



United States Department of the Interior

FISH AND WILDLIFE SERVICE

1875 Century Boulevard
Atlanta, Georgia 30345

In Reply Refer To:
FWS/R4/RF/Area II

FEB 21 2014

Stacey M. Zee
FAA Environmental Specialist
Shiloh EIS
c/o Cardno TEC Inc.
2496 Old Ivy Road, Suite 300
Charlottesville, Virginia 22903

Dear Ms. Zee:

The U.S. Fish and Wildlife Service (Service) provided the Federal Aviation Administration (FAA) with a technical assistance letter, dated January 3, 2014, that outlined a variety of concerns regarding the proposed Shiloh Launch Complex on Kennedy Space Center (KSC) and Merritt Island National Wildlife Refuge (NWR). We continue to express those concerns. Since that letter, additional information and details have been provided by the FAA and Space Florida regarding the proposed Shiloh Launch Complex. This letter provides additional details and concerns of the Service regarding the proposed Shiloh Launch Complex. Although not included as an attachment to this correspondence, the Service's technical assistance letter of January 3, 2014 is incorporated herein by reference.

MIGRATORY BIRDS

The Service's Migratory Bird Program and Merritt Island NWR believe a risk assessment for each guild/group of birds should be performed. Surveys using accepted protocols should be performed in all habitats to identify species, diversity, abundance, resource needs, and potential effects within both the proposed footprint and within an "area of potential impact" for waterfowl, wading birds, shorebirds, seabirds, raptors, passerines, secretive marsh birds, and other birds. All birds should be surveyed with special attention to the presence of, and potential impacts to, Birds of Conservation Concern (BCCs) as identified in the Service's technical assistance letter dated January 3, 2014. Colonial nesting and rookery areas should also be identified. The use of "best available information" will not be adequate as limited avian data is available for the proposed project footprint and adjacent areas. Therefore, surveys and assessments should begin as soon as possible in order to have an adequate data set.

The area of potential impact should take into account the estimated distances that vibration, noise, smells, sight, and movement of objects (such as rockets), as well as other activities could be perceived by avian species. The distance used for potential impacts to birds should be defined for the most sensitive bird species to a certain activity, with special attention to nesting birds and BCCs. Once the applicant determines how far the above factors are likely to extend from the site, the Service can assist in determining the area of impact to avian species. A 300-foot buffer that was suggested for scrub-jays in the Draft Wildlife Survey Work Plan in support of the Shiloh Launch Complex EIS and Biological Assessment, dated January 2014, is likely to fall very short of what will be required for scrub-jays, as well as other bird species.

According to the Draft Wildlife Survey Work Plan, only a 2-day avian survey is slated to be performed. These surveys would not be adequate to identify species potentially impacted by the proposal and perform

a risk assessment. We recommend performing at least weekly surveys for all guilds and across all habitats, both on-site and in the area of potential impact, for at least one year. These surveys would allow identification of avian residents, spring and fall migrants, and overwintering species, as well as the use of the site and adjacent areas across all seasons. Optimally, surveys would be performed over a 2-year period in order to potentially account for weather-related differences in avian presence. Accepted and appropriate survey methods should be used for the different bird guilds in all habitats such as point counts outlined by Ralph et al. (1993), Ralph et al. (1995), and Reynolds et al. (1980). We recommend consulting with the Service's Migratory Bird Program and Merritt Island NWR when developing the surveys in order to determine whether the planned protocols are appropriate and sufficient.

If surveys are conducted for less than the recommended 1-year time period and are not sufficient to adequately evaluate the population status of local and migrant avian species, this data set would be considered inadequate to sufficiently analyze project-related impacts.

In general, we do not recommend the use of eBird website data in a risk assessment. Although eBird may be somewhat useful to indicate species presence (albeit, still limited), it is unreliable when considering abundance. In addition, because we believe that the proposed site is unique, inferential data from a site that may be considered to have similar characteristics should not be used.

As above, potential impacts to birds and the extent of each should be assessed both upon the footprint of the project as well as within the area of potential impact including, but not limited to: direct mortality of birds and/or the destruction of nests or eggs [which are direct violations of the Migratory Bird Treaty Act, (MBTA)]; indirect effects that may result in nest failure or reduce nesting potential/success, such as noise, vibration, fuel, fumes, and other impacts; activities that alter behavior; and habitat loss. Along shorelines that may be directly or indirectly affected, disturbances to shorebirds and seabirds during nesting, wintering, and staging/feeding during migration should be assessed. For BCCs, the extent of impacts to both the local and overall populations should be assessed.

Although Service depredation permits for the take (killing) of birds directly on-site of some air traffic facilities may be provided when human health and safety are at risk, the MBTA does not allow for take or permits related to on-site construction, maintenance, and/or the operation of a project in adjacent areas. Therefore, avoidance measures and minimization measures should be identified for any potential impacts both on-site and off-site in order to avoid violations of the MBTA by the applicant or operators.

Additional discussion related to identifying potential impacts of the proposed Shiloh Launch Complex are provided below.

BALD EAGLES

The EIS should describe the disturbances to bald eagle nesting sites due to construction, maintenance, and operation activities associated with the proposal.

Bald Eagle Nest Surveys

The State of Florida Fish and Wildlife Conservation Commission (FWC) maintains a State database of all documented bald eagle nests across the State. Not all nests are documented and ground truthing the proposed sites is advised. Aerial survey coverage of the project areas and up to a ½-mile buffer is best to ensure nests are accounted for prior to commencing any tree clearing and to determine appropriate disturbance buffers for construction, maintenance, and operation activities. The survey should be conducted by experienced personnel while territories are active. December to March is the appropriate time to establish nest activity status in Florida. The general nesting season dates are October 1- May 15. Bald eagle nest surveys to support the EIS should include the entire project site and associated facilities,

plus a 660-foot buffer for all construction activities, plus a ½-mile buffer for all areas where launch activities would produce significant audible disturbance (noise). Please report survey results to the FWC so it can update the database, as well as to Merritt Island NWR. Records can be emailed directly to baldeagle@myfwc.com and Mike_Legare@fws.gov.

Bald Eagle Management Guidelines to Avoid and Minimize Take

The National Bald Eagle Management Guidelines and State Bald Eagle Management Guidelines (Florida) prescribe measures to help project proponents avoid and minimize the potential for take, including disturbance. Bald eagles and their nests are protected under the Bald and Golden Eagle Protection Act (BGEPA), as well as under 68A-16.002, Florida Administrative Code. Typical construction buffers are 660 feet from the nest, while blasting and other loud and intermittent noises are up to ½-mile, unless a greater tolerance has been demonstrated. This means that if any of these activities are being proposed closer than the recommended buffers, then they fall outside of the scope of the State and federal eagle management guidelines and a permit would be recommended. State and federal guidelines are found at:

http://www.myfwc.com/media/427567/Eagle_Plan_April_2008.pdf

<http://www.fws.gov/southeast/birds/Eagle/NationalBaldEagleManagementGuidelines.pdf>

The EIS should outline all proposed activities occurring within the ½-mile distance for all proposed launch activities and the 660-foot distance for all proposed construction activities related to operations. All impacts of proposed construction, maintenance, and operation activities must be analyzed for impacts to bald eagles using the ½-mile and 660-foot buffers, as referenced in the National Bald Eagle Management Guidelines.

Bald Eagle Permitting

State and federal permits for eagle take (disturbance) are required in the State of Florida in order to avoid liability under BGEPA and the State eagle rule. Again, if the project proponent cannot follow the State and federal guidance, a permit is recommended. Further information on State and federal eagle permitting can be obtained by visiting:

<http://www.myfwc.com/license/wildlife/protected-wildlife/eagle-permits/>

<http://www.fws.gov/southeast/birds/Eagle/eaglepermit.html>

REFUGE MANAGEMENT

Fire and Space Infrastructure

The proposed project is adjacent to the Shiloh core area of federally threatened Florida scrub-jays, called the Shiloh Scrub Reserve Unit (Shiloh SRU). This land management unit is currently occupied by more than 30 family groups of Florida scrub-jays. This unit encompasses 2,500 acres of Florida scrub habitat. Recent restoration efforts have improved the quality of the habitat such that it is capable of supporting 77 family groups. The principle tool for scrub restoration and maintenance required for Florida scrub-jays is fire. During the 10-year period of 2003 to 2013, the Refuge conducted 45 controlled burns for Florida scrub-jays, or between four and five fires per year, every year. This level of fire management has been made possible in the Shiloh SRU because of the lack of smoke sensitive infrastructure in the area.

Service fire managers at Merritt Island NWR have over 30 years of experience conducting prescribed fire and wildfire control operations in and around smoke sensitive areas of the Kennedy Space Center and Cape Canaveral Air Force Station. The addition of space related infrastructure, launch vehicles, payloads, hardware, transmission lines, and fuel storage facilities make the job of fire managers inherently more complicated. While burning within and around space facilities has additional challenges, planning burning operations and the timing of burn operations outside of launch schedules has been by far the most difficult hurdle to accomplishing scrub habitat management south of State Road 402.

Currently, payload/launch scenarios include a “no smoke” window within five miles of the payload/vehicle, 14 days before the payload/vehicle is transported along the entire transport route. For example, if a payload comes to the Shuttle Landing Facility (SLF) and is transported to Pad 40 for launch, burn operations are precluded for 14 days prior to arrival at the SLF, within five miles of the transport route, along the entire route. When a launch vehicle is at the launch pad, the five mile restriction is then in place around the pad until launch, typically two to three additional weeks. Following this process, each launch typically shuts down prescribed burning activities south of State Road 402 for one month at a minimum.

SpaceX, a commercial launch company, follows this model with the current launch operations at Pad 40 on Cape Canaveral Air Force Station. The above restrictions have been the actual experience of the refuge staff for the last three plus years of SpaceX activity at Pad 40.

Following this model, the proposed Shiloh Launch Complex would likely seriously impact the refuge’s ability to manage the Shiloh SRU. As proposed, we believe the project would adversely affect the Florida scrub jay and would, therefore, require formal consultation under section 7 of the Endangered Species Act. The EIS should describe the impacts to refuge management activities, including to prescribed burning activities, including the restriction zone, the number of closure days, and the impacts to the Florida scrub-jay population in the Shiloh SRU.

Lighting and Space Infrastructure

The Shiloh area currently has very few artificial lights, and none currently exist within the project area. This area is locally famous with astronomy hobbyists. The dark sky and relative isolation of the area are rare features in Brevard and Volusia counties. Wildlife impacts from lighting have been widely addressed on Cape Canaveral Air Force Station and Kennedy Space Center. Sea turtle disorientation is the major impact from light pollution on Merritt Island NWR.

Light pollution has two major forms: direct lighting from unshielded lights in close proximity to the beach and indirect light pollution from skyline glow, or sky glow, which is light on the horizon from more distant light sources that mimic the starlight that turtles would normally encounter over the ocean. Long duration lighting impacts from safety lighting, stairway lights, and vehicle lighting associated with the proposal are a major concern.

Sea turtle disorientation surveys are currently not necessary along the Canaveral National Seashore beach north of the Eagle Four security tower. If the proposed development occurs, disorientation surveys for federally listed sea turtles should be conducted along the majority of the beach north of Eagle Four.

The EIS should document the existing lighting conditions and analyze the lighting impacts of construction, maintenance, and operation activities of the proposal. This documentation should include both the immediate vicinity and the beach habitat due east of the proposed site.

Noise Pollution and Space Infrastructure

The current soundscape of the Shiloh area is mostly natural sounds with the occasional vehicle noise from State Road 3. With the addition of construction, maintenance, and launch operations under the proposal, the soundscape would be expected to be very different both locally to the site with normal operations and within a much larger area during launch and static test firing events. In addition to potential wildlife impacts from disturbance and reduced fitness, the Refuge visitor experience may also be impacted.

The EIS should document the existing soundscape conditions and analyze the noise impacts of construction, maintenance, and operation activities of the proposal. This documentation should include

both the immediate vicinity and at noise sensitive wildlife areas of the Refuge (e.g., wading bird nesting colonies and roosting sites). Noise sensitive areas are where noise interferes with normal activities at structures and sites, parks, recreational areas (including areas with wilderness characteristics), wildlife refuges, and cultural and historical sites. The FAA has stated that it recognizes that there are settings where the 65 Day Night Level (DNL) noise standard may not apply. In these areas, the responsible FAA official would determine the appropriate noise assessment criteria based on specific uses in that area. In the context of rocket launch operations, noise sensitive areas may include such sites within approximately 40 miles of the launch site for launches of very large rockets, whereas noise sensitive areas may include such sites within approximately two miles of the launch site for launches of small rockets.

The EIS should identify adequate noise attenuation equipment and testing methods that would be incorporated into the proposed Shiloh Launch Complex that would insure the elimination of adverse impacts to wildlife within and in close proximity to the Merritt Island NWR. The EIS should evaluate the extreme short-term and long-term noise levels emanating from all rockets that potentially would be launched and recovered from the proposed Shiloh Launch Complex and the acute and chronic effects of those elevated exposures on all species of wildlife within and surrounding the Merritt Island NWR. Noise assessment protocols should be specific for all species of fish and wildlife found in and around Merritt Island NWR. Noise assessments should take into consideration all magnitudes of vehicles that may be tested at or launched from the proposed site.

Traffic and Right-of-Way Improvements and Space Infrastructure

The gopher tortoise, a candidate for federal listing, and the federally threatened eastern indigo snake are the most susceptible species to road mortality, habitat fragmentation issues, and construction disturbance. The proposed project would be anticipated to increase vehicle traffic on State Road 3 and likely result in increased mortality for these two species. The EIS should describe construction, maintenance, and operation impacts of the proposal to gopher tortoises and eastern indigo snakes. Right-of-way improvements that have not yet been identified, but would likely be required to support the proposed project would likely include line of sight clearing and above ground and underground transmission lines and pipes. These additional impacts would increase the project footprint area, impact area, and fragmentation effects. The EIS should describe, identify, and map any and all infrastructure and rights-of-way improvements necessary to support the proposal and the EIS should analyze the impacts of construction, maintenance, and operation of these infrastructure elements and rights-of-way.

The EIS should document the existing traffic conditions and analyze the impacts of traffic, roadway, and right-of-way construction, maintenance, and operation activities of the proposal. This documentation should include both the immediate vicinity and sensitive wildlife crossing areas of the north end of the refuge (e.g., wetland swales that come to the road and scrub ridges adjacent to the road).

PUBLIC USE AND VISITOR SERVICES

The proposed Shiloh Launch Complex is located within the Secondary Public Use Zone of the Merritt Island NWR (U.S. Fish and Wildlife Service 2007). This area supports less intensive public use activities that require more space or depend upon dispersed use to maintain a quality nature-based experience. Of the 1.2 million annual visitors to Merritt Island, over 20% (200,000-300,000) utilize the waterways, boat ramps, hiking trails, hunting areas, and secondary roads north of Haulover Canal. To date, this area has never been impacted by launch-related closures. The public, and the facilities and waterways they utilize, could be impacted by the development and operation of the proposed project. Impacts to be analyzed in the EIS should include direct, indirect and cumulative impacts to refuge visitors and the related natural resources.

Water-based recreation (fishing, waterfowl hunting, and sightseeing) is the primary visitor activity on the refuge north of Haulover Canal. North Indian River Lagoon and southern Mosquito Lagoon are federal waters and are within the Merritt Island NWR. The Intracoastal Waterway passes through Haulover Canal from the Indian River Lagoon and continues north along the western edge of Mosquito Lagoon. In 2002, 100 one-hour aerial surveys were conducted in Mosquito Lagoon and the northern Indian River Lagoon to determine the level and distribution of boater activity. The highest boater concentration occurred along the east and west sides of Mosquito Lagoon with the majority of the fishing pressure north of Haulover Canal (U.S. Fish and Wildlife Service 2007). Boating use on the refuge varies through the year, with Mosquito Lagoon being a local boating hotspot during the summer (Sidman et al. 2007). Over 200,000 boaters utilize those portions of Mosquito and Indian River Lagoon within Merritt Island NWR annually. Although refuge boat ramps are available and heavily used, it seems that most boaters launch from off-refuge boat ramps in the Titusville area (Jane Whaley, U.S. Fish and Wildlife Service personal communication 2013). Additionally, Brevard County boater surveys indicate that more than half of boaters travel from outside of Brevard County (Sidman et al. 2007).

Another high visitor-use area north of Haulover Canal includes the Manatee Viewing Deck (which receives 70,000 visitors annually). Additionally, the northwest side of Haulover Canal is heavily used as a launch site for non-motorized watercraft. Other activities include waterfowl hunting within the Shiloh Impoundments and Mosquito Lagoon hunt areas; hiking on Pine Ridge Trail; and fishing, hiking, and biking along Shiloh Marsh Road. A proposed archery hunt for white-tailed deer and feral hogs is scheduled to open in late 2015. Nature photography and bird watching also are extremely popular activities in the Shiloh area.

Future recreational improvements planned for the area north of Haulover Canal include development of a 27-mile bike trail. The proposed Titusville to Edgewater Loop bike trail is intended to provide a connection between the existing and proposed trail heads in Titusville and Edgewater which are associated with the East Central Regional Rail Trail and is envisioned to be a potential national destination for both recreational and experienced trail users. The project feasibility study is currently underway. Project partners include Florida Department of Transportation, Space Coast Transportation Planning Organization, Volusia County Transportation Planning Organization, NASA, and the refuge. Additional planned facilities include a canoe trail in the Turnbull area and a canoe trail along the east side of Mosquito Lagoon (U.S. Fish and Wildlife Service 2007).

The northern area of the Refuge has little visible infrastructure and provides a scenic area to drive through or recreate within. Additionally, the roads in this area receive minimal traffic; consequently, related road noise is low. This scenic, quiet vista is highly valued by refuge visitors. The lack of infrastructure and industrial activity, coupled with a landscape containing a diversity of upland and wetland wildlife habitat provides the public with high quality nature-based recreational opportunities.

The recreational uses in this area contribute to the local economy (Brevard, Seminole, Volusia, and Orange counties). Seventy-seven commercial boating and fishing guides are permitted by the Service and National Park Service in the Mosquito Lagoon and northern Indian River Lagoon. These guides promote compatible use of the refuge's natural resources by providing guiding services to individuals and/or groups of visitors. In addition to commercial guides, 62 commercial seafood harvesters utilize the same area.

Substantial economic benefits occur within the local communities due to employment, income, and tax revenue effects generated from Merritt Island NWR's commercial users and recreational visitors. Refuge visitors pay for recreation through entrance fees, lodging near the refuge, and purchases from local businesses for items to pursue their recreational experience. This spending generates economic activity throughout the local economy. Sexton et al. (2012) found that nonlocal visitors to the refuge stayed in the

area, on average, for six days and spent an average of \$91/person/day. Local visitors spent an average of \$52/day/person. According to the Service's 2013 Banking on Nature report, \$60.4 million was generated by Merritt Island NWR in the counties of Brevard, Volusia, and Orange in Fiscal Year 2011 (U.S. Fish and Wildlife Service 2013).

Closures to accommodate launch and recovery operations would be anticipated to impact refuge visitors. To determine the level of impact of such closures, the launch and recovery closure/hazard area and average length of closure for dress (wet and dry) rehearsals, static firings, launches, and first-stage recoveries should be defined in the EIS. Based on the proposed 24 launches per year, the EIS should estimate the number of days of closure and the number visitors that would be unable to utilize the refuge each year due to launch operations.

To protect the public utilizing the Refuge during launch operations, Space Florida would have to ensure that the hazard zone is cleared of vehicles, vessels, and persons. Due to overlapping jurisdictions of the area impacted by launch operations and closures, Space Florida should develop a plan to be included with the EIS that outlines timing, methods, and responsibilities for closing and clearing the following:

- Kennedy Parkway (State Road 3)
- Intracoastal Waterway
- Mosquito Lagoon and Indian River Lagoon
- Refuge public use areas (including boat ramps, hunting areas, secondary roads and trails, Manatee Viewing Deck, and the northwest Haulover Canal area)
- Sawmill and Shiloh Marsh roads
- Shiloh and Mosquito Lagoon impoundments

To accommodate the public who regularly utilizes the north refuge entrance to commute to work, deliver supplies and materials, or visit the Refuge or Canaveral National Seashore, Space Florida should develop a detour route that is outside of the hazard area as part of the EIS. The EIS should describe the clearing, closing, and reopening process and clarify who would be responsible for notifying the public and clearing and closing access to launch and recovery hazard areas. The EIS should clearly identify for the public the detour routes and the lengths of time of the detour routes associated with closures for key destinations (e.g., KSC security gate near State Road 3 and State Road 402, Canaveral National Seashore entrance fee booth, Haulover Canal area, Bio Lab boat ramp, Scrub Ridge Trail, Black Point Wildlife Drive, and the refuge's visitor center). To minimize inconvenience to the public, this process should include notifications within a four-county area to adequately reach visitors, employees, and commercial vendors who come from outside the local commuting area.

Further, the EIS should identify proposed public viewing areas for launches, ensuring that all applicable laws and regulations are met.

Currently, Kennedy Parkway (State Road 3) is a narrow, lightly-utilized, two-lane road with no road shoulders. The EIS should describe the level and type of vehicle-use, the associated impacts, and any mitigation measures that would be expected during construction, maintenance, and operation of the site. The EIS should describe the road upgrades that would be necessary to support the increased industrial traffic, including impacts of those activities. The EIS should describe expected increase in ambient pollutants (e.g., noise, light, and air) for the area and how Space Florida intends to mitigate impacts on the public (including refuge and Canaveral National Seashore visitor experiences) and natural environment. The EIS should identify the entity or entities responsibility for financing and maintaining all infrastructure needed to support the proposal.

Construction of launch-support infrastructure in the Shiloh area would be anticipated to adversely impact the natural viewshed currently enjoyed by the public. Additionally, there are no utilities in this area; electrical, telecommunications, and related utility infrastructure would need to be added. The EIS should describe these infrastructure elements and the impacts of their installation, maintenance, and operation. These additional structures would also be anticipated to negatively impact the visitor experience. Impacts to the natural viewshed should be minimized. Much of the proposed site is located on former citrus groves which were replanted with Laurel oaks (*Quercus laurifolia*) approximately 30 years ago. This area also contains areas of old growth maritime hardwood hammocks. Native vegetation should be retained where possible between the road and launch facilities. Utilities should be installed underground.

The proposed Shiloh Launch Complex site plan encompasses two public access roads: Shiloh 3 and Weather Tower roads. These public roads are utilized seasonally and should remain open to the public during hunting season. The public utilizing these access roads should not be restricted by site security or operations. These roads are two of the primary access roads for the Shiloh hunt areas.

Starting in 2015, the Refuge anticipates opening deer and feral hog hunting (archery) in the upland area north of Haulover Canal, including the area encompassing the proposed Shiloh Launch Complex. Space Florida needs to assure that hunters have full access to refuge lands and roads included in the hunt area.

The Shiloh waterfowl hunt area requires quota hunt permits during November and December which are purchased through the Florida Fish and Wildlife Conservation Commission. Each permit holder can bring three guests. The hunters must have a State hunting license and appropriate State and federal stamps. Each permit is issued for a specific impoundment and a specific date. The proposed archery season will be managed under a similar quota system. Because there is no method to reimburse or offer alternative hunt dates to hunters for lost hunting opportunities due to launch closures, the EIS should address the impacts of hunt closures and the impacts to hunters (including the expenses of hunters for travel and permits that would be null under a closure).

Refuge Hunt Area 3 is a non-quota hunt area that includes all of Mosquito Lagoon north of Haulover Canal to the refuge boundary, including all the impounded wetlands on the east side of the Mosquito Lagoon (adjacent to Playalinda Beach). The EIS should describe closures due to launch operations and address closing and clearing procedures for these areas.

The population of the four-county area (Brevard, Volusia, Orange and Seminole counties) is expected to increase from the 2012 level of approximately 2.2 million (U.S. Census Bureau 2014) to a potential level of 3.6 million by 2035 (Smith and Rayer 2010). As the local population increases, demand for nature based recreation will continue to grow. Due to the positive economic impact refuge visitors have on adjacent communities, the EIS should analyze the impact of launch closures on Refuge generated revenue over the short-term and long-terms. Additionally, the EIS should evaluate the potential loss of revenue for permitted commercial users (guides and harvesters) due to launch closures.

CULTURAL RESOURCES

FAA and Space Florida have defined the proposed undertaking's Area of Potential Effect (APE) as the 200-acre launch complex site. This APE is too narrowly defined and does not include transportation and utility corridors, the area to be closed during launches, and the re-routing and/or replacement of existing refuge infrastructure (e.g., access roads leading to impoundments, hunt areas, and research or management plots). The existing transportation and utility networks are likely insufficient or non-existent to support required equipment access, construction, maintenance, and operation activities for the proposal. The existing transportation corridor traverses Merritt Island NWR and a complex of National Register-listed and eligible historic properties, which triggers Section 4(f) of the Department of Transportation Act.

The EIS should describe, map, and analyze the impacts associated with the utilities needed to support the proposal. Any route, even if parallel to the existing State Road, would cross the refuge and the Elliott Plantation Complex. The plantation complex refers to a suite of historic properties, including 8VO130, 8VO131, 8VO160, 8VO213, 8VO2569, 8VO9403-9506, and associated cultural landscapes. These historic properties exhibit chronological depth and ethnic diversity [including pre-Columbian Native Americans, the late protohistoric – early historic Ai, 16th – early 19th century Europeans (British and Spanish), the Seminoles, Africans and African Americans, and Americans]. Space Florida proposes to launch both medium and heavy vehicles that require a closed area or safety zone. For the current exercise, the APE should be extended to include the footprint of the closed area that would be required for heavy launch vehicles, such as the Falcon Heavy.

The EIS should adequately define the area of impact to cultural resources for proposed launch-related construction, maintenance, and operations, including the areas directly and indirectly impacted by construction, road improvements, and utility and other rights-of-way. The area of impact to cultural resources should include areas impacted by noise and vibrations associated with construction, maintenance, and operation of the proposal. To ensure that historic properties are adequately considered pursuant to the National Environmental Policy Act, Section 4(f) of the Department of Transportation Act, and Section 106 of the National Historic Preservation Act, the listed actions are recommended:

- Conduct a systematic Phase I terrestrial and underwater archaeological and historical reconnaissance of the undertaking's APE. The underwater reconnaissance should include the relevant portions of the Indian River Lagoon, Mosquito Lagoon, and the Atlantic Ocean.
- Conduct an architectural survey to identify, record, and evaluate standing structures and bridges, as well as above-ground architectural ruins. One of the survey's objectives should be to identify historically significant architectural properties that could be damaged during the construction, maintenance, operation of the proposed launch complex, which would then allow for the identification of relevant measures to mitigate potential damage that could be caused by launch and test firing vibrations.
- Conduct a Phase II testing of newly identified and prior recorded historic properties in order to determine their National Register eligibility.
- Conduct Phase III data recovery of historic properties where appropriate. Such investigations, if deemed necessary, would require the negotiation of a programmatic agreement that clearly delineated the participating parties' roles and responsibilities. Parties that should be included, but would not be limited to, FAA, Space Florida, NASA, the Service, the National Park Service, Florida Division of Historic Resources, the Seminole Tribe of Florida, the Miccosukee Tribe of Florida, the Seminole Nation of Oklahoma, the Muscogee (Creek) Nation, and the Poarch Band of Creeks.
- Develop and implement, in consultation with the Native American Tribes, Florida Division of Historical Resources, and other coordinating federal and State agencies, a policy or standard for the protection, treatment, and, if recovered, the disposition of human skeletal remains and funerary objects.
- Conduct an ethnographic overview and assessment of Shiloh and the surrounding area. This investigation should include archival research and oral history interviews that would aid in the identification of 18th-20th century historical contexts, traditional cultural properties, and other places of cultural significance to local communities. This investigation should include or involve the Seminole Tribe, the Seminole Nation, and the Miccosukee Tribe.
- A number of historic landscapes are present within and near the APE. These include, but are not limited to, the late pre-Columbian – early historic Native American landscapes; the plantation landscapes associated with the Elliott Plantation and the African and African American slave 18th – mid-19th century landscape; early American and later rural agricultural landscapes; and

landscapes associated with resource exploitation (e.g., fishing, hunting, and timbering). Some areas, specifically archaeological sites, may possess unique floral communities. A cultural landscape survey should be conducted. These investigations would draw upon the results of the Phase I archaeological reconnaissance, archival research, the ethnographic overview and assessment, and vegetative cover investigations conducted by the refuge, Canaveral National Seashore, and NASA. Use of LiDAR or similar high resolution mapping technology is highly recommended.

It is imperative that the archaeologist, architectural historian, ethnographer, historical ecologist and/or archaeological consulting firm selected to conduct the above investigations are well-versed in the archaeology, history, ecology, and the geomorphology of east Florida. Five specific areas of knowledge are critical: late pre-Columbian and early historic Native American archaeology, history, and ethnology; late 18th– early 19th century British sugar plantations of Florida and the Caribbean Basin; early 19th century Spanish history of east Florida; archaeology and history of late 18th– mid-19th century slave communities and later African American freedmen and rural communities and landscapes; and 19th–20th century rural and maritime communities and associated landscapes.

The Service recommends that the FAA and Space Florida provide funds that enable the National Park Service's Southeast Archaeological Center to complete the technical report of its recent archaeological and historical investigations of the Elliott Plantation Complex. This report is an integral component of the archaeological, historical, ethnographic, and ecological investigations mentioned above and would aid in the analysis of potential impacts of the proposal.

Note: Any cultural resource surveys will require appropriate permits; the FAA will need to coordinate all cultural resource work with Rick Kanaski, U.S. Fish and Wildlife Southeast Regional Archaeologist, and with the Refuge.

CATASTROPHIC FAILURE

On January 18, 1997, a Delta II rocket exploded 13 seconds into the launch and 1,589 feet above Cape Canaveral Air Force Station. Due to the close proximity of the launch site to the Atlantic Ocean, most rocket debris fell into a cleared area of the ocean, although some fell over land and caused a small brush fire. The blast was felt as far as 25 miles away and broke windows 10 miles from the launch site. The proposed Shiloh Launch pads are located nearly four miles from the ocean. If a similar failure occurred with a rocket launched from the proposed Shiloh site, debris could fall predominately on Kennedy Parkway, the upland scrub area due east of the launch site, Mosquito Lagoon, and Playalinda Beach. Compared to Cape Canaveral Air Force Station launches, a failed launch from Shiloh Launch Complex would have a significant impact on human safety, Refuge and seashore facilities, infrastructure, wildlife, and the environment. Because of the tremendous damage and impact a catastrophic failure, accidental or purposeful, by authorized personnel or not, could have on the resources and on the operation and management of the refuge, include a probabilistic risk analysis that systematically and comprehensively analyzes a feasible catastrophic outcome of proposed launch activities. The EIS should describe Space Florida's planned response and the level of potential damage to adjacent land, water, wildlife, staff of the refuge and Canaveral National Seashore, and the public, as well as how the determination would be made to reopen the area to the public and how damage and losses of Refuge and Canaveral National Seashore resources would be mitigated. Space Florida should coordinate with local agencies, including the Service, National Park Service, NASA, and appropriate local authorities to develop an emergency response plan to include actions for assessment and mitigation of impacts to infrastructure, natural and cultural resources, and the public in the event of a catastrophic mishap.

CONTAMINANTS

Specific information relating to the identity of hazardous materials and liquid/solid propellants to be stored on the proposed Shiloh site should be quantified and evaluated during the EIS process to enable an evaluation of potential impacts to all fish and wildlife species. The EIS should address the potential for fish and wildlife exposure to contaminants (e.g., from energetic liquids, solid propellants, and other explosives and/or hazardous wastes) within or adjacent to the Merritt Island NWR from the proposed Shiloh Launch Complex and analyze the impacts of such potential contamination. The EIS should describe how storm water and nonpoint source discharges from the proposed Shiloh industrial site activities will be managed. The EIS should identify if the proposed Shiloh Launch Complex will require a National Pollution Discharge Elimination System (NPDES) permit. The EIS should describe and analyze how the proposed Shiloh Launch Complex could impact Indian River Lagoon National Estuary Program plans and activities. The EIS should describe and analyze the potential impacts of containment structures for hazardous and/or explosive materials storage on the proposed Shiloh Launch Complex site. A Spill Prevention Control Plan and a Countermeasures Plan for the proposed Shiloh Launch Complex should be available for review during the EIS review.

ALTERNATIVES

The Service believes that the potential unavoidable effects of the proposed project as currently presented would be very difficult to mitigate. The Service recommends that the FAA consider and evaluate in the EIS not only the proposed project site, but also alternative sites. The consideration of alternative sites was also suggested during the February 10, 2014 hearing of the Congressional Committee on Oversight and Government Reform Subcommittee on Government Operations held at the Kennedy Space Center Visitors Complex. The January 3, 2014 technical assistance letter outlined the Service's concern that a reasonable range of alternatives be evaluated in the EIS. A potential alternative to be evaluated in the EIS could be a site within the Kennedy Space Center security area, south of State Road 402.

ADDITIONAL QUESTIONS

Will the FAA and Space Florida facilitate Florida scrub-jay conservation areas and fire management programs in perpetuity that would be required to maintain and increase the number of Florida scrub-jays inhabiting the lands surrounding and adjacent to the proposed Shiloh Launch Complex and the amount of habitat required to support territorial pairs of these birds?

What will be the size of the zone of influence, safety zone, noise impact zone, exclusion zone, and buffer zone for the proposed Shiloh Launch Complex? How many days per year will zone restrictions be in place? Will the proposed Shiloh Launch Complex have an adequate noise, safety, and wildlife buffer zone when taking into consideration the potential for future development, catastrophic failures, and all the different sizes of rockets that may be launched from that facility? (Note: SpaceX has indicated that no people may be present within 1.5 miles of their launch activities due to the extreme noise level or within a 3 mile safety zone due to the danger of malfunction.)

Why is the proposed Shiloh Launch Complex being proposed in an area that has previously been identified as an operational buffer zone for rockets being launched from the Kennedy Space Center?

What is the FAA's confidence in the integrity of the proposed Shiloh Launch Complex to guarantee that no catastrophic events (e.g., launch failures, explosions, and marsh and/or Indian River Lagoon fuel or

hazardous waste contamination) would harm or adversely impact the fish and wildlife within the Merritt Island NWR or the habitats those species depend on for survival?

The FAA should specify and ensure the implementation of all mitigation measures through special conditions, funding agreements, contract specifications, directives, other review or implementation procedures, and other appropriate follow-up actions in accordance with 40 CFR § 1505.3. Monitoring and other required follow-up reviews should be described in the EIS, and should allow for verification of the mitigation effectiveness. All mitigation, similar measures, and responsibilities should be recorded in the Record of Decision for FAA's EIS for this proposed project.

CONCLUSION

The Service continues to have serious concerns regarding the proposed Shiloh Launch Complex as currently presented. The EIS should address the direct, indirect, and cumulative impacts of the proposed project to the human environment, including natural resources, cultural resources, and public use and access. This letter provides additional details and concerns of the Service regarding the proposed Shiloh Launch Complex; it should not be considered as meeting other consultation requirements, such as the requirements of consultation under the Endangered Species Act, Migratory Bird Treaty Act, Marine Mammal Protection Act, or Bald and Golden Eagle Protection Act.

The Service suggests that the FAA:

- Continue to meet with the Service, including Merritt Island NWR, the Jacksonville Ecological Services Field Office, and the Florida/Caribbean Migratory Bird Field Office to discuss and refine data being collected.
- Coordinate with species' experts and seek other authorities to obtain the best scientific and commercially available data.
- Meet with the Service to discuss the range of alternatives and direct, indirect, and cumulative impacts of the proposed Shiloh launch Complex, including future build-out and catastrophic events.

Thank you for the opportunity to provide input and to express our concerns and recommendations regarding this matter. If you have any further questions, please contact me at (404) 679-4000 or Layne Hamilton, Refuge Manager, Merritt Island NWR, at (321) 861-2278.

Sincerely yours,



foCynthia K. Dohner
Regional Director

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