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November 1, 2021

Ms. Stacey Zee
SpaceX PEA, c/o ICF
9300 Lee Highway
Fairfax, VA 22031
Transmitted via electronic mail to SpaceXBocaChica@icf.com

RE: Comments on SPACEX Draft Programmatic Environmental Assessment for Starship/Super Heavy Program

Dear Ms. Zee,

These written comments to the draft Programmatic Environmental Assessment for the SpaceX Starship / Super Heavy Launch Vehicle Program dated September 2021 are submitted by the Friends of the Wildlife Corridor, a non-profit 501(c)3 organization whose mission is to support and further the conservation mission of Santa Ana National Wildlife Refuge and Lower Rio Grande Valley National Wildlife Refuge (the Refuge). The latter Refuge's largest single tract (21,000 acres) is the Boca Chica Unit which is immediately adjacent to SpaceX's launch site. Thus our organization is extremely concerned about impacts to that area and its irretrievable and irreversible commitment of natural resources.

FAA's Chief of Staff Brian Rushforth stated in an email dated June 29 [2020],
[f]or what it's worth, we do plan on conducting a new EIS See attached Exhibit 1.

Letter dated July 17, 2020, from Daniel Murray, Manager, Safety Authorization Division, Office of Commercial Space Transportation, Federal Aviation Administration

To operate Starship/Super Heavy at the Texas Launch Site, SpaceX must obtain an experimental permit or launch license from the FAA Office of Commercial Space Transportation. Issuing experimental permits and launch licenses is a major federal action under the National Environmental Policy Act (NEPA) and requires a new environmental review beyond the 2014 EIS. See attached Exhibit 2.

We anticipate FAA's fulfillment of this representation.

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Introduction: A New EIS Must Be Prepared.

Agencies, including the Federal Aviation Administration ("FAA"), must invoke the National Environmental Policy Act ("NEPA") during the planning stages of federal agency actions. NEPA is intended to ensure that "unquantified environmental amenities and values may be given appropriate consideration in [federal] decision-making." Under this landmark environmental

statute, a federal agency must take a "hard look" at the environmental impacts of its proposed action and "provide for broad dissemination of relevant environmental information." The statute is therefore crucial because, when properly executed, it allows federal agencies and members of the public to weigh the environmental consequences of proposed federal actions before agencies reach a final decision regarding the best path forward.

We have serious concerns with the Draft PEA that can only be resolved by the FAA developing an Environmental Impact Statement ("EIS"). The project requires an EIS for the reasons listed below.

The 2014 EIS is Obsolete.

In 2014, an EIS was conducted, which since then, became deficient, invalid, and misleading. The construction, testing and firing of the massive Starship and Heavy Booster will have much greater impacts, as opposed to the Falcon 9 and Falcon Heavy, for which the 2014 EIS was written. In fact SpaceX never tested or launched the Falcon 9 or The Starship and Super Heavy booster together will be larger than the 2014-EIS-approved Falcon 9 and Falcon Heavy by an order of magnitude, standing 50 stories tall, with 5.2 thousand metric tons of explosive propellant, nearly 50% more than NASA's Saturn V rocket used to launch moon-landing missions. Space X has turned its site and activities into something unrecognizable from the 2014 EIS and ROD--it is now a large and expanding industrial and launch complex to manufacture, fabricate, assemble and test the Starship and Super Heavy booster rocket. Round-the-clock experimental testing has already significantly increased SpaceX's footprint, and it plans to expand further, by enlarging its acreage, its number of buildings, its number of employees and contractors, its hours of beach and refuge closure, and its number of test firings and pressure tests. Not included in the 2014 EIS are the analysis of environmental impacts of the proposed desalination plant with injection well(s), an LNG plant with associated gas wells and pipelines, and a 250 megawatt gas-fired power plant.

In the short time since SpaceX has conducted operations at the Boca Chica site, there have been multiple accidental explosions at and above the launchpad that disrupted people's lives, scattered rocket debris and caused wildfires that have consumed more than 100 acres of native habitat on national wildlife refuge land. See attached Exhibit 3, which is a list of links to videos of SpaceX explosions. A new EIS needs to also include analysis for the direct and indirect impacts of SpaceX's increased noise, light, shock waves, sonic booms, anomaly events, fires, and explosions, to neighboring towns of South Padre Island, Port Isabel, and Long Island Village as well as to Refuge wildlife, wetlands, vegetation, and endangered and threatened species and their habitat. The Ocelot conservation measures in the ROD were not complied with by SpaceX, and neither

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were the conservation of many other endangered and threatened species in the area, as well as their habitats.

It is necessary to study by way of a new EIS, the direct and indirect impact of SpaceX's frequent fires and explosions upon the permitted but not yet built Texas LNG, Rio Grande LNG, the proposed Jupiter MLP crude upgrader facility, off-shore VLCC loading terminals on the Brownsville Ship Channel, and the storage of much more highly volatile rocket propellant that is also extremely explosive.

We note that the latest license for the Starship tests requires \$198 million in third party liability, and federal indemnification for losses beyond that. This is higher than is required for any Falcon 9 or Falcon Heavy launch from Vandenberg AFB or Kennedy/Cape Canaveral, suggesting a far larger risk zone than was included in the FEIS or ROD. And this probably doesn't include liability for the potential \$20 billion LNG terminals and LNG tankers that will likely be in the expanded risk zone. This list is by no means comprehensive.

The FAA has done an inadequate job in ensuring SpaceX compliance with many of the conditions in its 2014 (ROD). One example is the closure of Highway 4 and Boca Chica beach, which was to be limited to no more than 180 hours per year. In just the past 3 months of this year closures have exceeded 225 hours, often with confusing and inadequate prior notifications and last-minute changes and revocations. SpaceX now wants to nearly triple its beach closure time. To increasingly deny access to eight miles of public beach, state parkland and national wildlife refuge is a significant human impact and needs to be addressed in a new EIS. The road and beach closures, which have further enabled SpaceX's dangerous and careless expansions also constitutes constructive use of state and federal public land, as spelled out repeatedly by USFWS and as addressed later in this letter.

By failing to limit SpaceX's activities to the confines of the 2014 EIS, and by failing to conduct a new EIS, FAA has violated NEPA's prohibition of "irretrievable and irreversible commitment of resources" by allowing a huge build-out of infrastructure, including the 500 foot integration tower, without FAA authorization.

The significant impacts generally described above, and detailed below, illustrate how critical it is for FAA to initiate a new EIS process, and to exercise meaningful, legally required oversight. Otherwise, FAA is not doing its job--to protect the public.

Significant Impact

Under NEPA, an agency must prepare a detailed statement, referred to as an EIS, if it plans to undergo a "major Federal action[] significantly affecting the quality of the human environment." NEPA regulations include guidance for determining the significance of a projects' impacts, requiring agencies to consider "the potentially affected environment and degree of the effects of the action." The potentially affected environment includes "the affected area (national, regional, or local) and its resources, such as listed species and designated critical habitat under the

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Endangered Species Act.” When analyzing the degree of an action’s effect, agencies must consider, among other factors, adverse effects and effects that would violate other laws. Among other harms, SpaceX’s activities are likely to adversely affect the surrounding area, at least ten listed species, designated critical habitat, and the neighboring community. Moreover, the project’s effects will result in multiple legal violations. Thus, the SpaceX project has significant environmental impacts, and the FAA must prepare an EIS before moving forward with any approvals.

Impacts to the Surrounding Area

The SpaceX launch site is adjacent to the Lower Rio Grande Valley National Wildlife Refuge ("the Refuge"), Boca Chica State Park, Boca Chica Beach, the South Bay Coastal Preserve, Brazos Island State Park, Isla Blanca Park, Las Palomas Wildlife Management Area, and Palmito Ranch Battlefield National Historic Landmark. Nearby are tidal flats that host many wading bird species, beaches used by nesting sea turtles and by large numbers of people from the nearby communities for recreation, relaxation and enjoyment. This is an ecologically diverse area with a remarkable community of wildlife unlike any other place in the United States. It is located in a hemispheric meeting place of tropical and subtropical species with a mix of terrestrial, coastal, and marine environments representing one of the greatest diversity of plants and animals found in one place in North America. This area is a unique flyway for western hemisphere avian species, and more than 400 different bird species have been identified in the area. The ecological sensitivity and vulnerability of this area cannot be overstated, and activities in this area must be carefully managed to reduce, avoid, and mitigate impact to resident and migrant wildlife. SpaceX’s operations have seriously harmed nearby areas and will almost certainly continue to do so. Impacts from testing, launching, and failures include, but are not limited to: explosions, sonic booms, bright lights, debris fields, debris left in the ocean, fire, smoke, and release of hazardous fuels and vapors. In the last two years, SpaceX operations have caused repeated explosions, including—among other dates—on November 20, 2019, May 29, 2020, June 23, 2020, December 9, 2020, and March 30, 2021. See attached Exhibit 3. When explosions occur, the debris field can span for miles, which has happened as recently as this year. Exploded rocket debris, along with its removal operations involving heavy machinery such as high-capacity tow trucks and construction dump trucks damage sensitive habitat in the area.

Moreover, these explosions can and indeed have caused wildfires, such as two 2019 incidents that resulted in wildfires of 130-acres and 10-acres respectively which burned through coastal prairie and dune habitats on [national wildlife] refuge managed land. SpaceX’s proposed activities, therefore, threaten to disturb, burn, and damage ecologically critical state, federal and privately-owned lands. These are significant, adverse impacts that the FAA cannot overlook. Instead, it must address these in an EIS.

Impacts to Listed Species and Critical Habitat

The proposed expansion of SpaceX activities at this site would adversely affect at least ten federally listed species and designated critical habitat for one or two listed species. In its Biological Assessment ("BA"), the FAA admitted that the project is likely to adversely affect three listed

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species of birds in the area: the threatened red knot (*Calidris canutus rufa*), the threatened piping plover (*Charadrius melodus*), and the endangered northern aplomado falcon (*Falco femoralis*).

According to the BA, the area contains potential foraging habitat for all three species, and northern aplomado falcons may also nest in the vicinity. Noise associated with the project, such as from intensified traffic, construction, engine testing, and sonic booms, is likely to disturb or displace these species and to decrease foraging efficiency. All three species of birds, along with any nests or eggs, could also be killed if they appear within the heat plume created by engine ignition during testing and launches. The heat plume generated by launches would be 212 degrees Fahrenheit within a .3 mile radius of the launch area. Protected Refuge land begins within 200 feet of the launch area. No living animal above ground can survive 212 degrees. Moreover, according to the FAA, northern aplomado falcons could be attracted to nest and perch on proposed infrastructure, such as towers. If they flush off their nests during disturbances, it would expose their eggs or small young to inclement weather and predators, destroying the eggs and killing the young.

Last, the area contains piping plover critical habitat and proposed red knot critical habitat, both of which are also likely to be adversely affected by the project. We note that population and survival estimates indicate Piping Plovers have declined significantly in the past three years. Contrary to what is stated in the BA, birds cannot just “go somewhere else.” There are no plans stated in the PEA to adequately mitigate any of these impacts.

The BA states that the project is likely to adversely affect endangered Gulf Coast jaguarundis (*Herpailurus yagouaroundi cacomitli*) and ocelots (*Leopardus pardalis*). Texas is home to the only remaining breeding population of ocelots in the United States. This is a very rare species, with only 15 known individuals residing in the area of Laguna Atascosa National Wildlife Refuge, near the SpaceX site. The last verified jaguarundi near Boca Chica was a mortality that occurred on State Hwy 4 (also known as Boca Chica Boulevard)—the road on which SpaceX is located and by which all employees and visitors must travel. The area near the launch site is part of a broader travel corridor connecting suitable habitat for both members of the species, but the proposal will be accompanied by an expansion in the amount of traffic in the area, increasing the likelihood of a deadly vehicle collision with these rare species. The project could cause Gulf Coast jaguarundis and ocelots to avoid lit areas and seek alternate travel corridors through their native habitat in the lomas of the Refuge, causing them to expend more energy and increasing the possibility of a vehicle collision mortality on SH4. Finally, the rocket heat plume may injure or kill individual cats exposed to the plume. The FAA has not explained how any of these impacts to Gulf Coast jaguarundis and ocelots would be mitigated. Lastly, in its BA the FAA asserted the project is likely to adversely affect endangered Kemp's ridley sea turtles (*Lepidochelys kempii*), endangered hawksbill sea turtles (*Eretmochelys imbricata*), endangered leatherback sea turtles (*Dermochelys coriacea*), threatened loggerhead sea turtles (*Caretta caretta*), and threatened green sea turtles (*Chelonia mydas*). Noise and vibrations generated by rocket launches could cause turtles to abandon their nesting attempts by frightening them. Vibrations from rocket launches could also damage incubating eggs not collected by Sea Turtle Inc. either because they were overlooked during patrol or they were laid during times when public access is prohibited. Finally, lighting could potentially be visible from the beach and disorient emerging hatchlings and sea turtles, and hatchlings present near the site at the time of engine ignition could be injured or killed by the

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rocket heat plume. There are no plans to adequately mitigate any of these impacts. Monitoring and “best practices” is not mitigation. Thus, because this project is likely to adversely affect at least ten listed species and designated critical habitat for one or two listed species, its impacts are significant and must be analyzed and mitigated in an EIS.

Impacts to the Neighboring Community and Environmental Justice Concerns

The FAA must also prepare an EIS because the project will likely have significant impacts on the neighboring community, and many of these impacts will be adverse and unduly burdensome. During the NEPA process, “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations...” According to the draft PEA, “[i]n 2018, minority representation in Cameron County was 89.8 percent and Willacy County was 88.4 percent” and the median household income for Cameron and Willacy counties was 50 percent of that reported for Texas for the years 2014–2018.

One negative impact to environmental justice communities includes the encroachment and frequent closures of the public beach. There is immense value of a free public resource, like Boca Chica Beach, especially to communities who need beneficial open space in which to enjoy recreation and other activities. Brownsville residents have enjoyed the cultural, environmental, and recreational values of Boca Chica Beach for generations, and we have major concerns for its degradation and closure to the public. Boca Chica Beach is one of the few, undeveloped, free public beaches in the area. Many residents of Brownsville feel a close connection to Boca Chica as being their beach, because access is free of cost, it is easily accessible, and it is closer than the beaches on South Padre Island. The use of natural and open spaces, especially the beach, help to improve physical and mental health and well-being for all. The burden of reduced public access to Boca Chica beach falls disproportionately on the lower income and Hispanic population of Brownsville and surrounding communities. No mitigation of public beach access and environmental justice impacts are offered.

Furthermore, 13 of 18 local historic resources including national battlefields and local cemeteries have been identified for potential adverse effects by the FAA. These sites hold significant local cultural significance and significance for tourism in the area. The proposed mitigation of these impacts is consultation, which assumes that consultation will result in sufficient mitigation measures. Again, no appropriate minimization of and mitigation for the negative effects have been adequately identified. Environmental harms from this project would disproportionately impact the residents of Cameron County and Brownsville, many of whom are already overburdened by many other sources of pollution. Neighboring communities are already facing structural issues, such as broken windows and disrupted foundations, resulting from the impacts of SpaceX's activities that are already occurring. The proposal will now increase the amount of activity, which would likely be accompanied by increased structural issues, as well as increased air quality concerns, noise impacts, and other environmental degradation described herein.

Threatened Legal Violations

Open Beaches Constitutional and Statutory Guarantees: The FAA must also prepare an EIS for this project because its effects may violate multiple statutes, including laws that serve to guarantee beach access, govern the National Wildlife Refuge System, and protect other public lands. First, this project greatly affects the ability of the public to access and enjoy the Texas coastline adjacent to the project site, including Boca Chica State Park and Beach, a popular public beach on an 8-mile stretch of sand near the city of Brownsville. This area is enjoyed by coastal enthusiasts, bird watchers, conservationists, surfers, as well as those who wish to enjoy the beautiful dunes and native plants near the seashore, a pleasant beach walk, search for seashells, and many more coastal activities. The importance of environmentally responsible beach access, especially to this special place on the South Texas Coast, is guaranteed by local, state and federal law. The Cameron County Beach Access and Dune Protection Plan guarantees beach access in coastal Cameron County and lays out a local plan for accessibility. This includes access to the beautiful coastal prairie and waters of the Gulf of Mexico in Boca Chica Beach. The premier state law on beach access, the Texas Open Beaches Act, which was passed in 1959 making Texas one of the first states in the nation to have strong beach access protections memorialized in law, states: "It is declared and affirmed to be the public policy of this state that the public, individually and collectively, shall have the free and unrestricted right of ingress and egress to and from the state-owned beaches bordering on the seaward shore of the Gulf of Mexico..." The 2009 Texas Proposition 9 ("Prop 9"), a legislatively-referred constitutional amendment approved by the Texas electorate, elevated the level of protection of Texas's beaches by making Texas's Open Beaches Act a part of Texas's Constitution. Federally, the Coastal Zone Management Act was promulgated into law in 1972 to guide the state implementation of coastal zone management programs. The U.S. National Oceanic and Atmospheric Administration, which oversees the state implementation process, requires that coastal management programs include a planning process for protection of and access to state beaches. Here, the duty to protect public access is mandated by federal law, incorporated into state and local laws as a priority for the use of coastal resources and activity in the coastal zone.

Boca Chica Beach has been closed or inaccessible to the public in 2021 for over 500 hours, a conservative estimate. According to tracking of Cameron County notices by the Coastal Bend Bays and Estuaries Program, Boca Chica Beach and/or State Highway 4 had been closed for 473 hours from January 2021 to August 2021. These closures occurred on over 100 separate days and created an inaccessible Boca Chica Beach in 2021. These closures have happened in past years, as well. Since 2019, county officials have repeatedly closed-off the beach and State Highway 4 (the only road that leads to the beach) for various SpaceX launches, testing, and debris clean-up. According to local conservation group, SaveRGV, the Boca Chica Beach has been closed for SpaceX launches for over 450 hours per year since 2019. The FAA has been indifferent to these abuses of beach closure limitations. It follows that the public has lost confidence that the closure hour limits in the PEA will be adhered to and enforced.

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National Wildlife Refuge System Improvement Act of 1977: The project's effects will also result in violations of the National Wildlife Refuge System Improvement Act of 1997 ("Refuge Improvement Act"). For members of the public to use a refuge, the Service must engage in a compatibility determination to ensure that activities are compatible with a refuge's purposes. However, it is our understanding that the U.S. Fish and Wildlife Service has no plans to engage in a compatibility determination to authorize SpaceX's use of the Lower Rio Grande Valley National Wildlife Refuge as a debris field and for debris retrieval. However, even if the Service does engage in this analysis, there is no possibility that these activities could ever be deemed compatible with the purposes of the refuge.

Economic Activities: Moreover, whenever a refuge is used for economic purposes, the Service must issue a special use permit for economic activities. Similarly, we are not aware of any plans to authorize all of SpaceX's current and proposed activities in a special use permit. Moreover, the Refuge Improvement Act requires the Service to administer the System to "ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans." However, largely due to the forced refuge closures, the Service has explicitly stated that "[d]ue to operations by SpaceX, the Fish and Wildlife Service's ability to maintain the biological integrity, diversity and environmental health of Refuge resources... has been significantly diminished at the Boca Chica tract." Finally, the Refuge Improvement Act also requires the Service to "provide for the conservation of fish, wildlife, and plants, and their habitats within the System," and "ensure that the mission of the System... and the purposes of each refuge are carried out." The project will impede the Service's ability to do so.

4(f) Review: The SpaceX proposal would cause significant unmitigated environmental damage to nearby lands, would result in violations of the use restrictions delineated in Section 4(f) of the U.S. Department of Transportation Act of 1966. Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge, only if there is no feasible and prudent alternative to the using that land and the program or project includes all possible planning to minimize harm resulting from the use.

The Lower Rio Grande Valley National Wildlife Refuge (Refuge) and the overall National Wildlife Refuge System maintains the biological integrity, diversity, and environmental health of its natural resources for the benefit of present and future generations of Americans. The Refuge was established in 1979 to protect and restore the unique biodiversity of the Lower Rio Grande Valley of Texas, ensuring the conservation of South Texas fish, wildlife and plant populations and their habitat, which is necessary for the scientific study of wildlife, conservation biology and ecosystem management. The Refuge and Boca Chica public beach also provide recreational uses including hunting, fishing, wildlife observation, photography, environmental education, and interpretation. The area also holds historical significance on a National, State and local level. For these reasons, Boca Chica, the Refuge, and its surrounding areas are 4(f) protected properties.

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Constructive use occurs when there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose or when the project's proximity impacts are so severe that the protected activities, features, or attributes of a property are substantially impaired or substantially diminished. Although SpaceX seeks an exemption to 4(f) requirements by claiming that its “use” is temporary and intermittent, according to the federal judiciary “any park use, regardless of its degree, invokes § 4(f).” Additionally, a “use” of Section 4(f) property can include a temporary adverse occupancy of land. SpaceX would engage in temporary adverse occupancy of neighboring Section 4(f) lands because public access to Boca Chica State Park, Brazos Island State Park, the South Bay Coastal Preserve, and major portions of the National Wildlife Refuge, would be closed during launches. Indeed, even the FWS has highlighted this concern, asserting to the FAA that proposed SpaceX activities will in fact result in a “constructive use” of the Boca Chica tract of the Refuge. FWC submits that “constructive use” exists in the following:

a. 500 Hours of Closure (PEA 2.1.3.5, pgs. 19-23; 2.1.3.5.3, pgs. 23–26)

Beach and SH4 closures constitute “constructive use” because (1) the temporary occupancy of land is adverse in terms of the statute's preservation purpose; and (2) the project's proximity impacts are so severe that the protected activities, features, or attributes of the Refuge and surrounding protected areas are substantially impaired or substantially diminished.

Boca Chica is a public beach, and the public has unfettered access to it under Art. 1, Sec. 33 of the Texas Constitution and Sec. 61.011 Tex. Nat. Res. Code, the Open Beaches Act. Closures from SpaceX activities violate these provisions.

Prior to SpaceX-associated closures, an estimated 110,000 visitors accessed the Refuge annually. Sixty three percent of visitors to the Boca Chica tract were going to surf fish or beachcomb. The majority of visitors are from Brownsville, which has one of the country’s highest poverty rates with 26 percent of the population below the federal poverty line and 23 percent of families earning less than \$25,000. SpaceX activities already exceed the 300 road closure hours of FAA-permitted operations. Closures of the beach affect a population with limited income and few options to recreate. Boca Chica is the only beach that is free to the nearby and largely Hispanic communities. Therefore, additional closures cause substantial impairment and substantially diminish protected activities, features, or attributes of the Refuge and surrounding protected areas because the public beach and all the associated activities are no longer available on an unfettered basis.

b. 300 Hours of Additional Closure to Address Anomalies (PEA pgs. 9, 85–86, 122; Sec. 2.1.3.1, pgs. 15–16).

300 hours of additional closures to address anomalies (accidents or explosions on or above the launchpad) constitute “constructive use” because (1) the temporary occupancy of land is adverse in terms of the statute's preservation purpose; and (2) the project's proximity impacts are so severe that the protected activities, features, or attributes of the Refuge and surrounding protected areas are substantially impaired or substantially diminished.

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In PEA Section 2.1.3.1: Tank Tests, SpaceX is proposing to conduct approximately 10 tank tests a month, estimating a 10 percent rate of anomalies and acknowledges that anomalies would result in explosions and the spread of debris. Anomaly means an unexpected event. The PEA's description is not an "unexpected event," but rather is clearly anticipated. If and when 5,200 tons of liquid oxygen and liquified methane explode (the fuel load of Starship Super Heavy), that is not an "anomaly." It is an environmental catastrophe.

300 hours is an underestimation of the time for road and beach closure for these purported anomalies if comparison is made to the amount of time that it took to clear the debris from the explosion of three Raptor engines. Super Heavy will have as many as 37 Raptor engines and 3 times the amount of volatile fuel.

Since one explosion is expected a month, the noise, light, and debris from the explosion will not be contained only within the SpaceX property line. The PEA is devoid of comments by USFWS or other governmental entities who have care and control of the protected areas.

An EIS is necessary to determine whether the anomalies are adverse to the statute's preservation purpose; and whether these anomalies are so severe that the protected activities, features, or attributes of the Refuge and surrounding protected areas are substantially impaired or substantially diminished. We think they will be.

An EIS would reveal the same matters on closure discussed in part 2 above, which are incorporated herein for all intents and purposes. The extended closures occurring for hazardous explosion and debris-related events, or delays are deterrents for public access to the Boca Chica tract and its beaches for the duration of all published closure timeframes. In 2019, the FWS conservatively quantified more than 1,000 closure hours and noted a significant disparity in accounting between SpaceX's reported total of 158 hours and the conservative total being tracked by FWS staff. Frequent closures caused by SpaceX activities are already substantially impairing both the Refuge's ability to adequately manage the Refuge and the public's enjoyment of the Boca Chica Beach area for wildlife-dependent recreation. The protected activities of the Refuge that are being substantially impaired include fishing, wildlife observation, photography, environmental education, and interpretation. When closures occur, all of these wildlife-dependent recreational uses are substantially impaired because they are not available to the public.

Additional features and attributes of the Refuge that have already been substantially impaired include the sensitive tidal flats, salt prairies, wildlife, and sensitive bird nesting and wintering sites. Based on bird monitoring reports, Snowy and Wilson's plovers have not been documented nesting in close proximity to the SpaceX launching site as they had in years prior to the project. Finally, none of the damage to the sensitive tidal flats from debris pickup and motorized equipment and human access has been adequately addressed. These features and attributes will likely continue to be substantially impaired because explosions, debris, traffic, building construction, and invasive plant species will continue to threaten the health and diversity of the Refuge's habitats and wildlife.

An EIS would also reveal that SpaceX's activity of debris removal has had devastating effects: it has damaged sensitive wind tidal flats and the vehicles or machinery used to retrieve debris have

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created rutting and damage that interrupts tidal water sheet flow across these flats. These hazardous activities prove that FAA's current EIS and USFWS' Biological Opinion must be reinitiated and reevaluated considering SpaceX's expanded and untethered operations. See 50 C.F.R., part 402.16.

c. Noise from SpaceX flight activities. (PEA 3.5, pgs. 48–60).

The noise pollution caused by SpaceX during its testing and launch activities constitutes constructive use because the project's proximity impacts are so severe that the protected activities, features, or attributes of the Refuge and surrounding protected areas are substantially impaired or substantially diminished.

The Department of Transportation Act requires the consideration of natural resources during project development. 23 U.S.C. § 138. 23 C.F.R. § 774.15 identifies potential causes of constructive use to include among many things, “non-physical intrusions such as noise, air pollution, or other effects that would substantially impair the resource's use.”

Upon information and belief, decibel sound will be converted into shockwaves with the launch of the superheavy. The shockwave will kill every living thing in the direct vicinity of the launch pad and will blast eardrums out of every creature until the shockwave drops below 140 decibels. Destruction of hearing in an animal is often a fatal injury at 131.4 decibels. The PEA's glossing over facts and data from noise and shockwave impacts by SpaceX operations, and the failure to study this level of irreparable damage to animal and human life is irresponsible and unmitigated nonsense.

Constructive use exists around the SpaceX protected surrounding site because the emissions of noise during launches or testing will require closure of the beach and State Highway 4. Previous discussions about constructive use resulting from beach and road closures under items a. and b. above are incorporated herein for all intents and purposes.

The project's proximity impacts are so severe that the protected activities, features, or attributes of the Refuge and surrounding protected areas are substantially impaired or substantially diminished because of the declining nesting of certain bird species in Refuge areas as documented by the Coastal Bend Bays and Estuary Program. The effect of both existing and anticipated noise levels on wildlife, such as nesting sea turtles or birds, resulting from these tests has not been adequately analyzed and there has been no demonstration that the noise levels pose no harmful effect. Therefore, an EIS is required to conduct this analysis.

4(f) requires all possible planning to minimize harm resulting from the use; this has not been practiced, documented, or evidenced on the behalf of SpaceX or in the PEA.

An accurate determination of impact is not achievable due to the inability of USFWS to monitor SpaceX's operations due to road and beach closures and other SpaceX related obstructions. Thus, SpaceX has failed to avoid, minimize, and mitigate impacts. A true and accurate finding of effects of SpaceX's proposals under Section 4(f) and Section 106 is not possible.

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The PEA acknowledges that, “[a] startle response from nesting birds can result in broken eggs or cause immature young that are not flight-capable to flee the nest. Repeated nest failures could eventually trigger desertion of a nesting area.” Yet, there are no mitigation measures currently available to reduce the chances of noise-induced startle responses but monitoring of select species could determine if noise was responsible for reduced reproductive success.” With no substantiating data, the PEA then speculates that “[n]oise from the Proposed Action would not be expected to cause a significant impact because the noise events are infrequent and short-term and would not result in impacts at the population level.” See PEA, pg. 113. The words infrequent and short term downplay the effects, especially when other negative effects of increased lighting and road traffic are added to the day-to-day conditions. The PEA offers no mitigation whatsoever for the many and significant impacts to wildlife and wildlife habitat.

Appendix B of the Draft PEA states, “Loud individual events can pose a hearing damage hazard to people and can also cause adverse reactions by animals. Adverse animal reactions can include flight, nest abandonment, and interference with reproductive activities.”

As to all of the foregoing, the level, nature, and extent to which an area is constructively used should be subject to the expertise and determination of the agency responsible for management and administration of the parkland impacted by the constructive use. The project will have significant unmitigated impacts on neighboring habitat, listed species, and the surrounding community, and the project's effects will violate the law in multiple ways. The FAA must prepare an EIS to assess the adverse reaction of species whose hearing response is different from that of humans and to analyze all of these described significant impacts.

The Environmental Assessment Is Inadequate

Even if it were not clear that the FAA must develop an EIS for the SpaceX project, it would be indefensible for the FAA to issue a Finding of No Significant Impact (“FONSI”) at this stage, because the agency's Draft PEA does not meet the requirements of NEPA for issuance of a FONSI or Mitigated FONSI. If it is unknown whether an action will be “significant,” then an agency may prepare an EA. An EA must provide “sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.” The EA must discuss the environmental impacts of and alternatives to the proposed action and must account for connected actions. The Draft PEA, however, fails to adequately consider this information. Overall, the analysis does not provide sufficient evidence to support a FONSI.

The Draft PEA overlooks scores of crucial factors. There has been insufficient launch failure scenario analysis, including associated risk to public safety and natural resources. This is particularly egregious given that failures already are repeatedly occurring yet have never been properly analyzed under NEPA. The Draft PEA should have, but did not, adequately consider the impacts that explosion-induced wildfires and debris-removal operations have had and will have on surrounding habitat.

Among other failings, the FAA has not adequately evaluated the infrastructure attached to this project for significant environmental impacts and feasible alternatives. The Draft PEA makes only

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passing reference to a power plant, without discussing it in any depth and without incorporating it into the site-wide emissions estimate. Moreover, is our understanding that the power plant would require a cooling tower, with additional emissions and/or intake concerns. a 250 megawatt gas-fired power plant requires its own environmental review.

Other launch-related and power plant operations are estimated to emit 47,522 metric tons of carbon dioxide equivalent per year with no mitigation measures attached to this massive greenhouse gas emission. The proposed Liquefied Natural Gas ("LNG") export terminals and a proposed crude upgrading, processing and export facility have not been evaluated as part of the cumulative impacts analysis. Additional connected concerns that have not been addressed or fully evaluated, include but are not limited to:

- Air quality and public health concerns, including those associated with the proposed 250 mW combined-cycle power plant;
- Water quality impacts associated with development and industrial applications, including the desalination plant and injection wells.
- Impacts to listed species and critical habitat;
- Growth inducement and development impacts associated with augmented water, power and gas needs to accommodate a large workforce;
- Gas extraction, gas pipelines,LNG liquefaction, transportation, and storage;
- Greenhouse gas emissions for auxiliary projects;
- HAZMAT, solid waste, and pollution prevention;
- Land use and other impacts to public lands; and
- Health and safety, particularly as relates to "anomaly" explosions, sonic booms/overpressure, and high decibel noise in proximity to populated areas and schools.

Looking down the road at the profound impacts this project could have on this geographic area and sensitive coastal resources, the FAA should take into account how to minimize related impacts that are feasibly connected to the SpaceX project if it were to proceed. These effects are reasonably foreseeable given the immense scope and future plans of the project. The effects should be analyzed thoughtfully, controlled and mitigated at this early date.

Alternatives

While applicants for proposed actions are permitted to draft environmental assessments, the FAA has taken, as it must, responsibility for the document. The FAA has also appropriately warned SpaceX that the launch tower and other infrastructure it has or is constructing has not been

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approved, that SpaceX is proceeding at its own risk in undertaking that construction, and that Space X's proposed actions are not covered by the 2014 environmental impact statement (EIS).

FAA appears to have inappropriately deferred entirely to Space X's evaluation of reasonable alternatives to the proposed action. Without the requirement to analyze all reasonable alternatives as rigorously and objectively as possible, the NEPA process becomes merely an evaluation of the impacts of a decision already made, not a process for making a decision in accord with this nation's national environmental policies.

The statutory basis for alternatives analysis in EA requires that agencies, "study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." Certainly, the situation at issue involves serious unresolved conflicts. The fact that the proposal comes from an applicant instead of the FAA does not lessen the FAA's responsibility to take a "hard look" at alternatives to the proposed action, especially those that would mitigate some of the serious effects of Space X's ongoing and potentially expanded operations.

In the draft EA, the FAA examines only two alternatives – SpaceX's alternative and the no action alternative. The brief discussion of "Alternatives Considered but Eliminated from Further Consideration" in Section 2.3 of the EA succinctly reveals how completely the FAA ceded the alternatives analysis to Space X. It begins by stating that to meet "the purpose and need of SpaceX's proposed Starship/SuperHeavy launch program, Space X determined that action alternatives must meet the following criteria . . ." But there is no legal authority that permits agencies to simply adopt the purpose and need statement of an applicant; indeed, federal courts have cautioned agencies not to frame the purpose and need statement in a way that would "define competing 'reasonable alternatives' out of consideration (and even out of existence). The criteria that follow in the EA are clearly and openly framed by SpaceX's needs and evaluation alone ("SpaceX evaluated its existing launch facilities SpaceX dismissed these launch sites from detailed review.") But while the FAA must understand the applicant's goals, nothing in NEPA law permits the FAA to cede evaluation of alternatives solely based on the applicant's evaluation of its own purpose and need. Indeed, the purpose and need statement and EA violates the FAA's own NEPA procedures that states:

Purpose and Need. This section briefly describes the underlying purpose and need for the Federal action. It presents the problem being addressed and describes what the FAA is trying to achieve with the proposed action. The purpose and need for the proposed action must be clearly explained and stated in terms that are understandable to individuals who are not familiar with aviation or commercial aerospace activities. To provide context while keeping this section of the EA brief, the FAA may incorporate by reference any supporting data, inventories, assessments, analyses, or studies.

The FAA Order contains the legally appropriate direction – to identify the federal purpose and need; that is, what the FAA is trying to achieve with this proposed action. Unfortunately, this monumentally inadequate consideration of alternatives leads the reader to conclude that, despite

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its statements to the contrary, the FAA is trying to get to an approval of SpaceX's proposal without a thoughtful, objective consideration of alternatives.

Conclusion

In summary, the Draft PEA is deficient because it does not include a sufficient level of detail about the project or its potential impacts. Notwithstanding, given what is already known and can otherwise reasonably be surmised, the project will result in significant environmental effects for which proper mitigation has not been proposed. A comprehensive EIS, with full analysis of all components of the project, is required to understand the full extent of impacts that this project may cause, and how, if it is possible, to prevent or mitigate them. SpaceX says its mission is to save humanity. You, FAA, need to divorce yourself from such delusional nonsense. FAA is not SpaceX's lapdog. The FAA is obligated to always put the safety of the public first and foremost. The FAA must make SpaceX honor its original agreement and comply with existing laws and regulations. You are bound by your office's mandate to enforce the laws and regulations, including NEPA. Otherwise, the Boca Chica operations should be shut down for noncompliance, and all unauthorized structures removed. By ignoring your own declared public safety mission, you are failing the residents, wildlife, and populated areas around Boca Chica, allowing an ego-driven company with a terrible environmental and operational record to continue to operate in defiance of your orders and the laws and regulations that govern this situation. The only conclusion that FAA can reach with regards to this PEA is that there are too many significant environmental impacts and no environmental benefit associated with this project. And if it is allowed to proceed without a comprehensive EIS, FAA will violate NEPA's prohibition of "irretrievable and irreversible commitment of resources," the delicate, unique ecosystems of Boca Chica irreparably harmed and the public endangered. Accordingly, as a federal agency entrusted with the public good, the FAA must at the very least do an Environmental Impact Statement. We expect you to do your duty.

Respectfully,

Jim Chapman, President
JChapmanRGV@gmail.com

Exhibit 1

Rushforth, Brian (FAA) <Brian.Rushforth@faa.gov> Mon, Jun 29, 7:53 AM

to me

Mr. Chapman,

As Chief of Staff for the office, you are more than welcome to send the letter to me.

For what it's worth, we do plan on conducting a new EIS.

SpaceX has informed the FAA that its future plans are to eventually conduct suborbital test flights of the Starship prototype and then operate a full-scale Starship launch site at Boca Chica. A full-scale Starship launch site falls outside the scope of the 2014 EIS. The FAA is in the beginning stages of conducting an environmental review of SpaceX's Starship proposal in accordance with the National Environmental Policy Act (NEPA) and the FAA's policies and procedures for conducting a NEPA review (FAA Order 1050.1F). The FAA is working with SpaceX on a project schedule and will put out updates to the FAA project website and environmental distribution list.

The 2014 EIS analyzed the FAA's action of issuing launch licenses and/or experimental permits to SpaceX that would allow SpaceX to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from SpaceX's Texas Launch Site in Boca Chica, Texas. Since publication of the 2014 EIS, SpaceX started to develop the Starship Prototype (Starship for short), which falls under the "reusable suborbital launch vehicle" category discussed in the 2014 EIS.

The EIS assessed up to 12 commercial launch operations per year, including launches of the Falcon 9, a maximum of two Falcon Heavy launches, and/or associated mission rehearsals and static fire engine testing, through the year 2025. SpaceX's current testing of Starship prototypes, including the planned static fire engine test on May 29, 2020, falls within the scope of the 2014 EIS. The FAA conducted environmental reviews of SpaceX's changes to its original proposal analyzed in the 2014 EIS.

These reviews are documented in Written Re-evaluations and can be accessed on the FAA's website: https://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/launch/spacex_texas_launch_site_environmental_impact_statement/#spacex.

I hope this information is helpful, but of course you are more than welcome to send the letter.

Sincerely,
Brian Rushforth
Chief of Staff
Office of Commercial Space Transportation
Federal Aviation Administration
(202) 267-9617



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

Commercial Space Transportation

EXHIBIT 2

800 Independence Ave., SW.
Washington, DC 20591

July 17, 2020

Mr. Jim Chapman
President, Friends of the Wildlife Corridor
613 West St. Charles Street
Brownsville, Texas 78520

Dear Mr. Chapman:

Thank you for your July 3, 2020 letter requesting the Federal Aviation Administration (FAA) conduct a new Environmental Impact Statement (EIS) for Space Exploration Technologies Corporation's (SpaceX's) facility at Boca Chica, Texas.

Before we received your letter, SpaceX proposed operating its Starship/Super Heavy launch vehicle at its Texas Launch Site in Cameron County, Texas. To operate Starship/Super Heavy at the Texas Launch Site, SpaceX must obtain an experimental permit or launch license from the FAA Office of Commercial Space Transportation. Issuing experimental permits and launch licenses is a major federal action under the National Environmental Policy Act (NEPA) and requires a new environmental review beyond the 2014 EIS.

As the lead federal agency, the FAA is responsible for complying with NEPA. Under our NEPA policies, applicants have the right to choose whether to conduct an Environmental Assessment (EA) under FAA oversight or work with the FAA to initiate the EIS process. If an applicant believes the proposed action would have no significant environmental impacts, or that they can mitigate any potential impacts, then the applicant typically chooses an EA. However, all applicants run the potential risk that further review may uncover significant impacts that cannot be mitigated. In those cases, the FAA must conduct an EIS.

SpaceX has begun an EA for the action of issuing experimental permits or launch licenses to SpaceX for Starship/Super Heavy launch operations at the Texas Launch Site.

The FAA has invited the U.S. Fish and Wildlife Service, the National Parks Service, and the National Aeronautics and Space Administration (NASA) to participate as cooperating agencies. In the role of cooperating agency, each agency will actively participate in project meetings and provide comments regarding the description of the proposed action and the proposed action's potential impacts on resources for which it has special expertise and any related mitigation measures.

Again, if the EA identifies one or more significant environmental impacts from the proposed action, and mitigation measures would not reduce the impact(s) below significant levels, the FAA must prepare an EIS.

Your letter also raised several issues on the current mitigation measures, stemming from the 2014 EIS process that SpaceX has conducted. First, that SpaceX no longer conducts bird and vegetation monitoring. Much of the biological resources mitigation stated in the Record of Decision (ROD), including bird and vegetation surveys/monitoring, is also included in the U.S. Fish and Wildlife Service's (USFWS) Biological Opinion for the project. The Biological Opinion (BO) requires the FAA to submit an annual report to the USFWS Coastal Ecological Services Field Office by December 31 of each year. The FAA has submitted an annual report to the USFWS every year since publication of the BO and ROD (2015–2019). The last annual report was submitted to the USFWS in December 2019. SpaceX is continuing active construction biological resource surveys in accordance with the USFWS-approved monitoring plan.

Second, on the ocelot, jaguarundi, and falcon issues, SpaceX has continued to work with the USFWS on how best to conduct monitoring.

Third, SpaceX has and continues to coordinate with the Lower Rio Grande Valley National Wildlife Refuge staff establishing security fencing to protect Refuge lands. SpaceX has contributed funds towards the purchasing of the fence supplies as well as provided storage for the supplies. In addition, SpaceX immediately notifies the Refuge when operations are occurring and in the event of any anomaly or unplanned emergency occurs.

Finally, the FAA coordinated the development and review of the Facility Design and Lighting Management Plan and the Security Plan over several years with the National Historic Preservation Act Section 106 consulting parties. The FAA coordinated the development of the Fire Mitigation and Response Plan with the USFWS and Texas Parks and Wildlife in 2019. SpaceX is currently in the process of updating the Facility Design and Lighting Management Plan given SpaceX's changes to the launch site. As with the mitigation measures described above, these plans stemmed from the 2014 EIS process. All mitigation measures and SpaceX's site plans, including these three plans, will be revisited as part of the FAA's new environmental review for SpaceX's Starship/Super Heavy proposal.

Thank you again for your letter. If you have any questions, please feel free to call me at (202) 407-2381, or send me an email at daniel.murray@faa.gov.

Sincerely,



for: Daniel Murray
Manager, Safety Authorization Division, (ASA-100)
Office of Commercial Space Transportation
Federal Aviation Administration

EXHIBIT 3

Explosion Coverage Links

November 20, 2019 MK1 (exploded in pressure test releasing cryogenic fluid and white vapor clouds)

<https://www.space.com/spacex-starship-prototype-anomaly-pressure-test.html?jwsourc=cl>

April 2, 2020 SN3 (exploded during pressure test)

<https://youtu.be/wFXQ5SRCy74>

May 29, 2020 SN4 (exploded in sonic boom dramatic fireball, black smoke spewing for hours with fire)

<https://cdn.mos.cms.futurecdn.net/Jm37dwZyFdSDgUiAjHezvh-970-80.gif>

June 23, 2020 SN7 test tank (exploded super-chilled liquid nitrogen and released billowing white nitrogen clouds)

August 4, 2020 SN5 Successful

September 22, 2020 SN7.1 test tank (exploded in pressure test)

<https://youtu.be/CkFFgngw6Q4>

December 9, 2020 SN8 (the one he launched w/o FAA permit that FAA eventually looked the other way, exploded in a dramatic fireball 6 minutes and 42 seconds after liftoff.)

<https://www.space.com/rocket-launch-failures-of-2020?jwsourc=cl>

February 2, 2021 SN9 (exploded in fiery explosion again, 911 called out for fire sweep)

<https://www.cnn.com/video/2021/02/02/spacexs-starship-prototype-again-explodes-on-landing-attempt-after-successful-launch.html>

March 3, 2021 SN10 (exploded in a sonic boom and fiery blaze of glory)

<https://videos.space.com/m/bYPbUiBr/spacex-starship-sn10-explodes-shortly-after-landing?list=9wzCTV4g>

March 30, 2021 SN11 (exploded after take off in the air scattering hot, fuel laden debris as far as the Jetties and into the Laguna Madre. Debris in the tidal flats at Boca Chica still there.)

<https://www.valleycentral.com/spacex/public-responds-to-spacex-debris-from-sn11-still-scattered-across-boca-chica/>

SpaceX Launch Investigation Links

February 2, 2021:

<https://spacenews.com/spacex-violated-launch-license-in-starship-sn8-launch/>

March 29, 2021:

<https://spacenews.com/congress-raises-concerns-about-faas-handling-of-starship-launch-license-violation/>

March 29, 2021:

<https://www.reuters.com/world/us/us-house-panel-probes-spacex-launch-activities-2021-03-29/>

June 17, 2021

<https://www.cnbc.com/2021/06/17/faa-defends-spacex-despite-unauthorized-starship-sn8-launch.html>

June 18, 2021: House hearing rehashes longstanding commercial space transportation issues. This article is a very good summary of events.

<https://spacenews.com/house-hearing-rehashes-longstanding-commercial-space-transportation-issues/>

Referenced in the above June 18 article, the House Subcommittee hearing on “Starships and Stripes Forever – An Examination of the FAA’s Role in the Future of Spaceflight”:

https://transportation.house.gov/committee-activity/hearings/starships-and-stripes-forever_an-examination-of-the-faas-role-in-the-future-of-spaceflight

June 21, 2021 FAA Defends SpaceX to Congress

<https://www.avweb.com/aviation-news/faa-defends-spacex-to-congress/>

General Media Coverage

February 28, 2021

Nansi Guevara, a Brownsville resident, effectively addresses the social/environmental injustice issues in this letter to the editor of My RGV News (<https://myrgv.com/opinion/letters-to-the-editor/2021/02/28/letter-spacex-opposed/>)

July 15, 2021: Elon Musk may be forced to take down a SpaceX starship tower because of an FAA environmental review. This is about the integration tower that is being built prior to the release of the EA.

<https://www.independent.co.uk/life-style/gadgets-and-tech/elon-musk-spacex-starship-faa-b1884781.html>

Aug 4, 2021 Job alert: ‘Spaceport Mixologist’ - Bar and grill next to SpaceX High Bay

<https://www.theverge.com/2021/8/4/22609916/spacex-job-opening-spaceport-mixologist-starship-elon-musk>

August 17, 2021 SpaceX Launch Site Brings Controversy to Texas Town - 60 Min+ streaming on Paramount+ - did a good job of examining all the various issues

<https://www.cbsnews.com/news/spacex-launch-site-boca-chica-texas-60-minutes-plus/>

August 30, 2021 – The Final Frontera by Gus Bova – one of the first articles to aptly address environmental issues

<https://www.texasobserver.org/the-final-frontera/>

September 1, 2021 Radio interview with Gus Bova (see above) by Texas Standard

<https://www.texasstandard.org/stories/reduced-beach-access-part-of-battle-between-south-texas-community-and-spacex/>

September 5, 2021 Elon Musk's SpaceX Launch Site Threatens Wildlife, Texas Environmental Groups Say

<https://amp.theguardian.com/environment/2021/sep/05/texas-spacex-elon-musk-environment-wildlife>

September 14, 2021 FAA says it's keeping tabs on SpaceX over environmental concerns in South Texas

<https://www.wric.com/news/u-s-world/faa-says-its-keeping-tabs-on-spacex-over-environmental-concerns-in-south-texas/>