consumed, so no substantial volumes of hazardous waste would require disposal. SpaceX would comply with all applicable federal, state, and local laws and regulations pertaining to the proper storage, handling, and use of hazardous materials. SpaceX has appropriate plans in place to address accidental spills or releases of hazardous materials.

Regarding solid waste and pollution prevention, SpaceX would place solid waste in covered receptacles until disposal to avoid or minimize accidental entry into coastal waters or contact with stormwater and to prevent offsite deposition from wind. SpaceX would salvage or recycle solid waste to the maximum extent practicable and dispose of the remaining solid waste in appropriately permitted landfills. The landfills used by SpaceX have sufficient capacity to handle solid waste generated by the Proposed Action.

The Proposed Action would not result in significant impacts regarding hazardous materials, solid waste, and pollution prevention because it would not 1) violate laws or regulations regarding hazardous materials and/or solid waste management; 2) involve a contaminated site; 3) produce an appreciably different quantity or type of hazardous waste; 4) generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal; 5) exceed local capacity; or 6) adversely affect human health and the environment.

¹ SpaceX and Cameron County are updating its coordination agreement based on the Starship/Super Heavy.

- **Natural Resources and Energy Supply**, final PEA Section 3.14. Under the Proposed Action, SpaceX would power daily operations at the VLA primarily via solar power from the solar panels near the launch and landing control center (LLCC). The solar energy farm currently supplies approximately 1 megawatt (MW) of power. The proposed expansion of the solar farm would add an additional 750 kilowatts of power, for a total of 1.6 MWs of energy. SpaceX would install an additional battery system at the solar farm, with up to 8 MW-hours of storage.

SpaceX would use various propellant fuels and commodities for launches and static fire engine tests, as well as diesel and gasoline to fuel ground equipment. Use of these propellants in support of the Proposed Action would not adversely impact local supply, as the ability for SpaceX to supply its own propellants would reduce the demand on the local supply. Similarly, the gasoline and diesel fuels required for operations are not expected to adversely impact local supply.

SpaceX would install water distribution lines from the water tower at the VLA to provide potable water to the facilities. The existing well at the VLA would draw water from the Gulf Coast Aquifer. Water required to support the VLA would be primarily generated from the well and from Cameron County. The amount of groundwater required for the Proposed Action would create a negligible impact to groundwater supply in Cameron County. Potable water for employees would be supplied from municipal sources.

The Proposed Action would not cause demand to exceed available or future supplies of natural resources or energy. Therefore, the Proposed Action would not result in significant impacts on natural resources and energy supply.

- **Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks**, PEA Section 3.15. The Proposed Action does not involve activities anticipated to adversely affect existing economic activity, income, employment, population, housing, sustenance, public services, and social conditions. The Proposed Action may result in moderate economic benefits, including increased demand in the workforce, higher revenues, and increased per capita income in the local area. The Proposed Action would not induce substantial economic growth in an area, disrupt or divide the physical arrangement of an established community, cause extensive relocation of residents or community businesses, disrupt local traffic patterns, reduce the level of service of roads, or produce a substantial change in the community tax base. Therefore, the Proposed Action would not result in significant socioeconomic impacts.

The counties within the study area have substantially higher proportions of minority and low-income populations than Texas as a whole. Local residents have shown significant interest in the project, and have participated in the public comments, voicing concerns to the FAA. As an example, one overarching concern consistently raised by local residents was the frequency of access restrictions imposed on Boca Chica Beach, one of the area's free public beaches. As noted in PEA Section 2.1.3.5, SpaceX would implement measures to limit access restrictions.

The Proposed Action would have some unavoidable impacts from increased noise, traffic, lighting during nighttime operations, and intermittent and temporary access restrictions to Boca Chica Beach. The Proposed Action would not have the potential to lead to a disproportionately high and adverse impact on an environmental justice population due to impacts not meeting significance thresholds in other environmental impact categories. Further, impacts from the proposed project would not be unique or significant to an environmental justice population. Therefore, the Proposed Action would not result in significant impacts on environmental justice populations.

The Proposed Action is located in a sparsely populated area approximately six miles from the nearest public school. Boca Chica Village is the only residential area near the Proposed Action and has no children under the age of 18. The Proposed Action does not have the potential to lead to a disproportionate health and safety risk to children. Therefore, the Proposed Action would not result in significant impacts related to children's environmental health or safety.

Please refer to PEA Chapter 3 for a full discussion of the potential environmental impacts and determination for each environmental impact category, as well as a list of mitigation measures that SpaceX must implement.

Findings and Determinations

The FAA makes the following determinations based on the information and analysis in the PEA.

Summary of Necessary Permits and Approvals

Acquisition of permits and approvals under other laws would be required prior to construction and operation, including:

- **Air emissions** from applicable operations would be permitted by TCEQ.
- A **CWA Section 404 permit** from the USACE is required for filling wetlands.

- A **TPDES permit**, equivalent to a NPDES permit, is required for point source discharges from SpaceX facilities during construction or operations. SpaceX would update its facility Construction and Industrial SWPPPs prior to conducting FAA-permitted or -licensed operations to maintain compliance with the TPDES permit.
- A **Special Use Permit** on an emergency basis, as applicable, for clean-up activities is required from USFWS in the event of an anomaly that creates debris on NWR fee-owned or managed lands.

Coastal Barrier Resources Act

The Coastal Barrier Resources Act (CBRA) prohibits, with some exceptions, federal financial assistance for development within the Coastal Barrier Resources System that contains undeveloped coastal barriers along the Atlantic and Gulf coasts and Great Lakes. The project does not involve federal financial assistance; therefore, the CBRA does not apply.

Coastal Zone Management Act

The Coastal Zone Management Act places obligations on both the FAA and SpaceX to ensure actions proposed within or affecting the coastal zone are consistent with the enforceable policies of the state's approved coastal zone management program. For FAA permitting or licensing approvals, if the proposed action is specifically listed within an existing coastal zone management program, the FAA must ensure that the requirements of 15 CFR, Subpart D, *Consistency for Activities Requiring a Federal License or Permit*, are satisfied. For unlisted activities, like the Proposed Action, compliance with this subpart is also required where the responsible state agency specifically indicates to the FAA that approval for a proposed project would affect coastal zone resources and that it intends to review the approval.

On December 20, 2021, TGLO emailed SpaceX and stated TGLO will not be conducting a consistency review because the Proposed Action is not a listed activity and is not subject to review under the TCMP. However, TGLO stated that TCEQ would conduct a federal consistency review for any USACE modification of SpaceX's CWA Section 404 permit (see PEA Appendix J). SpaceX is responsible for ensuring its activities within the coastal zone comply with the policies of the TCMP (i.e., state laws) and will be conducted in a manner consistent with the TCMP.

DOT Act Section 4(f)

The Proposed Action would trigger the application of 49 U.S.C. Section 303(c), commonly known as Section 4(f) of the DOT Act, with regard to properties protected under that act. The FAA determined that the Proposed Action would not result in more than a minimal (i.e., *de minimis*) physical use of a Section

4(f) resource and would not result in a *constructive use* based on the FAA's determination that the Proposed Action would not substantially impair a Section 4(f) property.

ESA Section 7

In accordance with ESA Section 7, the FAA conducted consultation with the USFWS and NMFS. NMFS concurred with the FAA's determination that the Proposed Action *may affect, but would not likely adversely affect*, ESA-listed species and critical habitat under NMFS jurisdiction. The FAA determined the Proposed Action *may affect and is likely to adversely affect* ESA-listed species and critical habitat under USFWS jurisdiction and conducted formal consultation with the USFWS. The USFWS issued a BO, which concluded the Proposed Action is not likely to jeopardize the continued existence of any federally listed species or adversely modify designated critical habitat. The BO contains reasonable and prudent measures and associated terms and conditions to avoid, minimize, and mitigate the effects on listed species and critical habitat. SpaceX must implement the terms and conditions.

Executive Order 11988, Floodplain Management

The FAA has concluded that the Proposed Action would not involve a *significant encroachment* on a floodplain as defined in DOT Order 5650.2, which implements Executive Order 11988. These Orders establish a policy to avoid supporting construction within a 100-year floodplain, where practicable, and, where avoidance is not practicable, to ensure that the construction design minimizes potential harm to or within the floodplain. Consistent with this policy, the Proposed Action could encroach, but the encroachment would not be significant. The FAA has considered whether there are practicable alternatives to this encroachment. Further, the Proposed Action would conform to all applicable state and/or local floodplain protection standards (Executive Order 11988).

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The Proposed Action would not result in disproportionate high and adverse impacts to minority and low-income populations.

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks

The Proposed Action would not increase risks to children's environmental health or safety.

Magnuson-Stevens Fishery Conservation and Management Act

The FAA determined there may be temporary adverse effects to EFH, particularly in the event of launch failure involving the spread of debris and release of hazardous material (e.g., liquid propellant). The FAA

consulted NMFS regarding potential adverse effects to EFH, and NMFS provided two Conservation Recommendations pursuant to 50 CFR §600.920, which SpaceX and the FAA have agreed to implement.

Marine Mammal Protection Act

Consistent with the analysis of ESA-listed marine species, the Proposed Action is not expected to result in the *take* of marine mammals protected by the Marine Mammal Protection Act (MMPA). SpaceX is responsible for MMPA compliance, including obtaining any *take* authorization from NMFS.

Migratory Bird Treaty Act

Mitigation identified in PEA Chapter 3, including the terms and conditions identified in the USFWS's BO, would help avoid, minimize, or mitigate for any *taking* of migratory birds protected by the Migratory Bird Treaty Act (MBTA). SpaceX is responsible for MBTA compliance.

NHPA Section 106

The FAA determined the Proposed Action would create an *adverse effect* on historic properties. The FAA, SHPO, NPS, ACHP, TPWD and SpaceX executed a Section 106 PA to resolve the adverse effects.

Conditions and Mitigation

As prescribed by 40 CFR § 1505.3, the FAA shall take steps as appropriate to the action, through mechanisms such as the enforcement of licensing conditions, and shall monitor these as necessary to ensure that SpaceX implements mitigation as set forth in PEA Chapter 3. FAA will monitor SpaceX's implementation of the mitigation as outlined in this section.

Air Quality

1. Periodic water spraying to control particulates and fugitive dust.
2. BMPs such as minimal idling of engines, watering of soils to be disturbed, and use of low volatility coatings.
3. Compliance with TCEQ's authorization under the Oil and Gas Standard Permit, including adherence to any permit conditions.

Noise and Noise-Compatible Land Use

The FAA would ensure that SpaceX uses its notification plan to educate the public and announce when a launch or landing event would occur. Announcements of upcoming Starship/Super Heavy launches and landings would serve to warn people about these noise events and would likely help reduce human

adverse reactions to these noise events. The plan would involve issuing statements to news outlets and law enforcement so that when noise is heard, the public would understand what has occurred. This approach is consistent with the public notification efforts conducted by SpaceX at Cape Canaveral Space Force Station and Vandenberg Space Force Base. While the overall impact of sonic booms would not be significant, SpaceX's advance public notice would help reduce human adverse reactions. SpaceX would be responsible for resolving any structural damage caused by a sonic boom.

Per FAA regulations and the Commercial Space Launch Act, SpaceX is required to carry insurance to cover claims by third parties that result from licensed activities, including any structural damage. The FAA requires that SpaceX carry insurance in the amount of the "Maximum Probable Loss," which is determined on a launch-by-launch basis by the FAA and is up to \$500,000,000 per launch. In the event that structural damage results from noise-induced vibrations or sonic booms, any such claims of damage would be subject to the insurance policy terms and process specified by the Commercial Space Launch Act and FAA regulations.

Visual Effects (including Light Emissions)

1. Management of Launch Site Lighting

- a. Exterior lights used expressly for safety or security purposes are limited to the minimum number and configuration required to achieve their functional roles.
- b. Minimization measures include directing, shielding, or positioning lighting to avoid visibility from the beach, minimize lateral light spread, and decrease uplighting; turning off lights when not needed; using low-pressure sodium to the extent practicable; installing lighting with multiple levels of control (i.e., some, all, or none of the lights can be turned on); and installing lighting timers where appropriate.
- c. SpaceX will issue annual notices to all complex personnel prior to sea turtle nesting season reminding personnel of light use requirements and responsibilities.

2. Monitoring Launch Site Lighting

- a. To minimize lighting impacts to sea turtles, SpaceX will monitor its lighting. This monitoring will be conducted to verify SpaceX's compliance with the SpaceX Boca Chica Launch Site Lighting Management Plan.
- b. A qualified biologist will conduct lighting inspections to eliminate unnecessary lighting before nesting season and weekly during the nesting-hatching season (March 15th to October 1st) and send the results of the inspections to the FAA.

- c. SpaceX will conduct evening inspections between 9:00 p.m. and 5:00 a.m. monthly during sea turtle nesting season.
- d. Data from monitoring and unannounced inspections, as well as any compliance issues and remedies, will be summarized in SpaceX's annual monitoring report, per the requirements of the USFWS BO.

Historical, Architectural, Archeological, and Cultural Resources

1. Installing all utility lines between the LLCC and VLA underground to avoid visual effects to the NHL.
2. Preparing a historical context report (i.e., historical narrative) of the historic events and activities of the Mexican War (1846–1848) and the Civil War (1861–1865) that took place in the geographic area associated with and including the Area of Potential Effects (APE).
3. Funding the development and production of five interpretive signs (in English and Spanish) that describe the history and significance of the historic properties in the APE.
4. Funding educational outreach (i.e., webpage content for agency websites, informative videos) to the public about the region's cultural heritage.
5. Documenting the landscape of the Palmito Ranch Battlefield following the Level I Historic American Landscapes Survey standards and guidelines for nationally significant properties.
6. Implementing measures to reduce noise levels generated by construction equipment.
7. Implementing measures to minimize noise from truck (construction, tanker, concrete, water, delivery) traffic.
8. Conducting a vibration monitoring program to gather data on the effects of launches on the Palmetto Pilings Historical Marker, Palmetto Pilings, Port Isabel Lighthouse, and at the 2-, 3-, and 8-mile distances from the VLA. The program will also include a structural assessment from vibration data to assess any impacts and address any structural damage given any impact from launch operations.
9. Replicating and installing the missing stars and wreaths on the Palmetto Pilings Historical Marker.
10. Maintaining access restriction to the area west of the existing U.S. Customs and Border Protection checkpoint at a location east of where SH 1419 crosses SH 4 and west of where an

unnamed north-south canal crosses SH 4, as generally depicted in PEA Appendix C, to include the entire extent of the NHL.

11. Placing temporary construction barriers around the Palmetto Pilings Historical Marker during construction.
12. If an anomaly affects a historic property, SpaceX will hire a qualified professional to make recommendations for restoration of the historic property. All work will be done following the Secretary of the Interior's Standards for the Treatment of Historic Properties. The proposed restoration will be subject to the review process described in PA Stipulation V. Upon review and approval, SpaceX will hire a qualified professional to restore the historic property.
13. In addition, an Unanticipated Discoveries Plan will be prepared to outline the processes to be followed when previously unknown cultural resources or human remains are discovered during construction or operation of the Proposed Action.

Department of Transportation Act, Section 4(f)

1. SpaceX would restore the SH 4 ROW to pre-disturbance conditions after installation of utilities.
2. In the event of an anomaly, SpaceX would notify TPWD, TGLO, and/or USFWS, as applicable, per the procedure outlined in SpaceX's Anomaly Response Plan.
3. Following an anomaly, SpaceX would release the access restriction area west of the "All Hard Checkpoint" to allow visitors to continue to access the NHL and NWR while anomaly-response actions are taken. SpaceX would keep the "All Hard Checkpoint" in place to protect public safety and implement the measures outlined in its Anomaly Response Plan.
4. SpaceX or a qualified contractor would conduct debris removal in accordance with a method as determined by TPWD and agreed to by SpaceX.
5. Restoration measures regarding any adverse impacts to landforms include monitoring disturbed areas for spread of non-native vegetation and removal upon discovery, spreading seeds found locally from preferred grass species, and regrading disturbed land to its pre-existing condition. Alternative restoration approaches may be considered as determined by TPWD and agreed to by SpaceX.
6. Restoration actions with respect to algal flats include grooming of tracks with the use of hand tools and ambient soils to prevent further impacts, removing fill, establishing the proper slope

within the tidal range, and inoculating the soils with a mixture of the dominant algal species, or any other approach as determined by TPWD and agreed to by SpaceX.

7. SpaceX would implement the additional measures outlined in TPWD's Section 4(f) concurrence letter, dated May 11, 2022, which include the following:
 - a. Strict compliance with all terms and conditions of the MOA executed September 2, 2021, between TPWD and SpaceX.
 - b. Completion and maintenance of bollard-and-cable traffic control fencing along SH 4 demarcating the boundaries of TPWD lands. SpaceX at its sole cost will survey the SH 4 boundary and will leave two or three gaps in the western portion of the fence only as necessary to provide reasonable access to privately owned inholdings at access points recorded in the real property records of Cameron County. Signage will be placed at each gap with contact information for legitimate landowners to gain access to their property.
 - c. SpaceX will take all necessary measures to make TPWD-owned lands at Boca Chica accessible to researchers and all TPWD and/or USFWS-authorized personnel at all times except during ignition events.
 - d. SpaceX will cover the cost of a contract with TPWD and/or Texas A&M Corpus Christi/Texas A&M system to develop specific protocols for test restoration of impacts to tidal/algal flats at Boca Chica resulting from the SN11 anomaly within 30 days of presentation of such a contract. The scope of the contract will include the cost of a principal investigator, one or two graduate students and all related equipment, materials, overhead, administrative, and publication costs.
 - e. In the event Texas A&M University is unable to provide the services outlined above, TPWD staff will work in good faith to identify another academic institution or similarly qualified third party to undertake the proposed project and will keep SpaceX staff apprised of its progress.
 - f. During the first "restoration season" as recommended by and following the study referenced in the preceding paragraphs, SpaceX, at its sole expense, will hire a qualified environmental firm to undertake a test restoration per the recommendations of the study, covering a minimum of five net acres of tidal/algal flats affected by the impacts of debris and debris retrieval following the SN11 anomaly. SpaceX will work cooperatively with TPWD to designate the specific footprint of the test restoration.

- c. Sending real time status and updates on access restrictions through a text message alert service. Subscribers can text “BEACH” TO 1-866-513-3475 to receive updates.
9. SpaceX would implement the following measures to limit access restrictions:
- a. No SH 4 access restrictions on the following holidays: 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, New Year’s Day (“Holidays”).
 - i. Where any of the Holidays falls annually on a Monday or Friday, no Weekend Access Restrictions, as defined in 9.d below, shall be permitted.
 - ii. Where any of the Holidays does not fall annually on a Monday or Friday but falls on a Monday or Friday in a particular year, no Weekend Access Restrictions, as defined in 9.d, shall be permitted for that year.
 - iii. For Thanksgiving, no access restrictions shall be permitted from Thanksgiving Day through the Sunday immediately following Thanksgiving.
 - b. Except as provided in 9.d, from Memorial Day to Labor Day (the times of greatest visitor beach uses and enjoyment), no Weekend Access Restrictions from Friday at 6:00 a.m. through Sunday. Road access restrictions for any SpaceX activities would occur from Monday through Friday at 6:00 a.m. This predictive schedule ensures the public access to all open areas of the NWR (e.g., Boca Chica Beach) from Friday at 6:00 a.m. through Sunday from Memorial Day through Labor Day.
 - c. Except as provided in 9.d, from the day after Labor Day to the day before Memorial Day (throughout the winter months), no Weekend Access Restrictions on Saturday or Sunday.
 - d. When a SpaceX activity requires at least one road access restriction between Fridays at 6:00 a.m. and Sundays from Memorial Day to Labor Day, or on weekends from the day after Labor Day to the day before Memorial Day, it is considered a “Weekend Access Restriction.”
 - i. SpaceX may request a Weekend Access Restriction up to five times per calendar year.

- e. For any SH 4 road access restriction, SpaceX will request, at least 48 hours prior to the start of the access restriction period, that the Cameron County Commissioners Court implement the access restriction. This notice requirement is intended to give the public a minimum 48-hour notice to reduce impacts to the recreational users. Any requested Weekend Access Restriction shall count toward the total five annual Weekend Access Restrictions unless cancellation of the Weekend Access Restriction is publicized more than 24 hours prior to the start of the requested access restriction period.
 - f. Exception to the above is for activities deemed to be anomalies per FAA regulations.
10. SpaceX would implement measures identified in the Section 106 PA (see the list of measures below under *Historical, Architectural, Archeological, and Cultural Resources*).
 11. SpaceX would implement the lighting mitigation measures from PEA Section 3.6.5 (see the list of measures below under *Visual Effects (including Light Emissions)*).
 12. SpaceX would implement the insurance requirements noted in PEA Section 3.5.5, which require that SpaceX pay for any structural damage that may occur, thereby ensuring restoration and reducing the impact to a Section 4(f) resource (see below under *Noise and Noise-Compatible Land Use*).

In addition to the measures identified above, SpaceX would implement the following measures to mitigate impacts on recreational activities:

13. SpaceX would collaborate with TPWD and USFWS to meet USFWS fishing objectives for the region. To accomplish this goal, SpaceX would:
 - a. Provide improved, enhanced, or new access for fishing opportunities in the Gulf of Mexico, Rio Grande, Brownsville Shipping Channel, and/or South Bay. SpaceX will provide \$5,000 annually to enhance the existing TPWD Tackle Loaner Program. This funding may be used to purchase fishing equipment (rods, reels, and tackle boxes with hooks, sinkers, and bobbers) for use at existing, heavily visited sites and/or allow the program to expand to new locations.
 - b. Participate in fishing introduction and instruction opportunities on-site. SpaceX will provide the opportunity for Fishing's Future representatives to participate in the monthly beach cleanups and teach environmental stewardship and increase awareness for the protection, conservation, and restoration of aquatic natural resources.

14. SpaceX would collaborate with USFWS to meet wildlife observation, interpretation, and photography objectives for the area, as well as NHL priorities. To accomplish this goal, SpaceX would:
- a. Coordinate with the USACE, TxDOT, and USFWS to explore the feasibility of constructing one safe pull off along SH 4, east of the first public hard checkpoint, or other roads adjacent to the NWR. At this location, which will be determined by USFWS in coordination with SpaceX, SpaceX will construct a wildlife viewing platform and associated signage; the signage will address the resident wildlife, NHL, and the SpaceX launch site.
 - b. Provide enhanced satellite monitoring via solar powered Starlink for remote wildlife viewing opportunities. Enhanced satellite monitoring will be provided at location(s) to be determined by USFWS, in coordination with SpaceX.
 - c. Participate in wildlife photography introduction and instruction opportunities on-site. SpaceX will provide the opportunity for wildlife photographers to instruct the public during the monthly beach cleanups and/or provide wildlife photography information and instructions at the wildlife viewing platform.
 - d. Provide improvements to the site interpretive message system along the SH 4 corridor east of the first public hard checkpoint. Locations and sign content will be determined by USFWS, in coordination with SpaceX. Improvements will also benefit NHL interpretation.
 - e. Participate in public event(s), such as the Coastal Expo, that focus on joint SpaceX, TPWD, USFWS, and NPS mission outreach. SpaceX will participate in one event annually.
15. SpaceX would collaborate with USFWS to meet environmental education objectives. To accomplish this goal, SpaceX will provide onsite Science, Technology, Engineering, and Math based learning opportunities. SpaceX will host regular site tours and one annual educational event for students in the Brownsville Independent School District. On the site tours, SpaceX will educate the students on the sensitive resources and habitat surrounding the SpaceX facilities. SpaceX would coordinate with the USFWS on the information to be shared relevant to the sensitive resources and habitat surrounding the SpaceX facilities. At the annual educational event, SpaceX will invite USFWS, TPWD, and NPS to speak to the importance of studying the Life and Physical Sciences.

Water Resources (including Wetlands, Floodplains, Surface Waters, and Groundwater)

1. SpaceX would implement its SPCC Plan to minimize the potential for accidental releases of polluting substances.
2. In conjunction with final design and CWA permitting, SpaceX would submit a Notice of Intent to TCEQ for application of the general permit authorization for point source discharges of stormwater associated with industrial activity to surface water in the state. SpaceX would develop a SWPPP that would adhere to the permit effluent limitations and requirements applicable to the industrial activities.
3. If water treatment or retention is required, SpaceX would contain water in retention ponds. Retention ponds would be lined to prevent percolation of contaminants into the groundwater and would be maintained and monitored by SpaceX.
4. SpaceX would develop appropriate sampling protocols and water quality criteria in coordination with the TCEQ in accordance with Texas Surface Water Quality.
5. SpaceX would manage any deluge water according to state and local water quality requirements (e.g., pretreatment permits, NPDES permits, etc.).
6. SpaceX would adhere to proper marine vessel operating procedures and use of appropriate BMPs in the event of a recovery operation discharge or spill.
7. SpaceX would employ proper design redundancies of commodity storage facilities, containment around all hydraulic systems, safety measures in launch vehicle processes, and spill response and clean-up measures.
8. Pursuant to CWA Section 404, SpaceX would coordinate with the USACE to develop an appropriate compensatory mitigation plan for unavoidable impacts to wetlands.
9. SpaceX would coordinate with Cameron County floodplain administrators to obtain a development permit in accordance with the National Flood Insurance Program as well as county regulations.
10. Following an anomaly, SpaceX would release the access restriction area west of the "All Hard Checkpoint" to allow visitors to continue to access the NHL and NWR while anomaly-response actions are taken. SpaceX would keep the "All Hard Checkpoint" in place to protect public safety and implement the measures outlined in its Anomaly Response Plan.
11. Debris removal would occur by a method as determined by TPWD and agreed to by SpaceX.

12. In the event of an anomaly, SpaceX must obtain a Special Use Permit on an emergency basis from USFWS as applicable, prior to clean-up activities on NWR fee-owned or managed lands.
13. Restoration measures regarding any adverse impacts to landforms include monitoring disturbed areas for spread of non-native vegetation and removal upon discovery, spreading seeds found locally from preferred grass species, and regrading disturbed land to its pre-existing condition. Alternative restoration approaches may be considered as determined by TPWD and agreed to by SpaceX.
14. Restoration actions with respect to algal flats include grooming of tracks with the use of hand tools and ambient soils to prevent further impacts, removing fill, establishing the proper slope within the tidal range, and inoculating the soils with a mixture of the dominant algal species, or any other approach as determined by TPWD and agreed to by SpaceX.

Biological Resources (including Fish, Wildlife, and Plants)

Construction Measures

1. In conjunction with final design and CWA permitting, SpaceX will update its SWPPP to address the additional facilities proposed for the site and ensure compliance with its TCEQ stormwater permit. The updates will be completed before construction begins under the Proposed Action. The SWPPP identifies BMPs for erosion and sedimentation controls, including techniques to diffuse and slow the velocity of stormwater to reduce potential impacts (e.g., soil loss and sedimentation) to water quality during construction. All permitted construction activities with the potential to impact water quality from potential runoff from the site will be conducted in accordance with the stormwater permit, including measures identified in the SWPPP. SpaceX will provide a copy of the SWPPP for permitted construction activity under the Proposed Action to the FAA and USFWS before such construction begins and will provide the USFWS and FAA with written notice of updates to the SWPPP on a quarterly basis.
2. Prior to entry into or exit from unpaved areas of the VLA, SpaceX will ensure that heavy equipment (i.e., vehicles and machinery that are larger than a typical passenger truck) and vehicles to the maximum extent possible traverse over a construction shaker or rumble plates or rock bed located at the VLA to remove any sediment and dirt for purposes of preventing the introduction and spread of non-native plant species. SpaceX would inspect the equipment to ensure that hydraulic fittings are tight, hydraulic hoses are in good condition (and replaced if damaged), and there are no petroleum leaks. SpaceX will document the location(s) of the

construction shakers or rumble plates installed at the VLA in its annual report to the USFWS.

3. SpaceX will implement a SPCC Plan. SpaceX will provide a copy of the SPCC Plan for permitted construction activity under the Proposed Action to the FAA and USFWS before such construction begins and will provide the USFWS and FAA with written notice of updates to the SPCC Plan on a quarterly basis.
4. SpaceX will not place excavated or fill material in delineated CWA Section 404 waters of the United States except as authorized by a permit from the USACE. SpaceX will ensure that discharged water associated with concrete mixing and placement activities does not reach surrounding water bodies or pools unless specifically authorized in a Department of Army permit. SpaceX will provide to the USACE written notice documenting completion of the activity authorized under Section 404 of the CWA; compliance with all associated terms and conditions; and implementation of any required compensatory mitigation for impacts to waters of the United States. SpaceX will provide the notice to USACE within 30 days of completion of the activities authorized by the USACE and will include a copy of this notification in its annual report to the USFWS.
5. SpaceX will continue contracting a qualified biologist to conduct pre-, during, and post-construction biological monitoring (vegetation and birds). This monitoring is ongoing and will continue to be conducted within 3 miles of construction areas. Monitoring reports will continue to be sent to the USFWS annually.
6. SpaceX will limit vehicle operation to existing paved and unpaved roads, parking areas, and authorized construction sites. Vehicle operators within the VLA will not exceed 25 miles per hour.
7. SpaceX would incorporate raptor protection measures into project design and any above-ground utility upgrades. For example, SpaceX would equip structures with devices to discourage nest building and perching (e.g., monopole technology and visual fright devices).
8. SpaceX will initiate coordination with the USFWS within 60 days of the start of construction under the Proposed Action to identify practicable opportunities to protect, restore, and/or enhance habitat for the ocelot, jaguarundi, piping plover, and/or red knot. SpaceX intends to continue coordination with the USFWS to complete one or more habitat protection, restoration, or enhancement projects to benefit the cats and the birds and contribute to the conservation of these species.

9. Within six months of the issuance the BO, SpaceX will coordinate with the USFWS, USACE, and TxDOT to determine the feasibility of constructing wildlife crossings along SH 4 west of the first public hard checkpoint to benefit the ocelot and jaguarundi. If a wildlife crossing is deemed feasible by each of the coordinating parties, pending regulatory or other approvals from applicable agencies, SpaceX will fund the construction on one wildlife crossing west of the first public hard checkpoint within 1 year of the mutual determination of feasibility.
10. SpaceX will make an annual contribution of \$5,000 to the Friends of Laguna Atascosa National Wildlife Refuge Adopt-an-Ocelot Program within 3 months of the issuance of the BO and by March 1 of each year thereafter for the duration of the BO. Funds donated to the program are intended to pay for:
 - a. Wildlife guzzlers
 - b. Camera trapping sets
 - c. Special events to raise awareness about the ocelot
 - d. Important supplies that allow biologist to monitor ocelot dispersal, behavior and habitat needs
11. SpaceX will make an annual contribution of \$5,000 to the Peregrine Fund within 3 months of the issuance of the BO and by March 1 of each year thereafter for the duration of the BO. These funds will provide assistance with increased releases, repairing or replacing existing hack sites and/or nest boxes, or constructing new hack sites and/or nest boxes if falcons are observed in a new location.
12. If proposed construction activities under the Proposed Action occur during the avian breeding season (February 15 through August 31), a biologist will search the proposed areas of construction activities, including laydown areas, for nests (in shrubs and on the ground) one time no more than two days before the start of construction within the surveyed area. If the biologist finds an active nest, construction workers and activity, including the operation of vehicles, equipment, or tools, within 50 meters (164 feet) of the nest will be avoided until the biologist determines the nest is no longer in use. SpaceX will mark the avoidance zone with flagging, fencing, or similar signage within 24 hours of detecting the nest and will inspect the marking daily, repairing or replacing as needed, to ensure that it remains intact and visible through the duration of the nesting activity. SpaceX will document inspections and provide a summary of inspections and avoidance actions to the FAA and USFWS with the annual report.

Operational Measures

13. SpaceX will operate an employee shuttle between Brownsville and the project site and between parking areas at LLCC and the VLA to reduce the number of project-related vehicles traveling to and from the project site. SpaceX will encourage employees to use the shuttle by providing information on shuttle operation in new hire onboarding materials, routine staff communications (such as staff meetings), and in contractor environmental trainings. SpaceX will mandate use of the shuttle as practicable.
14. SpaceX will update its Lighting Management Plan to account for Starship/Super Heavy launches and related infrastructure that is the subject of the Proposed Action. These updates will be completed at least 30 days before the beginning of sea turtle nesting season that starts on March 15 of each year.

Consistent with safety and security needs, SpaceX will initiate coordination with the USFWS and TPWD with the intent of incorporating the agencies' recommendations for minimizing lighting effects on ESA-listed species. This measure will minimize the modification of sea turtle habitat and minimize the likelihood of false crawls and disoriented hatchlings. Upon agreement with the USFWS and TPWD, SpaceX will implement the updated Lighting Management Plan. At a minimum, the plan will include:

- a. Directing, shielding, or positioning facility lighting to avoid or minimize visibility from the beach, minimize lateral light spread, and minimize uplighting without compromising safety and security of personnel.
- b. Turning off lights when not needed to maintain a safe and secure facility.
- c. Using low pressure sodium lights, to the extent practicable, during sea turtle nesting season. Limitations to the use of low-pressure sodium include the use of white lighting required for protection and safety of SpaceX personnel for ground support operations performed 24/7 throughout the year and the use of bright spotlighting during nighttime launch activities.
- d. Installing new lighting with multiple levels of control (i.e., some, all, or none of the lights can be turned on) so that lighting levels can be matched with specific activities.
- e. Where lighting is not essential to safety or security of personnel, installing timers to switch lights off in the evening. Where applicable and not a threat to security, installing motion-detector switches.

15. SpaceX will continue contracting a qualified biologist to conduct pre- and post-launch biological monitoring (vegetation and birds). Monitoring will be conducted within 1 mile of the VLA up to a week before a Starship or Super Heavy launch and the day after the launch. Monitoring reports will be sent to the USFWS within two weeks following compilation and analysis of the data.
16. SpaceX will continue to collaborate with Sea Turtle, Inc. by supplying and storing field equipment and to provide sea turtle survey data within the action area to the USFWS annually. This measure supports activities that reduce the likelihood of death or injury to individual sea turtles.
17. Upon USFWS and SpaceX agreement of locations alongside SH 4 or other identified roads where the footprint is disturbed, SpaceX will fund the purchase of vehicle barrier materials to prevent trucks or ATVs from entering the NWR. The amount needed in any given year will be determined by NWR staff and is not to exceed \$10,000 annually. SpaceX will install the barriers and USFWS staff will perform general maintenance and repairs of the barriers. Funds will be issued within 3 months from the issuance of the BO, and by March 1 of each year afterwards for the duration of the BO. SpaceX will be responsible for replacing or restoring damaged barriers caused by SpaceX personnel or an anomaly.
18. In coordination with NWR staff, SpaceX will develop a protocol (e.g., Access Restriction Notification Plan) providing as much advance notice as practicable to minimize disruption to refuge and land management activities.
19. SpaceX would coordinate with the USFWS to fund additional resources or projects to enforce the access restrictions required for launch operations.
20. SpaceX would implement any applicable avoidance or minimization measures included in the NMFS Letter of Concurrence when operating in the marine environment.

Environmental Worker Educational Briefings

21. SpaceX will develop educational training materials and submit to the USFWS for approval. Once approved, SpaceX will provide all on-site personnel, including staff and contractors, with an environmental worker education briefing(s) prior to the start of construction activities that will include the following topics: species identification, instruction on implementing the conservation measures described in the BO, wildfire prevention measures, information regarding noxious or invasive weeds, requirements for safe handling and disposal of hazardous waste, proper disposal of litter and garbage, and the employee shuttle. SpaceX will also provide

this environmental worker education briefing on an ongoing basis to all new hires of on-site staff and contractors before starting on-site work and will offer refresher briefings to all on-site staff and contractors on an annual basis. SpaceX will document completion of these educational briefings in its annual report to the USFWS.

Anomaly Measures

22. If an anomaly occurs, prior to taking action to recover debris on land outside the VLA, SpaceX will notify the appropriate emergency personnel, land-managing agencies, and water regulatory authorities, as required. In addition, SpaceX will comply with the terms of the MOA between TPWD and SpaceX, including coordinating with TPWD and the USFWS prior to debris removal and clean-up and consulting with TPWD and/or the USFWS prior to any anomaly-response activity that may impact sensitive wildlife habitat.
23. In the event of an anomaly that creates debris on NWR fee-owned or managed lands, SpaceX would be required to obtain a Special Use Permit on an emergency basis from the USFWS, as applicable, for clean-up activities.
24. If an anomaly occurs, SpaceX will comply with its Anomaly Response Plan, Security Plan, and Fire Mitigation and Response Plan, as applicable.

Essential Fish Habitat Conservation Recommendations

25. Prior to any in-water work (i.e., debris recovery or sinking), SpaceX will ensure all ballast and vessel hulls do not pose a risk of introducing new invasive species and that project implementation will not increase abundance of invasive species present at the project site. SpaceX will sanitize any equipment that has been previously used in an area known to contain invasive species prior to its use for project activities.
26. The FAA will coordinate with NMFS in the case of a launch failure and any vessel grounding to determine if consultation re-initiation is appropriate.

BO Terms and Conditions

27. The FAA will ensure that any license or permit to SpaceX related to the Proposed Action will include a condition that SpaceX implement all of the terms and conditions of the BO.
28. SpaceX will implement the conservation measures, many of which include related monitoring and reporting measures, described in the Proposed Action that address aspects of construction, operation, anomaly response, educational briefings, and other conservation measures and

voluntary offsets. These measures minimize habitat modification, which can cause take via harm, for the ocelot, jaguarundi, northern aplomado falcon, piping plover, red knot, and/or sea turtles. These conservation measures require implementation, with updates as described, of certain facility and operational plans:

- a. Lighting Management Plan
- b. Fire Mitigation and Response Plan
- c. SPCC Plan
- d. SWPPP
- e. Anomaly Response Plan
- f. Access Restriction Notification Plan
- g. Site Security Plan
- h. Traffic Control Plan
- i. Biological Monitoring Plan

SpaceX will provide the USFWS and FAA with written notice of updates to these plans on a quarterly basis.

29. SpaceX will conduct quarterly SH 4 clean-up efforts east of the first public hard checkpoint to reduce garbage and litter along the road. The clean-up efforts will take place within the SH 4 right-of-way. SpaceX will keep all vehicles used to support cleanups on designated roadways. SpaceX will report the dates of the cleanups in the annual monitoring report submitted to the USFWS. This measure minimizes the severity of habitat modifications (i.e., the presence of litter or garbage) that may attract animals that prey on or compete with northern aplomado falcons, piping plovers, red knots, or sea turtles. This measure also benefits ocelots and jaguarundis by minimizing the likelihood or severity of increased prey concentrations along SH 4 that could lead to increased vehicle collision mortality.
30. SpaceX will ensure that staff and contractors place non-hazardous waste materials, litter, and other discarded materials, such as construction waste, on the VLA in containers until removed from the site. All trash containers will have predator-proof secured lids and be kept closed at all times and trash will be removed regularly. This measure minimizes the severity of habitat modifications (i.e., the presence of litter or garbage) that may attract animals that prey on or compete with northern aplomado falcons, piping plovers, red knots, or sea turtles. This measure

also benefits ocelots and jaguarundis by minimizing the likelihood or severity of increased prey concentrations along SH 4 that could lead to increased vehicle collision mortality.

31. SpaceX will perform quarterly beach cleanups of Boca Chica Beach to reduce the likelihood of attracting predators (i.e., minimizing habitat modification) of the piping plover, red knot, and sea turtles to the beach. SpaceX will perform these beach cleanups for 1.5 miles north and south of the VLA. SpaceX will provide the opportunity for resource agencies (i.e., TGLO, USFWS) to participate and teach the community about the area's wildlife, sensitive areas, beach debris, and beach cleanup. SpaceX will report the dates of the cleanups in the annual monitoring report submitted to the USFWS.
32. SpaceX will coordinate with TxDOT to help ensure that the shoulders of SH 4 east of the first public hard checkpoint are maintained by regular mowing and trimming to keep vegetation shorter than 12 inches. SpaceX will notify TxDOT that maintenance may be warranted when vegetation along SH 4 exceeds approximately 9 inches. TxDOT will be responsible for performing roadway vegetation maintenance. This measure minimizes vegetation cover along SH 4 and minimizes the likelihood of vehicle collisions with ocelots or jaguarundis.
33. SpaceX will construct a barrier along the northern boundary of the VLA to assist in keeping debris from entering the NWR, help deflect off-gassing of liquid nitrogen, reduce sound transmission. Construction of the barrier wall will be completed prior to the start of launch operations. This measure will minimize the extent and severity of habitat modification for piping plovers and red knots that use areas adjacent to the VLA.
34. Cryogenic testing and other pressure tanks used under the Proposed Action will be tethered by cables when practicable to the VLA site to help prevent debris from leaving the VLA. This measure will minimize the extent and severity of habitat modification for piping plovers and red knots that use areas adjacent to the VLA.
35. SpaceX will minimize noise from generators that may be used during construction and/or operations at the VLA under the Proposed Action. SpaceX will ensure that generators are placed within baffle boxes (a sound-resistant box that is placed over or around a generator), have an attached muffler, or use another noise-abatement method consistent with industry standards. This measure minimizes the severity of habitat modification for piping plovers and red knots that use areas adjacent to the VLA.
36. SpaceX will perform inspections of the lighting installed as part of the Proposed Action on a biweekly basis during the sea turtle nesting and hatching season (March 15 to October 1) to

ensure that the minimization measures specified in the Lighting Management Plan are installed and in good working order. SpaceX will document compliance with the Lighting Management Plan and note any deviations. SpaceX will address deviations with the USFWS on a timely manner to implement corrective actions. SpaceX will report any deviations and responsive actions to the USFWS in its annual report. This measure minimizes the severity of habitat modification for sea turtles.

37. SpaceX will monitor nighttime light levels on the beach within 1.5 miles of the VLA at least once before the start of the sea turtle nesting season and biweekly during the sea turtle nesting and hatching season (March 15 to October 1). SpaceX will perform this monitoring at least once per year at a time when there is a launch vehicle at the VLA (i.e., a condition when more lighting at the site is needed for safety and security), even if this monitoring event occurs outside of the sea turtle nesting and hatching season. SpaceX will perform this monitoring between 9:00pm and 5:00am. SpaceX will use the information to identify any practicable opportunities for modifying lighting at the VLA (with updates to the Lighting Management Plan, as appropriate) that reduce light levels at the beach while maintaining operational needs for safety and security. SpaceX will document and summarize its monitoring and any responsive actions in the annual report to the USFWS. This measure minimizes the severity of habitat modification for sea turtles.
38. SpaceX will implement the water resources mitigation measures described in PEA Section 3.9.5. These measures address compliance with TCEQ TPDES permits, updates and/or implementation of its SPCC Plan and SWPPPs, and development and implementation of associated water quality monitoring in coordination with TCEQ.
39. SpaceX will seek input from the USFWS on updates to its SWPPP prior to the start of construction activities under the proposed action. SpaceX will ensure that the updated SWPPP includes best practices appropriate to coastal ecosystems that minimize the transport of sediment and the discharge of freshwater runoff outside of the VLA and maximize the retention or infiltration of runoff within the VLA. This measure will minimize modification of habitat for piping plovers and red knots that use areas adjacent to the VLA (e.g., habitat modification resulting from discharges of sediment and freshwater runoff into the wind tidal flats adjacent to the VLA).
40. SpaceX will clearly demarcate the perimeter of all areas to be disturbed during construction activities under the Proposed Action using flagging or temporary construction fence and no

disturbance outside that perimeter will be authorized. This measure minimizes the extent of habitat modification for the piping plover and red knot that use area adjacent to the VLA.

41. SpaceX shall use areas within the project boundary or other area subject to prior disturbance for staging, parking, and equipment storage in connection with the Proposed Action. This measure minimizes the extent of habitat modification for the piping plover and red knot that use area adjacent to the VLA.
42. SpaceX will obtain any gravel or topsoil needed during construction activities under the Proposed Action from existing developed or previously used sources, and not from undisturbed areas that provide habitat for the ocelot, jaguarundi, piping plover, or red knot. The measure minimizes the extent of habitat modification for ocelots, jaguarundis, piping plovers and red knots.
43. Consistent with TCEQ stormwater permit conditions, during construction activities associated with the Proposed Action, SpaceX will ensure that best practices are applied at the VLA that minimize the deposit of eroded materials outside the boundary of the VLA. This measure minimizes the severity of habitat modification for the piping plover and red knot (via deposit of materials that could alter the microtopography of adjacent flats) that use areas adjacent to the VLA.
44. In coordination with TxDOT and the USFWS, SpaceX will install five signs along SH 4 to inform the public on areas (such as sensitive areas of the NWR and the dunes) where they may not watch ongoing activities and launches. Signs would be installed within 6 months of issuance of the BO.
45. SpaceX will initiate coordination with TxDOT within 30 days of issuance of the BO regarding the installation of up to five additional wildlife crossing signs along SH 4 for a total of ten signs (five in each direction) to reduce the risk of collision mortality for ocelots and jaguarundis. SpaceX has already installed five wildlife crossing signs. Pending TxDOT approval, SpaceX will purchase and install the additional five signs. Installation of the signs will be completed within 6 months of issuance receiving TxDOT approval of the sign locations.
46. SpaceX security patrol vehicles or other necessary SpaceX vehicles on Boca Chica Beach will be driven above the “wet line” (i.e., the line on the beach where waves reach and repeatedly wet the sand at the time the driver passes by) and at a speed not to exceed 15 miles per hour. This measure minimizes the severity of habitat modification for piping plovers and red knots.

47. SpaceX will continue to implement the SpaceX Boca Chica Launch Site Biological Monitoring Plan to survey for sea turtles, birds, and vegetation changes. Monitoring reports will be included as part of the SpaceX's annual monitoring report submitted to the USFWS. After five years of monitoring, and when SpaceX applies for a renewal or extension of its license or permit, the USFWS, FAA, and SpaceX will evaluate the need to modify, adapt, or discontinue the monitoring. Sea turtle monitoring on Boca Chica Beach will be conducted prior to implementation of access restrictions and security sweeps for, and as soon as practicable after, suborbital and orbital launches. Post-launch monitoring can be conducted by Sea Turtle Inc.; however, the use of drones is acceptable if Sea Turtle Inc. is unable to conduct monitoring in-person. Findings will be included in the annual report to the USFWS.
48. SpaceX will continue to offer enhanced satellite monitoring via solar powered Starlink to the Peregrine Fund for continuous video coverage of northern aplomado falcon habitat to aid in biological monitoring.
49. If sea turtle nests are discovered prior to closure and security sweeps, SpaceX will coordinate with Sea Turtle Inc. to remove eggs prior to launch. Findings will be included in the annual report to the USFWS.
50. SpaceX will provide a dedicated space for Sea Turtle, Inc. volunteers on SpaceX property to monitor Boca Chica Beach use and to conduct pre-and post- launch surveys at Boca Chica Beach.
51. If SpaceX plans to conduct more than two of the ten annual launches under the Proposed Action at night during the sea turtle nesting and hatching season (March 15th – October 1st), SpaceX and the FAA will contact the USFWS within 30 days of the third nighttime launch (and any subsequent nighttime launches planned during that year) to discuss if there is a need for additional take authorization.
52. SpaceX will submit an annual monitoring report to the USFWS by March 1st for the preceding calendar year. The annual report will include monitoring results, measures implemented during project activities, success of such measures, incidences, and any recommendations on improvements to those measures. Reports should be sent to: U.S. Fish and Wildlife Service, Texas Coastal Ecological Services Field Office, ATTN: Field Supervisor, 4444 Corona, Suite 215, Corpus Christi, Texas 78411 or email to dawn_gardiner@fws.gov.
53. If the FAA issues SpaceX a vehicle operator license for Starship/Super Heavy launch operations at the Boca Chica Launch Site, the BO would expire concurrent with the expiration of the FAA's license. SpaceX will notify the USFWS if SpaceX plans to continue FAA-licensed activities (i.e.,

applying for license renewal or a new license) no later than 6 months before FAA's license expires. The FAA would conduct its consultation obligations as required under ESA Section 7 as part of its evaluation of SpaceX's license application.

Land Use

1. SpaceX would notify and coordinate with the oil and gas operators prior to any launch (including landing).
2. The measures listed above under *Department of Transportation Act Section 4(f)* would also mitigate land use impacts.

Hazardous Materials, Solid Waste, and Pollution Prevention

1. SpaceX would handle any release of a hazardous material according to the management procedures described in its Anomaly Response Plan.
2. SpaceX would comply with all applicable federal, state, and local rules and regulations pertaining to the proper storage, handling, and use of hazardous materials.
3. SpaceX would implement its SPCC Plan to prevent and address accidental spills or releases of hazardous materials.
4. SpaceX would report any release of a hazardous material in the Gulf of Mexico through the U.S. Coast Guard National Response Center; releases in tidal waters would also be reported to TGLO.
5. SpaceX would comply with the International Convention for the Prevention of Pollution from Ships Annex IV and the CWA NPDES Program regarding vessel discharge of large commercial vessels for offshore landings on platforms.
6. SpaceX would implement the appropriate handling and management procedures for hazardous materials when venting residual LOX and LCH₄.
7. Hazardous materials such as fuels, ordnance, chemicals, and payload components would be transported over public transportation routes to the appropriate facilities in accordance with DOT regulations.
8. SpaceX would treat or remove any soils adversely affected by spills in accordance with applicable federal and state regulations.

9. In the event of an anomaly, SpaceX would respond to all accidental releases of polluting substances quickly and implement appropriate clean-up measures in accordance with applicable laws to minimize impacts to the environment.
10. SpaceX would store solid wastes in covered receptacles until disposal to avoid offsite deposition, recycle solid wastes to the extent practicable, and dispose of the remaining solid waste in appropriately permitted landfills.
11. SpaceX would collect, store, and dispose of hazardous materials, substances, and wastes used and generated as part of recovery operations using practices that minimize the potential for accidental releases or contact with storm or marine water and in accordance with the Hazardous Materials and Emergency Response Plan, SWPPP, and SPCC Plan, as well as Resource Conservation and Recovery Act and Occupational Safety and Health Administration regulations.
12. SpaceX would assemble an emergency response team that would be responsible for responding to hazards and spills for all Starship/Super Heavy propellants.

Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks

The measures listed above under *Department of Transportation Act, Section 4(f)*, specifically item #9, would mitigate any potential impacts on an environmental justice population. Further, the FAA will continue providing Spanish translations of vital project-related documents and information, and oral interpretation services for public meetings, or by request, in the future.

Finding and Decision

The FAA decision in this Mitigated FONSI/Record of Decision (ROD) is based on a comparative examination of environmental impacts for each of the alternatives studied during the environmental review process. The PEA discloses the potential environmental impacts for each of the alternatives and provides a full and fair discussion of those impacts. With implementation of the mitigation measures identified above, the Proposed Action would not result in significant impacts and, therefore, preparation of an EIS is not warranted and a Mitigated FONSI in accordance with 40 CFR Section 1501.6 is appropriate.

The FAA believes the Proposed Action best fulfills the purpose and need identified in the PEA. In contrast, the No Action Alternative fails to meet the purpose and need identified in the PEA. The FAA has determined that the Proposed Action is a reasonable, feasible, practicable, and prudent alternative for a federal decision in light of the established goals and objectives. An FAA decision to take the

required actions and approvals is consistent with its statutory mission and policies supported by the findings and conclusions reflected in the environmental documentation and this Mitigated FONSI/ROD. After reviewing the PEA and all its related materials, the undersigned has carefully considered the FAA's goals and objectives in relation to various aspects of the launch activities described in the PEA, including the purpose and need to be met, the alternative means of achieving them, the environmental impacts of these alternatives, and the costs and benefits of achieving the stated purpose and need.

After careful and thorough consideration of the facts contained herein, the undersigned finds that the proposed federal action is consistent with existing national environmental policies and objectives as set forth in Section 101 of NEPA and other applicable environmental requirements and will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 102(2)(C) of NEPA.

The undersigned hereby directs that action be taken, together with the necessary related and collateral actions, to carry out the agency decisions as detailed in this Mitigated FONSI/ROD, including:

- A determination under 14 CFR Part 450 as to SpaceX's application for a vehicle operator license.

APPROVED: _____

DATE: June 13, 2022

Michelle S. Murray
Manager, Safety Authorization Division