

CALIFORNIA COASTAL COMMISSION

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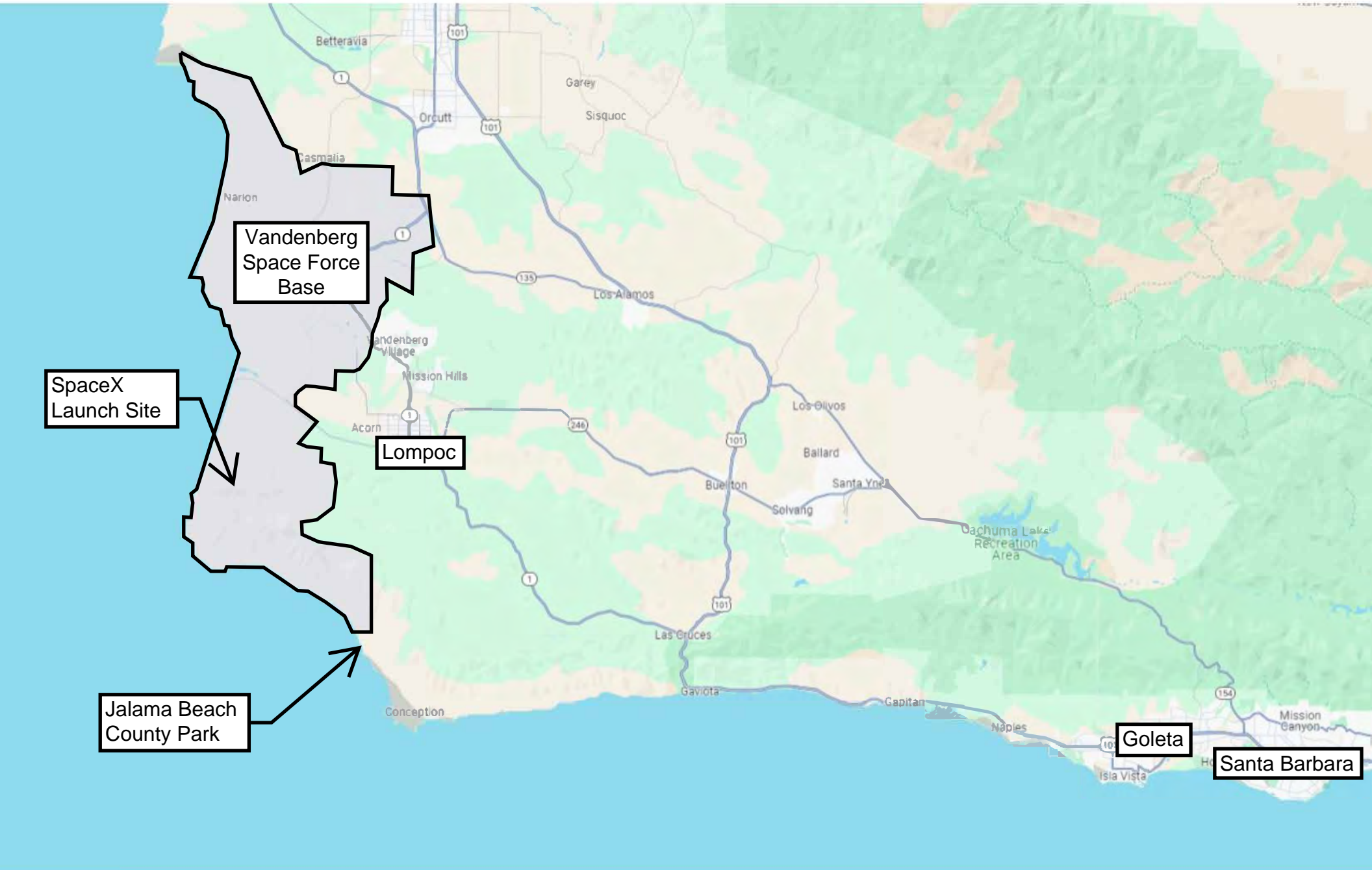
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Negative Determination No. ND-0009-23

December 15, 2023

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Exhibit 2
ND-0009-23

This content is from the eCFR and is authoritative but unofficial.

Title 15 – Commerce and Foreign Trade

Subtitle B – Regulations Relating to Commerce and Foreign Trade

Chapter IX – National Oceanic and Atmospheric Administration, Department of Commerce

Subchapter B – Ocean and Coastal Resource Management

Part 930 – Federal Consistency with Approved Coastal Management Programs

Subpart C – Consistency for Federal Agency Activities

Authority: 16 U.S.C. 1451 *et seq.*

Source: 65 FR 77154, Dec. 8, 2000, unless otherwise noted.

§ 930.45 Availability of mediation for previously reviewed activities.

- (a) Federal and State agencies shall cooperate in their efforts to monitor federally approved activities in order to make certain that such activities continue to be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the management program.
- (b) The State agency may request that the Federal agency take appropriate remedial action following a serious disagreement resulting from a Federal agency activity, including those activities where the State agency's concurrence was presumed, which was:
 - (1) Previously determined to be consistent to the maximum extent practicable with the management program, but which the State agency later maintains is being conducted or is having an effect on any coastal use or resource substantially different than originally described and, as a result, is no longer consistent to the maximum extent practicable with the enforceable policies of the management program; or
 - (2) Previously determined not to be a Federal agency activity affecting any coastal use or resource, but which the State agency later maintains is being conducted or is having an effect on any coastal use or resource substantially different than originally described and, as a result, the activity affects any coastal use or resource and is not consistent to the maximum extent practicable with the enforceable policies of the management program. The State agency's request shall include supporting information and a proposal for recommended remedial action.
- (c) If, after a reasonable time following a request for remedial action, the State agency still maintains that a serious disagreement exists, either party may request the Secretarial mediation or OCRM mediation services provided for in subpart G of this part.

CALIFORNIA COASTAL COMMISSION

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May 5, 2023

Beatrice L. Kephart
Chief Installation Management Flight
Department of the Air Force
ATTN: Samantha Kaisersatt
1028 Iceland Avenue
Vandenberg AFB, CA 93437-6010

Subject: Negative Determination **ND-0009-23** (Increase in frequency of space launch operations by SpaceX at Vandenberg Space Force Base)

Dear Chief Kephart:

The Coastal Commission staff has reviewed the above-referenced negative determination regarding the proposed increase in Space Exploration Technologies' (SpaceX) Falcon 9 launch activities at Vandenberg Space Force Base (VSFB) from six to 36 per year as well as the addition of offshore landing locations in the Pacific Ocean.

Background

In December 2003, the Executive Director concurred with the Air Force's ND-103-03 for implementation of the Falcon 1 launch vehicle program at Space Launch Complex 3 West, and in August 2005 concurred with ND-088-05 for relocation of that program to Space Launch Complex 4 West. The Executive Director determined that those programs would not generate new or additional adverse impacts on coastal resources not previously examined by the Commission in its concurrence with a consistency determination by the Department of the Air Force (CD-049-98) for launch activities at the adjacent SLC-3E associated with its Evolved Expendable Launch Vehicle Program.

In November 2010, the Executive Director concurred with the Air Force's ND-055-10 for modification of Space Launch Complex 4 East (SLC-4E) to support the Falcon 9 and Falcon 9 Heavy launch vehicle programs at VSFB and the use of SLC-4E for a maximum of ten launches per year (five of each). The Falcon 9 and Falcon 9 Heavy are significantly larger launch vehicles compared to the Falcon 1, and the facilities at SLC-4W are not able to accommodate the larger Falcon vehicles. SLC-4E supported launch operations for the larger and more powerful Titan IV launch vehicle through 2005 and, as a result, the Air Force modified SLC-4E to accommodate the Falcon 9 program operated SpaceX. In October 2013, the Executive Director concurred with a negative determination from the Air Force (ND-0035-14) for a single launch of the Falcon 9 rocket from SLC-4E, the in-flight abort test of the Dragon spacecraft capsule and

recovery operations approximately 1.5 miles off the Vandenberg AFB coast, and the Falcon 9 first stage boost-back and landing at SLC-4W. ND-0035-14 also included construction of a 1.6-acre concrete landing pad at SLC-4W; a temporary 5.7-acre area of flat panels west of the landing pad (installed two weeks prior to a launch and removed two weeks after launch) to facilitate radar sensor operations during first-stage landings; realignment of existing service and access roads; installation of ground-based communications equipment; and improvements to stormwater and firefighting runoff collection infrastructure at SLC-4W. In August 2015, the Executive Director concurred with ND-0027-15 for up to six SpaceX Falcon 9 launches per year from SLC-4E and associated first-stage landings at SLC-4W or on an offshore barge specifically designed as a first-stage landing platform and located at least 31 miles offshore of VSFB.

In the current proposal, SpaceX Falcon 9 launch operations previously concurred with by the Executive Director would continue and be increased to up to 36 per year. Existing infrastructure will be used and no construction activities or ground disturbance is proposed. First stage processing protocols at VSFB would remain unchanged but would increase in frequency. In addition, a new offshore landing location would be designated, SpaceX may add up to 100 personnel at VSFB and would increase its current level of use of specialized trucks for overland transport and barges for in-water transport of boosters, fairings, and other materials. SpaceX would also increase its processing of payloads and refurbishment of boosters and fairings at existing SpaceX facilities on VSFB. Up to 36 boosters and 36 fairings would be refurbished each year.

Marine Debris

Although this refurbishment and reuse of components by SpaceX significantly reduces the volume of marine debris generated from its launches over the Pacific Ocean, these launches and related activities (such as the use of weather balloons prior to launches) does result in the release of debris material into the ocean. To address this, the Department of the Air Force notes in ND-0009-23 that:

SpaceX proposes to participate in the SLD 30 Adopt-A-Beach Program and conduct quarterly beach cleanups at Surf Beach. SpaceX also proposes to make an annual contribution to the California Lost Fishing Gear Recovery Project to offset the impacts from unrecoverable debris (weather balloon/radiosonde, drogue parachute, parafoil, and MVac skirt ring). For every 3 pounds of unrecovered debris, SpaceX would make a compensatory donation of \$10.00, which is sufficient to recover 1 pound of lost fishing gear.

Based on estimates of the roughly 177 pounds of material anticipated to be released into the ocean and not recovered per launch, SpaceX would contribute approximately \$21,252 per year to the California Lost Fishing Gear Recovery Project. The actual contribution would be based on the actual amount of material released. With this commitment and SpaceX's participation in VSFB's Adopt-A-Beach program, Commission staff agrees that the proposed project would offset marine debris generated from launch activities through the removal of derelict fishing gear and thus

help ensure that the project does not result in a net increase in marine debris in California coastal waters.

Coastal Access and Recreation

The Department of the Air Force (DAF) also addresses in ND-0009-23 the potential effects of the proposed increase in launch activity on coastal access and recreation that would result from safety closures of public beaches in northern Santa Barbara County during launch operations. The need for such closures is summarized by DAF:

Since 1979, an evacuation and closure agreement has been in place between the DAF and Santa Barbara County. For the safety of park visitors, the County Parks Department and the County Sheriff currently close the parks upon request from the DAF. This agreement includes closing Jalama Beach County Park, Ocean Beach County Park, Surf Beach, and Point Sal Road, in the event of launch activities that have been determined by SLD 30 Range Safety to have certain human health and safety risks. These closures are communicated at least 72 hours' prior to closure and can be closed for a maximum of 48 hours per the agreement.

Based on information available to Commission staff, the number of such closures has not exceeded 12 per year and has typically been substantially less for the past several decades. In its concurrence with the DAF's consistency determination for the Evolved Expendable Launch Vehicle Program (CD-049-98), the Commission found that with the addition of mitigation measures, up to 14 beach closures per year would be consistent with California's Coastal Management Program. Mitigation measures included the consideration of coastal recreation impacts during launch scheduling and planning so that launches on weekends, holidays, and peak summer recreation season are avoided.

As part of the project proposed in ND-0009-23, the DAF states that "Launches from SLC-4E due to the Proposed Action would not cause an exceedance of 12 closures of Jalama Beach County Park per year" and that while "In the past, SLD 30 has restricted access to Ocean Beach County Park and Surf Beach for all launches from SLC-4E," this level of beach closures is no longer necessary and can be reduced:

Based on updated modeling and safety considerations, SLD 30 Range Safety and the Security Forces Squadron have determined closures are only required if the first stage of the Falcon 9 launch vehicle will boost back to land at SLC-4W. Thus, closures due to the Proposed Action would be infrequent (up to 12 times per year) and would not substantially diminish the protected activities, features, or attributes of Jalama Beach, Surf Beach, or Ocean Beach County Parks.

Commission staff greatly appreciates DAF's efforts to update its modeling and safety considerations in a way that would allow for increased launch activity while still maintaining public safety and not expanding adverse impacts to coastal access and recreation. With this reduction in proposed safety closures of Ocean Beach County Park and Surf Beach to only boost-back landing activities (rather than during launches

and landings, as is the current practice) as well as the commitment to not exceed 12 closures per year of any northern Santa Barbara County beaches (Jalama Beach, Ocean Beach County Park, and Surf Beach), the Commission staff agrees that the proposed project will not generate new or additional adverse impacts on coastal access and recreation not previously examined and found to be consistent by the Commission and Executive Director in CD-049-98 and subsequent negative determinations for launch activities on VSFB.

Biological Resources

As DAF notes in ND-0009-23,

Multiple federally listed species protected under the Endangered Species Act (ESA), potential habitat that supports these listed species, and several state special status species occur within the project vicinity. Pursuant to Section 7 of the ESA, the [U.S. Space Force (USSF)] has prepared two Biological Assessments for the federally listed species: one for species under the jurisdiction of the United States Fish and Wildlife Service (USFWS), and one for species under the jurisdiction of the National Marine Fisheries Service (NMFS). A list of federal and state special status species occurrence within the Proposed Action Area is included in Attachment 3. Potential impacts on federal and state listed species include indirect impacts resulting from water use, disruption of breeding, foraging, or roosting behaviors, and abandonment of habitat including breeding or roosting sites due to project related noise. The USSF has worked with the USFWS and NMFS to develop the avoidance, minimization, and mitigation measures described in Attachment 4 that are included as part of the Proposed Action to reduce impacts on biological resources. The USSF will implement these measures. Impacts to biological resources will not be significant.

Mitigation measures that would be implemented by the U.S. Space Force as part of the proposed project include a variety of protective measures as well as extensive baseline and post-launch monitoring of sensitive species such as red-legged frogs, western snowy plovers, California least tern, marine mammals, and bat species in the vicinity of the launch complex. If species-specific monitoring demonstrates a decline in a target population that is attributable to launch activities or due to indeterminate causes, specific compensatory mitigation action would be carried out on VSFB by the U.S. Space Force. Depending on the species, such mitigation would include habitat restoration, predator control efforts or similar activities.

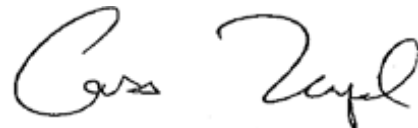
With the U.S. Space Force's commitment to carry out the specific biological resource mitigation measures detailed in Attachment 4 of ND-0009-23, as well as the lack of evidence of significant impacts on biological resources that have been documented by ongoing biological resource monitoring as a result of noise, sonic boom, and exhaust materials from past and current launch activities, Commission staff agrees that the proposed project will not generate new or additional adverse impacts on coastal biological resource not previously examined and found to be consistent by the

Commission and Executive Director in CD-049-98 and subsequent negative determinations for launch activities on VSFB.

Conclusion

In addition to the commitments described above to address the proposed project's potential to contribute to marine debris, loss of coastal access and recreation opportunities and disturbance of sensitive biological resources, the U.S. Space Force has also committed to convene an informational briefing with Commission staff in May of 2028 to present the results of biological monitoring efforts, beach closures and marine debris reduction and offset efforts over the previous five years. In addition to facilitating information sharing, this briefing would also provide an opportunity for U.S. Space Force and Commission staff to discuss potential lessons learned, emerging issues and unanticipated impacts associated with the proposed increase in SpaceX Falcon 9 launch activities. With these commitments, Commission staff **agrees** that the proposed increase to 36 Falcon 9 launches per year at VSFB and designation of a new offshore landing area will not adversely affect coastal zone resources. The proposed launch activities are similar to those concurred with by the Commission in CD-049-98 and by the Executive Director in ND-0027-15. We therefore **concur** with your negative determination made pursuant to 15 CFR 930.35 of the NOAA implementing regulations. Please contact Cassidy Teufel at Cassidy.Teufel@coastal.ca.gov should you have any questions regarding this matter.

Sincerely,



Federal Consistency Manager
(for)

KATE HUCKELBRIDGE
Executive Director

cc: CCC – South Central Coast District



**DEPARTMENT OF THE AIR FORCE
UNITED STATES SPACE FORCE
SPACE LAUNCH DELTA 30**

10 Apr 2023

Beatrice L. Kephart
30 CES/CEI
1028 Iceland Avenue
Vandenberg SFB CA 93437-6010

Mr. Cassidy Teufel
California Coastal Commission
455 Market Street, Suite 228
San Francisco CA 94105-2219

Dear Mr. Teufel

In accordance with Section 307c(1) of the Federal Coastal Zone Management Act (CZMA) of 1972, as amended, the Department of the Air Force (DAF) has determined that increasing SpaceX's Falcon 9 launch cadence from Vandenberg Space Force Base (VSFB) to 36 annual launches and landings, and adding downrange offshore landing locations in the Pacific Ocean (the Proposed Action), would not adversely affect coastal uses or resources because measures will be taken to prevent, minimize, and mitigate impacts. The DAF respectfully requests California Coastal Commission concurrence on this Negative Determination.

The California Coastal Commission has previously concurred with Negative Determinations for the SpaceX Falcon launch program at VSFB. The California Coastal Commission concurred in 2010 (ND-055-10) that the Falcon 9 and Falcon Heavy programs at Space Launch Complex (SLC)-4E would have similar impacts to those described for launch activities at SLC-3E (CD-049-98) and for relocating the Falcon 1 launch vehicle to SLC-4W (ND-088-08). In 2015, the California Coastal Commission concurred with a Negative Determination for recurring Falcon 9 first stage boost-back landings at SLC-4W or on a barge approximately 27 nautical miles offshore (ND-0027-15).

Project Description

The Space Launch Delta 30 (SLD 30) at VSFB is the DAF organization responsible for Department of Defense (DoD) space and missile launch activities on the west coast of the United States. The DAF proposes to increase the cadence of SpaceX Falcon 9 launches up to 36 times annually from SLC-4E. Existing infrastructure will be used with no construction activities or ground disturbance planned under the Proposed Action. First stage processing protocols at VSFB would remain unchanged but would increase in frequency to support 36 annual launches.

In addition to the range of trajectories between 140 and 301 degrees analyzed in the 2011 *Final Environmental Assessment for Falcon 9 and Falcon 9 Heavy Launch Vehicle Programs from Space Launch Complex 4 East* and ND-055-10, the Proposed Action includes adding a northerly mission profile with a launch azimuth between 302 and 325 degrees. Following each launch,

SpaceX would perform a boost-back and landing of the first stage, either downrange on a droneship or at SLC-4W at VSF. No more than 12 first stage landings would occur at SLC-4W per year. Mission objectives may also require expending the first stage booster in the broad open ocean; however, this is a rare occurrence. The Proposed Action includes expanding the potential landing area in the Pacific Ocean to the Proposed Landing Area, shown in Attachment 1 to accommodate the new trajectories.

Launch

SpaceX would launch Falcon 9 from SLC-4E up to 36 times per year in the same manner as current launches fully described in in the 2018 *Supplemental Environmental Assessment for Launch, Boost-Back, and Landing of the Falcon 9 at Vandenberg Air Force Base* and ND-0027-15. Each takeoff may be preceded by a static fire test of the engines, which lasts a few seconds. The need to conduct a static fire test is mission dependent, but there would be no more than 36 static fire events per year. Launch operations would occur day or night, at any time during the year. There would be approximately 7 to 14 days between each launch event. Static fires typically precede launches by 1 to 3 days.

The Proposed Action does not include the closure or alteration of the dimensions (shape and altitude) of the shipping lanes or airspace. When SpaceX launch and reentry operations pose an extreme risk to public safety over navigable waters, United States Coast Guard (USCG) District Eleven has the regulatory authority to restrict vessel transit after all risk mitigating strategies are exhausted. Federal government agencies, including the USCG, are responsible for ensuring maritime safety. SLD 30 would notify USCG of any upcoming launch operations to ensure safe launches over open ocean, consistent with current procedures. The USCG would be responsible for issuing a Notice to Mariners (NOTMARs) that provide hazard area locations prior to each mission event with ocean impacts. A NOTMAR provides notice of temporary changes in conditions or hazards in navigable waterways with maritime traffic to assist in mitigating risks for dangers associated with waterway users. This tool provides both an established and reliable line of communication with the maritime public. The NOTMAR would include the dates and times of the operations and coordinates of the hazardous operation area. Advance notice via Notices to Air Missions (NOTAMs) would assist general aviation pilots in scheduling around any temporary disruption of flight activities in the operation area. Launches would be of short duration and scheduled in advance to minimize the interruption to airspace and waterways. SLD 30 Range Safety monitors the affected area during launch and landing operations. Although marine vessels are informed of the operations, there is no requirement for them to alter their routes or change their navigation speed. If vessels are obstructing a launch or reentry phase of the operations, the launch would be delayed or altered within SLD 30 launch policies.

Payload Fairing Recovery Operations

The Falcon 9 vehicle payload system includes a fairing that protects payloads (e.g. satellites). The fairing consists of two halves which separate, allowing the deployment of the payload at the desired orbit. Each fairing half contains a parachute system for recovery, which includes one drogue parachute and one parafoil. The parachute system slows the descent of the fairing to enable

a soft splashdown so that the fairing remains intact. The parachute canopy is approximately 110 square feet and the fairing parafoils are approximately 3,000 square feet.

SpaceX would attempt to recover both halves of the fairing after each launch; accordingly, SpaceX anticipates approximately three recovery attempts per month. The fairing and parafoil would be recovered by a salvage ship stationed near the anticipated splashdown site, but no closer than 12 nautical miles offshore. Up to 72 parachutes and 72 parafoils would land in the ocean annually. SpaceX would attempt to recover all parafoils, but it is possible that some of the parafoils would not be recovered due to sea or weather conditions at the time of recovery. The recovery team would attempt to recover the parachute assembly if they can get a visual fix on the splashdown location. Because the parachute assembly is deployed at a high altitude, it is difficult to locate. In addition, based on the size of the assembly and the density of the material, the parachute assembly would be saturated and begin to sink. This would make recovering the parachute assembly difficult and unlikely. As a result, SpaceX has experienced limited success in recovering the parachutes but will continue to attempt recovery and improve the success rate. However, most parachutes would be deposited in the ocean.

Boost-Back and Landing

SpaceX would perform a boost-back and landing of the first stage up to 36 times per year, either downrange on a droneship or at SLC-4W at VAFB. Landing locations are specific to each mission. No more than 12 first stage landings would occur at SLC-4W per year. While it is SpaceX's goal to re-enter and land all first stage Falcon boosters for reuse, some payloads require additional propellant to reach desired orbits or destinations (due to increased weight or extended trajectory). These boosters would be unable to complete a boost-back burn and landing. As a result, some boosters may be expended in the open ocean.

SpaceX measures wind speed in the landing area using weather balloons. Measurements are taken at various intervals before launch and landing events and are used to create the required profiles of expected wind conditions during the landing event. A radiosonde, which is approximately the size of a shoe box and is powered by a 9-volt battery, is attached to a weather balloon, and transmits data to SpaceX and to predictive systems onboard the vehicle. The balloon, which is made of latex, rises approximately 12 to 19 miles and bursts. The balloon is shredded into many pieces as it falls back to Earth, along with the radiosonde, and lands in the ocean. The radiosonde does not have a parachute and would not be recovered.

Ground Operations, Support, and Transport

SpaceX operations for the Proposed Action would be like those currently occurring. To support the increased cadence, SpaceX may add up to 100 personnel at VAFB. SpaceX would continue to utilize specialized trucks for overland transport and barges for in-water transport of boosters, fairings, and other materials. SpaceX would continue to process payloads and refurbish boosters and fairings at existing SpaceX facilities on VAFB. Up to 36 boosters and 36 fairings would be refurbished each year under the Proposed Action.

Analysis of Impacts on the Coastal Zone

SLC-4E and SLC-4W are located on VSFB, which is owned and operated by the Federal government. As defined in Section 304 of the Act, the term “coastal zone” does not include “lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal government”. However, the DAF recognizes that actions outside the coastal zone may affect land or water uses or natural resources along the coast and therefore are subject to the provisions of the CZMA. Consequently, an analysis of the impacts of the Proposed Action on the coastal zone was conducted. The Proposed Action may impact public access, biological resources, coastal water resources, and marine debris. However, the Proposed Action would not adversely affect coastal uses or resources because measures will be taken to prevent, minimize, and mitigate impacts.

Public Access

Since 1979, an evacuation and closure agreement has been in place between the DAF and Santa Barbara County. For the safety of park visitors, the County Parks Department and the County Sheriff currently close the parks upon request from the DAF. This agreement includes closing Jalama Beach County Park, Ocean Beach County Park, Surf Beach, and Point Sal Road, in the event of launch activities that have been determined by SLD 30 Range Safety to have certain human health and safety risks. These closures are communicated at least 72 hours’ prior to closure and can be closed for a maximum of 48 hours per the agreement. Point Sal Road is not anticipated to be closed due to SpaceX launches.

Under the Proposed Action, public access to the coastline via Jalama Beach County Park, Ocean Beach County Park, and Surf Beach may be temporarily restricted during launch and landing operations. The length and frequency of temporary closures are mission dependent and determined by SLD 30 Range Safety; however, typical closures for launches from SLC-4E last between 4 to 8 hours. Launches from SLC-4E due to the Proposed Action would not cause an exceedance of 12 closures of Jalama Beach County Park per year. In the past, SLD 30 has restricted access to Ocean Beach County Park and Surf Beach for all launches from SLC-4E. Based on updated modeling and safety considerations, SLD 30 Range Safety and the Security Forces Squadron have determined closures are only required if the first stage of the Falcon 9 launch vehicle will boost back to land at SLC-4W. Thus, closures due to the Proposed Action would be infrequent (up to 12 times per year) and would not substantially diminish the protected activities, features, or attributes of Jalama Beach, Surf Beach, or Ocean Beach County Parks.

If it is later determined there are public safety issues or other human health and safety concerns, additional closures may be authorized. The DAF would notify the California Coastal Commission and determine the best path forward to offset impacts if more than 12 closures will occur in a calendar year during open public access hours (Attachment 2).

Access to the coastline from Surf Beach is available year-round. During the western snowy plover season, beach access is available from 0800-1800 and restricted during evening hours from 1800-0800. Access to the coastline from Ocean Beach County Park is available via a trail established by SLD 30 connecting this area to the coastal access available at nearby Surf Beach.

Ocean Beach County Park is open from 8:00 AM to dusk year-round. A portion of launches would occur at night when these locations are closed. Accordingly, the Proposed Action would only restrict public access to the coastline during daytime launches with boost back to SLC-4W.

If a launch were to be scrubbed after roadblocks have been erected, an additional closure would be required for the rescheduled launch. Roadblocks are removed approximately 15 minutes after launches are announced as scrubbed. However, this is considered a rare occurrence; SpaceX had only one day-of-launch scrub in 2022 out of 13 launches. SpaceX assumes that Surf Beach and Ocean Beach County Park could be closed 3 times due to a scrubbed launch. Since a portion of the launches will occur when Surf Beach and Ocean Beach County Park are closed at night, it is reasonable to assume that these few numbers of closures due to potential scrubbed launches will not result in exceedance of 12 closures during open public access hours. Closures due to launches would not exceed 12 at Jalama Beach County Park, including any closures resulting from a scrubbed launch.

Biological Resources

Multiple federally listed species protected under the Endangered Species Act (ESA), potential habitat that supports these listed species, and several state special status species occur within the project vicinity. Pursuant to Section 7 of the ESA, the USSF has prepared two Biological Assessments for the federally listed species: one for species under the jurisdiction of the United States Fish and Wildlife Service (USFWS), and one for species under the jurisdiction of the National Marine Fisheries Service (NMFS). A list of federal and state special status species occurrence within the Proposed Action Area is included in Attachment 3. Potential impacts on federal and state listed species include indirect impacts resulting from water use, disruption of breeding, foraging, or roosting behaviors, and abandonment of habitat including breeding or roosting sites due to project related noise. The USSF has worked with the USFWS and NMFS to develop the avoidance, minimization, and mitigation measures described in Attachment 4 that are included as part of the Proposed Action to reduce impacts on biological resources. The USSF will implement these measures. Impacts to biological resources will not be significant.

Coastal Water Resources

No construction will occur under the Proposed Action; therefore, no wetlands or surface waters would be filled. Water-usage from the San Antonio Creek Basin would increase to 19.5 ac-ft of water per year, representing approximately 0.7 percent of the total annual water usage at VSFB.

Wastewater discharges that may occur during project activities, including accumulated stormwater and non-stormwater discharges, would continue to be managed in accordance with the Regional Water Quality Control Board (RWQCB) letter for Enrollment in the General Waiver of Waste Discharge Requirements for SLC-4E Process Water Discharges. After a launch, approximately 9,000 gallons of deluge water per Falcon 9 launch would remain in the existing retention basin after evaporation. Samples of the deluge water would be collected and analyzed. If the water is clean enough to go to grade, it would be discharged from the retention basin via the

spray field. It would then percolate into the groundwater system and flow down gradient into Spring Canyon.

The following environmental protection measures would be implemented to avoid or reduce potential impacts to inland coastal water resources.

- Stormwater best management practices will continue to be implemented following the latest California Stormwater Quality Association's Stormwater Best Management Practices Handbook.
- Spring Canyon will be routinely monitored for erosion in existing vegetation management areas. BMPs would be utilized as needed to reduce erosion.
- SpaceX will continue to ensure that water ejected from the flame bucket during launches does not result in any overland surface flow into Spring Canyon by maintaining current v-ditches within the SLC-4 fence line and routinely assessing whether any additional diversion structures are necessary.
- All equipment will be properly maintained and free of leaks during operation, and all necessary repairs carried out with proper spill containment.
- Fueling equipment will only occur in pre-designated areas with spill containment materials placed around the equipment before refueling. Stationary equipment will be outfitted with drip pans and hydrocarbon absorbent pads.
- Adequate spill response supplies will be maintained at the site during operation for immediate response and clean-up of any fuel spills.
- Hazardous materials will be stored in proper containers, placed in proper containment facilities covered prior to rain events.
- Trash disposal containers will be always covered.

First stage boosters and payload fairings would land in the proposed landing area. As described above, it is SpaceX's goal to re-enter and land all first stage Falcon boosters for reuse. However, due to mission requirements, on rare occasions boosters may be unable to complete a boost-back burn and landing and would be expended in the broad open ocean. These boosters would be expected to break up upon atmospheric reentry. Any surviving debris would sink, like the fate of traditional non-reusable first stage boosters. However, these boosters would not have the potential to affect coastal water resources because they are made of inert materials that would not impact water quality, and they would be expended well outside of the coastal zone.

Marine Debris

SpaceX attempts to recover potential debris where practicable. However, due to weather conditions, sea state, or other factors, a recovery attempt may be unsuccessful. SpaceX successfully completed all landing attempts in 2022, all attempted fairing recoveries (110 fairing halves), and recovered approximately 50 percent of parafoils. Parachutes, parafoils, and their assemblies are made of Kevlar and nylon, and sink quickly as they become waterlogged. Weather balloons are made of latex and would split into pieces and quickly sink, along with the plastic

radiosonde. The fairings, parachutes/parafoils and their assemblies, and weather balloon with radiosonde are all inert.

As previously discussed, some missions may necessitate first stages boosters being expended in the broad open ocean, well outside of State jurisdictional waters. When a first stage booster is intentionally expended, the first stage is expected to break up upon atmospheric reentry, and any residual fuel is dispersed and evaporated such that there's none left when the vehicle debris hits the ocean. Upon impact with the ocean's surface, the inert vehicle debris is expected to sink. SpaceX has not conducted an expendable booster mission from SLC-4E since 2018.

SpaceX's recovery efforts have reduced marine debris by approximately 74,804 lbs per launch. If SpaceX's 2022 payload manifest for missions originating from SLC-4E was launched using expendable boosters and fairings, as all other launch providers currently operate, approximately 972,452 lbs of debris would have been deposited in the Pacific Ocean. For 2022 missions originating from VSFB, SpaceX achieved a 54 percent recovery rate for parafoils and recovered three drogue parachutes. These recovery efforts have reduced marine debris by approximately 99.8 percent, or 970,332 lbs, compared to a traditional launch provider. The continued recovery of the vast majority of the first stage and fairings off sets the rare occurrence that an ocean landing would occur.

The Merlin Vacuum Engine (MVac) skirt ring, weather balloon and radiosonde; parachute and assembly; and parafoil and assembly (Attachment 5) may not be recovered during launches. The MVac skirt ring is a curved titanium tube, similar in appearance to a curved shower curtain rod, that prevents the second stage engine deformation during integration and stage separation. One MVac skirt ring per launch would be deposited in the broad open ocean per launch and would sink upon contact with the ocean's surface.

To offset impacts from marine debris within state and U.S. territorial waters, SpaceX proposes to participate in the SLD 30 Adopt-A-Beach Program and conduct quarterly beach cleanups at Surf Beach. SpaceX also proposes to make an annual contribution to the California Lost Fishing Gear Recovery Project to offset the impacts from unrecoverable debris (weather balloon/radiosonde, drogue parachute, parafoil, and MVac skirt ring). For every 3 pounds of unrecovered debris, SpaceX would make a compensatory donation of \$10.00, which is sufficient to recover 1 pound of lost fishing gear. Based on SpaceX's historic recovery rates for activities in the Pacific Ocean, SpaceX assumes that half of the parafoils would be recovered and no drogue parachutes would be recovered. Attachment 5 summarizes the anticipated marine debris per launch and annual contribution to offset these debris, though the actual amount may vary. Through complete and effective cleanup of recoverable debris and the offset of unrecoverable debris through removal of other marine debris, the Proposed Action would not adversely impact coastal uses or resources.

Determination

The DAF has determined, based on measures within the project design to avoid, minimize, and offset adverse impacts, the Proposed Action would not adversely affect the coastal zone. Under the federal consistency regulations (15 CFR 930.35(a)), a negative determination can be submitted for an activity "which is the same or similar to activities for which consistency determinations have been prepared in the past." The Proposed Action will not generate new adverse impacts on coastal resources not previously examined by the Commission in CD-049-98, ND-088-05, ND- 098-05, ND-055-10, ND-0035-14, and ND-0027-15 for launch and landing activities at SLC-4 and does not require a consistency determination.

If you need additional information, or if you have questions, please do not hesitate to call me at (805) 605-7924 or email me at beatrice.kephart@spaceforce.mil. You can also direct your questions or comments to Tiffany Whitsitt-Odell at tiffany.whitsitt-odell@spaceforce.mil.

Sincerely

4/10/2023

X Beatrice L Kephart

Beatrice L Kephart

Signed by: KEPHART.BEATRICE.LINDA.1166122291

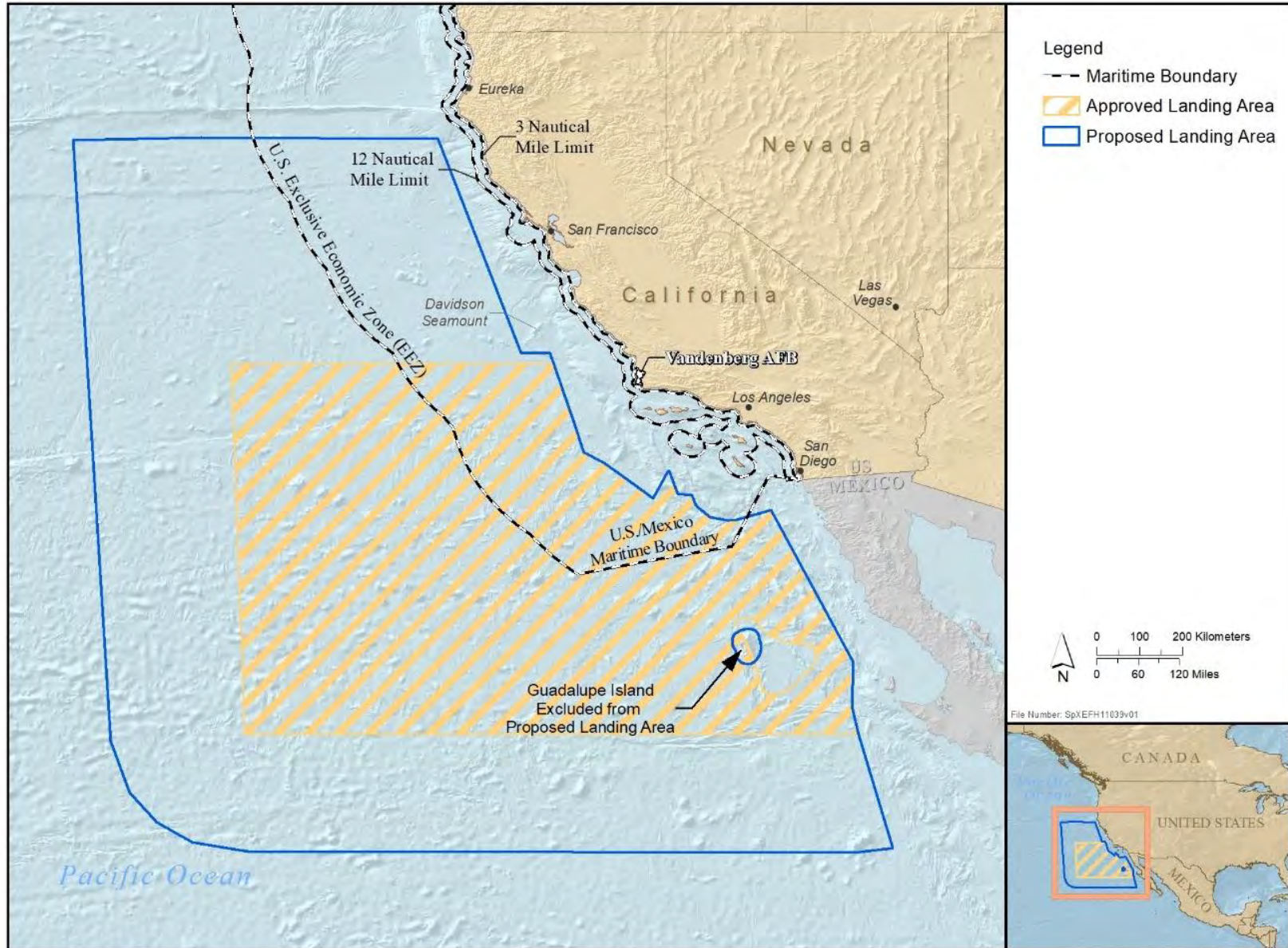
BEATRICE L. KEPHART

Chief, Installation Management Flight

5 Attachments:

1. Proposed Landing and Fairing Recovery Area
2. General Monitoring Measures
3. Federal and State Special Status Species Occurrence Within the Proposed Action Area
4. Avoidance, Minimization, and Mitigation Measures
5. Estimated Annual Contribution

Attachment 1. Proposed Landing and Fairing Recovery Area



Attachment 2. General Monitoring Measures

SLD 30 will track closures due to space launch activities of Jalama Beach County Park, Surf Beach, and Ocean Beach County Park during their normal operating hours. Calendar year totals will be submitted to the California Coastal Commission by 1 March of the following year.

If more than 12 closures will be required in one calendar year during normal open hours at Jalama Beach County Park, Surf Beach, or Ocean Beach County Park, SLD 30 will notify the California Coastal Commission and complete either a Negative Determination or Consistency Determination at that time.

At the end of 5 years, 30 CES would follow up with the California Coastal Commission to determine if impacts have changed and if there was a need to reinitiate this ND. 30 CES would provide a summation of biological monitoring associated with the USFWS BO, launch totals, and amount of unrecovered marine debris and documentation of compensation.

Attachment 3: Federal and State Special Status Species Occurrence Within the Proposed Action Area

Species	Status		Potential Occurrence within the Proposed Action Area
	USFWS	CDFW	
Invertebrates			
Crotch bumble bee (<i>Bombus crotchii</i>)	-	SSC	Assumed due to suitable habitat within noise footprint.
Monarch butterfly (<i>Danaus plexippus</i>)	Proposed	Special Animal*	Documented overwintering stands within noise footprint.
Fish			
Tidewater goby (<i>Eucyclogobius newberryi</i>)	FT	-	Historic occurrence in Honda Creek; surveys have not detected since 2001. Present in San Antonio Creek.
Unarmored Threespine Stickleback (<i>Gasterosteus aculeatus</i>)	FE	SE	Currently extirpated; historic introduction in Honda Creek in 1984. No individuals have been detected in Honda Creek since the late 1990's. Present in San Antonio Creek.
Arroyo chub (<i>Gila orcuttii</i>)	-	SSC	Not present in Honda Creek; present in San Antonio Creek.
Amphibians			
California red-legged frog (<i>Rana draytonii</i>)	FT	SSC	Documented in adjacent aquatic habitats within noise footprint.
Reptiles			
Southwestern pond turtle (<i>Actinemys pallida</i>)		SSC	Documented in Honda Creek upper reach within noise footprint.
Two-striped garter snake (<i>Thamnophis hammondi</i>)	-	SSC	Documented in Honda Creek within noise footprint.
Birds			
Allen's hummingbird (<i>Selasphorus sasin</i>)	BCC	-	Documented within noise footprint.
Black oystercatcher (<i>Haematopus bachmani</i>)	BCC	-	Documented on sandy beaches and rocky coastline within noise footprint.
Black skimmer (<i>Rynchops niger</i>)	BCC	-	Documented in nearshore ocean waters within noise footprint.
Brant (<i>Branta bernicla</i>)	-	SSC	Documented in nearshore ocean waters within noise footprint.

Species	Status		Potential Occurrence within the Proposed Action Area
	USFWS	CDFW	
Burrowing owl (<i>Athene cunicularia</i>)	BCC	SSC	Assumed due to suitable wintering habitat in grassland areas within noise footprint.
California brown pelican (<i>Pelecanus occidentalis californicus</i>)	-	Fully Protected	Documented in nearshore ocean waters and roosts on beaches and rocks within noise footprint.
California condor (<i>Gymnogyps californianus</i>)	FE	SE	One documented brief occurrence on VSFB in 2017 within noise footprint. Unlikely to be present.
California least tern (<i>Sterna antillarum browni</i>)	FE	SE	Documented foraging and nesting in noise footprint.
Costa's hummingbird (<i>Calypte costae</i>)	BCC	-	Documented in canyon and erosional wash habitat within noise footprint.
Golden eagle (<i>Aquila chrysaetos</i>)	BGEPA	Fully Protected	Documented in areas within noise footprint.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	BCC; BGEPA	CE, Fully Protected	Documented occasional flyovers; foraging habitat within noise footprint. Unlikely to be present.
Lawrence's goldfinch (<i>Spinus lawrencei</i>)	BCC	-	Documented in shrub and riparian habitat within noise footprint.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	BCC	SSC; Nesting	Documented in shrub and riparian habitat within noise footprint.
Long-billed curlew (<i>Numenius americanus</i>)	BCC	-	Documented on rocky coastline at low tide and beaches within noise footprint.
Marbled godwit (<i>Limosa fedoa</i>)	BCC	-	Documented on sandy beaches and rocky coastline at low tide within noise footprint.
Marbled murrelet (<i>Brachyramphus marmoratus</i>)	FT	SE	Documented in nearshore ocean waters within noise footprint.
Northern harrier (<i>Circus hudsonius</i>)	-	SSC Nesting	Documented in grassland within noise footprint.
Nuttall's woodpecker (<i>Dryobates nuttallii</i>)	BCC	-	Documented in riparian habitat within noise footprint.
Oak titmouse (<i>Baeolophus inornatus</i>)	BCC	-	Documented in riparian and non-native tree habitat within noise footprint.
Peregrine falcon (<i>Falco peregrinus anatum</i>)	BCC; Nesting	Fully Protected; Nesting	Documented in coastal habitat within noise footprint.
Short-billed dowitcher (<i>Limnodromus griseus</i>)	BCC	-	Documented on rocky coastline at low tide and beaches within noise footprint.

Species	Status		Potential Occurrence within the Proposed Action Area
	USFWS	CDFW	
Whimbrel (<i>Numenius phaeopus</i>)	BCC	-	Documented on rocky coastline at low tide and beaches within noise footprint.
Western snowy plover (<i>Charadrius nivosus nivosus</i>)	FT; BCC	SSC; Nesting	Documented on rocky coastline at low tide, nests on sandy beaches within noise footprint.
Willet (<i>Tringa semipalmata</i>)	BCC	-	Documented on rocky coastline at low tide and beaches impacted by noise.
White-tailed kite (<i>Elanus leucurus</i>)	-	Fully Protected Nesting	Documented in riparian and non-native tree habitat within noise footprint.
Yellow warbler (<i>Setophaga petechia</i>)	BCC	SSC; Nesting	Documented in riparian habitat within noise footprint.
Terrestrial Mammals			
Pallid bat (<i>Antrozous pallidus</i>)	-	SSC	Documented within noise footprint.
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	-	SSC	Documented within noise footprint.
Spotted bat (<i>Euderma maculatum</i>)	-	SSC	Documented within noise footprint.
Western red bat (<i>Lasiurus blossevillii</i>)	-	SSC	Documented within noise footprint.
Western mastiff bat (<i>Eumops perotis californicus</i>)	-	SSC	Documented within noise footprint.
San Diego desert woodrat (<i>Neotoma lepida intermedia</i>)	-	SSC	Documented within noise footprint.
American badger (<i>Taxidea taxus</i>)	-	SSC	Documented in grassland habitat within noise footprint.
Marine Species			
Invertebrates			
Black abalone (<i>Haliotis cracherodii</i>)	FE	-	Documented in rocky substrates in the high to low intertidal zone.
Fishes			
Steelhead (<i>Oncorhynchus mykiss</i>)	FE	-	Documented in the nearshore and offshore waters.
Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	FT	-	Specific evolutionary significant unit present or potentially present in the nearshore and offshore waters
Coho salmon (<i>Oncorhynchus kisutch</i>)	FT	-	Documented in the nearshore and offshore waters

Species	Status		Potential Occurrence within the Proposed Action Area
	USFWS	CDFW	
Green sturgeon (<i>Acipenser medirostris</i>)	FT	-	Likely present primarily along continental shelf waters of West Coast
Oceanic whitetip shark (<i>Carcharhinus longimanus</i>)	FT	-	Present in open ocean waters from Southern California to Peru
Scalloped hammerhead shark (<i>Sphyrna lewini</i>)	FE	-	Present in coastal and semi-oceanic water in temperate and tropical regions
Sea Turtles			
Green sea turtle (<i>Chelonia mydas</i>)	FT	-	Present in offshore and nearshore subtropical waters
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	FE	-	Present in offshore and nearshore waters
Olive ridley sea turtle (<i>Lepidochelys olivacea</i>)	FE	-	Present in offshore and nearshore waters
Hawksbill sea turtle (<i>Eretmochelys imbricate</i>)	FE	-	Present in offshore and nearshore waters of Mexico
Loggerhead turtle (<i>Caretta caretta</i>)	FE	-	Present in small numbers in offshore waters generally north of Point Conception
Marine Mammals			
Blue whale (<i>Balaenoptera musculus</i>)	FE; MMPA	-	High densities in summer/fall; single individuals in winter/spring
Fin whale (<i>Balaenoptera physalus</i>)	FE; MMPA	-	Higher densities in the summer and fall, present year-round
Gray whale (<i>Eschrichtius robustus</i>)	FE; MMPA	-	Present during seasonal migration in the winter and spring
Humpback whale (<i>Megaptera novaeangliae</i>)	FE/FT*; MMPA	-	Individuals present year-round with higher seasonal presence during the summer migrations from Mexico and Central America
Killer whale (<i>Orcinus orca</i>)	FE; MMPA	-	Occasionally present offshore of Central and Southern California
Sei whale (<i>Balaenoptera borealis</i>)	FE; MMPA	-	Present year round with more likely presence in winter and spring

Species	Status		Potential Occurrence within the Proposed Action Area
	USFWS	CDFW	
Sperm whale (<i>Physeter macrocephalus</i>)	FE; MMPA	-	Present year round with a preference for deep waters and the continental shelf break and slope
Steller sea lion (<i>Eumetopias jubatus</i>)	MMPA		Documented in coastal waters within the noise footprint.
Northern elephant seal (<i>Mirounga angustirostris</i>)	MMPA		Documented in coastal waters within the noise footprint.
Pacific harbor seal (<i>Phoca vitulina richardii</i>)	MMPA		Documented in coastal waters within the noise footprint.
California sea lion (<i>Zalophus californianus</i>)	MMPA		Documented in coastal waters within the noise footprint.
Guadalupe fur seal (<i>Arctocephalus townsendi</i>)	FT; MMPA	-	Documented in coastal waters within the noise footprint.
Southern sea otter (<i>Enhydra lutris</i>)	FT; MMPA	-	Present along coast of California from Santa Barbara County and north; present along coast of San Nicolas Island

Notes: CDFW = California Department of Fish and Wildlife; BGEPA = Bald and Golden Eagle Protection Act; BCC = Federal Bird of Conservation Concern; FE = Federally Endangered; FT = Federally Threatened; P = proposed for listing under the ESA; SE = State Endangered; SSC = California State Species of Special Concern; SE = State Endangered; USFWS = United States Fish and Wildlife Service; MMPA = Marine Mammal Protection Act

*Mexico population is FE and Central America population is FT

Attachment 4. Avoidance, Minimization, and Mitigation Measures

Terrestrial Biological Resources
Disturbances shall be kept to the minimum extent necessary to accomplish project objectives.
The USSF will maintain exhaust ducts and associated v-ditch to be free of standing water to the maximum extent possible between launches to help minimize the potential to attract California red-legged frogs (CRLF; <i>Rana draytonii</i>) to SLC-4.
The USSF will require that a biologist survey the SLC-4 v-ditch feature for CRLF prior to any maintenance activities and relocate any encountered individuals.
The USSF will sample water quality in lower Spring Canyon once annually when ponded water is present to ensure no project related biproducts (i.e., launch combustion residue, operations-related run-off, etc.) have entered the waterway in a manner not previously considered in this analysis. The USSF will perform sampling a minimum of once a year for three years of project operations. The USSF will design water quality sampling to detect potential project related biproducts and any resulting associated changes in aquatic habitat (i.e., salinity, pH, etc.). Sampling will consider and utilize the most recent applicable advances in water quality sampling technology. The USSF will include maps depicting sampling locations during annual reporting. The USSF will collect and clearly present data including any associated chemical and nutrient presence, dissolved oxygen, water temperature, turbidity, and any other pertinent observations regarding ecosystem condition for purposes of annual comparison. If the USSF finds that project related water contamination occurs, the USSF will coordinate with the USFWS, address sources of input, and remediate.
The USSF will establish a pre-project baseline for hydrodynamic data within San Antonio Creek. During project operations the USSF will collect hydrodynamic data annually using consistent data collection methodologies for purposes of comparison against the established baseline. The USSF will use this data to ensure that the proposed project's water extraction, when viewed in addition to the unknown total water extraction amount of permitted launch projects, is not measurably affecting flow rate or water level within San Antonio Creek.
All erosion control materials used will be from weed-free sources and, if left in place following project completion, constructed from 100% biodegradable erosion control materials (e.g., erosion blankets, wattles).
All human-generated trash at the project site shall be disposed of in proper containers and removed from the work site and disposed of properly at the end of each workday. Large dumpsters can be maintained at staging areas for this purpose.
Equipment and vehicles (mowers, etc.) shall be cleaned of weed seeds prior to use in the project area to prevent the introduction of weeds and be inspected by a qualified biological monitor to verify weed free status prior to use. Prior to site transport, any skid plates shall be removed and cleaned. Equipment should be cleaned of weed seeds daily especially wheels, undercarriages, and bumpers. Prior to leaving the project area, vehicles with caked-on soil or mud shall be cleaned with hand tools such as bristle brushes and brooms at a designated exit area; vehicles may subsequently be washed at an approved wash area. Vehicles with dry dusted soil (not caked-on soil or mud), prior to leaving a site at a designated exit area, shall be thoroughly brushed; vehicles may alternatively be air blasted on site.
The USSF will develop a proposed mitigation plan and provide it to the Service for approval within three months of project implementation. The plan must detail how the Space Force would calculate mitigation acreages in the event mitigation threshold triggers are met. The plan must also reiterate scenarios when mitigation would not occur as described. The plan must include specific quantifiable success criteria the Space Force will obtain within 5 years' time from when the proposed project triggers mitigation that will serve to address the Space Force's goal of no net loss in species' distribution and abundance. In the event the Space Force does not obtain the success criteria, the Space Force must reduce project effects to align with our analysis until they achieve alternative effective mitigation.
California Red-Legged Frog (CRLF)
Vegetation Management Area
One day prior to vegetation removal from Spring Canyon, a qualified biologist will conduct surveys for CRLF within the area to be mowed. Any CRLF present will be captured by the USFWS Approved or Permitted Biologist, if possible, and released at the nearest suitable habitat within Spring Canyon outside of the vegetation management area, as determined by the biologist. All biologists will follow the Declining Amphibian Populations

Task Force (DATF) fieldwork code of practice (DATF 2019) to avoid conveying diseases between work sites and will clean all equipment between use following protocols that are also suitable for aquatic reptiles. The USFWS-approved or permitted biologist will also be present during vegetation removal to capture and relocate CRLF to the extent that safety precautions allow. This biologist will also search for injured or dead CRLF after vegetation removal to document take.

A Qualified Biologist will perform one CRLF survey annually during peak breeding season in Spring Canyon when individuals are most likely to be present and detectable. If CRLF are not encountered at the time of this survey, no subsequent pre/post launch surveys would occur. If CRLF is found to be present during the annual survey, pre- and post-launch surveys, and relocation of any CRLF encountered would occur for each subsequent launch event.

The annual report will include methodology used (i.e., survey time, date, duration, weather conditions, and a depiction of the survey area).

Baseline and Launch Monitoring

The USSF will implement long-term monitoring of annual population and distribution trends associated with CRLF populations within Honda Creek, Bear Creek, and Santa Ynez River. The USSF will develop a monitoring plan that adequately addresses potential short- and long-term project effects that may result from sensory pollutants. The USSF will coordinate with the USFWS during plan development and provide the USFWS the monitoring plan for review and approval within three months of project implementation to ensure that potential project related short and long-term effects are detectable and clearly defined.

- The monitoring plan will clearly establish pre-project baseline of CRLF average population level within each impacted breeding feature (Honda Creek, Bear Creek, and Santa Ynez River) and clearly define the survey area and methodology. Following project implementation, the USSF will conduct annual surveys utilizing the same methodology within each impacted breeding feature during the breeding season when CRLF are most likely to be encountered.
- The monitoring plan will include bioacoustics monitoring and will establish frog calling behavior baseline within each impacted breeding feature (Honda Creek, Bear Creek, and Santa Ynez River) and any necessary appropriate control sites for purposes of signal characteristic comparison. CRLF calling behavior baseline will include applicable call characteristics (e.g., changes in signal rate, call frequency, amplitude, call timing, call duration, etc.). The USSF will ensure that bioacoustic monitoring conducted is designed to best address confounding factors in order to appropriately characterize impacts of launch, static fire, and SLC-4W landing events on calling behavior. Results will be analyzed in conjunction with long term population data to ensure any observed changes in signal characteristics are not resulting in observable declines in population.

The USSF will conduct quarterly night surveys for CRLF and spring tadpole surveys of lower Honda Creek to compare baseline CRLF occupancy data collected over the past 10 years and assess if there are any changes in CRLF habitat occupancy, breeding behavior (calling), and breeding success (egg mass and tadpole densities) on lower Honda Creek. The following will be recorded and measured during the surveys:

- CRLF detection density (number of frogs per survey hour), following the same survey methods conducted previously at these sites and throughout VSFB.
- CRLF 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 CRLF detection or calling rates.
- Annual habitat assessments to measure flow rates, stream morphology, depths, and sediment to determine if any changes in CRLF metrics are associated with other environmental factors, such as drought.

Bioacoustic monitoring would be conducted annually during CRLF breeding season (typically November through April, depending on rainfall) to characterize the noise environment and determine if there are changes in calling behaviors as the Proposed Action commences. Passive noise recorders and environmental data loggers (temperature, relative humidity, dew point) would be placed at two suitable breeding locations on lower Honda Creek. Passive bioacoustic recording would occur throughout the entirety of the breeding season using the

Wildlife Acoustics Song-Meter 4 (or similar technology) with software that enables autodetection of CRLF calling. The USSF will use bioacoustic monitoring to characterize and analyze impacts of launch, static fire, and SLC-4W landing events on calling behavior during the breeding season to assess whether Falcon 9 noise events affect CRLF calling frequency.
To address potential declining trends that may be a result of the proposed project, the specified threshold criteria is described below: <ul style="list-style-type: none"> • CRLF occupancy, calling rate, or tadpole densities decline from baseline by 15 percent or more and, • The 15 percent decline from baseline is maintained for two consecutive years.
If any of these threshold criteria are met and cannot confidently be attributed to other natural- or human-caused catastrophic factors, not related to the Proposed Action, that may eliminate or significantly degrade suitable habitat (see potential scenarios described below), the USSF will mitigate these impacts as discussed under CRLF Mitigation section below. Examples of potential catastrophic scenarios include the following: <ul style="list-style-type: none"> • Fire, unrelated to project activities or launch operations, that directly impacts Honda Canyon and is demonstrated to degrade or eliminate breeding habitat. • Landslides or significant erosion events, unrelated to project activities or launch operations, in Honda Canyon that result in the elimination or degradation of CRLF breeding habitat. • Drought or climate impacts that quantifiably reduces available aquatic habitat further than what was available during existing baseline. • Flash flood events during the breeding season that are more significant than what was experienced during the existing baseline.
The USSF will review the supported cause of decline with the USFWS and reach agreement. If cause of declines is determined to be inconclusive, the USSF will implement proposed mitigation.
Mitigation
The USSF will create new CRLF breeding habitat at a 2:1 ratio (habitat enhanced: habitat affected) for adverse effects to occupied CRLF habitat, as determined above, at the San Antonio Creek Oxbow Restoration Area, an established wetland mitigation site that is located outside of areas impacted by launch noise on VSF. Historically occupied by riparian vegetation, restoration efforts will focus on enhancing this abandoned tract of agricultural land to improve San Antonio Creek and provide breeding habitat for CRLF.
Restoration, which has already been conducted at this site for other projects, will be conducted in the “expansion area” adjacent to the restoration area, involve digging a channel that reaches ground water, and use the spoils to create a berm that will be planted with willows. This method is already being used at the site and has proven successful at creating deep water aquatic habitat, suitable for CRLF breeding, and riparian woodland that simulate naturally occurring high-flow channels.
Actions taken within this area will include site preparation via herbicide application, plowing, container plant installation, seeding, willow pole planting (via water jet, hand-held power auger, or manually driving a steel rod into the ground), and watering via water truck. The mitigation actions for CRLF are included under the existing USFWS Programmatic Biological Opinion (PBO 8-8-12-F-49R) and all applicable avoidance, minimization, and monitoring measures required under the PBO would be implemented.
Western Snowy Plover (SNPL)
Monitoring
The USSF will implement long-term monitoring of annual population and distribution trends associated with SNPL along Surf Beach. The USSF will develop a monitoring plan that adequately addresses potential short- and long-term project effects that may result from sensory pollutants. The USSF will coordinate with the USFWS during plan development and provide the USFWS the monitoring plan for review and approval within three months of project implementation to ensure that potential project related short and long-term effects are detectable and clearly defined. The SNPL monitoring plan will include a clear, established baseline annual variation and decline threshold that would trigger proposed mitigation (see below).

The USSF will augment the current SNPL monitoring program on VSFB by performing acoustic monitoring and geospatial analysis of nesting activity on South Surf Beach to assess potential adverse effects from Falcon 9 noise events.

- The current Base-wide SNPL monitoring program estimates breeding effort, nest fates, and fledging success while recording patterns of habitat use through the season. This program will be augmented for the Proposed Action by placing sound level meters (SLMs) immediately inland of South Surf Beach to characterize the noise environment and any related launch and landing associated disturbance.
- The USSF will perform geospatial analysis annually to identify declines in the SNPL population, nesting activity, and reproductive success that may result from cumulative effects of multiple launches and landings from SLC-4

To address potential declining trends that may be a result of the Proposed Action, the specified threshold criteria is described below.

- Geospatial analysis shows a statistically significant decline (defined as a decline greater than the baseline annual variation in these variables over the past 10 years at South Surf Beach) in population or reproductive success, and
- Decline from baseline maintains over two consecutive years within the areas impacted by Falcon 9 noise.

If any of these threshold criteria are met and cannot confidently be attributed to other natural- or human-caused catastrophic factors, not related to the proposed action, that may eliminate or significantly degrade suitable habitat (see potential scenarios described below), the USSF will mitigate for these impacts as discussed under the SNPL Mitigation section below. Examples of potential catastrophic scenarios include the following:

- Significantly higher levels of tidal activity, predation, etc. as compared with the existing baseline and demonstrable across remainder of base population.
- Significant avian disease demonstrable across the recovery unit.
- Separate work activities (i.e., restoration efforts) not related to project.

The USSF will review the supported cause of decline with the USFWS and reach agreement. If cause of declines is determined to be inconclusive, the USSF will implement proposed mitigation.

Motion triggered video cameras will be used during the breeding season (1 March through 30 September) to determine nest fates and potential impacts to nests due to launches and landings to reduce disturbance associated with human activity within breeding habitat.

- The USSF 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 4.0 psf zone to assess potential novel effects that may result from frequent launching: (i) 10 percent of active SNPL nests, or (ii) 4 active SNPL nests. The USSF will monitor at whichever the following is greater within the modeled 3.0 to 4.0 psf zone: (iii) 10 percent of active SNPL nests, or (iv) 2 active SNPL nests. The USSF will monitor at whichever the following is greater within the modeled 2.0 to 3.0 psf zone: (v) 5 percent of active SNPL nests, or (vi) 4 active SNPL 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 USSF will employ camera technology that is capable of long-term recording and time marking the moment of disturbance events.
- The USSF will implement landscape level camera monitoring in conjunction with individual nest cameras to document SNPL response to launch and sonic boom noise and overpressures. The landscape level camera(s) will be capable of long-term recording, time marking the moment of disturbance events, and deployed adjacent to areas of highest density nesting to best capture population level reaction. The USSF will coordinate camera installation and placement with a USFWS approved biologist to ensure no additional effects would occur (i.e., perching for raptors).
- The USSF will review SNPL nest camera recordings as soon as possible.

The USSF will rescue any SNPL eggs abandoned on Surf Beach during disturbance events. The USSF will develop and/or fund a program to incubate any rescued abandoned eggs and release fledglings.

Mitigation
The USSF will increase predator removal efforts to include the non-breeding season, particularly focusing on raven removal at and adjacent to VSFB beaches.
Given that SLD 30 has already or will soon (under current planning) restore all available SNPL nesting habitat on Base, the biggest factor reducing nesting success is nest predation with significant impacts from ravens. The raven population, which has historically been absent to rare in the region, is now common, and has increased substantially over the past two decades due to human-related factors that have allowed their numbers to increase and range to expand. As documented, the raven population continues to increase each year. Off-season depredation will help reduce the population on Base prior to breeding season which should increase nest success.
Predator control actions will include trapping, shooting, and tracking SNPL predators from VSFB beaches and surrounding areas on Base. The mitigation actions for SNPL are permitted under an existing USFWS BO (8-8-12-F-11R; USFWS 2015a) and all applicable avoidance, minimization, and monitoring measures required under BO 8-8-12-F-11R will be implemented. SLD 30 also maintains a USFWS depredation permit.
California Least Tern (LETE)
Monitoring
The USSF will implement long-term monitoring of annual population and distribution trends associated with California least tern (LETE; <i>Sterna antillarum browni</i>) at Purisima Point. The USSF will develop a monitoring plan that adequately addresses potential short- and long-term project effects that may result from sensory pollutants. The USSF will coordinate with the USFWS during plan development and provide the USFWS the monitoring plan for review and approval within three months of project implementation to ensure that potential project related short and long-term effects are detectable and clearly defined. The LETTE monitoring plan will include a clear, established baseline annual variation and decline threshold that would trigger proposed mitigation (see below).
The USSF will augment the current LETTE monitoring program on VSFB by performing acoustic monitoring and geospatial analysis of nesting activity at the Purisima LETTE colony to assess potential adverse effects from Falcon 9 noise events. <ul style="list-style-type: none"> • The current Base-wide LETTE monitoring program estimates breeding effort, nest fates, and fledging success while recording patterns of habitat use through the season. This program will be augmented for the Proposed Action by placing SLMs immediately inland of the LETTE colony at Purisima Point to characterize the noise environment and any related launch and landing associated disturbance. • The USSF will perform geospatial analysis annually to identify declines in the LETTE population, nesting activity, and reproductive success that may result from cumulative effects of multiple launches and landings from SLC-4.
To address potential declining trends that may be a result of the Proposed Action, the specified threshold criteria is described below. <ul style="list-style-type: none"> • Geospatial analysis shows a statistically significant decline (defined as a decline greater than the baseline annual variation in these variables over the past 10 years at Purisima Point) in population or reproductive success, and • The decline from baseline maintains over two consecutive years within the areas impacted by noise from the Falcon 9.
If any of these threshold criteria are met and cannot confidently be attributed to other natural- or human-caused catastrophic factors, not related to the Proposed Action, that may eliminate or significantly degrade suitable habitat (see potential scenarios described below), the USSF will mitigate for these impacts as discussed under the LETTE Mitigation section below. Examples of potential catastrophic scenarios include the following: <ul style="list-style-type: none"> • Significantly higher levels of predation, lower prey availability, etc. as compared with the existing baseline and demonstrable across remainder of base population. • Significant avian disease demonstrable across the recovery unit. • Separate work activities (i.e., restoration efforts) not related to project.

Motion triggered video cameras will be used during the breeding season (typically 15 April to 15 August) to determine nest fates and potential impacts to nests due to launches and landings to reduce disturbance associated with human activity within breeding habitat.

- The USSF will monitor at whichever of the following is greater within the Purisima Point colony: (i) 10 percent of active LETE nests, or (ii) 4 active LETE 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 USSF will employ camera technology that is capable of long-term recording and time marking the moment of disturbance events.
- The USSF will implement landscape level camera monitoring in conjunction with individual nest cameras to document LETE response to launch and sonic boom noise and overpressures. The landscape level camera(s) will be capable of long-term recording, time marking the moment of disturbance events, and deployed adjacent to areas of highest density nesting to best capture population level reaction. The USSF will coordinate camera installation and placement with a USFWS approved biologist to ensure no additional effects would occur (i.e., perching for raptors).
- The USSF will review LETE nest camera recordings as soon as possible.
- Acoustic monitoring will be conducted throughout the LETE breeding season by placing sound level meters immediately inland of the LETE colony during the breeding season to characterize the noise environment and any related launch and landing associated disturbance.

The USSF will rescue any LETE eggs abandoned at the Purisima Point colony during disturbance events. The USSF will develop and/or fund a program to incubate any rescued abandoned eggs and release fledglings.

Mitigation

The USSF will increase predator removal efforts to include the non-breeding season, particularly focusing on raven removal at and adjacent to VSFB beaches. The biggest factor reducing nesting success is nest predation. Off-season depredation will help reduce the population on Base prior to the breeding season which should increase nest success.

Predator control actions will include trapping, shooting, and tracking LETE predators from VSFB beaches and surrounding areas on Base. The mitigation actions for LETE are permitted under an existing USFWS BO (8-8-12-F-11R; USFWS 2015a) and all applicable avoidance, minimization, and monitoring measures required under BO 8-8-12-F-11R will be implemented. SLD 30 also maintains a USFWS depredation permit.

California Condor

Prior to any launch, the USSF will determine if any California condors (*Gymnogyps californianus*) are present by coordinating with the USFWS and Ventana Wildlife Society personnel. The USSF will contact the USFWS if California condors appear to be near or within the area affected by a launch from SLC-4. In the unlikely event that a California condor is nearby, qualified biologists will monitor California condor movements in the vicinity of VSFB and coordinate with the USFWS to analyze data before, during, and after launch events to determine whether any changes in movement occur.

The USSF will coordinate with current USFWS personnel, including Arianna Punzalan, Supervisory Wildlife Biologist (arianna_punzalan@fws.gov, (805) 377-5471); Joseph Brandt, Wildlife Biologist (joseph_brandt@fws.gov, 805-677-3324 or 805-644-1766, extension 53324), or Steve Kirkland, California Condor Field Coordinator, USFWS California Condor Recovery Program (steve_kirkland@fws.gov, 805-644-5185, extension 294). The Space Force will also coordinate with current Ventana Wildlife Society personnel, Joe Burnett (joeburnett@ventanaws.org, 831-800-7424).

Marbled Murrelet

Annual marbled murrelet (*Brachyramphus marmoratus*) population surveys would continue to be conducted at the current levels performed by the USSF to monitor the frequency and distribution of marbled murrelet within the action area.

Marine Biological Resources

Sonic boom modeling (commercially available modeling software [PCBoom] or an acceptable substitute) would be completed prior to each launch to verify and estimate the overpressure levels and footprint.

Between 1 January and 30 June, pinniped monitoring at south Base haulout locations would commence at least 72 hours prior to a launch event and continue until at least 48 hours after each event. Monitoring data collected would include multiple surveys each day that record the species, number of animals hauled out, general behavior, presence of pups, age class, and gender. Environmental conditions such as tide, wind speed, air temperature, and swell would also be recorded.

Acoustic and biological monitoring will be conducted on the Northern Channel Islands if the sonic boom model indicates that overpressures from a boom will reach or exceed the psf levels of ≥ 2.0 psf (March–July), ≥ 3.0 psf (August–September), or ≥ 4.0 psf (October–February). Biological monitoring will be conducted at the closest significant haulout site to the modeled sonic boom impact area.

The USSF will ensure that a USFWS-approved biologist monitors southern sea otters from a monitoring location within occupied habitat on VSFB where landing events at SLC-4W generate boost-back sonic booms of 2.0 psf or greater (i.e., Sudden Flats). Upon establishment of any new southern sea otter populations within areas of potential impact from project-related activities, the USSF will consider additional monitoring locations.

A USFWS-approved biologist will conduct daily counts of sea otters from the monitoring location when otters are most likely rafting (between 9:00AM and 12:00PM) beginning 3 days before and continuing 3 days after boost-back and landing events, noting any mortality, injury, or abnormal behavior. Personnel will use both binoculars (10X) and a high-resolution (50–80X) telescope for monitoring.

Acoustic recording equipment will be deployed at or near the monitoring location to document and quantify sonic boom levels.

The USSF will submit a 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. Specific protocol would be followed depending on the cause of the event, if cause is unknown, and whether injury or death was relatively recent.

To reduce the risk of injury or mortality of ESA-listed species in the marine environment, the following EPMs will be implemented during first stage and fairing recovery operations:

- The USSF 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. Personnel will be advised of the civil and criminal penalties for harming, harassing, or killing ESA-listed species.
- Support vessels will maintain a minimum distance of 150 ft (45 m) from sea turtles and a minimum distance of 300 ft (90 m) 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 USSF 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, SpaceX would make an annual contribution to the California Lost Fishing Gear Recovery Project. This includes the weather balloon and radiosonde; parachute and assembly; and parafoil and assembly. For every 3 lbs. of unrecovered debris, SpaceX would make a compensatory donation of \$10.00, which is sufficient to recover 1 lb. of lost fishing gear. Based on SpaceX's historic recovery rates for activities in the Pacific Ocean, the estimated maximum donation SpaceX may be obligated to pay for any unrecovered debris annually would be \$21,252.

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 (1.5-2.0 nm/hr) 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.
If nighttime activities are to occur at any time from dusk to dawn, the required lighting will be turned on before dusk and left on the entire night. Lights will not be turned on or off between dusk and dawn.
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.
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.
Bat Species
The USSF will conduct acoustic monitoring within the noise footprint to determine which bat species are present* and to record and assess their call rates before and after rocket launches (*in some circumstances, identification beyond genus may not be achieved).

Attachment 5: Estimated Annual Contribution

Item	Total Unrecovered per Launch	Weight (lbs)	Sink/Float	Material ¹
Weather balloon with radiosonde	1	1.5	Sink	Latex/Plastic Inert
Drogue parachute + assembly	2	10.8	Sink	Kevlar/Nylon Inert
Parafoil + assembly	1	150	Sink	Kevlar/Nylon Inert
MVac skirt ring	1	4	Sink	Titanium Inert
Fairing half ²	0	4,900	Sink	Carbon Composite Inert
First stage booster ²	0	65,000	Sink ²	Metal Composite Inert
Total Weight per Launch		177.1 lbs		
Total Annual Contribution (36 launches)		\$21,252 (3:1 ratio)		

¹ All materials would contain no or negligible amounts of hazardous materials at time of sinking (residual fuel is dispersed and evaporated such that there's none left when the vehicle debris hits the ocean)

² In rare occurrence the fairing or first stage is not recovered, offsets are through the amount SpaceX has been able to recover and associated research and participating in the SLD 30 Adopt-A-Beach program.

³ First stage booster is expected to break up upon atmospheric reentry

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RECORD PACKET COPY**STAFF REPORT AND RECOMMENDATION****ON THE INITIAL PHASE CONSISTENCY DETERMINATION**

Consistency Determination No. **CD-049-98**
Staff: JRR-SF
File Date: 4/10/1998
45th Day: 5/25/1998
60th Day: 6/9/1998
Commission Meeting: 5/12/1998

FEDERAL AGENCY: U.S. AIR FORCE**DEVELOPMENT****LOCATION:**

Vandenberg Air Force Base, Santa Barbara County (Exhibits 1 and 2)

DEVELOPMENT**DESCRIPTION:**

Evolved Expendable Launch Vehicle Program (Exhibits 3, 4, 5, and 6)

SUBSTANTIVE FILE DOCUMENTS:

1. Draft Environmental Impact Statement for the Evolved Expendable Launch Vehicle Program, December 1997.

EXECUTIVE SUMMARY

The U.S. Air Force proposes to develop and deploy the Evolved Expendable Launch Vehicle (EELV) systems. The EELV family of vehicles will consist of two

configurations of medium lift vehicles and two configurations of heavy lift vehicles (Exhibit 4). The medium vehicles would use one booster and the heavy lift vehicles would use the same rocket as the medium lift vehicle with two additional boosters. The Air Force intends to use this program to replace current Atlas IIA, Delta II, Titan II, and Titan IVB launch vehicles. Launch capabilities will be developed by two contractors, Lockheed Martin and Boeing, at existing launch facilities, SLC 3W and SLC 6, South Vandenberg Air Force Base (VAFB).

The proposed launch program will require temporary closures of public beach for protection of public safety during launches. The Air Force will close beaches for a minimum of two hours during a launch, if launch trajectory and weather require it. Because of limited availability of public beaches in northern Santa Barbara County, these closures are a significant issue. However, the Air Force proposes to minimize the impact by limiting the number of launches per year and considering access impacts in its scheduling decisions (i.e., attempt to avoid launches during holiday weekends and minimize the number of launches during summer months). Additionally, since the EELV program will replace existing launch activities, which also require beach closures, it will not significantly change the current beach closure requirements. Therefore, the EELV is consistent with the access and recreation policies of the California Coastal Management Program (CCMP).

Although, as currently proposed, the project does not include wetland fill, the original consistency determination for this project included the construction of a road that would result in such fill. The Air Force has withdrawn the road from Commission consideration at this time. The Air Force intends to re-evaluate the need for the road and, if necessary, provide the Commission with additional information to support either a finding of consistency with Section 30233(a) of the Coastal Act or a finding that the activity meets the maximum extent practicable standard. If necessary, the Air Force will evaluate the wetland fill in a phased consistency review of the project.

The original consistency determination for the EELV provided for dredging of existing channels to support barge transportation of rocket components. The consistency determination lacked information on grain size, chemical characteristics of the sediment, and disposal site location. Because of these concerns, the Air Force agreed to provide phased consistency review of the dredging after it collects this information.

The proposed launch sites are near habitat for several federally listed endangered and threatened species. The Air Force concludes, in its consistency determination, that the launch activities will not have significant impacts on these species. However, the Air Force has not completed its consultation with the U.S. Fish and Wildlife Service (Service) pursuant to Section 7 of the Endangered Species Act. Normally, a consistency determination without such an analysis would not contain enough information to evaluate the project for consistency with the CCMP. However, in this case, there are several

extenuating circumstances. First, the EELV launches are similar to other launch programs on south VAFB. The Air Force has consulted with the Service for these programs and none of these other consultations have resulted in a jeopardy opinion. Additionally, these consultations have required monitoring, which has not shown a significant adverse effect on listed species. Second, the EELV launch program will replace existing launch programs, and thus there will be little net new impacts to these species. Finally, the Air Force has agreed to submit the final analysis of endangered species impact, which would include the Section 7 consultation, as part of its phased consistency determination. With these considerations, this initial phase of the consistency determination is consistent with the endangered species policies of the CCMP.

The EELVs are design to use cleaner burning fuels. Therefore, they will reduce the air and water quality impacts from the current launch vehicles. Finally, the EELV will use safety measures required for other rocket operations to minimize an oil spill resulting from debris hitting an oil platform caused by launch accident. Therefore, the project is consistent with air quality, water quality, and oil spill policies of the CCMP.

STAFF SUMMARY AND RECOMMENDATION:

I. Project Description.

The U.S. Air Force proposes to develop and deploy the Evolved Expendable Launch Vehicle (EELV) systems. The EELV family of vehicles will consist of two configurations of medium lift vehicles and two configurations of heavy lift vehicles (Exhibits 7 and 8). The medium vehicles will use one booster and the heavy lift vehicles would use the same rocket as the medium lift vehicle with two additional boosters. The Air Force proposes to use this system to replace current Atlas IIA, Delta II, Titan II, and Titan IVB launch systems (Exhibit 9). The EELV systems will meet the requirements of the U.S. government space launch needs for both medium and heavy lift, at a lower launch cost than the present expendable launch systems. EELV systems will provide capabilities to launch Department of Defense, National Aeronautics and Space Administration, and commercial payloads to orbit through the year 2020.

The Air Force proposes to develop two different EELV systems at two separate VAFB launch sites. Under the first system, the Air Force will implement the EELV using vehicles developed by the Lockheed Martin Corporation with launch operations at the 33-acre SLC-3W on South VAFB (Exhibit 3). The Air Force has previously used SLC-3W for Atlas D/Agenda launches (1960-1963), for Thor Agenda launches (1963-1972), and for Atlas E/F launches (1972-1995). Currently, SLC-3W is inactive and requires minimal maintenance. Construction activities will begin in 2000 and the Air Force has scheduled the first launch for 2001. The Air Force will confine all construction activity to previously disturbed areas within VAFB.

In the second program, the Air Force will implement the EELV using vehicles developed by the Boeing Company, with launch operations conducted at the 100-acre SLC-6 at South VAFB (Exhibit 5). SLC-6 was originally constructed in 1970 for the Titan IIIM launch vehicle. After the Air Force canceled that program, it modified SLC-6 for the Space Shuttle program, but it was never used for that purpose. Athena launch activities currently occupy a small portion of the SLC 6 complex. Some of the other facilities are currently being used by the California Commercial spaceport and a launch contractor. The Air Force will begin construction activities in 1998, with the first launch scheduled for 2001. The Air Force will confine all construction activity to previously disturbed areas within VAFB.

II. Status of Local Coastal Program.

The standard of review for federal consistency determinations is the policies of Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) of the affected area. If the Commission certified the LCP and incorporated it into the CCMP, the LCP can provide guidance in applying Chapter 3 policies in light of local circumstances. If the Commission has not incorporated the LCP into the CCMP, it cannot guide the Commission's decision, but it can provide background information. The Commission has not incorporated the Santa Barbara County LCP into the CCMP.

III. Federal Agency's Consistency Determination.

The Air Force has determined the project to be consistent to the maximum extent practicable with the California Coastal Management Program.

IV. Staff Recommendation:

The staff recommends that the Commission adopt the following motion:

MOTION. I move that the Commission concur with the Air Force's consistency determination.

The staff recommends a YES vote on this motion. A majority vote in the affirmative will result in adoption of the following resolution:

A. Concurrence.

The Commission hereby **concurs** with the consistency determination made by the Air Force for the proposed project, finding that the project is consistent to the maximum extent practicable with the California Coastal Management Program.

V. Findings and Declarations:

The Commission finds and declares as follows:

A. Public Access. Section 30210 of the Coastal Act provides that:

In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30220 of the Coastal Act provides that:

Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

Section 30221 of the Coastal Act provides that:

Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

The proposed project involves launches from two locations, SLC-3W and SLC-6. Depending on the trajectory, launches from SLC-3W (Exhibit 10) could require closures of both Jalama Beach County Park and Ocean Beach County Park. Additionally, launches from SLC-6 (Exhibit 11) could require the closure of Jalama Beach. These beaches are two of only four public beaches within the 64-mile stretch of northern Santa Barbara County: Gaviota Beach, Jalama Beach, Ocean Beach, and Point Sal.

Jalama Beach is an important public recreational resource because of its upland and water-oriented recreational values and scenic resources. It is popular for surfing and wind surfing and used by people from all over the state. The Commission's California Coastal Resource Guide also describes this area as a popular fishing spot: "*An offshore reef protects the nearshore waters from turbulent wave action, creating a popular sport fishing ... spot.*" In addition, there are 100 overnight camping sites at Jalama Beach. The sandy beach and estuary along Jalama Creek provide ample opportunity for the public to bird watch, walk, and passively enjoy coastal resources. The scenic resources of Jalama Beach provide a unique place to enjoy coastal recreational resources.

Additionally, Ocean Beach is an important recreation area. Ocean Beach is a popular recreation destination for the local community. It is probably the primary public beach for people in the Santa Ynez Valley, including the City of Lompoc, and other communities in northern Santa Barbara County. Additionally, this beach is a popular fishing area for both the local community and for visitors from outside the County.

Because these beaches provide unique recreational opportunities and are one of the few places along the northern Santa Barbara County coast that provides for public access, the Commission has concerns about the potential impact on the recreational use of the beach from the proposed project. Existing space launch activities at Vandenberg Air Force Base result in temporary closures of public beaches in this area.

Space Launch Complex/Vehicles and Resulting Beach Closures

LAUNCH COMPLEX AND VEHICLES		BEACH CLOSURE STATUS	
		Ocean	Jalama
SLC-2W	Delta II	All launches	Open
LSC 576-E	Taurus SLV	Open	Open
SLC-3E	Atlas II	All launches	Open
SLC-4E	Titan IV	All launches	All launches*
SLC-4W	Titan II	All launches	All launches*
SLC-6	Athena	Open	Low azimuth**
SLC-3W	EELV-Con. A	All launches	Low azimuth
SLC-6	EELV-Con. B	Open	Low azimuth
SLC-3W	EELV-Con. A/B	All launches	Low azimuth
SLC-6	EELV-Con. A/B	Open	Low azimuth

* Closed for all launches beginning in 1997; previously closed only for low azimuth launches.

** None projected.

The Air Force closes these beaches for public safety reasons. If an accident occurs or the Air Force must destroy the vehicle during its take off, debris could crash on these beaches. In its consistency determination, the Air Force describes the public safety issue as follows:

Currently, all launches are carried out in accordance with required ground, range, and flight safety regulations of the Air Force at VAFB. For public safety, closure of some portions of the Coastal Zone during certain launch operations are mandated by the Air Force Safety Officer in coordination with local and state agencies. These beach closures are required to insure that no one remains within the identified impact debris corridor during a launch. Debris impact corridors are established based on the location of the launch site, the characteristics of the launch vehicle, its planned flight trajectory, and weather conditions at the time of launch. The debris impact corridor is the zone within which debris from an

aborted or failed launch would impact. If a launch vehicle deviates from its planned trajectory beyond an acceptable limit, flight controllers activate the vehicle's onboard self destruct mechanism to terminate the flight and prevent the vehicle from endangering the public. The debris impact corridor is designed to encompass debris that would fall to the ground in such a scenario.

Beach closures for launch vehicle activity last for approximately 3 to 4 hours per closure under normal conditions. The Air Force and Santa Barbara County officials work together in a collaborative effort to ensure that necessary areas are cleared prior to launches. On the day of launch, the Air Force's safety requirement is that the affected beach areas be cleared by approximately 60 minutes prior to launch (T-60). In order to accommodate this requirement, park rangers generally begin clearing the beaches around two to three hours prior to launch with roadblocks put in place at T-90 minutes. Weather and/or mechanical problems can extend or cause additional periods of beach closure when they cause slips in the launch schedule during the final countdown. However, beaches are not closed at all when the delay initiates before the opening of this window. Closures at Jalama Beach County Park can be longer during night launches. Since overnight camping is allowed there, park rangers generally close Jalama at dusk to ensure that all campers are evacuated and the area is cleared prior to the launch.

EELV launches will operate under safety procedures governed by the same rules and regulations as current programs. Beach closure practices associated with the EELV systems will be very similar to current programs.

In the past, the Commission has had significant concerns about public beach closures in this area. The Commission has generally agreed that beach closures are necessary part of the space launching activities at Vandenberg and the Commission has generally supported these space launching activities. However, in evaluating these activities, the Commission usually requires some mitigation for the beach closures. This mitigation is usually a limitation on the number of launches annually and other measures designed to reduce the significance of the impact. These other measures have included commitments to avoid weekend launches, especially holiday weekends, and minimizing the number of launches occurring during the peak recreation season (usually May through September). Additionally, although not required in the past, the Commission believes that there is some value for the applicant to provide to the Commission annual reports on the beach closures resulting from its launch activities.

With respect to the proposed EELV program, as with other programs, the Commission has concerns about the access impact. However, in this case, the Air Force proposes to replace existing governmental launch vehicles with the EELV. (For commercial launches, the Air Force does control the type of launch vehicle used. However, the Air Force argues that the EELV will be less expensive to operate, and thus the preferred vehicle for commercial launches.)

Future VAFB Space Launch Schedule

LAUNCH VEHICLE	LAUNCHES/YEAR				
	FY 98	FY 99	FY 00	FY 01	FY 02
Titan II	1	1	1	0	0
Titan IV	1	1	2	1	1
Atlas II	1	0	2	1	1
Delta II	8	2	5	0	0
Taurus	2	1	1	0	0
Athena	2	1	0	0	0
Medium EELV	0	0	0	2	6
Heavy EELV	0	0	0	2	0
TOTAL	15	6	11	6	8
BEACH	CLOSURES/YEAR				
	FY 98	FY 99	FY 00	FY 01	FY 02
Ocean (Surf)	11	4	10	4	5
Jalama	2	2	3	4	6
TOTAL	13	6	13	8	11

Regardless of whether the Air Force uses the EELV or an existing vehicle, the needs of the payload, and not by the needs of the vehicle, drive the launch rate. In other words, the number of satellites proposed drives the launch rate and the uses of EELV will not change the number of satellites. Therefore, the addition of the EELV will not affect the launch rate at Vandenberg. Exhibits 12 and 13 shows the launch rate for the EELV. In summary, the Air Force expects an average of eight launches per year with a maximum of 14 launches, which includes both government and commercial launches. Additionally, the Air Force commits to resubmitting the EELV program to the Commission if the launch rates exceed its estimates and results in impacts to coastal resources (Exhibit 14).

Finally, the Air Force has modified its consistency determination to include mitigation measures that would limit or reduce the significance of the beach access impacts. Specifically, the Air Force has agreed to consider access impacts among those issues it will evaluate in determining launch schedule. For example, the Air Force will attempt to avoid holiday weekends and minimize the number of launches during the summer months. Additionally, the Air Force will monitor beach closures and provide an annual report to the Commission. The monitoring will provide data on the number of launches that included beach closures, the location of the closure, and the duration of each closure.

Exhibit 14 shows these commitments. Therefore, the Commission finds that, with these modifications, the proposed EELV program is consistent with the public access policies of the CCMP.

B. Wetland Resources. Section 30233(a) of the Coastal Act provides that:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource dependent activities.

Originally, the proposed project included 0.03 acres of wetland fill. Although this is not a significant amount of habitat loss, the Air Force did not initially provide enough information for the Commission to evaluate the project's consistency with the wetland policies of the CCMP. Specifically, the modifications to the existing facility at SLC-3W included the construction of a second access road. That new road would have filled 0.03 acres of wetland. In its consistency determination, the Air Force describes the impact as follows:

Under Concept A and Concept A/B, construction plans for a road at SLC-3W may affect the edge of a willow wetland. The portion of wetland affected measures less than 0.03 acres. The wetland exists in a drainage originally constructed as a part of SLC 3W. The road that affects the wetland is required from an operational and safety standpoint to provide an additional point of entry into the launch pad area. Rerouting the road to avoid the wetland would require construction in undisturbed Coastal Sage Scrub habitat that is present along the banks of a steep ravine located just outside the fence-line of the SLC. Construction in this area would require substantial disturbance and placement of fill in the ravine. Construction at the SLC's has generally been confined to previously disturbed areas within the fence-line of the existing complexes to avoid disturbance of the biological and cultural resources which exist at VAFB. Due to the size of the potentially impacted wetland (less than three acres), it qualifies for Nationwide Permit 14 for road crossings. Impacts to the wetland will be mitigated in accordance with permit requirements.

Section 30233 of the Coastal Act provides three tests by which the Commission must evaluate wetland fill projects: allowable-use, alternatives, and mitigation tests. With respect to the first test, Section 30233 identifies eight allowable activities that can result in wetland fill. It appears that none of the allowable uses apply to this proposed road. Additionally, the Air Force did not provide enough information to demonstrate that the proposed road is the least damaging feasible alternative. Finally, although the Air Force stated that it would mitigate for the fill, it did not provide any details on that mitigation.

In response to these concerns, the Air Force agreed to withdraw the road from the Commission's consideration at this time (Exhibit 14). The Air Force proposes to reconsider the need for the proposed road. If it concludes that the road is necessary, the Air Force will provide additional information to demonstrate that the road is either consistent with Section 30233(a) of the Coastal Act or that the maximum extent practicable standard in the Coastal Zone Management Act applies in this case. Since the

Air Force, as described below, proposed to conduct phased consistency review for the proposed project, it will bring the road back to the Commission, if it is still necessary, as part of the Air Force's phased consistency review. With this modification, the proposed project does not include any wetland fill at this time.

C. **Dredging.** Section 30230 of the Coastal Act provides that:

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30233(a) provides, in part, that:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

....

Section 30233(b) of the Coastal Act provides:

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems.

The Air Force proposes to ship supplies and rocket components supporting launch activities at SLC-6 to an existing harbor at Boathouse Flats (Exhibits 1 and 2). The

channels supporting this harbor requires maintenance dredging to allow this shipping operation. The Air Force's consistency determination includes this dredging, approximately 20,000 cubic yards, as part of the project. However, the Air Force has not provided the Commission with an evaluation of the dredging to a level of detail that would allow the Commission to analyze it for consistency with the Coastal Act.

The proposed dredging is an allowable use pursuant to Section 30233(a) of the Coastal Act because it will maintain an existing channel (Section 30233(a)(2)). However, the consistency determination does not contain enough information to evaluate the dredging for consistency with the other requirements of Section 30233(a), Section 30230, and Section 30233(b). In evaluating dredging projects, the Commission requires the federal agency to adequately characterize the sediments. Specifically, the federal agency would provide, at a minimum, bulk chemistry and grain size analysis of the sediment proposed for dredging. This information is necessary for the Commission to evaluate the water quality, habitat, and sand supply impacts from the proposed project.

The Air Force's consistency determination does not include any of this information. Additionally, in its consistency determination, the Air Force states that it intends to re-use the material for beach replenishment purposes by disposing of the sediment into the nearshore environment. However, the Air Force has not identified a disposal site or a receiver beach. Therefore, the Commission cannot evaluate the impacts from dredging and dredge material disposal. Based on these concerns, the Air Force modified its consistency determination to propose phased consistency review for the dredging (Exhibit 14). With this phase, the Air Force submits a conceptual plan for dredging and will bring the final dredging project to the Commission after the Air Force completes its data gathering and analysis and disposal site selection. Since dredging is an allowable use, the Commission finds that the conceptual plan for dredging is consistent with the CCMP. However, the issues raised by disposal site selection and sediment characterization are important issues that the Air Force will need to address at the later phase.

D. Habitat. Section 30230 of the Coastal Act provides that:

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30240(b) of the Coastal Act provides that:

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

1. Marine Mammals. In past projects, the Commission has raised concerns about potential impacts on marine mammals from launch activities at Vandenberg. The marine mammals that are found in this area include California sea lions, northern fur seal, northern elephant seal, and harbor seals. The species most likely to be affected are sea lions, which use various beaches in the Rocky Point area for haulouts, and harbor seals, which use the Purisma Point for haulout. Additionally, the northern Channel Islands, which are potentially affect by the program, provide habitat for all of these species.

The proposed launch activities could affect these species through launch noise and sonic booms. In its consistency determination, the Air Force describes the potential effects as follows:

Concept A: SLC-3W

Noise and Sonic Boom Environment: Both launch noise surrounding the SLC and sonic boom were modeled for all variants of the Concept A vehicle during preparation of the EIS for the EELV program. Noise levels at key pinniped haul-out sites along the coast ranged from 80 to 85 dBA at Rocky Point and 75 to 80 dBA at Purisima Point. The lower levels were associated with the medium vehicle and the higher levels with the heavy vehicle. Modeling results indicate that sonic booms may affect one or more of the Channel Islands, depending on the vehicle type and trajectory. Maximum modeled sonic boom focal zones that may affect the islands range from less than one to as much as six psf [pounds per square foot], depending on vehicle type and trajectory.

Launch Noise Effects: Launches from the SLC-3W launch site would cause a startle response at Purisima and Rocky Points haul-out areas, with a slightly greater effect at Rocky Point. Current launch noises as low as 80 dBA have been shown to cause pinnipeds on land to flee to the water, but no abandonment of the haul-out areas or impacts on the species' survival has been observed. These effects would be temporary and minor.

Sonic Boom Effect: As stated above, sonic boom overpressures could impact on portions of the Channel Islands with overpressures of as much as six psf, or the boom could miss some islands entirely. Titan IV vehicles

launched from SLC-4E created focused sonic booms over the northern Channel Islands but showed a lack of significant impact to biota of San Miguel Island (Versar, 1991). None of the studies summarized in the Final Programmatic EA for the Marine Mammal Take Permit showed injury or pup abandonment during all levels of dB and sonic boom overpressures observed from any launch site, although temporary abandonment of haul-out places were of a longer duration for those areas receiving higher dBA (Tetra Tech, Inc., 1997).

Launch noises on cetaceans appear to be somewhat attenuated by the air/water interface. The cetacean fauna in the area have been subjected to sonic booms from military aircraft for many years without apparent adverse effects (Tetra Tech, Inc., 1997).

Concept B: SLC-6

Noise and Sonic Boom Environment: Both launch noise surrounding the SLC and sonic boom were modeled for all variants of the Concept B vehicle during preparation of the EIS for the EELV program. Noise levels at key pinniped haul-out sites along the coast ranged from more than 85 dBA at Rocky Point (for both the medium and heavy vehicles) to 70 to 75 dBA at Purisima Point. The lower levels were associated with the medium vehicle and the higher levels with the heavy vehicle. Operations at the South VAFB boat dock will cause noise within the immediate area of approximately 85 dBA over a three day period for up to four times per year while the common booster cores for the launch vehicle are off-loaded from the barge.

Modeling results indicate that sonic booms may affect one or more of the Channel Islands, depending on the vehicle type and trajectory. Maximum modeled sonic boom focal zones that may affect the islands range from less than one to as much as seven psf, depending on vehicle type and trajectory.

Launch Noise Effects: Launches from the SLC-6 launch site would cause a startle response at Purisima and Rocky Points haul-out areas, with a substantially greater effect at Rocky Point. Current launch noises as low as 80 dBA have been shown to cause pinnipeds on land to flee to the water, but no abandonment of the haul-out areas or impacts on the species' survival has been observed. These effects would be temporary and minor.

***Sonic Boom Effects:** As stated above sonic boom overpressures could impact on portions of the Channel Islands with overpressures of as much as seven psf, or the boom could miss some islands entirely. Titan IV vehicles launched from SLC-4E created focused sonic booms over the northern Channel Islands but showed a lack of significant impact to biota of San Miguel Island (Versar, 1991). None of the studies summarized in the Final Programmatic EA for the Marine Mammal Take Permit showed injury or pup abandonment during all levels of dB and sonic boom overpressures observed from any launch site, although temporary abandonment of haul-out places were of a longer duration for those areas receiving higher dBA (Tetra Tech, Inc., 1997).*

***Boat Dock Operations Noise:** Operations at the boat dock would cause intermittent, temporary disturbance to sensitive and listed species that utilize the harbor, including brown pelican, sea otters, and harbor seals. Although the species may avoid using the harbor during operations, the harbor area is not expected to be abandoned by these species because of EELV activities.*

The Air Force has monitored effects on the marine mammals for many years and there is no indication of any long-term effects on these species. This monitoring will continue under the EELV program. Therefore, the Commission finds that the project will not significantly affect marine mammals.

2. Threatened and Endangered Species. Vandenberg Air Force Base provides habitat for several federally listed threatened and endangered species (Exhibit 15). Those species located near or potentially affected by the proposed EELV program include the California least tern, Pacific Coast population of the western snowy plover, peregrine falcon, unarmored threespine stickleback, California red-legged frog, California brown pelican, least Bell's vireo, and southern sea otter.

The proposed project will not result in any direct loss of habitat for listed species. However, indirect impacts from launch noise and emissions may affect these species. The Air Force usually evaluates these impacts in its consultation with U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act. However, the Air Force has not completed its consultation with the Service. Despite this lack of analysis, the Commission recognizes that the Air Force has evaluated these endangered species issues in previous federal consistency reviews and Section 7 consultations. Through these past reviews, the Service has required monitoring and mitigation. Although the monitoring has shown that the launch activities have short term effects on the listed species, there is no evidence of significant permanent effects. In these past reviews, the

Air Force mitigated the endangered species impacts through such measures as monitoring, predator control, and human access control.

In its consistency determination for the proposed project, the Air Force describes the effects to endangered species and proposed mitigation as follows:

Impacts to threatened, endangered, or sensitive species from construction of facilities or from a launch are not expected to jeopardize the existence of any species considered during the EELV analysis. A summary of impacts to listed species and potential mitigation measures that may be implemented to ensure protection of listed species are as follows:

Brown pelicans, peregrine falcons, least terns, southwestern willow flycatchers, snowy plovers, and red-legged frogs on or in the vicinity of VAFB could be disturbed due to launch noises or launch exhaust associated with EELV vehicles.

The Western snowy plover, the brown pelican, the peregrine falcon, and the red-legged frog (at SLC-6 evaporation ponds) would be monitored to assess individual and cumulative impacts for EELV launches from SLC-6. For launches from SLC-3, the above species, except for the red-legged frog, would also be monitored. Monitoring at SLC-3 will also include southwestern willow flycatcher and least tern.

The Commission agrees that the likely impacts to listed species from the proposed launch program will be similar to previous launch programs. It is likely that launch noise and exhaust will have some impact on these species. The degree of impact depends on the frequency of launches and the type of vehicles used (larger vehicles will have more noise and air pollution). However, the Commission must analyze its concern about potential impacts to listed species considering that the program will replace existing launch activities.

Even in the context of these previous launch programs, the Commission has concerns about the incomplete evaluation of the endangered species impact from this project. Most of that analysis will occur through its coordination with the Service. That process will also provide mitigation and monitoring requirements for any impacts. Since the Air Force has not completed this consultation process, the Commission does not have the benefit of the data, mitigation, and monitoring results from that process. In most circumstances, the Commission would object to a consistency determination without the complete endangered species analysis. However, in this case there are extenuating circumstances. As described above, the Air Force has thoroughly analyzed potential impacts to endangered species in previous space launch programs. Additionally, the proposed EELV will replace those launch programs. Finally, the Air Force has agreed to

a phased review process that would include resubmitting the project for review of the endangered species impacts after the completion of the Section 7 process (Exhibit 14). In other words, the endangered species analysis in this consistency determination is a preliminary review based on previous projects and the final review will occur after completion of the Air Force's consultations with the Service. This phased review process would allow the Commission full review of the endangered species impacts with the possibility of objecting to the project if the Commission finds that any endangered species impacts are not consistent with the CCMP. Under these circumstances, the Commission finds that, based on its preliminary review of endangered species impacts, the project is consistent with the habitat policies of the CCMP.

D. Air Quality. The Coastal Act contains several air quality provisions. Section 30253(3) of the Coastal Act states in part, that:

New development shall ... [b]e consistent with the requirements imposed by an air pollution control district of the State Air Resources Control Board as to each particular development.

Section 30414 provides:

(a) The State Air Resources Board and air pollution control districts established pursuant to state law and consistent with requirements of federal law are the principal public agencies responsible for the establishment of ambient air quality and emission standards and air pollution control programs. The provisions of this division do not authorize the commission or any local government to establish any ambient air quality standard or emission standard, air pollution control program or facility, or to modify any ambient air quality standard, emission standard, or air pollution control program or facility which has been established by the state board or by an air pollution control district.

(b) Any provision of any certified local coastal program which establishes or modifies any ambient air quality standard, any emission standard, any air pollution control program or facility shall be inoperative.

(c) The State Air Resources Board and any air pollution control district may recommend ways in which actions of the commission or any local government can complement or assist in the implementation of established air quality programs.

Additionally, Section 307(f) of the Coastal Zone Management Act incorporates federal, state, and local provisions established pursuant to the Clean Air Act into state coastal management programs.

Pursuant to the Clean Air Act, the state has established programs to attain and maintain national ambient air quality standards adopted by the Environmental Protection Agency (EPA). Under the State Health and Safety Code, the State Air Resources Board (ARB) and local air pollution control districts implement this responsibility. EPA reviews those rules to determine that they are consistent with the Clean Air Act. Pursuant to the Clean Air Act and the State Health and Safety Code, the state may adopt more stringent standards for certain pollutants than those under federal law.

Air pollution levels above both the designated federal and state ambient air quality standards threaten public health. The federal standard for ozone is 12 parts per hundred million (pphm), while the state standard is 9 pphm. State and federal law require the local Air Pollution Control Districts (APCDs) (usually counties) to establish air quality programs, which include rules and regulations for the attainment and maintenance of both the federal and state ozone standards and other standards within their districts.

The project is within Santa Barbara County, which does not meet several established air standards. The State has classified the County as non-attainment for both state and federal ozone standards (O₃), as well as for the state fine particulate matter standard (PM₁₀, 24 hour standard).

Santa Barbara County APCD requirements that may be applicable to the project include: consistency with Air Quality Attainment Plan provisions, consistency with Health and Safety Code provisions, compliance with District New Source Review, Prevention of Significant Deterioration, and any other rules listed in any APCD's Final Authority to Construct permit program that might be required. Upon exceeding certain thresholds, or "trigger" levels, these rules generally require reduction of pollutants, Best Available Control Technology, and offsets for residual emissions. However, under the APCD's existing rules, the proposed project does not exceed any of these trigger levels.

The major activities involving air emissions from this project are construction activities and the rocket launches. In its consistency determination, the Air Force describes the Air Quality impacts as follows:

Estimates of air emissions due to construction and operation of the proposed action concepts indicates that implementation of any of the proposed action concepts will not jeopardize the attainment status of criteria pollutants in Santa Barbara County. Santa Barbara County is in non-attainment of the National Ambient Air Quality Standards for ozone. Consequently, the estimated emissions of ozone precursors (nitrogen oxides and volatile organic compounds) due to the EELV concepts were compared with the appropriate federal de minimis thresholds at which a

conformity determination would be required. Total emissions of ozone precursors under all concepts were found to be below the de minimis threshold of 50 tons per year. Therefore, no conformity determination was required for the EELV program. In addition, EELV is not considered regionally significant since its total emissions of any criteria pollutant are far less than ten percent of Santa Barbara County emissions. While there would be a short-term increase in emissions due to EELV construction activity, long-term estimates indicate a decrease in total emissions due to the phase-out of other government launch vehicles as EELV is implemented.

The construction activities fall within the regulatory authority of the APCD, which will evaluate the air quality impacts from the construction activities and, if necessary, require appropriate mitigation. The APCD does not have regulatory authority over launch activities because they are mobile sources. In analyzing launch emissions, the applicant notes the primary pollutants for most of the launch activities are nitrogen oxides. Most of the existing launch vehicles currently use solid fuel. The liquid fuel used in most of the EELV will significantly reduce the emissions from the launch activities. The solid fuel vehicles are more polluting than the EELV with the primary emissions being particulates, nitrogen oxides, and hydrochloric acid. The Air Force's uses a model (Rocket Exhaust Effluent Diffusion Model) to estimate launch "hold" criteria, to assure that the project does not pose any health risks. Under these criteria launches will not be allowed under certain atmospheric conditions. The applicant will conduct rocket launches in accordance with safety zones and safety regulations established by VAFB.

Addressing ozone depleting materials, the applicant does not anticipate releases of fluorocarbons to the atmosphere and that it will comply with all U.S. Air Force regulations that apply to the use of ozone depleting chemicals.

Regarding compliance with the Clean Air Act, the applicant notes that the Act would require compliance with its "Conformity Rule" if emission levels were to exceed "de minimis" levels. Federal actions that do not contribute pollutants above the specified levels are exempt from the conformity analysis requirements. An Air Force Air Emissions Conformity Analysis concluded that proposed construction and operations of the EELV, will not exceed the de minimis thresholds.

Therefore, the Commission finds that the project, as proposed, complies with all applicable APCD, ARB, and Clean Air Act requirements, and is consistent with Section 30253(3) of the Coastal Act.

E. Water Quality Resources. Section 30231 of the Coastal Act provides that:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

The Air Force will collect and test waste water from launch activities (deluge and wash down water) and then truck the water to a treatment facility on South VAFB. An additional water quality concern is the generation of an acid ground cloud caused by the launch events. However, this impact will not be significant because the most of the EELVs use a liquid fuel that does not generate Hydrogen Chloride and Aluminum oxide (the main components of the acid ground cloud). Thus, the ground clouds from the EELV are far less hazardous than the clouds created from launches of rockets using solid fuels. Therefore, the Commission finds that the proposed project is consistent with the water quality protection policies of the CCMP.

F. Oil Spills. There is a potential for the launch activities at VAFB to damage offshore oil platforms and cause an oil spill. Section 30232 of the Coastal Act requires protection of coastal resources from oil spills. That section provides:

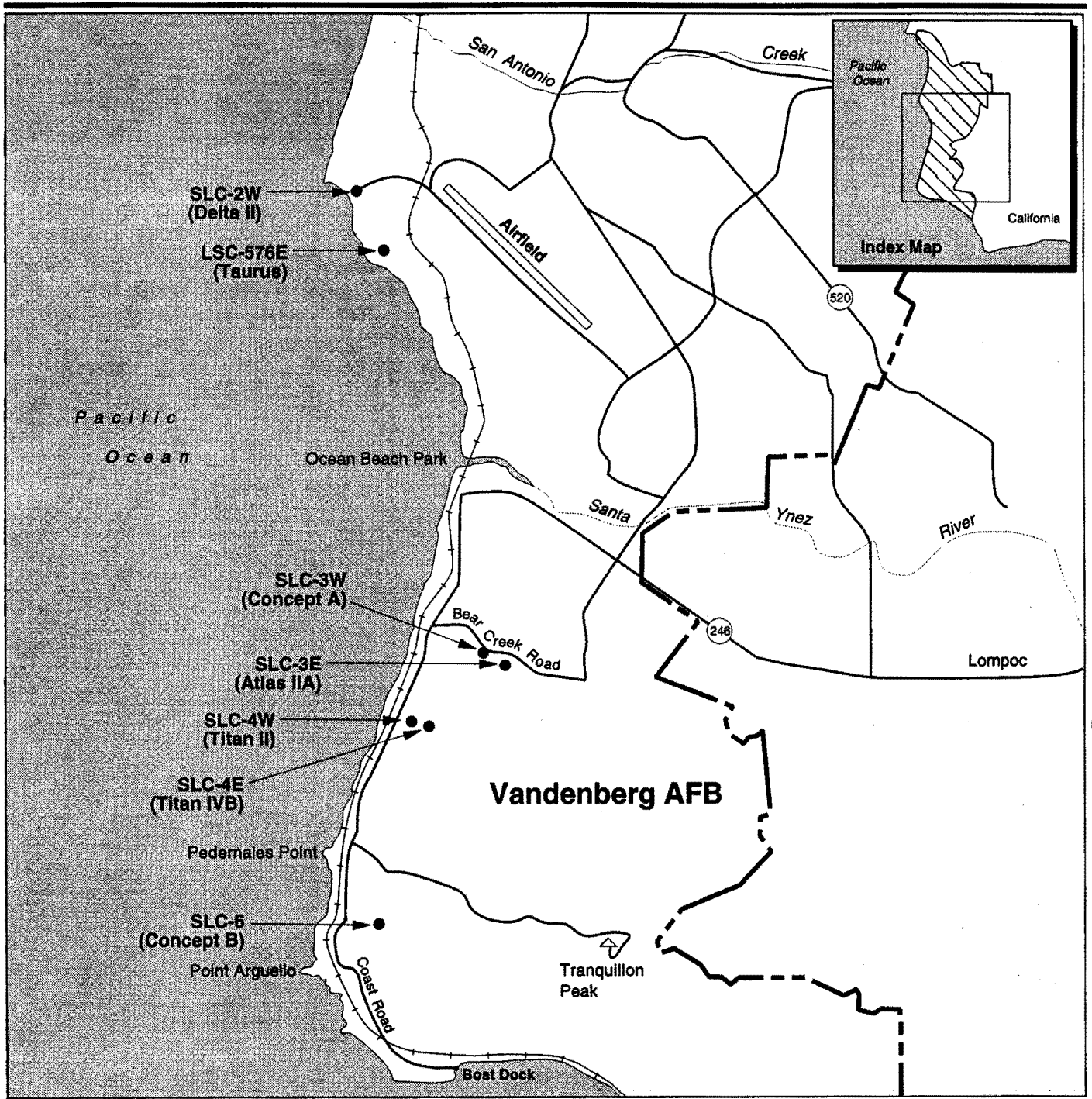
Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

The Air Force recognizes the potential for an accident during launch damaging an offshore oil platform. This project is subject to the stringent safety requirements as the Air Force implements for any military launch. These safety requirements include measures to protect oil platforms from impacts from catastrophic events. The consistency determination the Air Force's launch facility on Cypress Ridge, SLC-7 (CD-51-89), describes the procedures used to minimize the risk of an oil spill:

During SLC-7 launches, the USAF will advise oil companies operating offshore of the need to evacuate oil platforms considered to be at risk from

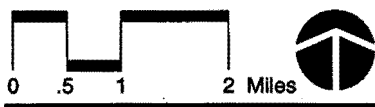
the launch. According to oil industry representatives, prior to evacuation of a platform, the wellbore will be closed and capped, and the blow-out prevention equipment on the ocean floor and the platform will be activated to prevent a spill. In addition, not all personnel would be evacuated. A skeleton crew trained in fire fighting, damage control, and spill response would remain on the platform and be in a shelter for approximately 12 minutes at the time of the launch. Personnel remaining on the rig could promptly respond to emergencies utilizing onboard equipment and request assistance from shore-based support services.

The Commission has historically found that these measures will reduce the potential for oil spills caused by an accident during a launch. Therefore, the Commission finds that the proposed project will protect against the potential for an oil spill, and thus that the proposed project is consistent with the oil spill protection policy of the CCMP.



EXPLANATION

- Base Boundary
- LSC Launch Support Complex
- SLC Space Launch Complex
- (246) State Route




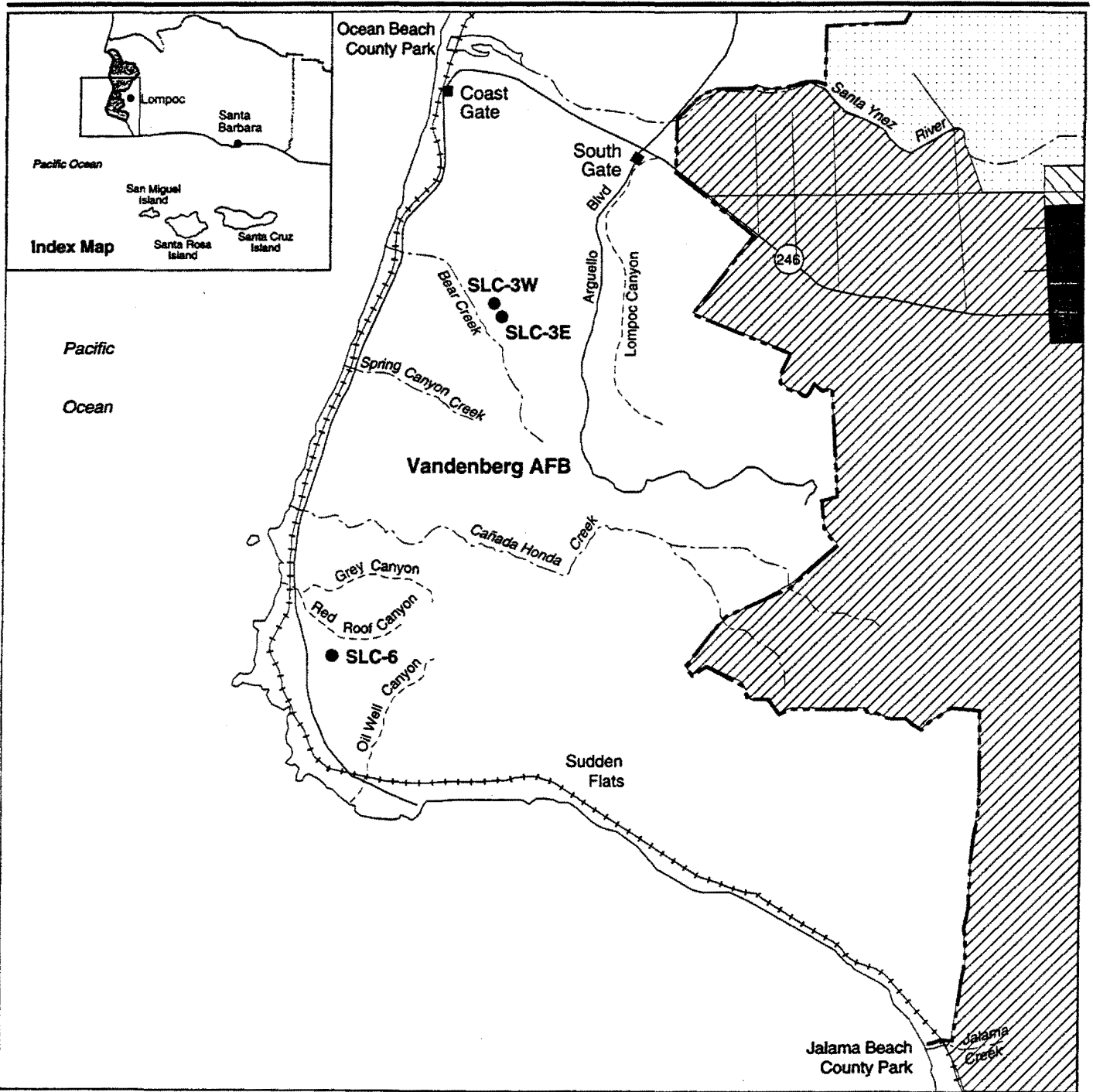
EELV/119

Space Launch Complexes on Vandenberg AFB, California

EXHIBIT NO. 1

APPLICATION NO. CD-49-98







 California Coastal Commission



Index Map

Pacific
Ocean


EXPLANATION

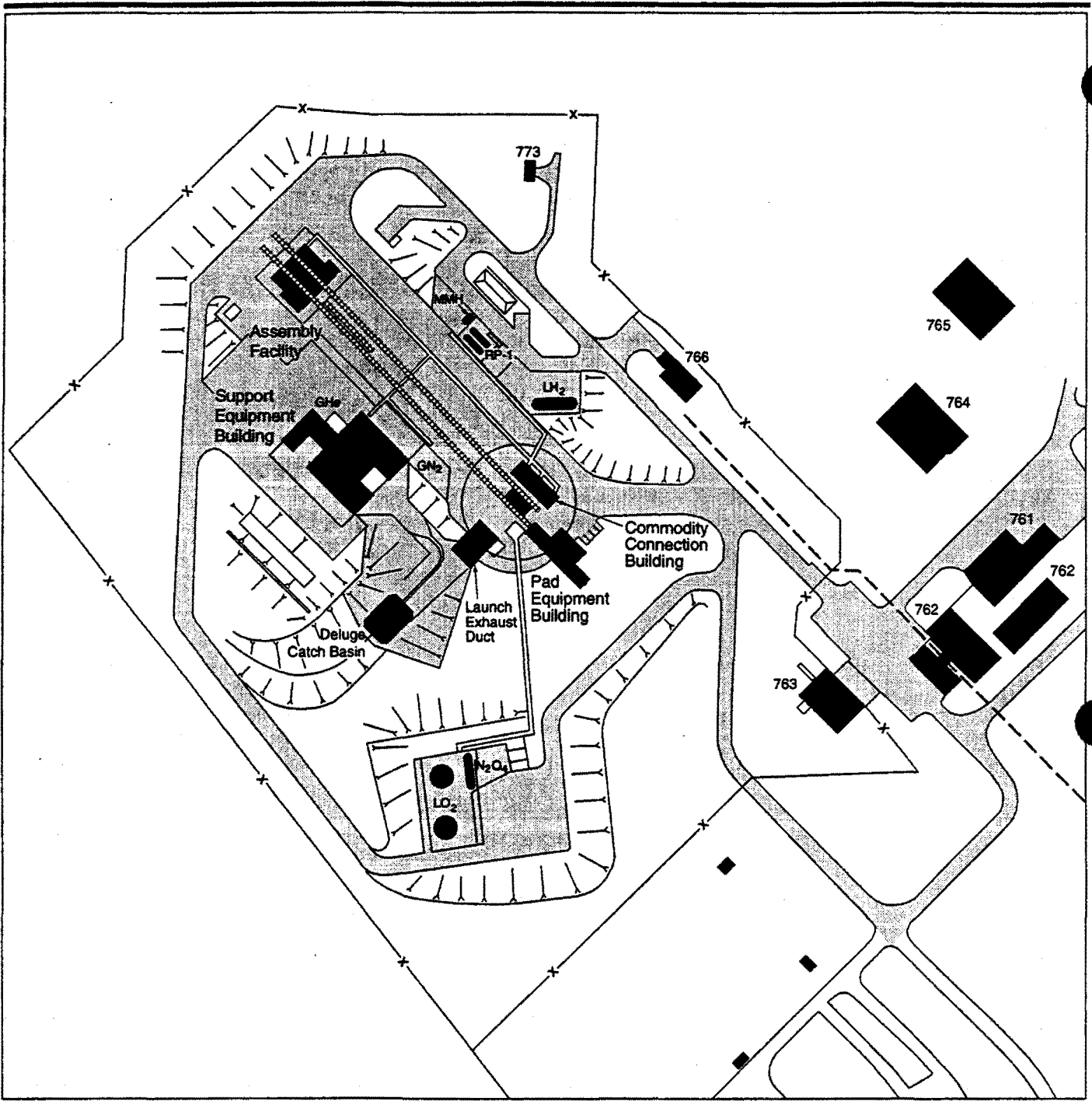
-  Industrial
-  Commercial
-  Residential
-  Industrial
-  Agriculture
-  Vandenberg AFB Boundary

**Off-Base Land Use,
South Vandenberg
AFB, California**

**EXHIBIT NO. 2
APPLICATION NO. CD-49-98**



 California Coastal Commission



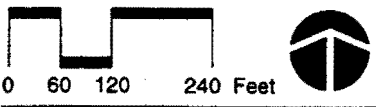
EXPLANATION

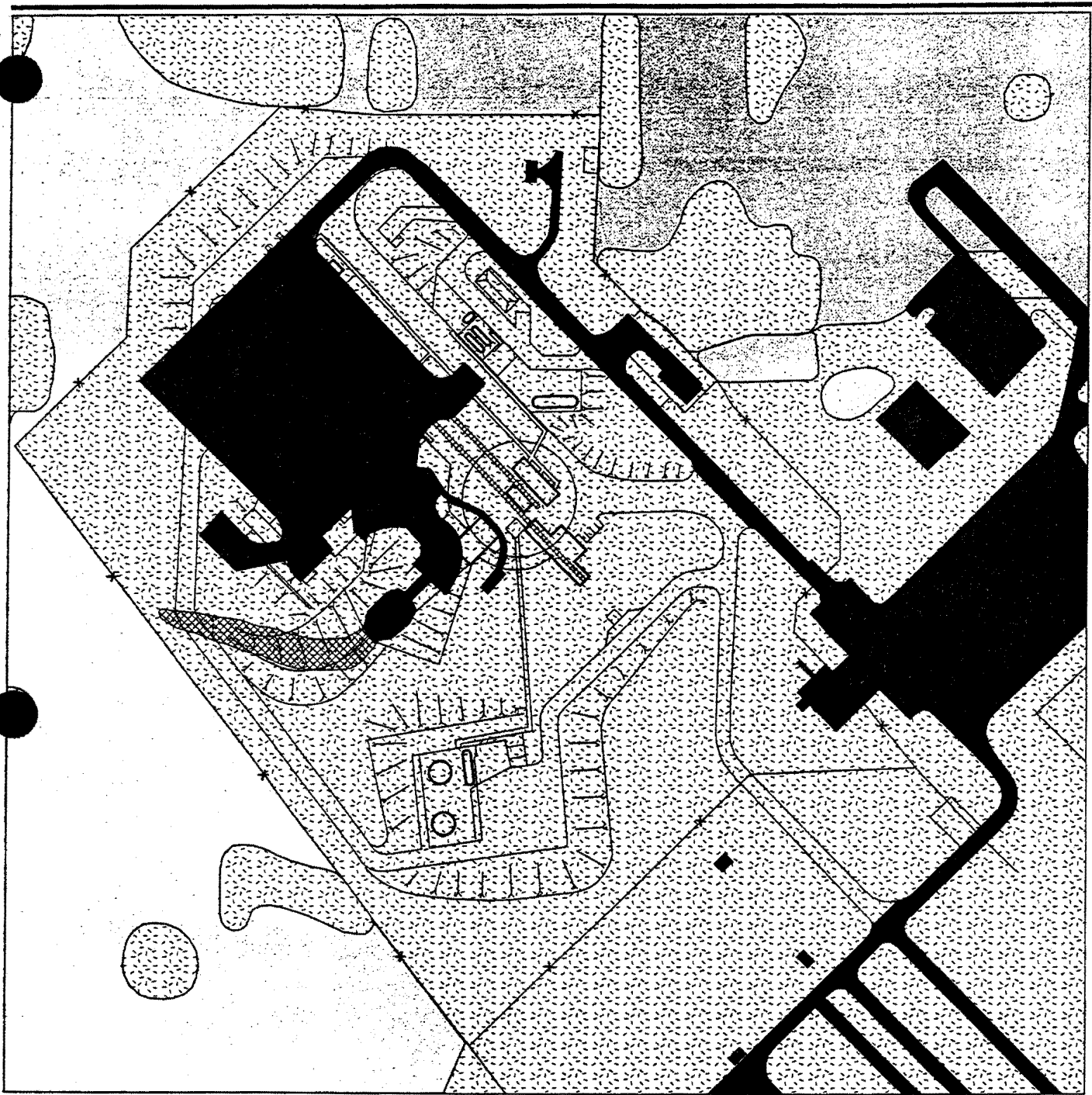
- | | | | |
|-------------------------------|-------------------------------------|-----|-----------------|
| GHe | Gaseous Helium | --- | Electrical Line |
| GN ₂ | Gaseous Nitrogen | — | Embankment |
| LH ₂ | Liquid Hydrogen | ■ | New Pavement |
| LO ₂ | Liquid Oxygen | | |
| MMH | Monomethyl Hydrazine | | |
| N ₂ O ₄ | Nitrogen Tetroxide | | |
| RP-1 | Rocket Propellant-1 (Kerosene Fuel) | | |

**Concept A
SLC-3W Site Plan,
Vandenberg AFB,
California**







**EXHIBIT NO. 3
APPLICATION NO. CD-49-98**

California Coastal Commission





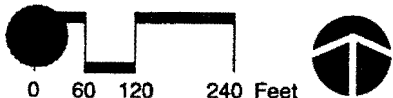
EXPLANATION

- | | | | |
|--|---|---|---------------------------|
|  | Coastal Sage Scrub |  | Grasslands |
|  | Developed |  | Wetland (Willow Riparian) |
|  | New pavement proposed/
Proposed facilities | | |
|  | Electrical line | | |

**SLC-3W Vegetation
and Sensitive Habitat
Vandenberg AFB,
California**

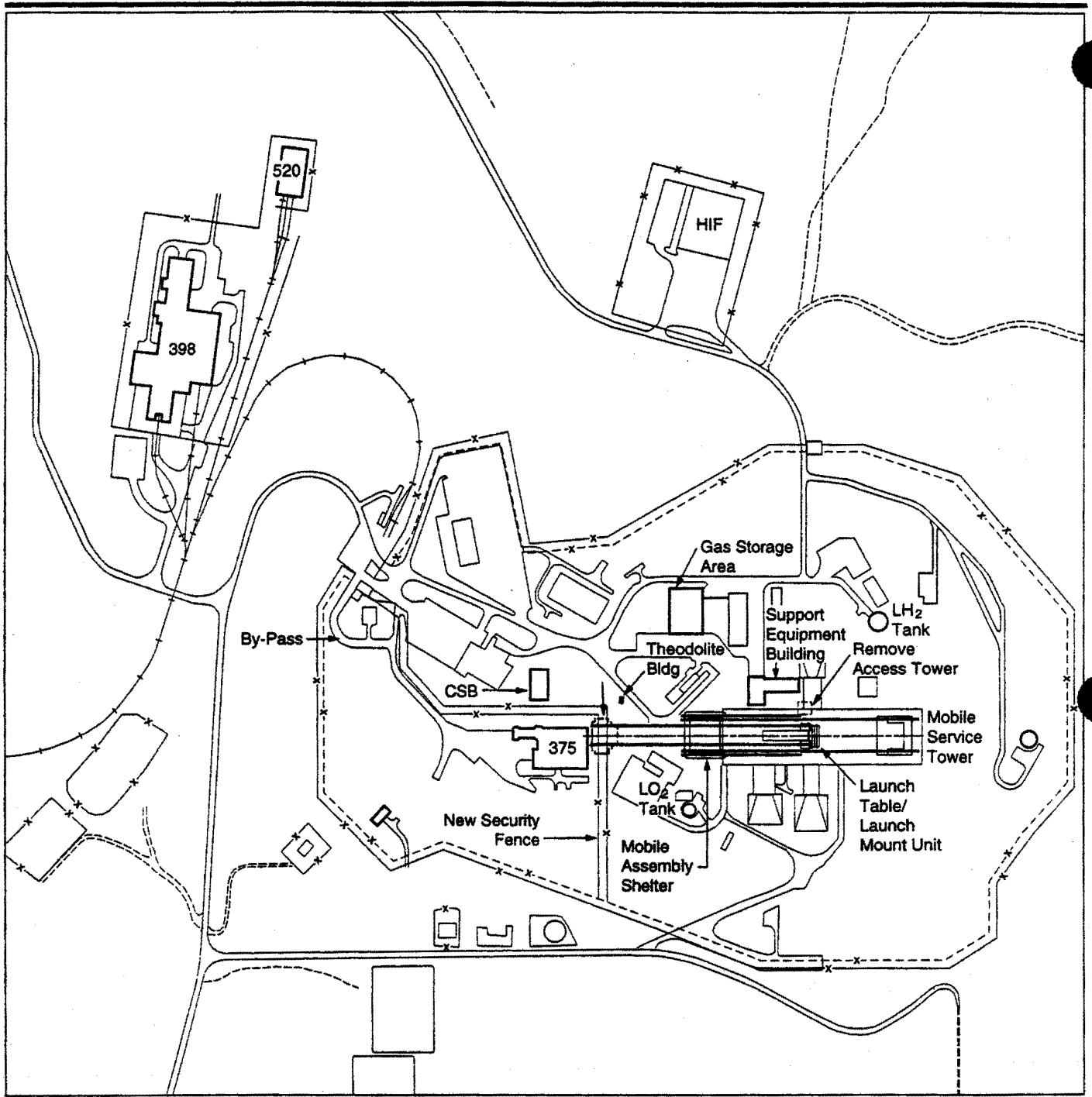
EXHIBIT NO. 4

APPLICATION NO. CD-49-98



Source: Bionetics Corporation, 1988; site visit, 1997.

 California Coastal Commission



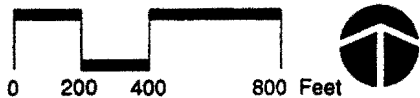
EXPLANATION

- CSB Common Support Building
- HIF Horizontal Integration Facility
- LH₂ Liquid Hydrogen
- LO₂ Liquid Oxygen
- x— Security Fence
- - -x - - - Double fence (if required)

**Concept B
SLC-6 Site Plan,
Vandenberg AFB,
California**

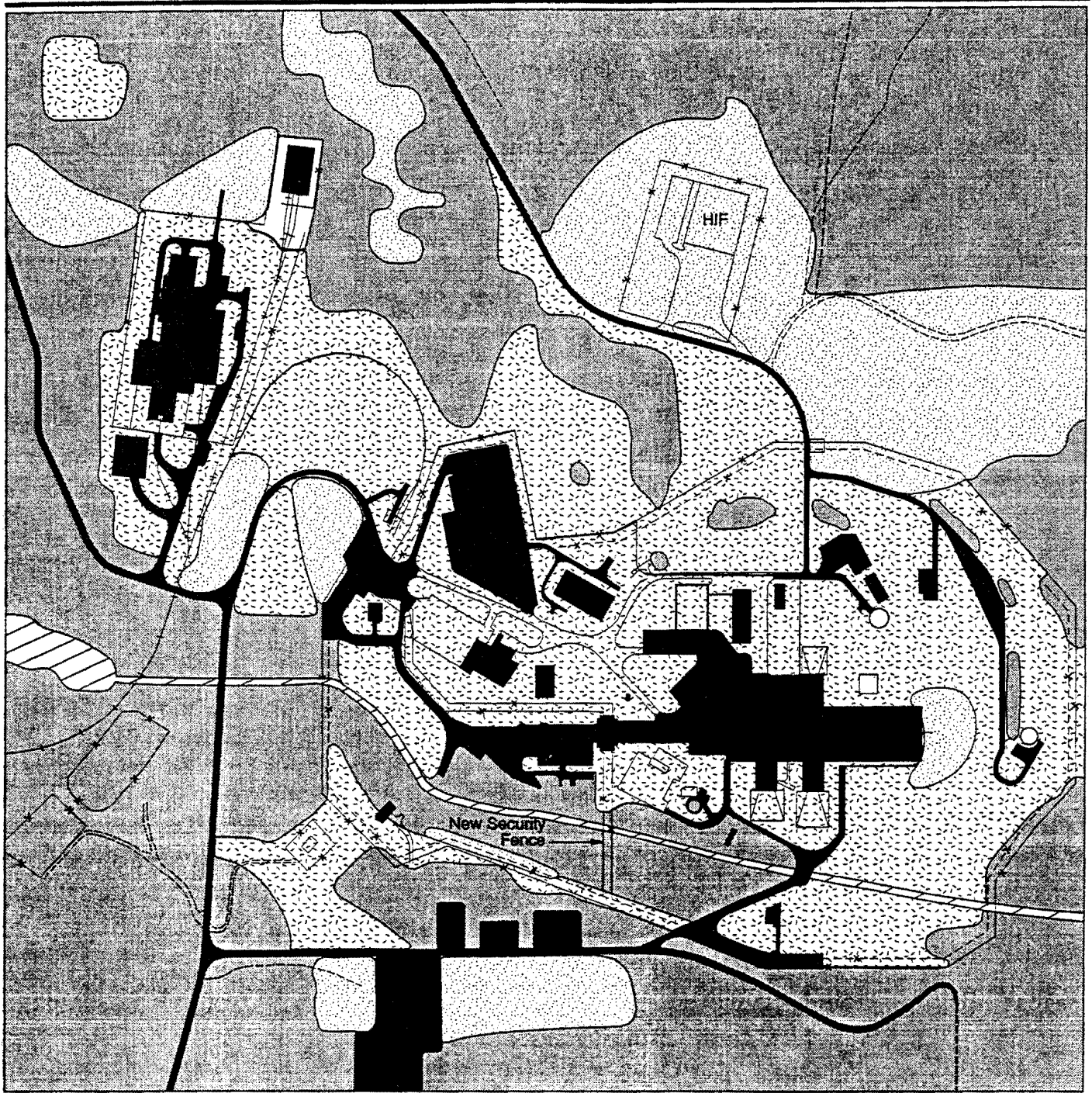
EXHIBIT NO. 5

APPLICATION NO. CD-49-98



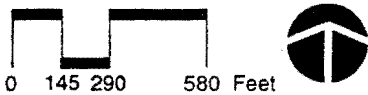
Note: Construction laydown areas would be located immediately adjacent to the SLC-6 launch pad.

 California Coastal Commission



EXPLANATION

- | | |
|-------------------------------------|-------------------------|
| --- Double Fence
(If required) | Barren |
| — Security Fence | Coastal Sage Scrub |
| HIF Horizontal Integration Facility | Grassland |
| Developed | Wetland |
| | New proposed facilities |

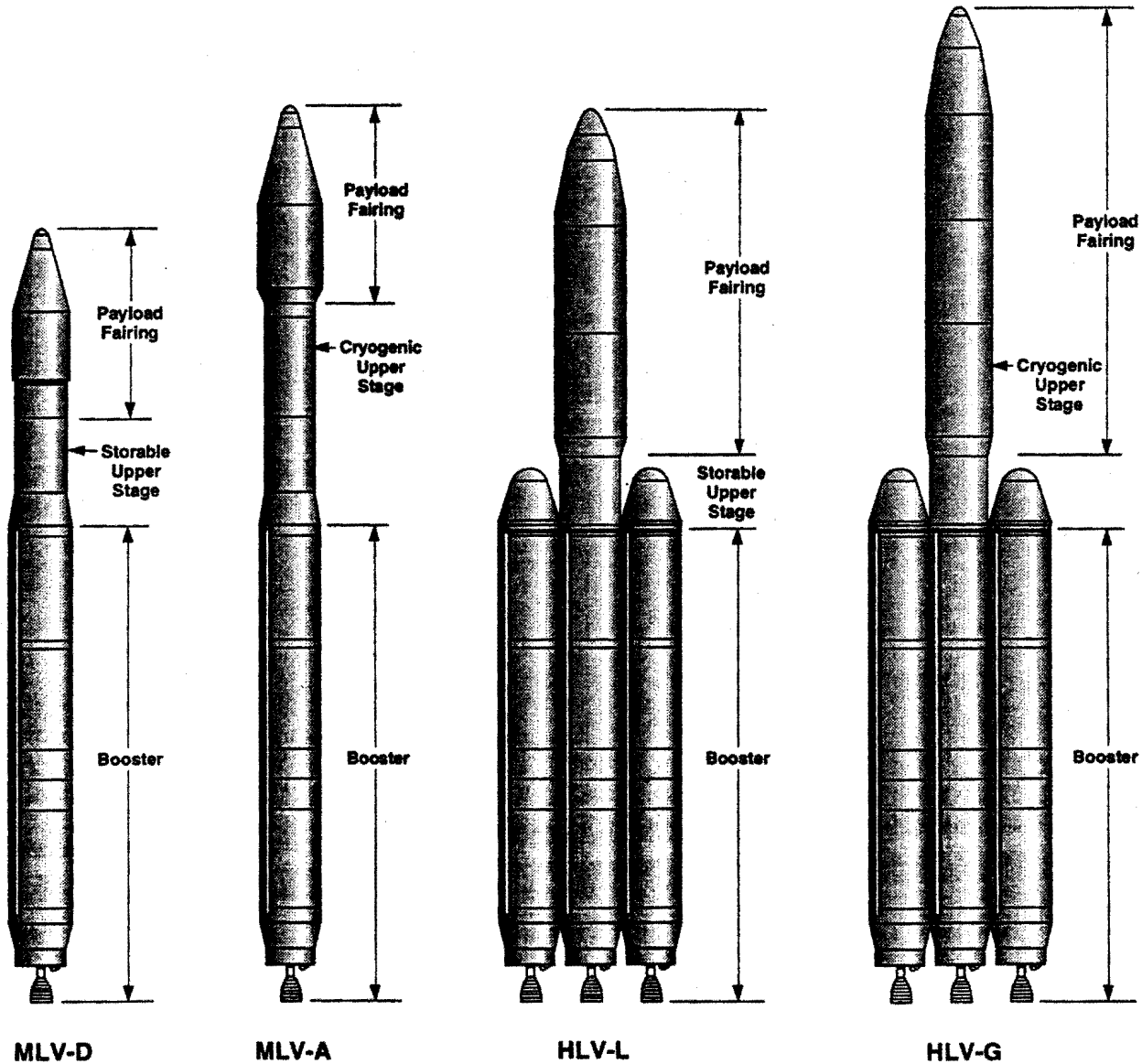


Source: Bionetics Corporation, 1988; site visit, 1997.

SLC-6 Vegetation and Sensitive Habitat Vandenberg AFB, California

EXHIBIT NO. 6
APPLICATION NO. CD-49-98

California Coastal Commission



EXPLANATION

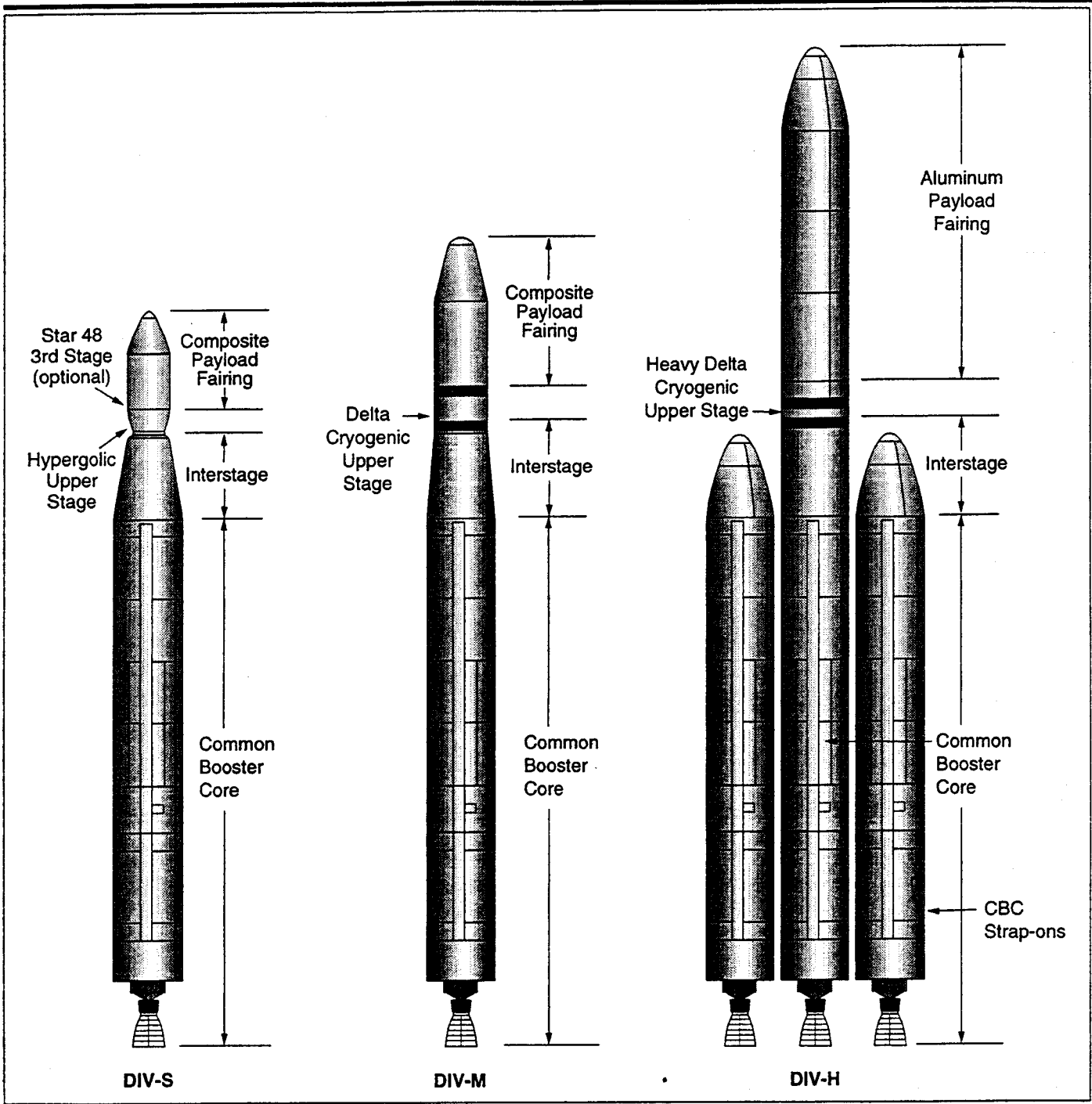
HLV Heavy Lift Variant
 MLV Medium Lift Variant

**Concept A
 Launch Vehicle
 Concept**

**EXHIBIT NO. 7
 APPLICATION NO. CD-49-98**

NOT TO SCALE

California Coastal Commission




EXPLANATION

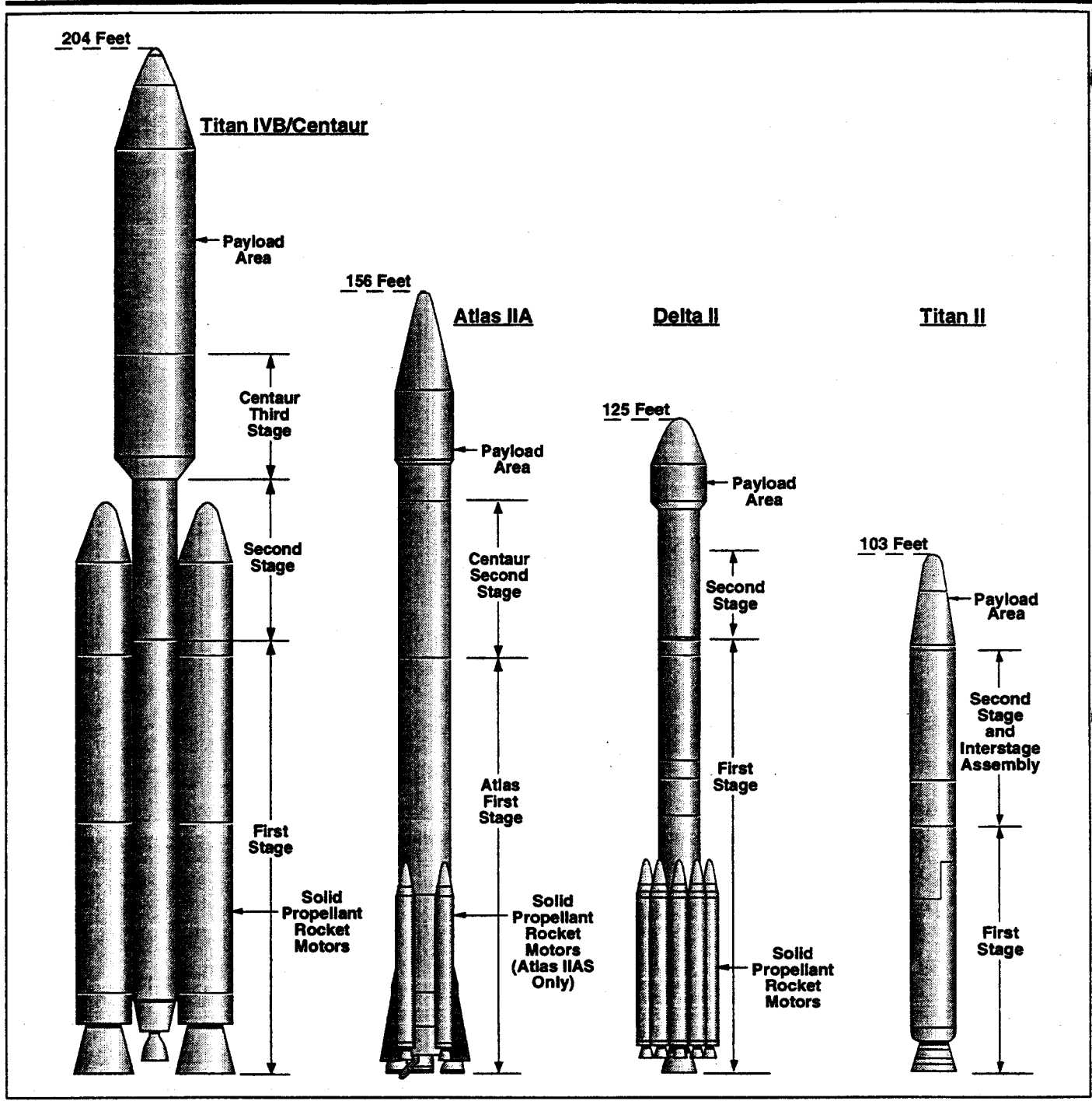
- CBC Common Booster Core
- DIV Delta IV
- DIV-H Heavy Launch Vehicle
- DIV-M Medium Launch Vehicle
- DIV-S Small Launch Vehicle

**Concept B
Launch Vehicle
Concept**

**EXHIBIT NO. 8
APPLICATION NO. CD-49-98**

NOT TO SCALE

 California Coastal Commission

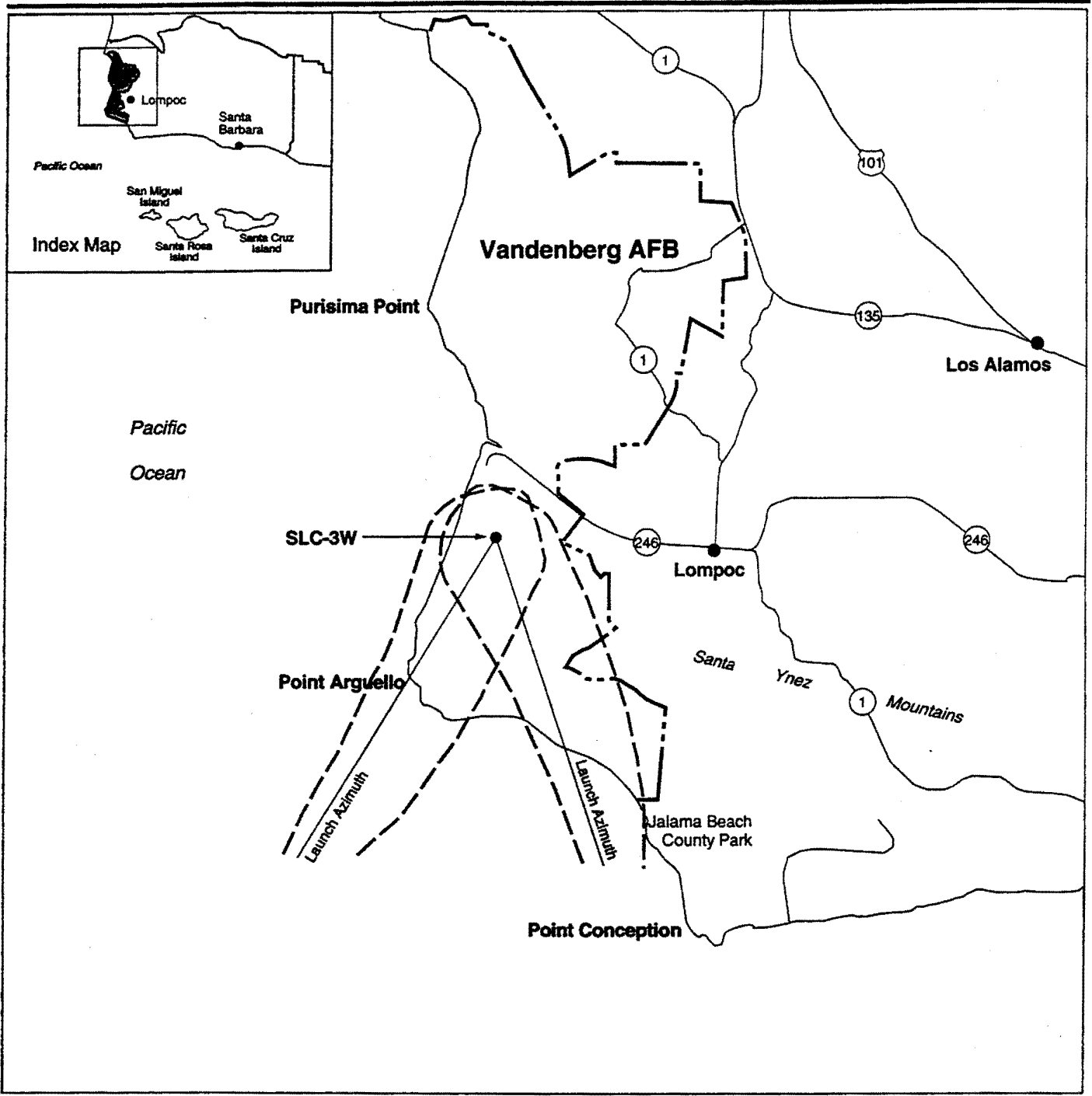


No-Action Alternative Launch Vehicles

**EXHIBIT NO. 9
APPLICATION NO. CD-49-98**

NOT TO SCALE

California Coastal Commission




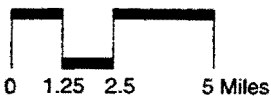
EXPLANATION

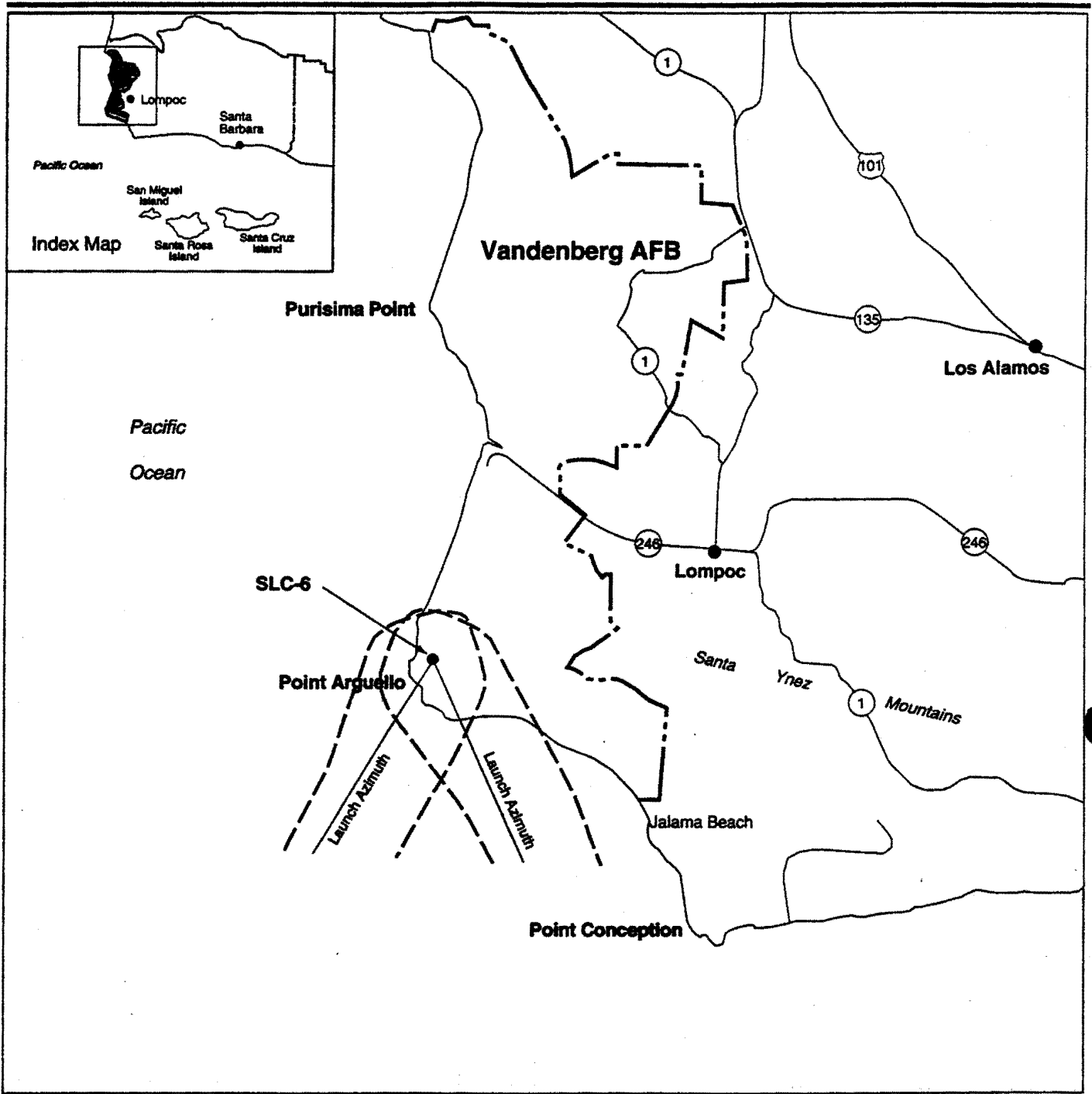
- Vandenberg AFB Boundary
- - - - - Impact Debris Corridor

Typical Impact Debris Corridors, SLC-3W

EXHIBIT NO. 10
APPLICATION NO. CD-49-98

 California Coastal Commission



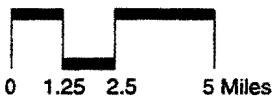


EXPLANATION

- Vandenberg AFB Boundary
- Impact Debris Corridor

Typical Impact Debris Corridors, SLC-6

**EXHIBIT NO. 11
APPLICATION NO. CD-49-98**




 California Coastal Commission

Table 2.1-3. Concept A Launch Rates

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
East Coast^(a)																					
Government^(b)																					
MLV-D	1	2	3	2	2	3	3	3	3	3	5	3	5	3	3	3	3	3	3	3	59
MLV-A		2	2	4	7	6	4	4	1	3	3	5	4	5	7	5	3	4	5	4	78
HLV-L																					
HLV-G			1			1		1		1			1		1			1		1	8
Commercial																					
MLV-D	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	120
MLV-A	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	120
HLV-L																					
HLV-G																					
West Coast^(c)																					
Government^(b)																					
MLV-D		1	1		1	1	3	2	1	2		2	1	2		1	1	1		1	21
MLV-A		1	1	3	2	3	3	1	3	2	4	2	2	4	1	2	3	4	1	3	45
HLV-L								1													1
HLV-G																					
Commercial																					
MLV-D	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	80
MLV-A																					
HLV-L																					
HLV-G																					
Total	17	22	24	25	28	30	29	28	24	26	29	28	29	30	28	27	26	29	25	28	532

Notes: (a) Cape Canaveral Air Station, Florida.
 (b) Based on the National Executable Mission Model.
 (c) Vandenberg Air Force Base, California.
 HLV = heavy lift variant
 MLV = medium lift variant

EELV DEIS

EXHIBIT NO. 12

APPLICATION NO. CD-49-98

Table 2.1-8. Concept B Launch Rates

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
East Coast^(a)																					
Government^(b)																					
DIV-S	1	2	3	2	2	3	3	3	3	3	5	3	5	3	3	3	3	3	3	3	59
DIV-M		2	2	4	7	6	4	4	1	3	3	5	4	5	7	5	3	4	5	4	78
DIV-H			1			1		1			1		1		1			1		1	8
Commercial																					
DIV-S	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	118
DIV-M																					
DIV-M+	8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	122
DIV-H																					
West Coast^(c)																					
Government^(b)																					
DIV-S		1	1		1	1	3	2	1	2		2	1	2		1	1	1		1	21
DIV-M		1	1	3	2	3	3	1	3	2	4	2	2	4	1	2	3	4	1	3	45
DIV-H								1													1
Commercial																					
DIV-S		4																			4
DIV-M																					
DIV-M+	2			4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	38
DIV-H	2		4		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	38
Total	17	22	24	25	28	30	29	28	24	26	29	28	29	30	28	27	26	29	25	28	532

Notes: The DIV-S and DIV-M vehicles fulfill the medium lift requirement of the National Mission Model. The DIV-H vehicle fulfills the heavy lift requirement of the National Mission Model.

(a) Cape Canaveral Air Station, Florida.

(b) Based on the National Executable Mission Model.

(c) Vandenberg Air Force Base, California.

DIV-H = heavy launch vehicle

DIV-M = medium launch vehicle

DIV-M+ = medium launch vehicle with solid rocket motor strap-ons

DIV-S = small launch vehicle

EXHIBIT NO. 13

APPLICATION NO. CD-49-98

California Coastal Commission

EELV DEIS



DEPARTMENT OF THE AIR FORCE

30TH SPACE WING (AFSPC)

23 Apr 98

MEMORANDUM FOR MR. JAMES R. RAIVES
CALIFORNIA COASTAL COMMISSION
45 FREMONT STREET, SUITE 1900
SAN FRANCISCO CA 94105-2219

FROM: 30 CES/CEVPP

SUBJECT: Additional Information Regarding EELV Coastal Consistency Determination

1. We appreciate your assistance in helping us move forward with a Consistency Determination for the Evolved Expendable Launch Vehicle (EELV) program. It is important for the EELV program to be addressed at the May 1998 California Coastal Commission (CCC) meeting because the Air Force plans to issue its Record of Decision in June 1998 in order to meet mission requirements.

2. We are providing responses to the issues raised during our recent meeting. These issues, including impacts to beach access, filling of wetlands, harbor dredging, and monitoring and mitigation of impacts to threatened and endangered species are addressed in the following paragraphs.

a. **Beach Access.** EELV will minimize interference with beach access to the maximum extent practicable. While mission requirements and orbital dynamics preclude any guarantee that beach closures will not occur, EELV launch scheduling and planning will include consideration of coastal recreational impacts. Specific considerations will include avoiding launches on weekends, especially holiday weekends, and minimizing the number of launches during the peak recreation season. In addition, per your request, Vandenberg AFB will provide an annual report on beach closures.

1) The total expected launch rates for both government and commercial EELVs are included in Table 2.1-11 in the Draft EELV EIS. As referenced in the Coastal Zone Consistency Determination (Section 4.1.2), not all EELV launches will result in beach closures. EELV systems will be phased in to eventually replace completely the current government use of Atlas II, Delta II, and Titan IVB launch systems. It is expected that the more economical EELV will also be the launch system of choice for commercial launch activity in lieu of current launch systems. If the total number of launches exceeds the level stated in the EIS and that increase results in impacts to coastal resources, the Air Force will consult with the CCC.

2) We believe the information above addresses your concerns regarding beach access. However, we agree to submit a phased consistency determination for consideration of the three remaining issues: SLC-3W wetlands, dredging, and endangered species. While unusual, this is an appropriate procedural mechanism given the continuing nature of the launch program and the similarity of impacts as compared to those of current launch vehicles. We recognize that through this phased consistency approach the Commission retains its full regulatory authority over EELV.

b. **Wetlands.** We request the CCC not consider SLC-3W wetlands at this time, pending re-evaluation of the need for the road impacting the wetland, and/or the feasibility of other alternatives, and/or the potential for mitigation if warranted.

c. **Dredging.** A phased approach is also requested for the proposed dredging operation pending completion of sediment analysis, and identification and characterization of the disposal site. These activities are now underway in preparation for the U. S. Army Corps of Engineers permitting process.

d. **Endangered Species.** EELV will utilize sites that have been previously used for substantially similar launch activities. There have been previous consultations regarding these sites. The Air Force will submit the second phase of the consistency determination upon completion of the Section 7 consultation now in progress with the U.S. Fish and Wildlife Service (USFWS). It is anticipated that the consultation will result in a no-jeopardy opinion which may include monitoring programs similar to those being conducted for current launch vehicles. Copies of monitoring reports will be provided as required in the biological opinion. Finally, should monitoring indicate impacts to species beyond those anticipated, potential mitigation activities will be coordinated with the CCC as well as the USFWS.

2. We believe the above information addresses the concerns raised at the meeting on April 22nd and look forward to seeing you at the CCC meeting on May 12, 1998. Please do not hesitate to contact me at (805) 734-8232, ext 50633 or Dale Clark at (210) 536-3668 if you have any further questions regarding this issue.


JAMES L. JOHNSTON, GS-13
Environmental Planner

Table 3.14-2. Threatened, Endangered, and Candidate Species Occurring or Potentially Occurring at Vandenberg AFB, California

Common Name	Scientific Name	Federal Status	State Status
Plants			
Beach layia	<i>Layia carnosa</i>	E	E
Gambel's watercress	<i>Rorippa gambelli</i>	E	T
Seaside's bird's beak	<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i>	-	E
Lompoc yerba santa	<i>Eriodictyon capitatum</i>	C	R
Beach spectaclepod	<i>Dithyrea maritima</i>	-	T
La Graciosa thistle	<i>Cirsium loncholepis</i>	C	T
Surf thistle	<i>Cirsium rhotophilum</i>	C	T
Fish			
Unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsonii</i>	E	E
Tidewater goby	<i>Eucyclogobius newberryi</i>	E	-
Steelhead trout	<i>Oncorhynchus mykiss irideus</i>	E	-
Reptiles and Amphibians			
California red-legged frog	<i>Rana aurora draytonii</i>	T	SC
Green sea turtle	<i>Chelonia mydas</i>	T	-
Loggerhead sea turtle	<i>Caretta caretta</i>	T	-
Pacific Ridley sea turtle	<i>Lepidochelys olivacea</i>	T	-
Leatherback sea turtle	<i>Dermodochelys coriacea</i>	E	-
Birds			
California brown pelican	<i>Pelacanus occidentalis californicus</i>	E	E
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	E
American peregrine falcon	<i>Falco peregrinus anatum</i>	E	E
California black rail	<i>Laterallus jamaicensis coturniculus</i>	-	T
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T	SC
California least tern	<i>Sterna antillarum browni</i>	E	E
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	-	E
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	E
Least Bell's vireo	<i>Vireo bellii pusillus</i>	E	E
Belding's savannah sparrow ^(a)	<i>Passerculus sandwichensis beldingi</i>	-	E
Mountain plover	<i>Charadrius montanus</i>	C	-
Mammals			
Guadalupe fur seal	<i>Arctocephalus townsendi</i>	T	T
Steller sea lion	<i>Eumetopias jubatus</i>	T	-
Southern sea otter	<i>Enhydra lutris nereis</i>	T	-
Sei whale	<i>Balaenoptera borealis</i>	E	-
Blue whale	<i>Balaenoptera musculus</i>	E	-
Finback whale	<i>Balaenoptera physalus</i>	E	-
Humpback whale	<i>Megaptera novaeangliae</i>	E	-
Right whale	<i>Balaena glacialis</i>	E	-
Sperm whale	<i>Physeter catodon</i>	E	-

Note: (a) Taxonomic status of subspecies is pending.

C = candidate (former Category C1)
 E = endangered
 R = rare (state designation)
 SC = special concern (state designation)
 T = threatened