

RECORD OF DECISION – ATTACHMENT A
ENVIRONMENTAL IMPACT STATEMENT
AUTHORIZING CHANGES TO THE FALCON LAUNCH PROGRAM
AT VANDENBERG SPACE FORCE BASE

ATTACHMENT A – MITIGATION MEASURES THAT ARE TO BE IMPLEMENTED AND
CARRIED FORWARD AS DIRECTED IN THIS RECORD OF DECISION

Table 1. EIS Mitigation Measures

Resource Category	FEIS Section	Mitigation(s)
Air Quality	3.3.2.5, page 3-17	Any portable equipment powered by an internal combustion engine with a rated horsepower of 50 brake horsepower or greater used for this project shall be registered in the California State-wide Portable Equipment Registration Program or have a valid SBCAPCD Permit to Operate.
		Ultra-low sulfur diesel fuel (15 parts per million by volume) will be used for all diesel equipment.
		CARB-developed idling regulations will be followed for trucks during loading and unloading.
		When feasible, equipment will be powered with Federally mandated “clean” diesel engines.
		The size of the engine in equipment and number of pieces of equipment operating simultaneously for the project should be minimized.
		Engines should be maintained in tune per manufacturer or operator’s specification.
		USEPA or CARB-certified diesel catalytic converters, diesel oxidation catalysts, and diesel particulate filters may be installed on all diesel equipment.
		SpaceX shall adhere to the CARB In-Use Off-Road Diesel-Fueled Fleets Regulation (CARB 2024) for fleet management and fuel selection.
		CARB diesel will be the only fuel combusted in the engines while in California Coastal Waters.
Noise	3.4.2.5, page 3-44	SLD 30 will provide notification prior to each launch mission through social media and an opt-in launch alert text and email system, which includes a message indicating areas of potential sonic boom impact.
Terrestrial/Freshwater Biological Resources	Appendix B	Ensure compliance with the actions required by the USFWS Biological Opinion to monitor and mitigate potential adverse effects to listed species (see Table 2 below)
	3.5.2.5, page 3-64	During site development, a qualified biologist would survey for nesting migratory birds prior to any

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		vegetation clearing, and flag and monitor any nesting sites to avoid impact.
Marine Biological Resources	Appendix C	Ensure compliance with the actions required by the NMFS Letter of Authorization (see Table 3 below)
	3.6.2.5, page 3-74	Sonic boom modeling (commercially available modeling software [PCBoom] or an acceptable substitute) would continue to be completed prior to each launch to verify and estimate the overpressure levels and footprint.
		Semi-monthly surveys (two surveys per month) would continue to be conducted to monitor the abundance, distribution, and status of pinnipeds at VSFB.
		Marine mammal monitoring and acoustic measurements will be conducted at the NCI if the sonic boom model indicates that pressures from a boom will reach or exceed 7 psf from 1 January through 28 February, 5 psf from 1 March through 31 July, or 7 psf from 1 August through 30 September. No monitoring is required on NCI from 1 October through 31 December. The monitoring methods are described in the Letter of Authorization (LOA) included in Appendix B of the FEIS.
		The DAF will continue to submit report detailing results of the monitoring program, to the Office of Protected Resources, NMFS, and the West Coast Regional Administrator, NMFS, in compliance with the requirements of the current LOA.
		Discoveries of injured or dead marine mammals, irrespective of cause, would be reported to the Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator, NMFS.
		To reduce the risk of injury or mortality of ESA-listed species in the marine environment, the following EPMs will continue to be implemented during first stage and fairing recovery operations, as included in the NMFS 2023 and 2024 Letters of Concurrence (see FEIS Appendix C): • The DAF will ensure that all personnel associated with vessel support operations are instructed about marine species and any critical habitat protected under the ESA that could be present in the proposed landing area.

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		• Support vessels will maintain a minimum distance of 150 ft from sea turtles and a minimum distance of 300 ft from all other ESA-listed species. If the distance ever becomes less, the vessel will reduce speed and shift the engine to neutral. Engines would not be re-engaged until the animal(s) are clear of the area. • Support vessels will maintain an average speed of 10 knots or less. • Support vessels will attempt to remain parallel to an ESA-listed species' course when sighted while the watercraft is underway (e.g., bow-riding) and avoid excessive speed or abrupt changes in direction until the animal(s) has left the area. • The DAF will immediately report any collision(s), injuries, or mortalities to ESA-listed species to the appropriate NMFS contact. To offset the impacts from unrecoverable debris in state waters, SpaceX will continue to make an annual contribution to the California Lost Fishing Gear Recovery Project. Vessels will enter the harbor, to the extent possible, only when the tide is too high for pinnipeds to haul-out on the rocks. The vessel will reduce speed to 1.5 to 2 knots once the vessel is within 3 mi of the harbor. The vessel will enter the harbor stern first, approaching the wharf and mooring dolphins at less than 0.75 knots. Vessels using the harbor will follow a predetermined route that limits crossing kelp beds. No vessels will anchor within kelp beds or hard-bottom habitat outside of the dredge footprint, and no vessel anchors within the dredge footprint will be placed in kelp or hard bottom habitat. Activities that could result in the startling of wildlife in the vicinity of the harbor will be allowed so long as they are initiated before dusk and not interrupted by long periods of quiet (in excess of 30 minutes). If such activities cease temporarily during the night, they will not be reinitiated until dawn.
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		Starting-up of activities (either initially or if activities have ceased for more than 30 minutes) will include a gradual increase in noise levels if pinnipeds are in the area.
		The restrictions on access to the intertidal area will be included in the personnel orientations provided at project startup and for new employees.
		The tug vessels and barge will be periodically cleaned as necessary to avoid impacts related to the transfer of non-native invasive pests and vegetation to VSFB Harbor.
Water Resources	3.7.2.5, page 3-83	BMPs will be implemented to minimize sediment, chemicals, debris or other pollutants from entering the stormwater system, natural surface water drainages or groundwater per the latest California Stormwater Quality Association's Stormwater Best Management Practices Handbooks.
		Upon construction completion, disturbed soil areas will be stabilized with effective erosion control per the NPDES Construction General Permit.
		All temporary sediment and erosion control devices including silt fence and wattles with plastic netting shall be removed when disturbed soil areas are stabilized.
		Storm drain inlet protection will be used as needed to minimize pollutant discharge into storm drains.
		Fueling equipment or systems will only occur in pre-designated areas designed to capture runoff or spilled fuel or with portable spill containment devices.
		Hazardous and industrial materials that can be mobilized by contact with stormwater will be stored under cover prior to rain events.
		Trash disposal containers will be covered at all times. Trash that escapes from containers will be collected.
		Concrete materials, curing compounds, waste and washout water will be properly managed to prevent pollution. Washout water will be contained for evaporation.
		SpaceX will employ personnel trained to follow current California stormwater pollution prevention industrial activity BMPs.

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		SpaceX would prepare and implement an SWPPP including BMPs, employee training, stormwater monitoring and reporting.
		SpaceX will continue to ensure that water ejected from the flame trench during launches does not result in any overland surface flow reaching Spring Canyon by maintaining current v-ditches within the SLC-4 fence-line and routinely assessing whether any additional diversion structures are necessary.
		Launch related wastewater and stormwater that accumulates within the flame trenches would be tested for contamination and disposed of per Regional Water Quality Control Board waste discharge waiver or permit and federal regulations.
Cultural Resources	3.8.2.5, page 3-87	If previously undocumented cultural resources are discovered during maintenance activities, work would stop, and the procedures established in 36 CFR Part 800.13 and the VSFB Integrated Cultural Resources Management Plan shall be followed.
Coastal Resources	3.9.2.5, page 3-89	Post-construction BMPs and stormwater management would minimize any potential effect to impervious surfaces and stormwater runoff.
Human Health & Safety	3.14.2.5, page 3-111	Comply with OSHA, AFOSH, California Division of Occupational Safety and Health regulations, and other recognized standards and applicable DAF regulations or instructions.
		Provide for the health and safety of workers and all subcontractors who may be exposed to operations or services. Submit a health and safety plan to VSFB and appoint a formally trained individual to act as safety officer who would be the POC on all problems involving job site safety.
		Site-wide anomaly avoidance would be implemented since it is possible unexploded ordinance may be encountered outside of MMRP boundaries.
		Comply with all provisions and procedures prescribed for the control and safety of personnel and visitors to the job site
Hazardous Materials and Waste Management	3.15.2.5, page 3-115	Proper disposal of hazardous waste would be accomplished through identification, characterization, sampling (if necessary), and analysis of wastes generated.

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		All hazardous materials would be properly identified and used IAW manufacturer's specifications to avoid accidental exposure to or release of hazardous materials required to operate and maintain equipment.
		All equipment would be properly maintained and free of leaks during operation and maintenance activities. All necessary equipment maintenance and repairs would be performed in pre-designated controlled, paved areas to minimize risks from accidental spillage or release.
		SpaceX would ensure employees and contractor staff are trained in proper prevention and cleanup procedures.
		SpaceX would store liquids, petroleum products, and hazardous materials in approved containers and drums and would ensure that any open containers are covered prior to rain events.
		Per 40 CFR Part 112, Spill Prevention, Control, and Countermeasure Plan, SpaceX would place chemicals, drums, or bagged materials on a pallet and, when necessary, secondary containment.
		All aboveground oil or fuel tanks and containers 55 gallons or greater shall be reported to the tank manager at (805) 605-0342. All tanks and containers must be doubled-walled or constructed with secondary containment at minimum of 110 percent of the total capacity. Please contact SLD 30 Tank Manager at 605-0342 for questions.
Solid Waste Management	3.16.2.5, page 3-118	All materials that are disposed of off Base would be reported to the SLD 30 Solid Waste Manager.

Table 2. USFWS Biological Opinion Actions

Species	Actions
All	The Space Force will ensure that the Applicant implements the following measures at SLC-4 and SLC-6: (1) the site-specific Stormwater Pollution Prevention Plan; (2) the Best Management Practices within the latest California Stormwater Quality Association's Stormwater Best Management Practices Handbook; (3) collect any rocket propellant seen floating in the retention basin using absorbent pads prior to discharge to the spray field; and (4) the procedures in

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	VSFB’s Hazardous Materials Emergency Response Plan in the event of a hazardous materials spill. The Applicant will continue to remove nonnative, invasive predators captured incidentally during the monitoring efforts described below (e.g., American bullfrogs).
California Condor	The Space Force will determine if California condors are present by coordinating with the Service and Ventana Wildlife Society personnel on a quarterly basis and/or via direct access to Condor tracking platforms utilized by the Service. The Space Force will contact the Service if California condors appear to be near or within the area affected by a launch from SLC-4 or SLC-6. In the unlikely event that a California condor is nearby, Qualified or Permitted Biologists will monitor California condor movements in the vicinity of VSFB and coordinate with the Service to analyze data before, during, and after launch events to determine whether any changes in movement occur. The Space Force will coordinate with the Service, California Condor Recovery Program, and Ventana Wildlife Society to keep updated on recent California condor movement patterns and observations.
California Red-Legged Frog	The Applicant will continue to implement long-term monitoring of population and distribution trends associated with California red-legged frog populations within Jalama Creek, Honda Creek, Bear Creek, and the Santa Ynez River, as described below: The Applicant will ensure that quarterly night surveys for California red-legged frog and spring tadpole surveys are conducted in lower Honda Creek, Bear Creek, the Santa Ynez River, and Jalama Creek to compare baseline California red-legged frog detection rate and occupancy data collected over the past 10 years and assess if there are any changes in California red-legged frog habitat occupancy, breeding behavior (calling), and breeding success (egg mass and tadpole densities). Data analysis will incorporate past and future habitat assessments to account for variables including but not limited to observed variation in extent of wetted habitat, quantified predator removal, and climatic factors. Within-site population trends will be assessed in relation to intensity of launch impacts experienced at each site to evaluate whether proximity to launch sites is related to occupancy, breeding behavior (calling), and breeding success (egg masses and tadpole densities). The surveys will record and measure the following: California red-legged frog detection density following the same survey methods conducted previously at these sites and throughout VSFB (MSRS 2024a); California red-legged frog locations and breeding evidence (e.g., calling, egg masses); environmental data during surveys (temperature, wind speed, humidity, and dewpoint) to determine if environmental factors are affecting California red-legged

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	frog detection or calling rates; annual habitat assessments to measure flow rates, stream morphology, depths, quantify suitable occupied habitat and sediment to determine if any changes in California red-legged frog metrics are associated with other environmental factors, such as drought; and locations and densities of co-occurring anurans, including bullfrogs and Baja California tree frogs (<i>Pseudacris regilla</i>).
	The Applicant will continue to perform passive bioacoustics monitoring (Wildlife Acoustics Song-Meter 4 or similar technology) and will establish frog calling behavior baseline within each impacted breeding feature (Jalama Creek, Honda Creek, Bear Creek, and Santa Ynez River) and a control site at Arroyo Quemado for purposes of signal characteristic comparison. California red-legged frog calling behavior baseline will include applicable call characteristics (e.g., changes in signal rate, call frequency, amplitude, call timing, call duration, etc.). The Applicant will ensure that bioacoustic monitoring conducted is designed to best address confounding factors to appropriately characterize impacts of launch, static fire, and landing events on calling behavior. The California red-legged frog call characteristics described above will be analyzed from the sites on VSFB and Arroyo Quemado to determine if there are any differences that may be due to launch-related causes. The results will be analyzed in conjunction with long term population data to ensure that any observed changes in signal characteristics are not resulting in observable declines in population.
	Service-Approved Biologists, approved by Service and 30 CES/CEIEA, including personnel who are familiar with and possess necessary qualifications to be approved for capture, handle, and release of California red-legged frogs, will be present to monitor construction and demolition activities at SLC-6 when deemed necessary by the Space Force throughout the length of the project to minimize impacts on this species. The biological monitors will be responsible for delineating areas where special-status species are located or concentrated, relocating special-status species in jeopardy of being killed or injured by construction, and inspecting equipment and equipment staging areas for fluid leaks. Prior to the onset of construction activities, qualification submittals of biologist(s), who would conduct the monitoring, surveying, species relocation, and other biological field activities will be submitted by 30 CES/CEIEA to the Service for approval.
	Prior to construction activities at SLC-6, any California red-legged frogs will be removed by a Service Approved Biologist from an exclusion area within the project site and relocated, to the nearest

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	suitable habitat location at least 500 feet away to decrease the likelihood of recapture through the process described below.
	The Applicant, under direction from a Qualified Biologist, will establish an exclusion area (or potentially multiple separate exclusion areas) around previously undisturbed areas where construction activities occur and require vegetation removal, fill placement, and California red-legged frog removal/exclusion to avoid impacts to this species.¹
	The applicant, under direction of a Qualified Biologist, will ensure the exclusion area is encircled with a minimum 3-foot-high silt fencing, anchored with metal T-posts, and buried along the bottom edge to the best extent possible to prevent terrestrial wildlife, including California red-legged frogs, from entering the site.
	Following completion of the installation of exclusion fencing, Service Approved Biologists would conduct a pre-project survey of the exclusion area for wildlife and special-status species, including California red-legged frog. All California red-legged frogs captured will be transported to the nearest suitable habitat outside of the exclusion area and released by a Service Approved Biologist. The Service Approved Biologist will repeat these surveys following any precipitation event greater than 0.2 inch during a 24-hour period.
	A Service Approved Biologist will monitor any initial ground disturbance or vegetation removal within suitable aquatic, adjacent upland, or dispersal habitat identified following the adaptive habitat assessment procedures (as described in the PBO, Service 2018). However, after the initial ground disturbance/vegetation removal is complete, no further monitoring will be required within these bare-dirt areas.
	Relocation: If California red-legged frogs are found within the project area during pre-project surveys, daily monitoring where required, or at any other time, all construction activity within the vicinity of the California red-legged frog occurrence (if any) will cease. If the project site is large and if the Service Approved Biologist is satisfied that work in a different area of the project can continue with no threat to California red-legged frogs, then that work would continue. Construction activities within the vicinity of the California red-legged frog occurrence will not begin or resume until the California red-legged frog is relocated by a Service Approved Biologist or the individual has left the construction area of its own volition. The Service Approved Biologist will relocate all life stages of California red-legged frogs the shortest distance possible to a location that is (1) within the same drainage, (2) contains suitable aquatic/upland habitat, and (3) is outside of the project impact area. All animals will be held

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	in 5-gallon buckets until release. All animals held will be segregated by size such that predation is unlikely. The holding time will be minimized to the greatest extent feasible and the health of all held animals will be continuously monitored to evaluate the need for additional measures to protect the animals, such as aeration of water in holding buckets.
	All exclusion fencing will be removed at the completion of construction activities.
	To avoid transferring disease or pathogens between aquatic habitats during surveys and handling of amphibians, the Service Approved Biologists will follow decontamination procedures described in the Declining Amphibian Population Task Force’s Code of Practice (Service 2002a).
	Any open holes or trenches will be covered with plywood or metal sheets and/or supplied with an escape ramp if left overnight to minimize the risk of entrapment of California red-legged frogs or other wildlife.
	Construction activities will not occur in previously undisturbed areas with potential for California red-legged frogs until 24 hours after an actual precipitation event greater than 0.2-inch accumulating within a 24-hour period.
	No overnight staging of equipment or supplies will occur within 0.10 miles of aquatic habitat. Measures would be implemented that prevent California red-legged frog from accessing the staging area (e.g., drift fence barrier installed).
	The Applicant will maintain exhaust ducts at SLC-6 to minimize standing water when operationally feasible, as verified by the Space Force, to help minimize the potential to attract California red-legged frogs to SLC-6.
	The Applicant will discontinue monitoring after 5 years from initiation of monitoring, which began with the 2023–2024 breeding season.
	The Space Force must monitor vibrations from three Falcon Heavy launches and boostbacks to determine magnitude, frequency, and distance. Results of the monitoring must be presented in units for understanding ecological effects of vibration on California red-legged frog.
General	A Service Approved Biologist will brief all construction personnel prior to participating in construction and demolition activities at SLC-6. At a minimum, the training would include a description of the listed species and sensitive biological resources occurring in the area, the general and specific measures and restrictions to protect these resources during project implementation, applicable provisions of the

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	ESA and the necessity of adhering to those provisions, and the penalties associated with violations of the ESA.
	The Applicant will limit construction and demolition activities to areas and durations necessary, as verified by the Space Force, to accomplish project objectives.
	The Applicant will place all human-generated trash and food waste in concealed containers. Trash will be transferred to a secure on-site dumpster or equivalent at the end of each workday and removed from the work area weekly throughout construction and demolition at SLC-6.
	The Applicant will ensure that a Qualified Biologist inspects any construction equipment left overnight prior to the start of work the following day. The Qualified Biologist will check equipment for presence of special-status species in the vicinity and for fluid leaks and immediately let 30 CES/CEIEA know to coordinate subsequent actions prior to the start of work.
	Lighting plans (Avoidance and Minimization Measure GM-2) for SLC-4 and SLC-6 must reduce the potential for artificial lighting on the landscape with the intention to reduce scatter into natural, undeveloped areas to the maximum degree possible incorporating the recommendations provided to the Applicant by IMEG Corporation (Whitsitt-Odell, pers. comm., 2025).
	The Applicant will develop a lighting management plan to incorporate into the construction of SLC-6 and will be provided to the Service.
Least Bell's Vireo	The Space Force will have a Qualified Biologist conduct point count surveys for least Bell's vireos on VSFB and at potential breeding habitats at the Santa Ynez River adjacent to Buellton, California during the breeding season (May 15 through August 15) concurrent with routine riparian bird surveys on VSFB.
Least Tern	The Space Force will continue to implement long-term monitoring of annual population and distribution trends associated with California least tern.
	The Applicant will perform statistical analysis annually to identify declines in the California least tern population, nesting activity, and reproductive success that may result from cumulative effects of multiple Falcon launches and landings from SLC-4 and SLC-6. The Applicant will discontinue this analysis after 5 years from initiation, which began with the 2024 California least tern breeding season.
	The Applicant will perform acoustic monitoring (rocket engine noise and sonic boom) during the first three Falcon Heavy missions at the Purisima Point California least tern colony to validate noise model predictions.

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	Motion triggered video cameras will be used during the breeding season (typically April 15 to August 15) to determine nest fates and potential impacts to nests during the first three Falcon Heavy launches and landings to reduce disturbance associated with human activity within breeding habitat. The Applicant will monitor during the first three Falcon Heavy launches and landings at whichever of the following is greater within the Purisima Point colony: (i) 10 percent of active California least tern nests, or (ii) four active California least tern nests. Cameras will be placed in a manner to minimize disturbance to nesting terns; this will be determined in the field based on the best judgement of a Permitted Biologist. The Applicant will employ camera technology that is capable of long-term recording and time marking the moment of disturbance events. The Applicant will review California least tern nest camera recordings as soon as possible following the Falcon Heavy launch/landing events.
Marbled Murrelet	The Space Force will have a Qualified Biologist conduct marbled murrelet population surveys at the current levels to monitor the frequency and distribution of marbled murrelets within the action area.
Reporting Requirements	Pursuant to 50 CFR 402.14(i)(3), the Space Force must report the progress of the action and its impact on the species to the Service as specified in this incidental take statement. The Space Force must submit a final report within 90 days following completion of the proposed construction of SLC-6 project and provide an annual report by February 15 for each fiscal year (October through September) that activities are conducted pursuant to this biological opinion to the Service's Ventura Fish and Wildlife Office via electronic mail. The reports must describe all activities that were conducted under this biological opinion, including activities and conservation measures that were described in the proposed action and required under the terms and conditions, and discuss any problems that were encountered in implementing conservation measures or terms and conditions and any other pertinent information. The report(s) must also include the following information: 1. Documentation of any impacts of the proposed activities on southern sea otters, California red-legged frog, western snowy plover and California least tern; results of biological surveys and observation records; documentation of the number of individuals of any life stage of California red-legged frog, western snowy plover and California least tern injured or killed; the date, time, and location of any form of take; approximate size and age of those individuals taken; and a

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	description of relocation sites or rehabilitation outcomes for captured individuals. 2. Results from all monitoring described within this biological opinion. 3. The Space Force must submit federally listed species observations over the course of the project to the California Natural Diversity Database (CNDDDB). The report should also include a discussion of any problems encountered implementing the terms and conditions and other protective measures, recommendations for modifying the terms and conditions to enhance the conservation of federally listed species, and any other pertinent information.
Sea Otter	The Space Force will continue to conduct southern sea otter population surveys at the current levels to monitor the densities and distribution of southern sea otters along VSFB's coastline.
	The Space Force will require that project-related boats that utilize the harbor during hours of darkness operate under a lighting management plan to reduce potential impacts to rafting southern sea otter and other marine mammals from visual disturbance.
	As depicted in the 2022 Programmatic Biological Assessment, the Space Force will require the project proponent to adhere to the following measures in regard to watercraft speed within and adjacent to the VSFB Harbor: a) Within the harbor during hours of daylight, personnel will maintain a speed of less than 11.5 miles per hour (10 knots) if southern sea otter are present and maintain a minimum of 80 feet of separation from rafting southern sea otter; b) Within the harbor during hours of darkness, personnel will maintain a speed of less than 11.5 miles per hour (10 knots) at all times; c) Outside the harbor, personnel will maintain speeds of less than 17 miles per hour (15 knots) within depths of less than approximately 80 feet which correlates to approximately 5.5 miles from shore; d) Outside the harbor during hours of daylight, personnel will maintain a minimum of 325 feet of separation from rafting southern sea otter and 30 feet of separation from kelp. If this separation distance is determined to be infeasible in coordination with the Qualified Biologist, personnel will maintain a 'no wake' speed (5 miles per hour/4.3 knots) when within 30 feet of kelp.
Snowy Plover	The Space Force will continue to implement long-term monitoring of annual population and distribution trends associated with western snowy plover along Surf Beach.

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	The Applicant will perform acoustic monitoring (rocket engine noise and sonic boom) at South Surf Beach during the first three Falcon Heavy missions to validate noise model predictions.
	The Applicant will perform geospatial analysis annually to identify declines in the western snowy plover population, nesting activity, and reproductive success that may result from cumulative effects of multiple Falcon launches and landings from SLC-4 and SLC-6. The Applicant will discontinue this analysis after 5 years from initiation, which began with the 2024 western snowy plover breeding season.
	The Applicant will use motion triggered video cameras during the breeding season (March 1 through September 30) to determine nest fates and potential impacts to nests during the first three Falcon Heavy launches and landings.
	The Applicant will monitor active nests at South Surf Beach with motion triggered video cameras during the breeding season at whichever of the following is greater within the modeled 4 psf zone during the first three Falcon Heavy launches and landings to assess potential novel effects that may result from frequent launching: (i) 10 percent of active western snowy plover nests, or (ii) four active western snowy plover nests. The Applicant will monitor at whichever of the following is greater within the modeled 3 to 4 psf zone: (iii) 10 percent of active western snowy plover nests, or (iv) two active western snowy plover nests. The Applicant will monitor at whichever of the following is greater within the modeled 2 to 3 psf zone: (v) 5 percent of active western snowy plover nests, or (vi) four active western snowy plover nests. Cameras will be placed in a manner to minimize disturbance to nesting plovers; this will be determined in the field based on the best judgement of a Permitted Biologist. The Applicant will employ camera technology that is capable of long-term recording and time marking the moment of disturbance events. The Applicant will review western snowy plover nest camera recordings as soon as possible after the Falcon Heavy launch/landing events.
Southwestern Willow Flycatcher	The Space Force will have a Qualified Biologist conduct point count surveys for southwestern willow flycatchers on VSFB and at potential breeding habitats at the Santa Ynez River adjacent to Buellton, California during the breeding season (May 15 through August 15) concurrent with routine riparian bird surveys on VSFB.
Monitoring Plan	To adequately monitor potential effects from the proposed project, the Space Force must ensure the monitoring included in the Description of the Proposed Action (Avoidance and Minimization Measures WSP-3, CLT-2, CRLF-15, and CRLF-16) continues for 5 years following full execution of the proposed action (i.e., completion of construction of

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	SLC-6 and implementation of increased launch program at SLC-4 and SLC-6). Following these five years, the Space Force, developed in coordination with the Service, must implement a monitoring plan to continue detecting and tracking take of listed species from the proposed project.
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Table 3. NMFS Letter of Authorization Actions

Actions
USSF must provide pupping information to launch proponents at the earliest possible stage in the launch planning process and direct launch proponents to, if practicable, avoid scheduling launches during pupping seasons on VSFB from 1 March to 30 April and on the Northern Channel Islands from 1 June- 31 July. If practicable, rocket launches predicted to produce a sonic boom on the Northern Channel Islands >3 pounds per square foot (psf) from 1 June – 31 July will be scheduled to coincide with tides in excess of +1.0 ft (0.3 m), with an objective to do so at least 50 percent of the time.
Monitoring at VSFB and NCI must be conducted by at least one NMFS-approved Protected Species Observer (PSO) trained in marine mammal science. PSOs must have demonstrated proficiency in the identification of all age and sex classes of all marine mammal species that occur at VSFB and on NCI. They must be knowledgeable of approved count methodology and have experience in observing pinniped behavior, especially that due to human disturbances.
In the event that the PSO requirements described in paragraph (a) of this section cannot be met (e.g., access is prohibited due to safety concerns), daylight or nighttime video monitoring must be used in lieu of PSO monitoring. In certain circumstances where the daylight or nighttime video monitoring is also not possible (e.g., USSF is unable to access a monitoring site due to road conditions or human safety concerns), USSF must notify NMFS.
At VSFB, USSF must conduct marine mammal monitoring and take acoustic measurements for all new rockets, for rockets (existing and new) launched from new facilities, and for larger or louder rockets (including those with new launch proponents) than those that have been previously launched from VSFB during their first three launches and for the first three launches from any new facilities during March through July.
For launches that occur during the harbor seal pupping season (March 1 through June 30) or when higher numbers of California sea lions are present (June 1 through July 31), monitoring must be conducted. At least one NMFS-approved PSO trained in marine mammal science must conduct the monitoring.
When launch monitoring is required, monitoring must begin at least 72 hours prior to the launch and continue through at least 48 hours after the launch. Monitoring must include multiple surveys each day, with a minimum of four surveys per day.
For launches within the harbor seal pupping season, USSF must conduct a follow-up survey of pups.
For launches that occur during daylight, USSF must make time-lapse video recordings to capture the reactions of pinnipeds to each launch. For launches that occur at night, USSF must employ night video monitoring, when feasible.

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When possible, PSOs must record: species, number, general behavior, presence and number of pups, age class, gender, and reaction to launch noise, or to natural or other human-caused disturbances. PSOs must also record environmental conditions, including visibility, air temperature, clouds, wind speed and direction, tides, and swell height and direction.
USSF must conduct sonic boom modeling prior to the first three small or medium rocket launches from new launch proponents or at new launch facilities, and all heavy or super-heavy rocket launches.
USSF must conduct marine mammal monitoring and take acoustic measurements at the NCI if the sonic boom model indicates that pressures from a boom will reach or exceed 7 psf from 1 January through 28 February, 5 psf from 1 March through 31 July, or 7 psf from 1 August through 30 September. No monitoring is required on NCI from 1 October through 31 December.
The monitoring site must be selected based upon the model results, prioritizing a significant haulout site on one of the islands where the maximum sound pressures are expected to occur.
USSF must estimate the number of animals on the monitored beach and record their reactions to the launch noise and conduct more focused monitoring on a smaller subset or focal group.
Monitoring must commence at least 72 hours prior to the launch, during the launch and at least 48 hours after the launch, unless no sonic boom is detected by the monitors and/or by the acoustic recording equipment, at which time monitoring may be stopped.
For launches that occur in darkness, USSF must use night vision equipment.
Monitoring for each launch must include multiple surveys each day that record, when possible: species, number, general behavior, presence of pups, age class, gender, and reaction to sonic booms or natural or human-caused disturbances.
USSF must collect photo and/or video recordings for daylight launches when feasible, and if the launch occurs in darkness night vision equipment will be used.
USSF must record environmental conditions, including visibility, air temperature, clouds, wind speed and direction, tides, and swell height and direction.
USSF must continue to test equipment and emerging technologies, including but not limited to night vision cameras, newer models of remote video cameras and other means of remote monitoring at both VSFB and on the NCI.
USSF must evaluate UAS based or space-based technologies that become available for suitability, practicability, and for any advantage that remote sensing may provide to existing monitoring approaches.
USSF must conduct semi-monthly surveys (two surveys per month) to monitor the abundance, distribution, and status of pinnipeds at VSFB. Whenever possible, these surveys will be timed to coincide with the lowest afternoon tides of each month when the greatest numbers of animals are usually hauled out. If a VSFB or area closure precludes monitoring on a given day, USSF must monitor on the next best day.
PSOs must gather the following data at each site: species, number, general behavior, presence and number of pups, age class, gender, and any reactions to natural or human-caused disturbances. PSOs must also record environmental conditions, including visibility, air temperature, clouds, wind speed and direction, tides, and swell height and direction.

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USSF must submit an annual report each year to NMFS Office of Protected Resources and West Coast Region on March 1st of each year that describes all activities and monitoring for the specified activities during that year. This includes launch monitoring information in Condition 7(a)(i) through (iii) for each launch where monitoring is required or conducted. The annual reports must also include a summary of the documented numbers of instances of harassment incidental to the specified activities, including non-launch activities (e.g., takes incidental to aircraft or helicopter operations observed during the semi-monthly surveys). Annual reports must also include the results of the semi-monthly sentinel marine mammal monitoring described in Condition 6(i), results of tests of equipment and emerging technologies described in condition 6(f), and results of evaluation of UAS based or space-based technologies described in condition 6(g).

USSF must submit a final, comprehensive 5-year report to NMFS Office of Protected Resources within 90 days of the expiration of this LOA.

If the activity identified in Condition 2 likely resulted in the take of marine mammals not identified in Condition 4(b), then the USSF must notify the NMFS Office of Protected Resources and the NMFS West Coast Region stranding coordinator within 24 hours of the discovery of the take.

In the event that personnel involved in the activities discover an injured or dead marine mammal, USSF must report the incident to the Office of Protected Resources (OPR), NMFS (PR.ITP.MonitoringReports@noaa.gov and itp.davis@noaa.gov) and to the West Coast regional stranding network (866-767-6114) as soon as feasible.

If real-time monitoring during a launch shows that the activity identified in Condition 2 is reasonably likely to have resulted in the mortality or injury of any marine mammal, USSF must notify NMFS within 24 hours (or next business day). NMFS and USSF must then jointly review the launch procedure and the mitigation requirements and make appropriate changes through the adaptive management process, as necessary and before any subsequent launches of rockets and missiles with similar or greater sound fields and/or sonic boom pressure levels.