

Appendix F – Avoidance and Minimization and Mitigation Measures

The following list of Avoidance and Minimization Measures (AMMs) and Mitigation Measures (MMs) are required during the implementation of the Hangar 3 Building Demolition at Moffett Federal Airfield to ensure impacts to the environment remain less than significant. Note that these requirements are in addition to other requirements, such as those detailed in the Memorandum of Agreement (MOA) made between the California State Historic Preservation Officer, the Advisory Council on Historic Preservation, PV, and NASA. The MOA contains the actions required to resolve adverse effects to cultural resources.

Title	Requirement
AMM-1: Environmental Issues Management Plan (EIMP)	<p>Follow the requirements in the 2017 EIMP prepared for the MFA Lease.</p> <p>Risk management measures described in the EIMP are briefly summarized below:</p> <ul style="list-style-type: none"> • Development and implementation of a site-specific health and safety plan that covers health and safety training requirements, personal protective equipment, and other precautions to minimize direct contact with soil, groundwater, and soil vapors. • Implementation of construction impact mitigation such as dust and odor control measures, decontamination procedures for equipment, stormwater pollution controls (including implementation of best management practices [BMPs] established in NASA ARC’s Storm Water Pollution Prevention Plan [SWPPP]), and methods for sampling and analyzing groundwater extracted during construction to determine appropriate storage and disposal practices. • Proper management of: ACM, debris and structures containing LBP, and/or paint containing polychlorinated biphenyls (PCB), equipment or structures that are removed during Project activities. • Procedures for the management of the dewatering water generated during construction activities, including, using for dust control within the lease area, sending for treatment, or releasing into the sanitary sewer in accordance with waste discharge permit requirements. If none of these options are available, the Lessee would arrange for disposal at a permitted facility.
AMM-2: Noise and Vibration	<p>During project activity implement the following:</p> <ul style="list-style-type: none"> • Route vehicle traffic to avoid passing through noise-sensitive neighborhoods while traveling between the project site and the freeway. • For all project activities, follow the hours restrictions and procedures listed in Chapter 8, Buildings, Article VI, Construction Noise, Section 8.70, Construction noise, of the Mountain View Municipal Code and Paragraph 16.080.030, Hours of Construction – Time and Noise Limitations, in the Sunnyvale Municipal Code. • Consider tethering and mechanically lowered demolished materials. • If demolished materials are to be mechanically cut and dropped to the floor consider limiting fall distances and the weight of the material being dropped to minimize impact to the slab. • Keep the existing hydraulic jack system in place until trusses are removed.

<p>AMM-3: Construction Traffic Control Plan</p>	<p>Prepare a detailed construction traffic control plan for NASA’s review and approval prior to any construction activity requiring site access by on-site workers and/or construction trucks. The Plan would include, but would not be limited to, identification of access and haul routes to/from the Project site; appropriate signage and temporary traffic control devices (e.g., lane striping, coning, barricades, etc.) for pedestrians, bicyclists, and motorists; staging areas; construction days and hours; construction worker transportation and parking; and any other disruption to traffic, transit, bicycle, or pedestrian circulation.</p> <p>Follow the approved Construction Traffic Control Plan for the duration of project activities.</p>
<p>MM BIO-1A: Pre-activity Survey of Project Access Route</p>	<p>Prior to the commencement of Project-related vehicular activity along the access routes to Hangar 3, a qualified biologist will conduct a pre-activity survey for burrowing owls. The survey area will consist of all suitable owl habitat (e.g., grassland and ruderal habitat with ground squirrel burrows) located within 250 feet and 160 feet of the Project’s access route during the breeding season (February 1 through August 31) and non-breeding season (September 1 through January 31), respectively. The survey will consist of at least two site visits, with the first conducted within 14 days prior to the commencement of Project-related vehicular activities along the access routes and the second conducted within 48 hours of the start of Project-related vehicular activities. If no burrowing owls are located during these surveys, no additional action would be warranted.</p> <p>However, if burrowing owls are located in areas adjacent to or within the specified distances of the access routes as described above, PV will coordinate with NASA on the appropriate avoidance and minimization measures, such as staggering the passage of construction vehicles, implementing a slower speed limit along the access routes, or use of screening or construction monitoring by a qualified biologist, to prevent disturbance to owls from Project-related vehicular activity along the access routes.</p>
<p>MM BIO-1B: Pre-activity Survey of Project Site</p>	<p>Prior to any initial Project-related activity involving the physical manipulation (e.g., relocation, addition to, or removal of) of piles of equipment, debris, or materials that could be used as a perch site by burrowing owls on the Project site, a qualified biologist will conduct a pre-activity survey for burrowing owls. The survey will consist of at least two site visits, with the first conducted within 14 days prior to the start of Project activities and the second conducted within 48 hours of the start of Project activities.</p> <p>Additional surveys will be necessary any time construction activities cease, or equipment and materials remain undisturbed, for more than 7 days after initial Project-related activity has begun. If no burrowing owls are located during these surveys, no additional action would be warranted. However, if burrowing owls are located on or immediately adjacent to impact areas, Mitigation Measure BIO-1C will be implemented.</p>
<p>MM BIO-1C: Materials Monitoring and Relocation</p>	<p>If Project-related activities will directly impact a pile of materials that is occupied by a perching owl, the qualified biologist will coordinate with</p>

	<p>NASA environmental staff on the best approach to relocate or redistribute the materials to discourage its use as a perch site. This may include monitoring the owl to determine whether it is paired and/or actually nesting (which would be highly unlikely in a pile of materials), monitoring the owl to ensure that it has left the area on its own before materials are accessed and/or moved or redistributed, and/or having a biologist walk toward the owl to cause it to flush from the area where it is perching (being careful to ensure that no avian predators are present nearby at the time).</p> <p>After the owl has moved on its own or flushed, the materials where the bird had taken refuge will be moved and stored in a way that does not create a protected area which the owl may return to and perch. If necessary, the biologist will remain on-site until the materials have been relocated, or rendered unsuitable for use by the owl, to ensure that the bird does not re-occupy the perch site while materials relocation is occurring.</p>
MM BIO-1D: Materials Storage	<p>When materials are delivered to the Project site, material stockpiles should be stored and distributed in such a way as to prevent the creation of an attractive nuisance that may provide artificial nesting or perching habitat for burrowing owls. Equipment or materials with an upright, vertical profile should be stored on their side (if safe to do so), or tarped to create a slick, unnatural surface. Equipment or materials that are hollow, such as pipe, or otherwise recessed that might provide cover and refugia should be tarped or the openings plugged or covered with plywood (to hinder access) or broken down and redistributed to eliminate any protective cover. Material stockpiles should be located near active work sites where they are regularly exposed to vehicle and foot traffic and be located distant from any adjacent natural habitat (e.g., not along the project margins) to prevent attracting burrowing owls from adjacent properties.</p>
MM BIO-2A: Avoidance of the Nesting Season	<p>To the extent feasible, pre-demolition and demolition activities should be scheduled to begin during the period between September 1 through January 31, outside the nesting season.</p>
MM BIO-2B: Pre-Activity Surveys for Nesting Birds	<p>If it is not feasible to schedule the commencement of Project activities between September 1 and January 31, then pre-activity surveys for nesting birds will be conducted by a qualified biologist to ensure that no nests will be disturbed during Project-related activities. These surveys will be conducted no more than seven days prior to the initiation of pre-demolition, demolition, or other Project-related activities. During breeding-season surveys for nesting birds, the biologist will inspect all potential nesting locations inside and outside of Hangar 3, as well as all other areas within 300 feet (for raptors) and 100 feet (for non-raptors) of the Project site, where access allows.</p>
MM BIO-2C: Non-Disturbance Buffers around Active Nests	<p>If an active nest (i.e., a nest with viable eggs or live young) is found sufficiently close to the Project area and would be disturbed by Project activities, or if an active nest is present on substrate (such as the hangar structure) that would be subject to substantial vibrations or removal as part of pre-demolition or demolition activities (no matter how far from the nest), a qualified biologist will determine the extent of a construction-free buffer zone to be established around the nest (typically 300 feet for raptors and 100 feet for other species), to ensure that no nests of species</p>

	<p>protected by the MBTA and CFGC will be disturbed during Project-related activities. However, these buffers may be reduced if the biologist determines that a smaller buffer will adequately prevent excessive disturbance of the nest (e.g., due to intervening structures that block the birds' view of demolition activities, the level of activity occurring when the nest was established, or other factors).</p> <p>Alternatively, the buffers may be expanded if the biologist determines that a larger buffer is needed, such as if an active nest appears to be disturbed by an increased level of Project activities beyond the initially established construction-free buffer zone distance. If an active nest is on substrate that will be subject to substantial vibrations during Project activities, then the activities potentially causing such vibrations will be postponed (regardless of distance from the nest) while the nest is active. The buffer established around an active nest will remain in place until the nest is no longer active, as determined by the biologist.</p>
<p>MM BIO-2D: Nesting Bird Deterrence</p>	<p>To minimize the potential for active nests to constrain Project activities, PV may elect to deter birds from nesting in, on, or near Hangar 3 prior to the start of Project activities. Deterrence measures would be developed and implemented or supervised by a qualified biologist, and a structural engineer would verify that any manipulation to building structures for nest deterrence would not pose a greater safety hazard than currently exists. Such deterrence measures may include:</p> <ul style="list-style-type: none"> • Physical removal of nest-starts (nests that are under construction but do not yet contain eggs); • Installation of physical deterrence devices, such as slippery sloped panels that prevent swallows and phoebes from attaching mud nests to vertical surface, materials to block nooks and crevices that may be used for nesting, and screening or netting to prevent birds from accessing nesting areas; • Modification of the nesting area to make it unattractive to birds (such as exposing areas within the box beams where barn owls may attempt to nest). <p>For birds capable of nesting throughout the year (i.e., barn owls), additional deterrence measures may be appropriate, such as the installation of a nest cam (e.g., nestbox camera, birdhouse camera) to determine when a clutch has successfully fledged, or to confirm a period of inactivity between nesting attempts, so that nesting bird deterrents such as those described above can be safely implemented and the nest or underlying box beams can be modified or removed. If any netting is used to deter nesting, it will be regularly inspected and maintained to ensure that birds are not entangled within it or trapped behind it.</p>
<p>MM BIO-2E: Pre-Activity for Roosting Birds</p>	<p>Regardless of the time of year in which pre-demolition or demolition activities begin, pre-activity surveys for roosting birds will be conducted by a qualified biologist to ensure that no roosting birds will be injured or killed during Project-related activities in Hangar 3. These surveys will be conducted no more than seven days prior to the initiation of pre-demolition or demolition activities to identify active roost sites and allow time for additional remedial actions to be taken, and again immediately before the start of pre-demolition or demolition to clear the work area before work begins. During surveys for roosting birds, the biologist will look for the presence of birds roosting in areas where they could</p>

	<p>potentially be injured or killed during pre-demolition or demolition activities.</p>
<p>MM Bio-2F: Passive Relocation of Roosting Birds</p>	<p>If birds are found roosting in the interior of Hangar 3 in areas where they may be subject to injury or mortality during pre-demolition or demolition activities, a qualified biologist will identify actions that can be taken to “passively relocate” the birds by encouraging them to leave the hangar. Examples of such actions include:</p> <ul style="list-style-type: none"> • Removing or physically modifying the structures used for roosting, • Opening areas of the walls or ceiling close to the roost site to make those sites more exposed and thus less attractive, • Using auditory deterrents (e.g., recorded vocalizations of falcons or other raptors) or visual deterrents (lasers [not targeting the birds themselves], bright lights, streamers, or other means) to encourage birds to leave areas where they may be subject to injury or mortality. <p>The precise methods used to encourage birds to leave the hangar will be determined by the biologist based on the species in question and the circumstances of the roost. A structural engineer would verify that any manipulation to building structures for passive relocation would not pose a greater safety hazard than currently exists.</p>
<p>MM BIO-3A: Exclude Bats Prior to Disturbance</p>	<p>To encourage bats to leave Hangar 3 prior to the initiation of pre-demolition activities, a qualified bat biologist will identify appropriate locations for, and will supervise the installation of, ultrasonic deterrence devices. These devices will be employed prior to the start of the bat maternity season (as determined by the qualified bat biologist, but approximately March 15 to August 31) and will be maintained in regular use and checked periodically by the bat biologist to ensure proper function until demolition commences. These devices will remain in use as far into the demolition process as feasible to discourage bats from re-occupying former roosts.</p>
<p>MM BIO-3B: Conduct Pre-Activity Surveys for Roosting Bats</p>	<p>To ensure that the ultrasonic deterrence devices have been successful in deterring bats from occupying Hangar 3 prior to demolition, a pre-activity survey for roosting bats shall be conducted within seven days prior to commencement of pre-demolition and demolition activity. The survey shall be conducted by a qualified bat biologist. If no active roosts are found, then no further action is warranted. If a roost is present, a qualified bat biologist shall determine the species and number of individuals present.</p>
<p>MM BIO-3C: Avoid Disturbing Maternity Roosts</p>	<p>If an active maternity roost is present within any section of Hangar 3 where materials may be removed during pre-demolition or in areas that are to be demolished, disturbance shall not take place during the maternity season (as determined by the qualified bat biologist, but approximately March 15 to August 31), and an appropriate disturbance-free buffer zone (also determined by the qualified bat biologist and based upon the level of Project activity disturbance) shall be observed during this period to avoid disturbing the roosting bats.</p> <p>If a roost is present on infrastructure (such as the hangar structure) that would be subject to substantial vibrations or removal as part of Project activities, the buffer distance will take into consideration not only</p>

	<p>distance between Project activities and the roost site, but also whether certain activities could cause substantial vibrations at the roost location, no matter how far from the roost those activities occur.</p>
<p>MM BIO-3D: Eviction of Roosting Bats</p>	<p>If an active non-maternity roost is present in Hangar 3, the bats will be evicted outside of the maternity season (March 15 to August 31). The bat biologist, along with a structural engineer (who would verify that any manipulation to building structures for bat eviction would not pose a greater safety hazard than currently exists), will determine the appropriate means of evicting the bats depending on the circumstances of the roost.</p> <p>Examples of potential eviction actions include opening the roost area to increased air flow to change the thermal conditions in the roost, establishing increased lighting in the roost area, installing one-way devices to allow bats to exit but not re-enter the roost, or otherwise physically modifying the roost area at night when bats are not present. If used, one-way doors or other deterrence devices should be left in place for a minimum of five fair-weather nights with no rainfall and temperatures no colder than 50° F.</p>