July 8, 2021

Ms. Stacey M. Zee, Environmental Specialist
Federal Aviation Administration c/o Leidos
2109 Air Park Road, SE, Ste. 200
Albuquerque, New Mexico 87106

Mr. Steve Howard, County Administrator
Camden County Board of Commissioners
P.O. Box 99
Woodbine, Georgia 31569

RE: Federal Consistency Certification Concurrence: FAA LSOL, Spaceport Camden, Camden County, Georgia

Dear Ms. Zee & Mr. Howard:

The Georgia Coastal Management Act, O.C.G.A. § 12-5-320 et seq., authorizes the Georgia Department of Natural Resources (DNR) to concur or object to any certification of consistency from a federal agency for a permit or license that may impact coastal uses or resources. 15 C.F.R. 930 Subpart D provides implementing regulations for federal consistency reviews.

On December 30, 2020, Camden County submitted to DNR an application for a Federal Aviation Administration (FAA) Launch Site Operator License (LSOL) and Certification to be reviewed for consistency with Georgia’s environmental laws. Additionally, other state and federal agencies, as well as the public, have reviewed the application. The FAA conducted a Policy Review that involved coordination with the Department of Defense, Department of State, Federal Communications Commission, National Aeronautics and Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA), United States Coast Guard (USCG), and the Office of the Director of National Intelligence. The FAA prepared the Environmental Impact Statement (EIS) under the Environmental Review portion of the license evaluation in cooperation and/or consultation with National Park Service, NASA, USCG, U.S. Fish and Wildlife Service, National Marine Fisheries Service (NMFS), Georgia State Historic Preservation Officer, Advisory Council for Historic Preservation, and other consulting parties. The FAA Record of Decision considers these various reviews before determining whether to issue the license; therefore, we recognize this letter is not outcome determinative as to the issuance of the LSOL.
DNR staff has reviewed the FAA Spaceport Camden Draft EIS (DEIS, March 2018), FAA Revised Launch Site Operator License application (January 2020), and Coastal Consistency Certification (CCC, December 2020). The revised LSOL application contains the Explosive Siting Plan, Accident Investigation Plan, Control of Public Access/Security Plan, Camden County Emergency Operation Response Plan, and Example Comprehensive Launch Plan\(^1\), among other plans and attachments. These items were placed on public notice from January 7, 2021, to March 8, 2021. Over 1,700 comments were received and taken into consideration during review. We received an FEIS and revised Federal Consistency Certification in June 2021. These were not placed on public notice. State agencies cannot require submission of National Environmental Policy Act (NEPA) documents, such as a Final EIS (FEIS), to complete their review.\(^2\)

The Camden County Board of Commissioners (the County) is proposing to construct and operate Spaceport Camden, a commercial space launch site that would offer vertical launch vehicle operators a facility on which to ready, test, and execute up to 12 annual launches (one at night) of small lift-class orbital liquid propulsion launch vehicles over the next 5 years\(^3\). Launch vehicle operators wishing to use the facility must obtain a separate FAA Launch Operator License (LOL) that has undergone additional environmental and safety review for the specific rocket(s) they intend to launch, including federal consistency review by DNR.\(^4\) Suborbital launch vehicles,\(^5\) reusable launch vehicles,\(^6\) and unproven launch vehicles\(^7\) will not be authorized to use Spaceport Camden under this LSOL. Camden County would need to submit a LSOL modification request to FAA to allow launch of any of these rocket types or make any major changes in the construction or operation of the site. The LSOL modification request would undergo additional environmental and safety review by DNR and FAA.

Unlicensed suborbital launch vehicles, such as amateur rockets exempt from Title 14 Part 101 or launch vehicles that have been reviewed by FAA and obtained waivers under Title 14 Part 101.3, do not require Launch Operator Licenses (LOLs), are not reviewed by DNR, and may launch at

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\(^{1}\) LSOL Application Attachments 6, 7, 5, 8 and 9, respectively  
\(^{2}\) 15 CFR 930.37  
\(^{3}\) FAA LSOLs are valid for 5 years  
\(^{4}\) DEIS Section 1.4.1 FAA Licenses, page 1-6, lines 17-22  
\(^{5}\) LSOL Application Attachment 2: Spaceport Camden Launch Site Location Review, Section 3.2 Guided Sub-Orbital Expendable Launch Vehicle Flight Corridor [14 CFR §420.23(b)]: “Spaceport Camden is not requesting permissions for guided suborbital operations at this time;” and Section 3.3 Unguided Sub-Orbital Expendable Launch Vehicle Flight Corridor [14 CFR §420.23(c)]: “Spaceport Camden is not requesting unguided suborbital operations at this time;”  
\(^{6}\) LSOL Application Attachment 2: Spaceport Camden Launch Site Location Review, Section 3.4 Reusable Launch Vehicle Flight Corridor [14 CFR §420.23(d)]: “Spaceport Camden is not requesting reusable suborbital operations at this time;”  
\(^{7}\) LSOL Application Attachment 2: Spaceport Camden Launch Site Location Review, Section 6 Launch Site Location Review for Unproven Launch Vehicles [14 CFR §420.29]: “Spaceport Camden is not applying for these permission in this application.”
sites that do not have LSOLs. The Vector rocket that was launched at the site of the proposed Spaceport Camden in 2017 was reviewed by FAA and received a Title 14 Part 101.3 waiver. Camden County did not need an LSOL to launch from the site and DNR did not review this activity. A second launch took place at the proposed Camden Spaceport site in 2019 that involved the launch of an experimental amateur rocket exempt from FAA and DNR review by the Georgia Institute of Technology’s Yellow Jacket Space Program. Launching of these vehicles can continue at the Spaceport Camden site whether or not FAA issues an LSOL.

NOAA regulations lay out the obligations of all parties who are required to comply with the federal consistency requirements of the Coastal Zone Management Act. Camden County and DNR are charged with developing conditions that, if agreed to during the consistency review period and included in FAA’s final decision, would allow DNR to concur with FAA’s issuance of the LSOL. Implementation of the federal consistency requirements must strike a balance between the need to ensure consistency with state laws for federal actions impacting coastal resources and the importance of federal activities. Camden County, DNR, FAA and other state and federal resource agency discussions over the past three (3) years resulted in Camden County modifying their LSOL application and incorporating conditions and/or alternative measures that will be incorporated into the LSOL through reference or FAA Terms and Conditions. Specific modifications, conditions, and/or mitigation measures addressing relevant DNR enforceable policy concerns Camden County has incorporated into their LSOL application or has agreed to incorporate into future documents are described below.

If the FAA determines, through a Record of Decision (ROD), that an LSOL will be issued, Camden County’s LSOL will incorporate these conditions by reference or as enforceable Terms and Conditions of the permit. After the LSOL is issued, FAA will require the submission of several documents outlining specific mitigation measures prior to construction of the launch site. These include a Protected Species and Habitat Management Plan, Lighting Management Plan, Wildland Fire Management and Burn Plan, and Site Revegetation and Landscaping Plan. While none of these documents are required by FAA prior to issuance of an LSOL, they must be reviewed by and receive approval from FAA and DNR as part of the LSOL terms and conditions. Camden County has voluntarily agreed to incorporate the mitigation measures below into the future documents to satisfy consistency with DNR’s enforceable policies.

FAA also requires additional documents before the site can be operated that are not typically submitted until a launch site has entered into an agreement with an individual launch vehicle operator. These documents are specific to the launch vehicle that will be operated on the site.

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8 Attachment: 20210607_GADNR-CRD_Q and A_Spaceport Camden Excel Spreadsheet, 2/8/21 Answer column
9 15 CFR § 930.1(a)
10 15 CFR § 930.4(a)
11 15 CFR § 930.1(b)
12 DEIS Section 6.2.1 Construction, pages 6-1 to 6-2
and are a collaboration between the site operator and the vehicle launcher. These documents outline additional mitigation measures and include a Storm Water Pollution Prevention Plan; Spill Prevention, Control and Countermeasure Plan; and Hazardous Waste Management Plan. Like the pre-construction documents above, these pre-operation documents must be reviewed and approved by FAA and DNR as part of their LSOL terms and conditions and will include the mitigation measures below to satisfy consistency with DNR’s enforceable policies.

All FAA-required post-LSOL documents will be reviewed by DNR concurrently with FAA if the LSOL is issued to ensure they remain consistent with state enforceable policies and FAA terms and conditions. Additionally, all future launch vehicle operators wishing to use Spaceport Camden would have to obtain an LOL from FAA after obtaining federal consistency concurrence from DNR. FAA will conduct a policy review, payload review, financial determination, and safety review as part of the launch license evaluation process for an individual launch vehicle operator. For FAA to complete the safety review, an individual launch vehicle operator is required to submit a flight safety analysis detailing the specific flight trajectory and hazard areas.

Putting these parameters in place now facilitates consistent and predictable expectations for future launch vehicle operators that minimizes the potential for impacts to both Georgia’s coastal uses and coastal resources while balancing development and economic growth. Individual conditions and mitigation measures will not need to be re-negotiated with each potential launch vehicle operator for the 5-year duration of the LSOL; they will simply be the ground rules for use of the Spaceport Camden launch site.

Enforceable Policies Addressing Coastal Uses:
NOAA’s Federal Consistency implementing regulations define Coastal Uses to include, but are not limited to, public access, recreation, historic or cultural preservation, development, hazards management, marinas, floodplain management, scenic and aesthetic enjoyment, and resource creation or restoration projects.

The State of Georgia is the trustee of the rights of the people of the state to use and enjoy all tidewaters capable of use for fishing, passage, navigation, commerce, and transportation and citizens have an inherent right to use as highways all navigable streams and rivers. Hunting and fishing are a valued part of Georgia’s cultural heritage and citizens have the right to fish and hunt. Coastal marshlands are regulated to ensure that their values and functions are not impaired so as to fulfill the responsibilities of each generation as public trustees of the

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13 DEIS Section 6.2.2 Operation, page 6-2
14 DEIS Table 2.4-1: Restrict Launch Trajectories
15 15 CFR § 930.11(b)
16 Protection of Tidewaters Act, O.C.G.A. 52-1-1, et seq.
17 Right of Passage Act, O.C.G.A. 52-1-30, et seq.
18 Game and Fish Code, O.C.G.A. 27-1-1, et seq.
marshlands for succeeding generations.\textsuperscript{19} They provide a nursery for commercially and recreationally important shellfish and other wildlife and are vitally linked to the economy.\textsuperscript{20} This resource system is costly to rehabilitate once adversely affected and it is important to conserve for the present and future use and enjoyment of all citizens and visitors to the state.\textsuperscript{21,22} Similarly, ocean beaches are vital to maintaining the health, safety, and welfare of all citizens and provide natural recreational resources that are likewise vitally linked to the economy.\textsuperscript{23} Also important for present and future citizens is the need to preserve historic properties or elements that constitute a valuable heritage\textsuperscript{24} and promote the health, prosperity, and general welfare of the people.\textsuperscript{25}

Commercial and recreational fishing opportunities in Camden County promote tourism to the area and contribute to the local economy. During the 4-year period between 2017 and 2020, recreational anglers made an average of 2.5 million fishing trips per year to Camden and Glynn counties and caught an average of nearly 10 million fish per year. Fifty-three percent of Georgia-licensed charter captains use Glynn and Camden counties and 55 percent of recreational angler trips state-wide are out of Glynn and Camden Counties. Commercial fishing is also a very important coastal use in Camden and Glynn counties. An average of over 5,000 trips were made by 210 commercial fishing vessels during the past four (4) years and over 1.6 million pounds of seafood worth over $4.5 million was produced annually between 2017 and 2020. This represents a substantial percentage in both pounds (20\%) and dollars (23\%) of all commercial fishing in Georgia that takes place in Glynn and Camden counties.\textsuperscript{26}

**Coastal Uses Minimization Measures:**
Camden County has worked with DNR, FAA and resource agencies to minimize and/or mitigate reasonably foreseeable effects to address coastal uses and relevant enforceable policies through these proposed actions:

1) The exclusion zone, or debris dispersion radius, for the medium-large lift-class launch vehicle launches originally proposed by Camden County was 10,600’ and the revised LSOL for the small lift-class launch vehicle launches is 7,300’.\textsuperscript{27} Reduction in the size of the launch vehicle has decreased the size of the potential debris dispersion radius, thus reducing the area of potential impacts to marshlands and tidal waterbodies from debris;

\textsuperscript{19} Coastal Marshlands Protection Act, O.C.G.A. 12-5-280, et seq.
\textsuperscript{20} Coastal Marshlands Protection Act, O.C.G.A. 12-5-280, et seq.
\textsuperscript{21} Coastal Marshlands Protection Act, O.C.G.A. 12-5-280, et seq.
\textsuperscript{22} Georgia Coastal Management Act, O.C.G.A. 12-5-320, et seq.
\textsuperscript{23} Shore Protection Act, O.C.G.A. 12-5-230, et seq.
\textsuperscript{24} Heritage Trust Act, O.C.G.A. 12-3-70, et seq.
\textsuperscript{25} Historic Areas Act O.C.G.A. 12-3-50, et seq.
\textsuperscript{26} DNR Coastal Resources Division, Marine Fisheries Section, May 2021 Updated Fisheries Data
\textsuperscript{27} 14 CFR 420.21 Table 2
2) The overflight exclusion zone, or area where the public will be excluded during launch closures, will be approximately 1/3 smaller since it was narrowed from 10,600’ wide to 7,300’ wide and extends out twelve (12) nautical miles (nm) offshore;

3) With use of small lift-class vehicles, the exclusion zone or debris dispersion radius for pre-launch testing operations/activities is further reduced from a 10,600’ radius\textsuperscript{28} to a 4,021’ radius\textsuperscript{29} so no major navigation routes\textsuperscript{30} will be closed for those activities;

4) Not only the size of closure areas, but the typical length of time the marsh, beach and navigable waterways will be closed to public use has been reduced by switching from medium-large lift-class to small lift-class launch vehicles. The twelve (12) annual launch closures could last up to twelve (12) hours each on an a typical day to allow for potential aborts and contingencies, but are anticipated to be three and a half (3 ½) hours long for the small lift-class vehicles instead of four (4) to six (6) hours for the medium to large lift-classes.\textsuperscript{31} Typical waterway closures for launches would total 42 hours per year rather than the 72 hours per year for the medium-large lift-class, which is more than a 40% reduction.\textsuperscript{32} These waterway closures would be up to approximately 7,300’ wide and extend 12 nm offshore;

5) Each of the twelve (12) pre-launch wet dress rehearsals and the twelve (12) static fire engine test waterway closures are anticipated to be three (3) hours or less and would include only those areas within a 4,021’ radius of the launch pad.\textsuperscript{33} Typical closures would not affect public use of major waterways or offshore areas and would total 72 hours per year;\textsuperscript{34}

6) Camden County has voluntarily agreed to incorporate a cumulative annual closure limit that will be used to “bank” unused closure hours for any launches that are scrubbed and need to be rescheduled. There will be a maximum of 42 hours each year spread out over 12 days that the public can be excluded from the overflight exclusion zone out to 12 nm for launches and a maximum of 72 hours each year spread out over 12 days that the public can be excluded from a 4,021’ radius surrounding the launch site for pre-launch activities, for a total annual limit of 114 hours and 24 days.\textsuperscript{35} This cap ensures that the marshes, beaches and waters are not closed to public use more frequently than currently anticipated;

7) The marshlands, waterways and beaches will remain open to the public at all other times.\textsuperscript{36}

\textsuperscript{28} DEIS Section 2.1.2.5 Pre-Launch Activities, Security and Safety Zones, page 2-31, line 36
\textsuperscript{29} June 2021 Coastal Consistency Certification, USCG Security Zones, page 10, paragraph 2
\textsuperscript{30} Satilla River, Cumberland River, Atlantic Intracoastal Waterway
\textsuperscript{31} June 2021 Coastal Consistency Certification, USCG Security Zones, page 11, paragraph 4 and DEIS Section 2.1.2.5 Pre-Launch Activities, Security and Safety Zones, page 2-31, lines 33-36
\textsuperscript{32} 3.5-hour launch x 12 times per year = 42 hours, versus 6-hour launch x 12 times per year = 72 hours
\textsuperscript{33} June 2021 Coastal Consistency Certification, USCG Security Zones, page 11, paragraph 4
\textsuperscript{34} 3-hour pre-launch activity x 24 times (12 wet dress rehearsals plus 12 static fire engine tests) per year = 72 hours
\textsuperscript{35} June 2021 Coastal Consistency Certification, USCG Security Zone page 11, paragraph 4 and State Enforceable Policies, Table 2, O.C.G.A. 52-1-30, Right of Passage, page 28, paragraph 2; and O.C.G.A. 27-1-3, Game and Fish Code, page 32, paragraph 2
\textsuperscript{36} June 2021 Coastal Consistency Certification, USCG Security Zone, page 9, paragraph 3, and June 2021 Coastal Consistency Certification, State Enforceable Policies, Table 2, O.C.G.A. 52-1-30, Right of Passage, page 27, paragraph 2
8) Camden County will require launch vehicle operators using the Spaceport Camden launch site to avoid launch operations requiring closures of major public waterways on weekends, holidays, and during organized fishing tournaments to the greatest extent practicable;37
9) Notice of limited public access dates and times will be posted at public access points within 10 miles of the USCG Security Zone waterway closures 30 days in advance;38 and
10) Georgia Historic Preservation Division (HPD) of the Department of Community Affairs will record the terms and conditions agreed upon with FAA and Camden County to resolve potential adverse effects to cultural and historic resources in a Programmatic Agreement.39

**Enforceable Policies Addressing Coastal Resources:**
NOAA's Federal Consistency implementing regulations define Coastal Resources to include, but are not limited to, air, tidal and nontidal wetlands, ocean waters, estuaries, rivers, streams, lakes, aquifers, submerged aquatic vegetation, land, plants, trees, minerals, fish, shellfish, invertebrates, amphibians, birds, mammals, reptiles, and coastal resources of significance.40

Many of the enforceable policies that protect coastal uses also protect coastal resources.41 The estuarine area provides habitat for many species of marine life and wildlife and, without the food supplied by marshlands, such marine life and wildlife cannot survive.42 Animals that are rare, unusual, or in danger of extinction that use public lands, such as tidal waters, marshes, or intertidal beaches, are protected and managed by the state.43 Erosion and sedimentation from upland construction is also managed to protect tidal waters from pollution and reduce damage to fish and wildlife.44 There is also nation-wide concern over the deterioration of our natural environment and an increasing need to study long-term effects on natural areas.45

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37 Attachment: DNR Fishing Tournaments Effort List June 2021 (Subject to Change): May: Reeling in a Cure, Morningstar Marina; June: Two Way Sportfishing Club Rodeo, Two Way Marina; July: Sapelo Saltwater Fish Tournament, Contentment Bluff; August: Cap HAP’s Kingfish Bash, Gascoigne; September: Two Way Trout Tournament, Two Way Marina; October: Layne Dixon Memorial Trout, Hickory Bluff and Bull Red Catch and Release, Morningstar Marina; November: Blythe Island Trout, Blythe Island Park and Blue N Hall Trout, Blue N Hall Rod & Gun Club; and December: Hickory Bluff Trout, Hickory Bluff Marina and River Rats, Two Way Marina
38 June 2021 Coastal Consistency Certification, State Enforceable Policies, Table 2, O.C.G.A. 12-5-320, Coastal Management, page 18, paragraph 2
40 15 CFR § 930.11(b)
42 Coastal Marshlands Protection Act, O.C.G.A. 12-5-280, et seq.
43 Endangered Wildlife Act, O.C.G.A. 27-3-130, et seq.
44 Erosion and Sedimentation Control Act, O.C.G.A. 12-7-1, et seq.
45 Natural Areas Act, O.C.G.A. 12-3-90, et seq.
Coastal Resources Minimization Measures:
Camden County has worked with DNR, FAA and resource agencies to minimize and/or mitigate reasonably foreseeable effects to address coastal resources and relevant enforceable policies through these proposed actions:

1) FAA estimates launch failure probabilities for launch vehicles to be in the range of 2.5 to 6 percent.\(^{46}\) For the purposes of performing a cumulative risk analysis (Ec), Camden County used a conservative 20% value for total probability of failure (Pf).\(^{47}\) Nearly 700 public comments were received by DNR with safety concerns that claimed failure rates for small lift-class vehicles were as high as 40%. NASA looked at Small-Satellite Mission Failure Rates\(^{48}\) in 2019 and differentiated mission failure rates from launch vehicle failure rates. They found that while 41.3% of all small satellites launched between 2000 and 2016 failed, 24.2% were total mission failures, 11% were partial mission failures, and only 6.1% were launch vehicle failures. For example, a launch vehicle carrying several satellites may launch successfully but some of the satellites it launched may not perform as anticipated once in orbit and be counted as mission failures. This report includes launches from foreign countries that have higher failure rates in general than the U.S.\(^{49}\) The Spaceport Camden team has conducted preliminary analysis on over 600 U.S.-based or -licensed operational launches between 1990 and 2020 and the first stage failure rate generally falls between 0.5 percent and 1.5 percent.\(^{50}\) Therefore, it is not a reasonably foreseeable effect that several launch vehicles annually will crash into the marsh or tidal waters. In the event of a launch vehicle failure that impacts tidal lands or waters out to the 3-mile limit of State waters, debris and/or contaminants will be removed when environmentally feasible and the area restored.\(^{51}\)

2) While there is potential for launch vehicle failure to impact tidal areas, that potential does not constitute an “alteration” under the Coastal Marshlands Protection Act (CMPA) or Shore Protection Act (SPA) and neither a CMPA nor SPA permit will be required for operation of Spaceport Camden.\(^{52}\) Clean-up activities are temporary in nature and could be handled through various procedures;

3) FAA requires all launch vehicle operators to carry insurance or demonstrate financial responsibility for the Maximum Probable Loss (MPL) that is reasonably expected to result

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\(^{46}\) DEIS Section 2.1.2.8, Launch Failures, page 2-34, line 22
\(^{47}\) LSOL Application, Attachment 2, Launch Site Location Review, Section 4.1 Assumptions, Exhibit 14
\(^{49}\) List includes all rockets, U.S. space shuttle missions, Russian manned missions, and all foreign launches to the extent made public
\(^{50}\) 20210607_GADNR-CRD_Q and A_Spaceport Camden Excel Spreadsheet, 3/1/21 Answer Column
\(^{51}\) June 2021 Coastal Consistency Certification, State Enforceable Policies, Table 2, O.C.G.A. 12-5-280, Coastal Marshlands Protection, page 18, paragraph 4 and O.C.G.A. 12-3-90, Natural Areas, page 27, paragraph 2
\(^{52}\) Attachment: Georgia Department of Law Memorandum, February 8, 2021, from Andrea Hartung, Assistant Attorney General to Doug Haymans, CRD Director
from each launch to a maximum of $500,000,000 ($500 million) as a condition of LOLs.\(^{53}\) FAA determines the MPL amount for each launch based on many factors\(^{54}\) and no commercial launch mishap to date has resulted in casualties or substantial property damage to 3\(^{rd}\) parties\(^{55}\) that has exceeded the MPL amount.\(^{56}\) NASA indemnifies FAA-licensed launchers for any amount above the MPL up to $1.5 billion adjusted for inflation.\(^{57}\)

Launch site operators are not required by FAA to carry insurance; however, Camden County will require launch operators using Spaceport Camden to obtain insurance to cover environmental clean-up costs within the marshlands and waterbodies, including those within the launch site boundary, out to 3 nautical miles in the event of a catastrophic failure if it is not explicitly covered by the launch operator’s Maximum Probable Loss insurance required by FAA.\(^{58}\)

4) The existing dock and ramp in Floyd Creek are not serviceable and no repairs or improvements are planned at this time. Applicable permits/permissions will be obtained from the state if they are put into use in the future;\(^{59}\)

5) If driving vehicles on Cumberland Island or Little Cumberland Island beach becomes necessary for security purposes during launches, appropriate authorization will be obtained under the Shore Protection Act.\(^{60}\) In the event an emergency necessitates driving vehicles on the beach without prior authorization, personnel will be informed of and adhere to Georgia’s Beach Driving Rules.\(^{61}\)

6) Turtle-friendly lighting designed to minimize facility glow, skyglow, or direct light to a level of no measurable impact on sea turtle nesting will be implemented to the extent it does not conflict with, and is as or more restrictive than, ESA Section 7 consultation requirements, to include:\(^{62}\)

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\(^{53}\) 14 CFR 440.9
\(^{54}\) 14 CFR 440 Appendix A I. General Information: launch trajectory, orbital inclination, orbit altitudes, flight sequence, staging events and time, impact locations, launch site facility, previous launches of same vehicle, launch vehicle description, description of hazardous components, payload, and flight safety system.
\(^{55}\) Outside of the launch site boundary
\(^{56}\) GAO-17-88. GAO Report to Congressional Committees: Commercial Space Launch Insurance, Views Differ on Need for Change to Insurance Approach by Clarification is Needed, November 2016
\(^{57}\) In 2016, $1.5 billion adjusted for inflation was $3.06 billion
\(^{58}\) June 2021 Coastal Consistency Certification, State Enforceable Policies, Table 2, O.C.G.A. 52-1-1, Protection of Tidewaters, page 31, paragraph 3
\(^{59}\) LSOL Attachment 5 Access Control Plan, Section 3.3.8, p. 22 and June 2021 Coastal Consistency Certification, State Enforceable Policies, Table 2, O.C.G.A. 12-5-280, Coastal Marshlands Protection, page 18, paragraph 3
\(^{60}\) June 2021 Coastal Consistency Certification, USCG Security Zones, page 9, paragraph 4
\(^{61}\) June 2021 Coastal Consistency Certification, State Enforceable Policies, O.C.G.A. 12-5-230, Shore Protection, Georgia Rule 391-2-2, page 29, paragraphs 1 and 2; and Appendix B. Beach Driving Access Points
\(^{62}\) June 2021 Coastal Consistency Certification, State Enforceable Policies, Table 2, page 23, O.C.G.A. 27-3-130, Endangered Wildlife and Appendix A, United States Fish and Wildlife Service Conservation Measures, 2.3.1 Project Level Measures (1)(d) Artificial Lighting Management
a. Exterior lights used expressly for safety or security purposes are limited to the minimum number and configuration required to achieve their functional role(s). Motion detector switches that keep lights off except when approached and that switch lights on for the minimum duration possible are preferred;
b. The increased illumination needed for the one (1) annual night launch should not interfere with turtle hatchlings and night launches are prohibited between July 1st and October 31st;
c. Direct line-of-sight requirements below will be incorporated if DNR determines, at any time during the life of the facility, that there is a direct line of site from any sea turtle nesting beach.63
   i. Light fixtures must be:
      1. completely shielded;
      2. full cut-off design;
      3. oriented in a downward direction;
      4. produce light of 560 nm or longer wavelength.
7) Persons authorized by DNR to conduct surveys and/or perform management work must be able to conduct daily sea turtle surveys between May 1st and October 31st on Cumberland Island and/or Little Cumberland Island regardless of the launch schedule;64
8) All stormwater features must be designed and implemented in accordance with the Coastal Stormwater Supplement to the Georgia Stormwater Management Manual;65
9) Launch and pre-launch activities that conflict with prescribed burns on the adjacent Ceylon Wildlife Management Area (WMA) must not be scheduled during a 10 consecutive day period each month between January and May to allow for prescribed burns;66 and
10) The Satilla River Marsh Island Natural Area support threatened, endangered, and/or rare seabirds during the spring, summer and fall, and adjacent areas support Bald Eagle nests and wood stork colonies. These areas are regularly monitored during the nesting season by DNR.67
   a. The Natural Resources Specialist responsible for implementing conservation measures on the launch site will coordinate with DNR on a regular basis regarding launch schedules and which bird nesting areas are active that require monitoring. DNR personnel will be allowed inside the Safety Zone closure area if needed to conduct survey work; and

63 Lighting taller than the tree line or visible between gaps in the tree line at a sea turtle nesting beach are considered direct line of sight
64 June 2021 Coastal Consistency Certification, State Enforceable Policies, Table 2, O.C.G.A. 27-3-130, Endangered Wildlife, page 23, paragraph 3
65 June 2021 Coastal Consistency Certification, State Enforceable Policies, Table 2, O.C.G.A. 12-7-1, Erosion and Sedimentation Control, page 24, paragraph 1
66 June 2010 Coastal Consistency Certification, State Enforceable Policies, Table 2, O.C.G.A. 27-1-3, Game and Fish Code, page 32, paragraph 3
67 June 2021 Coastal Consistency Certification, State Enforceable Policies, Table 2, O.C.G.A. 12-3-90, Natural Areas, page 26, paragraphs 1-3
68 DEIS Section 6.2 Biological Resources, page 6-1, paragraph 5
b. Spaceport Camden will develop monitoring protocols in coordination with DNR to monitor potential impacts from launches during nesting season which may include setting up cameras on natural area site(s) and/or visiting active sites prior to and following launches.\(^{69}\)

**Mitigation Measures to be Enforced by FAA as Terms and Conditions or by Reference to LSOL:**

1) FAA incorporates the Coastal Consistency Certification into the LSOL and adopts the mitigation measures below by reference or as Terms and Conditions of the FAA license;\(^{70}\)

2) A minimum of 90 days prior to facility construction the following plans must be submitted to DNR and obtain federal consistency concurrence prior to FAA approval:\(^{71}\)
   a. Mitigation Plan;
   b. Protected Species and Habitat Management Plan;
   c. Lighting Management Plan;
   d. Wildland Fire Management and Burn Plan; and
   e. Site Revegetation and Landscaping Plan.

3) A minimum of 30 days prior to facility operation the following plans must be submitted to DNR and obtain federal consistency concurrence prior to FAA approval:\(^{72}\)
   a. Storm Water Pollution Prevention Plan;
   b. Spill Prevention, Control and Countermeasure Plan; and

4) LSOL limits closure of public waters during launches to a maximum of 114 hours annually;\(^{73}\)

5) All future LOL Comprehensive Launch Plans using Spaceport Camden must avoid launch operations requiring closures of major public waterways on weekends, holidays, and during organized fishing tournaments identified by DNR to the greatest extent practicable;\(^{74}\)

6) All future LOL Comprehensive Launch Plans using Spaceport Camden must post notice of limited public access dates and times at public access points within 10 miles of the USCG Security Zone waterway closures 30 days in advance;\(^{75}\)

7) Georgia Historic Preservation Division approves the terms and conditions of the Programmatic Agreement to be executed between FAA and Camden County for cultural and historic resource protection;\(^{76}\)

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\(^{69}\) June 2021 Coastal Consistency Certification, State Enforceable Policies, Table 2, page 27, O.C.G.A. 12-3-90, Natural Areas, page 27, paragraph 1

\(^{70}\) June 2021 Coastal Consistency Certification, Introduction, page 2, paragraph 2

\(^{71}\) June 2021 Coastal Consistency Certification, Introduction, page 1, paragraph 3

\(^{72}\) June 2021 Coastal Consistency Certification, Introduction, page 2, paragraph 1

\(^{73}\) Coastal Uses Mitigation Measure 6)

\(^{74}\) Coastal Uses Mitigation Measure 8)

\(^{75}\) Coastal Uses Mitigation Measure 9)

\(^{76}\) Coastal Uses Mitigation Measure 10)
8) All future LOL Comprehensive Launch Plans using Spaceport Camden must incorporate debris and contaminant removal protocols;\textsuperscript{77}

9) Camden County and future launch vehicle operators must incorporate insurance protocols;\textsuperscript{78}

10) All future LOL Comprehensive Launch Plans using Spaceport Camden must incorporate beach driving protocols;\textsuperscript{79}

11) Turtle-friendly lighting requirements\textsuperscript{80} must be incorporated into:
   a. LSOL Protected Species and Habitat Management Plan;
   b. LSOL Lighting Management Plan; and
   c. All future LOL Comprehensive Launch Plans using Spaceport Camden.

12) LSOL Stormwater Pollution Prevention Plan must incorporate Coastal Stormwater Supplement designs;\textsuperscript{81}

13) LSOL Wildland Fire Management and Burn Plan must incorporate Ceylon WMA prescribed burn protocols;\textsuperscript{82}

14) LSOL Protected Species and Habitat Management Plan must incorporate bird monitoring protocols;\textsuperscript{83} and

15) Modification and/or renewal requests of the LSOL will be submitted to DNR and obtain federal consistency concurrence prior to FAA approval.

The DNR Coastal Management Program \textit{concurs} with Camden County’s federal consistency certification for issuance of an FAA-issued Launch Site Operator License at Spaceport Camden. The proposed project is consistent with the enforceable policies of Georgia’s Coastal Management Program. We look forward to working with you to complete supplemental federal consistency reviews of the remaining documents required as terms and conditions of the Launch Site Operators License should the Federal Aviation Administration chose to issue the license. Please feel free to contact Kelie Moore, Federal Consistency Coordinator, or me if we can be of further assistance.

Sincerely,

Doug Haymans,
Director

\textsuperscript{77} Coastal Resources Mitigation Measure 1)
\textsuperscript{78} Coastal Resources Mitigation Measure 3)
\textsuperscript{79} Coastal Resources Minimization Measure 5)
\textsuperscript{80} Coastal Resources Minimization Measures 6) and 7)
\textsuperscript{81} Coastal Resources Minimization Measure 8)
\textsuperscript{82} Coastal Resources Minimization Measure 9)
\textsuperscript{83} Coastal Resources Minimization Measure 10) b)
Spaceport Camden Consistency Certification
July 8, 2021
Page 13 of 13

Attachments:
   20210607_GADNR-CRD_Q and A_Spaceport Camden Excel Spreadsheet
   April 15, 2021, Historic Preservation Division Letter
   May 7, 2021, Federal Aviation Administration Letter
   DNR Fishing Tournaments Effort List June 2021
   February 8, 2021, Georgia Department of Law Memorandum

cc:    Kevin Akstulewicz, Leidos, via email
       Brian Gulliver, Kimley-Horn, via email
       Jill Andrews, DNR Coastal Resources Division, Coastal Management Program
       Kelie Moore, DNR Coastal Resources Division, Coastal Management Program
       Jason Lee, DNR Wildlife Resources Division
Many sections of the LSOL, DEIS and CCC (coastal consistency determination) reference suborbital launch vehicles but LSOL Attachment 2: Launch Site Location Review at Section 3 – Flight Corridors (14 CFR 420.23) states that Spaceport Camden is not requesting permission for guided or unguided suborbital expendable launch vehicles (14 CFR 420.23 (b) and (c) respectively) or for reusable (recovery of 1st stage) launch vehicles (14 CFR 420.23(d)). This seems to limit launch vehicles to only guided orbital expendable launch vehicles (14 CFR 420.23(a)). Can you verify that suborbital vehicles will not be launched from Spaceport Camden or identify LSOL sections to the contrary? Thank you.

Camden County confirms that the Launch Site Operator License application focuses on orbital expendable launch vehicles and does not include guided or unguided suborbital expendable launch vehicles or reusable launch vehicles. If a launch operator wanted to use the site for a licensed suborbital launches (i.e., those that would occur under 14 CFR Part 450) Spaceport Camden would require an amendment to the Launch Site Operator License. Launches that do not require a license (such as those conducted under a part 101 waiver [i.e., the 2018 Vector launch at the proposed Spaceport Camden site]) could occur. However, it is important to note that those launches could occur at the proposed Spaceport Camden site now and do not require a launch site operator license. Therefore, they do not constitute a change from existing conditions.

Over the course of the licensing process The Aerospace Corporation has analyzed a wide range of scenarios to understand their potential impacts. The current analysis presented in Attachment 2 only depicts the launch of the representative expendable small launch vehicle capable of inserting a satellite into orbit. The analysis does not depict an unguided suborbital launch vehicle, nor does it analyze a landing at Spaceport Camden. It is important to note that first stage boosters for all orbital vehicles are inherently "guided suborbital" rockets as they do not achieve orbit and impact the water downrange from the launch point. In the case of a small launch vehicle originating from Spaceport Camden that downrange impact point is anticipated to be hundreds of miles off the coast.

The Proposed Action, which is based on the Spaceport Camden Launch Site Operator License application, includes up to twelve annual licensed launches of small lift-class vehicles. Amateur operations that do not require an FAA license or waiver are outside the scope of the Proposed Action, as there is no federal nexus. We currently do not have an estimate on the type and number of 14 CFR Part 101 amateur rockets anticipated to be launched at the project site as it would be purely speculative. For context, since the FAA began the environmental review process in 2015, there have been two (2) amateur operations: the Vector test launch in 2017, and the Georgia Tech Yellow Jacket Space Program launch in 2019.

The 20 percent Total Probability of Failure (PF) used in the safety flight analysis for the license application is a combination of an assumed 10 percent PF for the first stage and 10 percent PF for the second stage. The 20 percent total PF is an extremely conservative assumption used in the flight safety analysis to demonstrate that even at such a high and unrealistic assumed PF, the safety analysis for a small launch vehicle still passes FAA requirements. Spaceport Camden expects that actual launch systems operating from Camden will have a PF substantially lower than 20 percent used in the flight safety analysis, and likely substantially lower than that values used within the Draft Environmental Impact Statement.

In 2018, NASA published a document titled “Small-Satellite Mission Failure Rate” which mentions that “[F]rom 2000 to 2017, the average [launch vehicle] failure rate is also 6.1%... it seems reasonable to conclude that about 6 percent of all satellites (large and small) will be lost due to failures of the launch vehicles." The document also notes that “[T]he list includes all rocket launches, US space shuttle missions, Russian manned missions, and all foreign launches to the extent made public.” It’s important to note that although the list is not exhaustive, it fall into the list of rocket failures and that tends to skew the results. The rocket failures identified in the NASA document also include both first stage and second stage failures. Only first stage failures would have a potential impact within the vicinity of Spaceport Camden. An operational example of a small launch system failure rate is the Rocket Lab Electron. As of May 18, 2021, The Rocket Lab Electron (small lift launch vehicle) has launched 20 times with three attempts failing to make orbit; none of the three failure events were a result of a first stage failure.

In a March 2021 letter from the FAA to the Georgia Historic Preservation Division, Daniel P. Murray, safety authorization division manager, writes “Please note that a small-lift vehicle does not have an inherently greater probability of launch failure than a larger vehicle. Probability of failure is based on many factors, including vehicle performance and previous launches and is not the only factor in calculating risk to the public,” said Murray.

Based on a preliminary analysis conducted by the Spaceport Camden team of over 600 U.S.-based or licensed operational launches between 1990 and 2020, the first stage failure rates for launch systems generally falls between 0.5 percent and 1.5 percent.
April 15, 2021

Daniel P. Murray  
Manager, Safety Authorization Division  
Federal Aviation Administration  
800 Independence Avenue, SW  
Washington DC 20591  
Attn: Stacey Zee

RE: Construct/Operate Commercial Space Launch Site, Spaceport Camden, Woodbine  
Camden County, Georgia  
HP-151117-001

Dear Mr. Murray:

The Historic Preservation Division (HPD) has received the additional information submitted concerning the above referenced project. Our comments are offered to assist the Federal Aviation Administration (FAA) in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

The subject project consists of the construction of a spaceport complex, and its subsequent operation, in Woodbine. Based on the additional information provided regarding Item 1, it appears to HPD that the area of potential effect (APE) does not need to be changed. HPD will respond to any revised documentation resulting from consulting party comments made during the April 8, 2021 meeting efficiently to aid the FAA in completing this portion of the Section 106 process.

Additionally, HPD concurs with the Advisory Council on Historic Preservation regarding an undertaking having one effect assessment (Items 2 through 5). As such, regardless of whether the undertaking is simply the construction of the spaceport, or the construction and operation, it appears to HPD that the proposed project has an unknown impact on historic properties. Therefore, HPD concurs with the FAA’s recommendation to draft a programmatic agreement that will govern the remainder of the Section 106 process for this undertaking.

Please refer to project number **HP-151117-001** in any future correspondence regarding this project. If we may be of further assistance, please do not hesitate to contact me at (404) 486-6376 or jennifer.dixon@dca.ga.gov.

Sincerely,

[Signature]

Jennifer Dixon, MHP, LEED Green Associate  
Program Manager  
Environmental Review & Preservation Planning

Cc: All identified consulting parties
May 7, 2021

Ms. Jennifer Dixon  
Environmental Review & Preservation Planning Program Manager  
Department of Community Affairs  
60 Executive Park South, NE  
Atlanta, GA 30329-2231

HP-151117-001

Dear Ms. Dixon:

Thank you for reviewing the additional information provided by the Federal Aviation Administration (FAA) regarding Spaceport Camden on March 29, 2021 for the Area of Potential Effect and Findings of Effect.

We appreciate your April 15, 2021 concurrence on the FAA proposal to record the terms and conditions agreed upon to resolve potential adverse effects to archaeological and above-ground historic properties in the Spaceport Camden APE in a Programmatic Agreement pursuant to 36 CFR §800.14(b)(ii).

If you have any comments or questions regarding this undertaking, please contact Stacey Zee of my staff at 202-267-9305, or via email at Stacey.Zee@faa.gov.

Sincerely,

Daniel P. Murray  
Manager, Safety Authorization Division

cc: Sarah Stokely, ACHP  
Kevin Lang, Little Cumberland Island  
Betsy Merritt, NTHP
Beth Byrd, NPS
Queen Quet, Gullah/Geechee Sea Island Coalition
<table>
<thead>
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<th>County</th>
<th>Location</th>
<th>Date</th>
<th># Days</th>
<th>Species</th>
<th>General Area</th>
<th>N boundary</th>
<th>S boundary</th>
<th>E boundary</th>
<th>Avg # of boats</th>
<th>Avg # People per boat</th>
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<td>Morningstar Marina</td>
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<td>St Mary's</td>
<td>None</td>
<td>30</td>
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</tbody>
</table>
MEMORANDUM

TO:            Doug Haymans  
Director, Coastal Resources Division, Department of Natural Resources

THROUGH: Peggy Eckrote  
Deputy Attorney General

Robin J. Leigh  
Senior Assistant Attorney General

FROM: Andrea M. Hartung AMH  
Assistant Attorney General

RE: Necessity of Camden County to Obtain a CMPA Permit for Operation of a Commercial Rocket Launch Facility

This memorandum responds to the Coastal Resources Division (CRD) of the Department of Natural Resources (DNR) request for informal advice regarding whether or not Camden County (the County), an applicant for a Launch Site Operators License from the Federal Aviation Administration (FAA), must seek a permit under the Coastal Marshlands Protection Act (CMPA) or some other form of authorization, in order to operate its facility.

There are two relevant mechanisms under the CMPA that authorize CRD and the Coastal Marshlands Protection Committee (CMPC) to regulate activities within CMPC’s jurisdiction (jurisdiction over marshlands, including vegetated marshlands, filled marshlands, and water bottoms within the estuarine area of the state). First, the CMPA requires an entity to obtain a permit under O.C.G.A. § 12-5-286 if it plans to “remove, fill, dredge, drain, or otherwise alter
any marshlands or construct or locate any structure on or over marshlands in this state…” See O.C.G.A. § 12-5-286(1). Second, if an activity is conducted under a letter of permission, no permit is required, and instead DNR provides public notice of the activity. See O.C.G.A. § 12-5-286(2). The CMPA defines a letter of permission as authorization “to conduct a proposed activity…provided such activity is either within the physical perimeter of an existing serviceable project or involves the construction and removal of a project or other temporary activity that concludes within six months…” See O.C.G.A. § 12-5-282(7.1).

The activity that CRD would regulate is the clean-up or restoration of the marsh if a rocket launch were to fail and send debris into the marsh. Within the Risk Analysis section of the Launch Site Location Review prepared by the County as part of its application to FAA, there was an assumed 20% total probability of failure. See Launch Site Location Review, Exhibit 14. This 20% probability is a higher estimate than what is expected by the County. However, it still indicates that within an expected 12 launches per year, there may be failed launches. Expected consequences of a failed launch include rocket debris and fuel entering the surrounding marsh, potentially requiring clean-up and restoration. It is difficult to envision regulating a potential activity that statistically may never occur. Thus, the key issue is whether these potential failures which may require marsh clean-up and restoration are an “alteration” to the marsh that was contemplated by the legislature when it wrote the CMPA, specifically O.C.G.A. § 12-5-286. If the answer is yes, then the probable failure of rocket launches would require some sort of regulation.

Likely, the act of removing debris and rocket fuel from marshland was not an activity that the legislature intended to be regulated through a permit under the CMPA. O.C.G.A. § 12-5-286 states that the following activities require a permit from the CMPC: removing, filling, dredging, draining, or otherwise altering the marsh. Projects requiring a permit usually involve long-term impacts to the marsh, such as filling marsh, constructing a structure within the marsh, or even dredging the marsh. The long-term nature of these permitted projects is further supported by the application requirements found in O.C.G.A. § 12-5-286(b): a plan or drawing of the project, where the project will take place, a description of alternative sites and why they are not feasible, and so on. It would be impractical for a person to apply for a permit for rocket debris clean-up prior to launch because important portions of the application would be nearly impossible to fill out. The applicant would not know the best way to clean up debris if they are unaware of what debris will land in the marsh and where. The applicant would not know where cleanup will take place as the launch will not have occurred and no debris will have entered the marsh. Additionally, it would be difficult to consider alternative sites because where debris will enter the marsh is not determinable. Furthermore, the application process requires either proof of ownership of the property or proof of permission to carry on the project from the owner. Because there is a lack of clarity as to whether the County is the owner of the surrounding marshlands, it is unclear whether it would be able to meet this requirement. In sum, the nature of permitted projects that come before the CMPC does not match the temporary nature of rocket-

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1 This application requirement would be extremely burdensome as the marshland composes approximately 2,700 acres of the 3,900 acre-launch boundary. Furthermore, as discussed further in this memorandum, if an entity other than the County were the appropriate party to be issued the permit or letter of permission, proof of ownership or proof of permission would have to be repeated with each different applicant.
debris removal and the application process itself is not conducive for a “potential” project. Therefore, it would be difficult to defend a requirement that the County apply for a CMPA permit each time an entity launches a rocket from its site.

While it is likely impractical to require the County to apply for a permit under the CMPA, requiring a letter of permission is more feasible. A letter of permission does not require the lengthy permit process described above. Rather, it is written authorization from DNR to conduct a proposed activity, including a “temporary activity that concludes within six months”, (Emphasis added). See O.C.G.A. § 12-5-282(7.1). The letter of permission appears to be better-fitted for the temporary nature of debris-clean up and restoration, as compared to the long term nature of a permit. However, while a letter of permission seems to give CRD a path forward in regulating the County’s launches, it is important to contemplate whether regulation of these launches is the best policy. CRD must consider the activities that DNR typically issues letters of permission for and decide whether the act of cleaning up rocket debris is similar to those other activities. If not, then perhaps the legislature did not intend such a temporary activity based on potential failure of a rocket to be regulated through letters of permission.

As to both the permit and letter of permission, it is important for CRD to consider the impact of rocket-regulation on its workload. If the County anticipates roughly 12 launches per year, in addition to other test runs and projects on site, regulation could generate additional work for CRD and the CMPC.

In addition to the decision whether to regulate, CRD will need to determine whether the County, the entity operating the launch site, would be the appropriate party to apply for a permit or be granted a letter of permission. While the County is the entity actually operating the launch site, other parties will be bringing their materials and rockets on site for launch. What will ultimately enter the marsh as a result of rocket failure will be debris and fuel from a rocket not owned by the County. Unless the County envisions being the party responsible for rocket failure clean-up, it would be a different entity that actually entered the marsh and restored any damage caused by a failure. This may mean that if CRD moved forward with regulating launches, it would need to interact with every single different entity that launched from the County’s site.

Finally, the above contemplates issuing permits or letters of permission prior to each launch on the County’s site. CRD should also consider whether it would be open to after-the-fact regulation by issuing a permit or letter of permission after a rocket’s failure. If CRD waits to regulate until after there has been a failure, issues such as permit application requirements and an increased workload would not be as impactful. However, certain drawbacks such as the temporary nature of a clean-up would still make issuing a permit problematic

**Conclusion**

The legislature likely did not intend for CRD and the CMPC to regulate activities such as rocket launches through the CMPA. However, if CRD wishes to move forward with regulation, issuing letters of permission would be more defensible then issuing permits. CRD will ultimately need to decide whether it is the best policy moving forward to regulate these rocket launches and
carefully consider the potential pitfalls in each path forward. As CRD does so, please do not hesitate to reach out with questions or concerns about the legal analysis contained in the memorandum.

This memorandum constitutes the informal legal analysis of the author only and is not intended to express an opinion of the Attorney General. The analysis is limited to the documents, statutes, and regulations referenced within. To the extent additional documents are provided, the analysis may change. Additionally, this memorandum is attorney-client privileged. Accordingly, CRD has the right to treat this advice as confidential and may refuse to disclose its content to persons outside of CRD, or CRD may decide to waive the privilege. If the privilege is waived, the memorandum would be subject to release under the Georgia Open Records Act. Please let me know if there are any questions or concerns.