National Aeronautics and Space Administration

Draft Environmental Assessment for Hangar 3 Building Demolition at Moffett Federal Airfield

June 2022

Draft Environmental Assessment for Hangar 3 Building Demolition

Location:	Ames Research Center, Moffett Federal Airfield in California
Lead Agency:	National Aeronautics and Space Administration (NASA) Ames Research Center (ARC)
Proposed Action:	Planetary Ventures LLC (PV) (ground lessee to NASA) is proposing Hangar 3 building demolition
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ES-1 EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared for the National Aeronautics and Space Administration (NASA) to evaluate potential effects that arise as a result of the work proposed by Planetary Ventures, LLC (PV or Lessee) to address existing hazardous structural conditions at Hangar 3. Hangar 3 is located adjacent to the Moffett Federal Airfield (MFA), which is part of NASA's Ames Research Center (ARC). NASA entered into an Adaptive Reuse Lease (Lease) with PV in October 2014 for PV's use and occupancy of MFA. The MFA Lease includes Hangar 3 as well as other facilities. The Lessee has proposed demolition of Hangar 3 to remedy its unsafe condition and eliminate the unacceptable structural hazard it poses. The preparation of this EA is consistent with regulations issued by the Council on Environmental Quality (CEQ), 14 Code of Federal Regulations (CFR) Part 1216.3, Procedures for Implementing the National Environmental Policy Act (NEPA), and NASA Procedural Requirements (NPR) 8580.1A, Implementing the National Environmental Policy Act and Executive Order 12114. Preparation of this EA commenced prior to September 14, 2020. This EA has been prepared in accordance with the CEQ regulations implementing the provisions of NEPA as were codified in 1978.

ES-2 PURPOSE AND NEED

Based on the terms of the Lease, it was anticipated that Hangar 3 would be rehabilitated for use as a research and development facility. However, since the effective date of the Lease, ongoing efforts to rehabilitate Hangar 3 have proven to be ineffective. While PV has undertaken significant additional efforts to repair the damaged trusses since commencing the Lease, it was not possible to keep up with the damage progression continuously advancing throughout the structure. While a temporary internal shoring and hydraulic jacking system is in place, the building is currently unsafe for occupancy and vulnerable to further damage and collapse, especially from seismic or high wind load events.

The purpose of the Project is to remedy this unsafe condition and eliminate an unacceptable structural hazard. The need for the Project is a long-term solution that eliminates the potential for continued degradation or collapse of Hangar 3 under normal or adverse conditions, thereby protecting life and property.

ES-3 ALTERNATIVES CONSIDERED

ES-3.1.1. ALTERNATIVES ANALYZED

Proposed Action - Building Demolition

This alternative, previously referred to as Structural Hazard Remediation in the supporting studies found in the appendices, would involve the demolition of Hangar 3 and would also include removal and management of contaminated materials, equipment, and environmental media. This would remove an unsafe condition and eliminate an unacceptable structural hazard in a timely manner that would eliminate the potential for continued degradation or collapse of Hangar 3 under normal or adverse conditions, thereby protecting life and property. The Proposed Action would occur in three phases, with pre-demolition activities (Phase 1) lasting approximately 80 to 90 working days and demolition (Phase 2) lasting approximately 125 working days. Waste disposal and recycling (Phase 3) would occur concurrently with Phase 1 and Phase 2. The total duration for all phases would take approximately nine months. In Phase 1, a pre-demolition survey would be conducted to characterize non-hazardous and hazardous wastes in accordance with the framework established by applicable federal, state, and local regulations. Phase 2 activities would include removal of all above ground components, and no work would occur below the slab. A 6-foot-high temporary fence would be installed around the demolition area to control entry to the work area, and all of the work would be conducted within the fenced area. All demolition materials would either be tethered and mechanically lowered to the ground or mechanically cut and dropped to the floor. If materials are dropped to the floor, considerations would be made including limiting fall distances and considering the weight of the material being dropped to minimize impacts to the slab. Waste disposal and recycling would occur in Phase 1 with *in situ* characterization prior to demolition to assist in efforts to segregate non-hazardous from hazardous wastes or from incompatible wastes during demolition. In Phase 2, materials would be characterized after demolition but before being loaded onto trucks or trailers for transport to an approved offsite construction waste facility. Upon completion of the Proposed Action, all above ground Hangar 3 components would be removed and only the concrete slab would remain, consistent with pre-Project conditions. No land use is planned for the site after demolition.

No Action Alternative

Under the No Action Alternative, Hangar 3 would remain unoccupied, and maintenance of the temporary internal shoring and hydraulic jacking system would continue. Under this alternative, no further attempts to complete structural upgrades of Hangar 3 would be undertaken. Although PV has removed all items stored in the structure due to safety concerns, some ongoing maintenance of the extensive internal

shoring and hydraulic jacking system for the structure would be required under this alternative. Under this alternative, the structure could sustain further damage and there would be potential for collapse of portions of the hangar from an earthquake or high wind loading, which could result in a partial or full collapse of Hangar 3. Such a collapse would pose a life-safety risk to nearby personnel and damage to nearby property from flying debris.

ES-3.1.2. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER STUDY

Reconstruction of Hangar 3

The possibility of fully stabilizing and rehabilitating Hangar 3 was considered. However, full rehabilitation that does not require destruction of the essential components that make Hangar 3 a valuable historic structure would not be possible since it is not feasible to replace damaged components in sequence. In order to bring the structure into prevailing seismic code regulations for safety, Hangar 3 would effectively have to be deconstructed and then reconstructed into an entirely new structure using new materials. In addition, the cost for reconstruction of the hangar would be more than 50 times higher than the Proposed Action. For these reasons, this alternative was dismissed from further study.

Partial Preservation of Hangar 3

A partial preservation of Hangar 3 was considered that would have removed the safety hazard associated with the main hangar structure while restabilizing and preserving independent features of the structure. This alternative is referred to as Alternative 2 – Partial Preservation in the supporting studies found in the appendices. Under this alternative, the two sets of concrete towers and box beam structures (at the northern and southern ends) would be retained, and the entire main hangar structure would be demolished. Appendix A, KPFF Memos, provides memorandums that address the feasibility of retaining portions of Hangar 3. Under this alternative, both sets of hangar doors, machinery, and existing tracks would be removed with the demolition of the main hangar structure. Demolition activities related to this alternative would include the three phases discussed in the Proposed Action. This alternative would also include an additional Phase 4 for activities required for abatement and stabilization of the remaining Hangar 3 elements. These activities would include: 1) box beam rehabilitation, shoring, and strengthening; 2) concrete door tower rehabilitation and strengthening; and 3) foundation strengthening. The total duration for all phases would take approximately 21 months.

The costs associated with the partial preservation of Hangar 3 was determined to be considerably higher than the Proposed Action. This alternative would also effectively reduce Hangar 3 to two smaller structures, which would relate in form to each other, but would, as a result, contrast with the overall visual character of Hangar 2. Therefore, this alternative was dismissed from further study.

ES-4 SUMMARY OF POTENTIAL EFFECTS

This EA considered the following ten resource areas to provide a context for understanding the potential environmental effects of the Proposed Action and alternatives: air quality; biological resources; cultural resources; greenhouse gases and climate change; hazards, safety, and waste management; noise and vibration; transportation and circulation; utilities; visual resources; and water resources.

The environmental consequences associated with the Proposed Action and No Action Alternative were analyzed. Table ES-1 presents a summary of the resources considered and the potential impacts on those resources.

Table ES- 1 Summary of Environmental Impacts

Resource Area	Potential Impacts from the Proposed Action	Potential Impacts from the No Action Alternative
Air Quality	Construction exhaust emissions would be generated from construction equipment, demolition activities, on-site workers' commutes and hauling of demolition material. Emissions would be below the Federal *de minimis* and Bay Area Air Quality Management District (BAAQMD) thresholds for all criteria pollutants and would be therefore less than significant. Fugitive dust would be generated from demolition activities. A water truck would apply water to exposed areas or those that could generate dust during demolition activities. The Proposed Action would wet any asbestos containing material (ACM) prior to demolition. As a result, these effects would be less than significant. Construction of the Proposed Action would not result in a health risk from exposure to diesel particulate matter (DPM). Impacts to air quality would be less than significant.	Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. The condition of Hangar 3 would continue to deteriorate. In the event of a structural failure, air quality impacts would be temporary but would be uncontrolled compared to the Proposed Action. Subsequent clean-up would require haul trucks, and construction equipment, similar to those needed for the Proposed Action, which would emit criteria air pollutants and DPM. Quantification of the emissions is not possible because it is speculative to determine the extent of an unplanned collapse. Clean-up would not result in a health risk from exposure to DPM.
Biological Resources	The Proposed Action could result in potential impacts to nesting/overwintering burrowing owls, nesting and roosting common (i.e., non-special-status) species of birds, and roosting common species of bats. The Proposed Action would not result in impacts to wetlands, aquatic habitats, riparian habitats, or other sensitive habitats; threatened or endangered species or their habitats; special-status plants; trees; or wildlife movement corridors. The Proposed Action would implement Mitigation Measures BIO-1A through BIO-3D (14 measures) to	Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, potential impacts would be uncontrolled and would result in greater direct and immediate impacts to wildlife in the vicinity of the Project site as mitigation measures identified for the Proposed Action would not be implemented. Therefore, wildlife impacts could be significant as the No Action Alternative could result in the loss of bird eggs or nestlings, the

Resource Area	Potential Impacts from the Proposed Action	Potential Impacts from the No Action Alternative
	minimize potential impacts to burrowing owls, nesting and roosting birds, and roosting bats. Because the Proposed Action would not result in effects that are substantial (i.e., resulting in a measurable decline in regional populations) or that could be permanent in their effect on population or subpopulation survival without active management, the impacts would be less than significant. **Mitigation Measures:** ● BIO-1A. Burrowing Owl Pre-activity Survey of Project Access Route ● BIO-1B. Burrowing Owl Pre-activity Survey of Project Site ● BIO-1C. Materials Monitoring and Relocation ● BIO-1D. Materials Storage ● BIO-2A. Avoidance of Bird Nesting Season ● BIO-2B. Pre-Activity Surveys for Nesting Birds ● BIO-2C. Non-Disturbance Buffers around Active Bird Nests ● BIO-2D. Nesting Bird Deterrence ● BIO-2E. Pre-Activity Surveys for Roosting Birds ● BIO-2F. Passive Relocation of Roosting Birds ● BIO-3A. Exclude Bats Prior to Disturbance ● BIO-3B: Conduct Pre-Activity Surveys for Roosting Bats ● BIO-3C. Avoid Disturbance of Maternity Roosts ● BIO-3D. Eviction of Roosting Bats	death or injury of a roosting burrowing owl (if present in debris or materials near the hangar), and the injury or mortality of bats within a roost site in Hangar 3, therefore, violating the MBTA and/or CFGC or potentially affecting the regional population of burrowing owls.

Resource Area	Potential Impacts from the Proposed Action	Potential Impacts from the No Action Alternative
Cultural Resources	The Proposed Action would result in the demolition of Hangar 3, which is both individually listed as a historic structure in the National Register of Historic Places (NRHP) and as a contributor to the NRHP-listed Naval Air Station (NAS) Sunnyvale Historic District. The demolition of Hangar 3 would also disrupt the visual qualities and historic character within the District as a whole. This would impact the historic setting of the District and the individual contributors, particularly on the eastside of the airfield, which includes Hangar 2, Building 055, the East Aircraft Parking Apron, other contributing airfield infrastructure (runways and taxiways), operations and support buildings, and the munitions magazines and historic handling facilities. Thus, the Proposed Action would have an adverse effect on historic resources, as defined by 36 CFR 800(a)(1), Protection of Historic Properties. However, the NAS Sunnyvale Historic District and its remaining various contributors would retain sufficient, albeit diminished, historic integrity following the completion of the Proposed Action and would continue to qualify for listing on the NRHP. Additionally, the adverse effects resulting from the Proposed Action would be addressed and resolved through the execution and implementation of a Memorandum of Agreement (MOA) with the State Historic Preservation Officer (SHPO) and other parties. There are no ground disturbing activities located within the identified area of heightened prehistoric-era or historic-era archaeological sensitivity or areas with	Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, direct and indirect impacts to Hangar 3, the NAS Sunnyvale Historic District, and the other contributors to the NAS Sunnyvale Historic District in the vicinity could occur from the collapse of Hangar 3. Under the No Action Alternative, there would not be a Section 106 process or resulting MOA to address and resolve adverse effects to historic properties. Therefore, the No Action Alternative could result in a significant impact to cultural resources.

Resource Area	Potential Impacts from the Proposed Action	Potential Impacts from the No Action Alternative
	known sites. In the event that ground disturbing activities were required and archaeological materials were discovered, all work would be halted, the NASA Cultural Resources Manager would be notified, and the appropriate steps outlined in the Integrated Cultural Resources Management Plan Standard Operating Procedure 8: Inadvertent Discovery would be implemented. As a result, impacts on cultural resources under NEPA would be less than significant.	
Greenhouse Gases and Climate Change	Demolition of Hangar 3 would result in the emissions of greenhouse gases (GHG) generated from construction equipment, demolition activities, and on-site workers' commutes. The accumulation of GHGs within the atmosphere leads to global climate change. The GHG emissions generated by the Proposed Action would occur over a short-duration of time and would not exceed the Federal Mandatory Reporting Threshold. Therefore, impacts would result in a less than significant contribution to the significant cumulative impact to global climate change.	Under the No Action Alternative there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, demolition, waste removal, and recycling activities like the Proposed Action would be required. GHG emissions would be generated from construction activities and would be comparable to the Proposed Action. Therefore, the No Action Alternative would have a less than significant contribution to the significant cumulative impact to global climate change.
Hazards, Safety, and Waste Management	Demolition of Hangar 3 would result in potential exposure of other MFA users to lead-based paint (LBP), ACM, and polychlorinated biphenyls (PCB) in the vicinity of the Project site. All construction activities would comply with Avoidance and Minimization Measure (AMM)-1: Environmental Issues Management Plan	Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, the No Action Alternative could result in the uncontrolled release and exposure

Resource Area	Potential Impacts from the Proposed Action	Potential Impacts from the No Action Alternative
	(EIMP), to ensure demolition would not expose personnel to site contaminants or release additional contaminants into the environment. To minimize hazards from falls, scaffolding would be installed as per Occupational Safety and Health Administration (OSHA) standards that include provisions such as, but not limited to fall protection, guardrail height, training, and inspection. Implementation of the Proposed Action would create short-term impacts with regard to hazardous wastes during mobilization, demolition, and demobilization activities. All activities would be in compliance with applicable regulations, AMM-1: EIMP, and the site-specific health and safety plan. Moreover, there is adequate capacity at the landfills for any demolition waste. By implementing appropriate plans and complying with applicable regulations, impacts related to worker safety or the exposure to hazardous materials would be less than significant.	of MFA users to hazardous materials, including those containing asbestos, lead, or PCB. The No Action Alternative would not include hazardous material abatement activities described under the Proposed Action. As such, the No Action Alternative could potentially release hazardous materials into the environment causing greater risk to human health and the environment compared to the Proposed Action, resulting in a potentially significant impact. Clean up following structural collapse would be required to follow all applicable federal, state, and local regulations pertaining to the clean-up, abatement, and transport of hazardous materials.
Noise and Vibration	Two types of short-term noise impacts could occur during demolition in the Proposed Action: traffic-related noise from demolition crew, equipment, and materials; and noise generated during demolition from building removal. Noise modeling indicates that impacts of demolition activity to sensitive receptors would be negligible, and the Proposed Action would not result in any operational noise as no use is proposed post-demolition. Modeling also indicates that vibration generated from demolition equipment would not be expected to cause damage to existing nearby buildings.	Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In an event of a structural failure, there may be instantaneous loud noise from the structural collapse that may be higher than the acceptable noise levels defined in the General Plans for the City of Mountain View and the City of Sunnyvale. In addition, depending on the level of emergency response required, there could be nighttime and

Resource Area	Potential Impacts from the Proposed Action	Potential Impacts from the No Action Alternative
	Demolition noise levels would be expected to be well below impact thresholds. Additionally, the Proposed Action would implement the protection measures noted in AMM-2: Noise and Vibration, to further reduce temporary construction noise and vibration impacts on adjacent sensitive receptors. Therefore, noise and vibration impacts on sensitive receptors would be less than significant.	weekend activity noise generated that is not contemplated under the Project. However, these noise impacts would not be considered significant since they would be temporary and short-term. Noise levels from worker and truck trips would be expected to be similar to the Proposed Action and thus would not be significant. However, sudden collapse could have an adverse impact on surrounding structures; if vibration levels were to exceed 0.25 in/sec PPV then damage to nearby structures could result.
Transportation and Circulation	The traffic impact analysis found that the surrounding study intersections would operate at level of service (LOS) D or better during the AM and PM peak hours under background conditions. Addition of the peak hour Proposed Action traffic to the study intersections would have a negligible impact on the intersections and would not result in a significant impact at the study intersections. The effects of the Proposed Action on the transportation system would be temporary since the Proposed Action would not generate new operational trips once construction was complete. No offsite improvements at study intersections would be needed under the Proposed Action. Additionally, the Proposed Action would implement AMM-3: Construction Traffic Control Plan, to ensure construction traffic does not block access for other area users and coordination occurs with other construction activities during the same construction period. Since the Proposed Action would not result in a substantial increase in traffic generation or increase in	Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, there would be temporary construction traffic for remediation and clean-up activities that would be expected to result in similar LOS at the study intersections as the Proposed Action. As a result, impacts related to temporary construction traffic would be less than significant.

Resource Area	Potential Impacts from the Proposed Action	Potential Impacts from the No Action Alternative
	the use of connecting street systems, the impact would be less than significant.	
Utilities	The Proposed Action would not result in any new utility infrastructure. Active utility infrastructure connected to Hangar 3 would be identified and disabled before initiating any site work. Underground utility lines would not be impacted as no subsurface activity would occur. All existing service connections would be capped or otherwise disabled. Above-ground water lines serving Hangar 3 would be drained, terminated, and capped at the connection to the service line where it goes below ground. All underground NASA communication infrastructure and vaults would be protected during demolition of Hangar 3. Therefore, the Proposed Action would not disrupt or accidentally damage existing utility lines and the impact would be less than significant.	Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, impacts to utilities could be potentially significant as utility connections to Hangar 3 would not be capped or disconnected systematically and thus structural failure could result in the inadvertent loss of service or damage to critical infrastructure such as water lines connecting to Hangar 3 and NASA telecommunication lines that lie underneath the Hangar 3 concrete slab. Additionally, disruption or damage to utility infrastructure could impact service to other MFA users, including the CAANG facility, resulting in a potentially significant impact.
Visual Resources	Permanent changes to the existing visual landscape would result from the demolition of Hangar 3. Hangar 3 is a prominent feature in views toward MFA from nearby locations, reinforced by the presence of Hangar 2. As a pair, these structures are highly recognizable visual and historic features in the local and regional landscape. Therefore, the removal of Hangar 3 would be noticeable by viewers familiar with the area. However, such visual changes would not be substantial, as Hangar 2 would provide a similar but new focal point in public views and would maintain the overall visual character of the Project	Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of structural failure, potential damage to Hangar 3 would be uncontrolled and thus could affect other nearby structures, including Hangar 2. However, it would be speculative to determine the extent of an unplanned collapse and the potential damage to other structures. In the absence of Hangar 3, Hangar 2 would be the

Resource Area	Potential Impacts from the Proposed Action	Potential Impacts from the No Action Alternative
	area. Additionally, as shown in the close-in views from Key Observation Point (KOP) 1 and KOP 2, the removal of Hangar 3 would allow for greater visibility of the Project area and the surrounding hillsides and mountain range. With the demolition of Hangar 3, the vividness would be reduced with the elimination of a repeating form. Hangar 2 would become the sole dominant feature in public views and would retain the elements that contribute to the overall visual character. As such, impacts on the existing visual character and the scenic quality of public views would be less than significant.	sole dominant feature in public views and would retain the elements that contribute to the overall visual character that is evident in existing views toward this portion of MFA. Thus, visual impacts from the No Action Alternative would be less than significant.
Water Resources	Under the Proposed Action, construction activities would include abatement, demolition, and waste disposal. All construction activities would be above-ground, and no site grading or site disturbance would occur. Water generated from dust suppression and watering of ACM prior to demolition would be collected and treated, as necessary. All water discharged from demolition activities would be collected in covered and secured Baker tanks and tested prior to being transported offsite or discharged to the sanitary sewer. To minimize potential impacts associated with runoff and sedimentation, the construction contractor would implement a sitewide Stormwater Pollution Prevention Plan (SWPPP) in accordance with AMM-1: EIMP. Ongoing groundwater monitoring would not be disturbed at MFA. There would be no excavation associated with the Proposed Action; therefore, no groundwater would be expected to be encountered, and dewatering would not be needed. As such, significant impacts to groundwater would not occur. Under this alternative, potential impacts to water resources would be minimized	Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, existing lead, asbestos, PCB, and other contaminants from building materials within Hangar 3 could be released into the environment, including surface waters, because no abatement of hazardous materials (lead/asbestos/PCB) would be conducted prior to cleanup. Therefore, the No Action Alternative could degrade downstream water quality through the release of hazardous and other contaminants into surface waters and result in a potentially significant impact to water resources.

Resource Area	Potential Impacts from the Proposed Action	Potential Impacts from the No Action Alternative
	through implementation of AMM-1: EIMP and would be less than significant.	

Abbreviations

µg/m^3	micrograms per cubic meter
ABAG	Association of Bay Area Governments
ACE	Altamont Corridor Express
ACM	asbestos containing materials
ADT	average daily trips
AIRFA	American Indian Religious Freedom Act
APE	Area of Potential Effects
ARC	Ames Research Center
ARPA	Archaeological Resources Protection Act
BAAQMD	Bay Area Air Quality Management District
BCDC	San Francisco Bay Conservation and Development Commission
Bay Trail	San Francisco Bay Trail
BAT	Best Available Technology
BCT	Best Control Technology
BMP	Best Management Practice
CAA	Clean Air Act
CAANG	California Air National Guard
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board

CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQ	Council of Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibels
DFSP	Defense Fuel Support Point
DPM	Diesel Particulate Matter
EA	Environmental Assessment
EAIP	Eastside Airfield Improvement Project
EIMP	Environmental Issues Management Plan
EIS	Environmental Impact Statement
Empl	Employees
EO	Executive Order
^{o}F	degrees Fahrenheit
FAA	Federal Aviation Administration

FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
G	Global ranking
GHG	greenhouse gases
GNR	global rank not yet assessed
H_2S	hydrogen sulfide
HTH	H. T. Harvey and Associates
ITE	Institute of Traffic Engineers
KOP	Key Observation Point
KPFF	KPFF Consulting Engineers
LBP	lead-based paint
L_{dn}	day-night sound level
Lease	Adaptive Reuse Lease
Leq	Equivalent Continuous Sound Pressure Level
Lmax	maximum level of a noise source
LOS	level of service
MBTA	Migratory Bird Treaty Act
MFA	Moffett Federal Airfield
mg/m3	milligrams per cubic meter
MM	Mitigation Measure
MOA	Memorandum of Agreement
MTCO2e	metric tons carbon dioxide equivalent

MTC	Metropolitan Transportation Commission
NAAQS	National Ambient Air Quality Standards
NADP	NASA Ames Development Plan
NAHC	Native American Heritage Commission
NAS	Naval Air Station
NASA	National Aeronautics and Space Administration
Navy	U.S. Navy
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_X	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPR	NASA Procedural Requirements
NRHP	National Register of Historic Places
NRP	NASA Research Park
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
PCB	polychlorinated biphenyls
PCE	passenger car equivalent
PM	particulate matter
ppm	parts per million

PPV	peak particle velocity
Project	Hangar 3 Building Demolition
PV or Lessee	Planetary Ventures, LLC
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
ROGs	reactive organic gases
RWQCB	Regional Water Quality Control Board
S	State ranking
SFBAAB	San Francisco Bay Area Air Basin
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SNR	unranked - state conservation status not yet assessed
SO_2	sulfur dioxide
sf	square feet
SR	State Route
Stantec	Stantec Consulting Services Inc.
SWPPP	Stormwater Pollution Prevention Plan
TAC	Toxic Air Contaminant
TPA	Transit Priority Area
UC	University of California
U.S. or US	United States
US 101	U.S. Highway 101
USACE	U.S. Army Corps of Engineers

USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United State Geologic Survey
v/c	volume-to-capacity
VOCs	volatile organic compounds
VTA	Valley Transportation Authority

1.0 Purpose and Need for Action

1.1 Introduction

The National Aeronautics and Space Administration (NASA) is evaluating potential environmental effects that may arise as a result of the work proposed by Planetary Ventures, LLC (PV or Lessee) to address existing hazardous structural conditions at Hangar 3. Hangar 3 is located within the NASA Moffett Federal Airfield (MFA) area at NASA's Ames Research Center (ARC). NASA entered into an Adaptive Reuse Lease (Lease) with PV in October 2014 for PV's use and occupancy of MFA. The MFA Lease includes Hangar 3 as well as other facilities (Figure 1-1). The Lessee proposes demolition of Hangar 3 to remedy its unsafe condition and eliminate the unacceptable structural hazard it poses. This Environmental Assessment (EA) has been prepared to assess the potential environmental impacts resulting from this Project. The preparation of this EA is consistent with regulations issued by the Council on Environmental Quality (CEQ), 14 Code of Federal Regulations (CFR) Part 1216.3, Procedures for Implementing the National Environmental Policy Act (NEPA), and NASA Procedural Requirements (NPR) 8580.1A, Implementing the National Environmental Policy Act. In accordance with CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508, Section 1502.13), this section specifies the purpose and need for the Project. Preparation of this EA commenced prior to September 14, 2020. This EA has been prepared in accordance with the CEQ regulations implementing the provisions of NEPA as were codified in 1978, NASA's NEPA implementing regulations (14 CFR subpart 1216.3), and applicable NASA NEPA implementation policy directives and guidelines.

Figure 1-1 Project Location

1.2 Background

Hangar 3 is a large historic structure covering approximately 16 acres. It is listed in the National Register of Historic Places (NRHP) as a contributor to the Naval Air Station (NAS) Sunnyvale Historic District and has been determined eligible for individual listing in the NRHP.

Hangar 3 was built in August 1943, immediately after Hangar 2, as part of the Navy's Lighter-Than-Air dirigible aircraft coastal defense program during World War II. While Hangar 2 was completed in 372 days, Hangar 3 was completed in a much shorter duration of 208 days (Page and Turnbull 2006). Photo 1 shows construction of both of the Hangars in 1943. Unlike Hangar 1 and its steel construction, Hangars 2 and 3 were constructed of wood since steel was used by other wartime efforts. Significant character-defining features of Hangars 2 and 3 include the following: distinctively large massing (main volume); parabolic roof with corrugated aluminum siding; massive sliding hangar doors with supporting concrete towers, wood box beams, and adjoining clamshell roof; the flanking brick masonry sheds; wood frame truss construction set on repeating concrete bents; expansive interior concrete decking; and the vast open interior volumes. Following the end of World War II, the hangars were used continuously throughout the Post-War period to support a variety of Naval aircraft missions. Hangar 3 is 171 feet high and encloses approximately 240,000 square feet (sf) of open concrete deck underneath wood trusses, and an estimated 122,000 sf of lateral shed space flanking the central volume at the east and west elevations. Hangar 2 is nearly identical to Hangar 3, both consisting of parabolic arch-shaped wood trusses that clear-span the high bay of the hangars at a distance of approximately 234 feet. The trusses are spaced approximately 20 feet on center and are supported at each end by concrete bents. Within the bent's spaces and running the entire length of the hangars on both sides are a two-story office, lab, shop, and other support facilities.

Photo 1: Hangars 2 and 3 Under Construction, 1943
Source: Moffett Field Museum

Subsequent to the original construction, a two-story lean-to structure measuring approximately 60 feet in width and 1,000 feet in length was added to the east side of Hangar 3. This addition was primarily designed for office and shop space. After NASA took over the site from the Navy in 1994, NASA leased a portion of Hangar 3 to private entities for research and development, airship production, storage, and aircraft maintenance. During this period, the California Air National Guard (CAANG) continued to use portions of the hangar for aircraft maintenance, machine shop, and office space. On behalf of NASA, the General Services Administration issued a Request for Proposals on May 28, 2013, to obtain lease proposals from qualified private entities for a 96-year adaptive reuse lease of the 1,000-acre parcel known as MFA in Sunnyvale, California. Subsequent to the Request for Proposals process, NASA selected PV as the Lessee and executed the lease on October 30, 2014. Since taking over the property in 2014, PV has invested significant capital into MFA to complete a variety of projects required to improve the condition of the property, including Hangar 3.

Hangar 3 was originally constructed in 1943 as a wood-framed glulam chord and timber arched truss structure and has experienced structural degradation over the years. Repairs began as early as 1946,

with batten strengthening (where battens were added to chords to increase stability and prevent buckling) and other strengthening measures. Numerous assessments of the hangar have been undertaken since its construction, noting structural inadequacies and life safety concerns; previous restoration efforts have occurred in 1981-87, 1993, and 1995. Figure 1-2 shows the members surveyed in recent due diligence investigations. Repairs to the glulam chords of the arched truss system[1] occurred in 1981, then 1993, and again in 2015 (Figure 1-3). The distressed condition of Hangar 3 was first observed by PV's structural consultant during the initial visual inspections in July and August 2013, with additional assessments in 2014, 2015, and 2016 (Appendix A.1 through A.3, KPFF Memos).

In August 2015, NASA approved a construction permit for emergency stabilization repairs, due to the severity of the existing damage and the immediate danger of partial, and potentially progressive, structural collapse. That permit commenced a shoring[2] and emergency repairs process that continued through the spring of 2016. Although the original intent of the emergency repair program was to return the arched trusses to their original but deficient state, the program was ultimately abandoned due to the numerous severely damaged arched trusses, as well as the damage progression to undamaged trusses which continued to occur.

Hangar 3 was initially decommissioned, or removed from service, in spring of 2017 in an effort to reduce the threat of further damage or partial collapse and based on the engineering team's observation of new and continued deterioration to a significant portion of the timber arched trusses (Appendix A-4, KPFF Memos). This damage had created an unsafe condition within certain areas of the hangar and east shed. Additional temporary shoring posts were erected several years ago, and the shoring platform was left in place to provide added protection for the building from the potential of future damage and to slow further deterioration. Figure 1-4 shows the location of temporary shoring installed in 2015 and Figure 1-5 shows the damage progression observed in 2017. The decommissioning of Hangar 3 was completed in December 2019. Under existing conditions, the concrete slab floor has some cracks and spalls. These cracks are typical for large concrete pours and do not appear to affect the structural performance of the foundation. The slab floor appears to be intact with no major swells or dips (Page and Turnbull 2006).

[1] A truss system is an arrangement of wooden support beans configured in a triangular shape. Chords are the outer layers of a truss that define the truss shape.

[2] Shoring is the process of temporarily supporting a building or structure with shores (props) when in danger of collapse or during repairs and alterations.

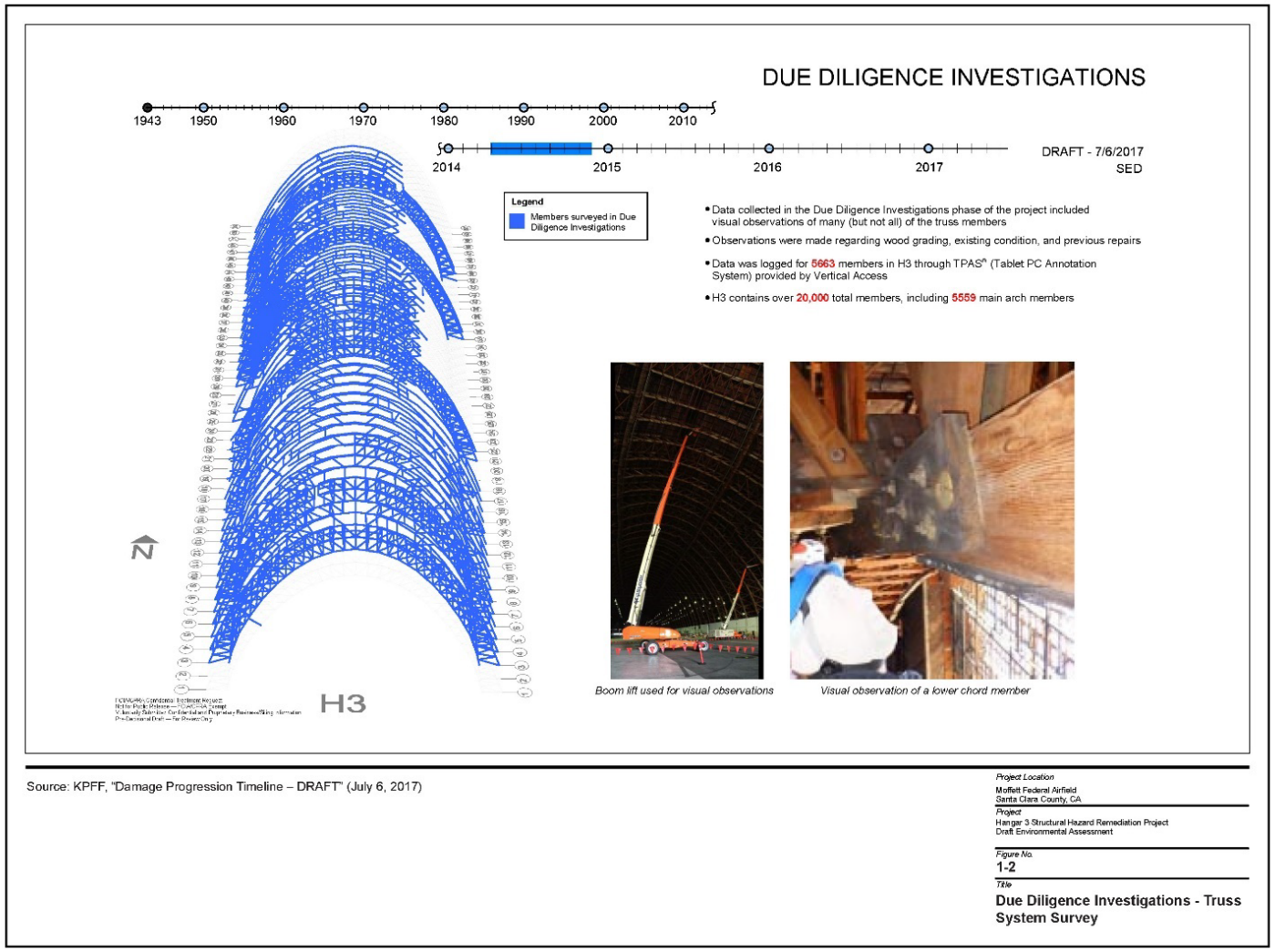

Figure 1-2 Due Diligence Investigations – Truss System Survey

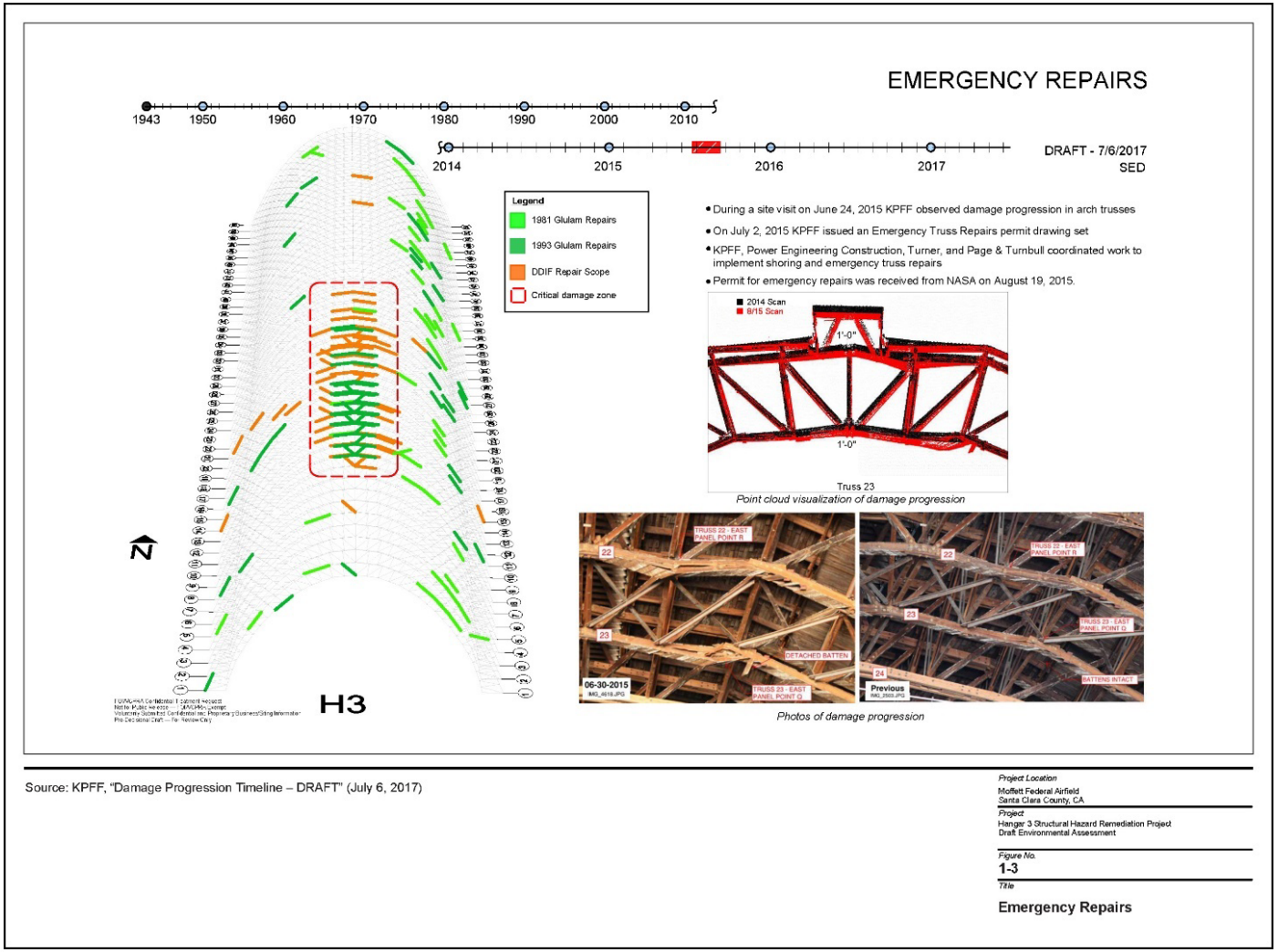

Figure 1-3 Emergency Repairs

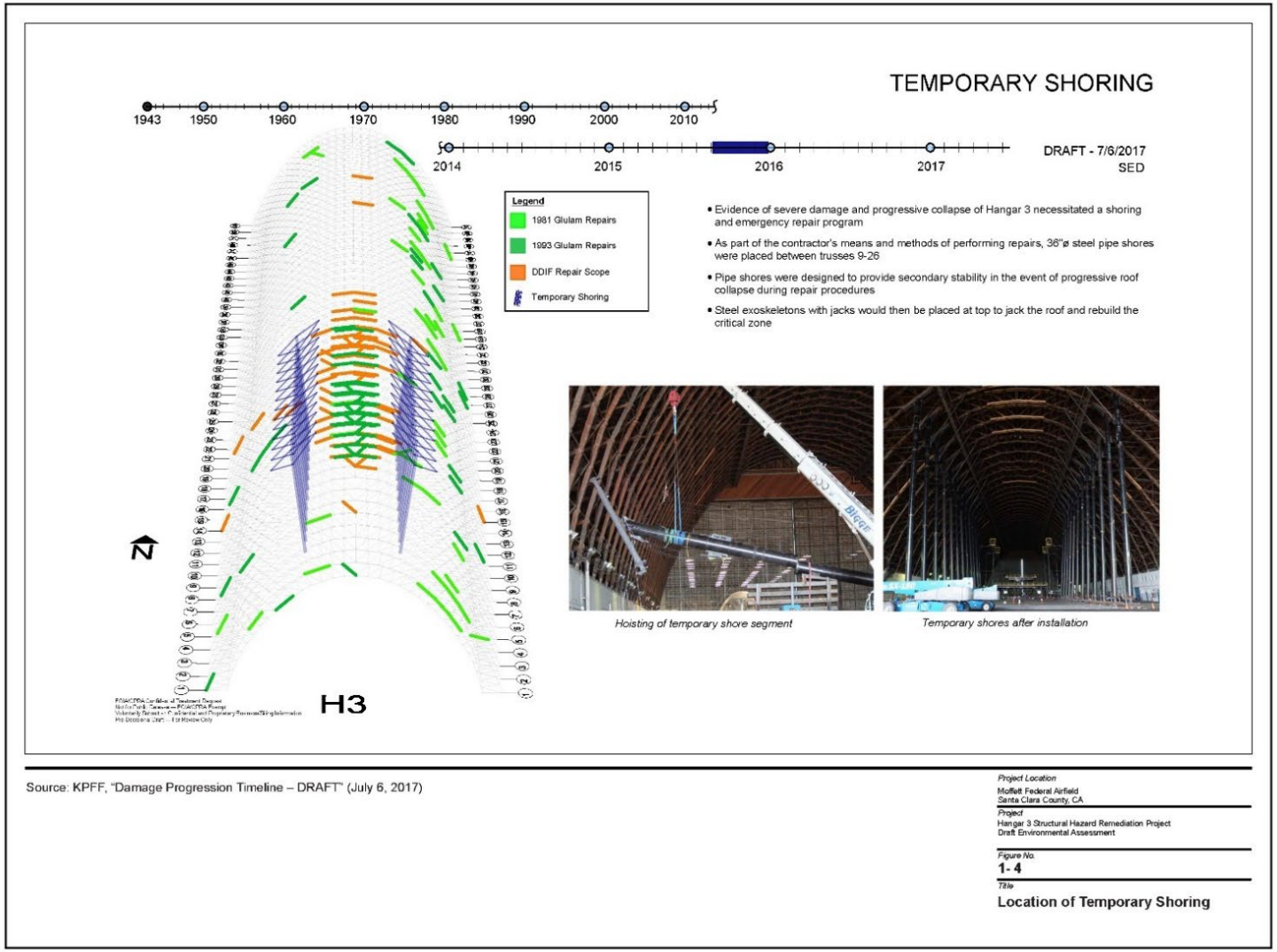

Figure 1-4 Location of Temporary Shoring

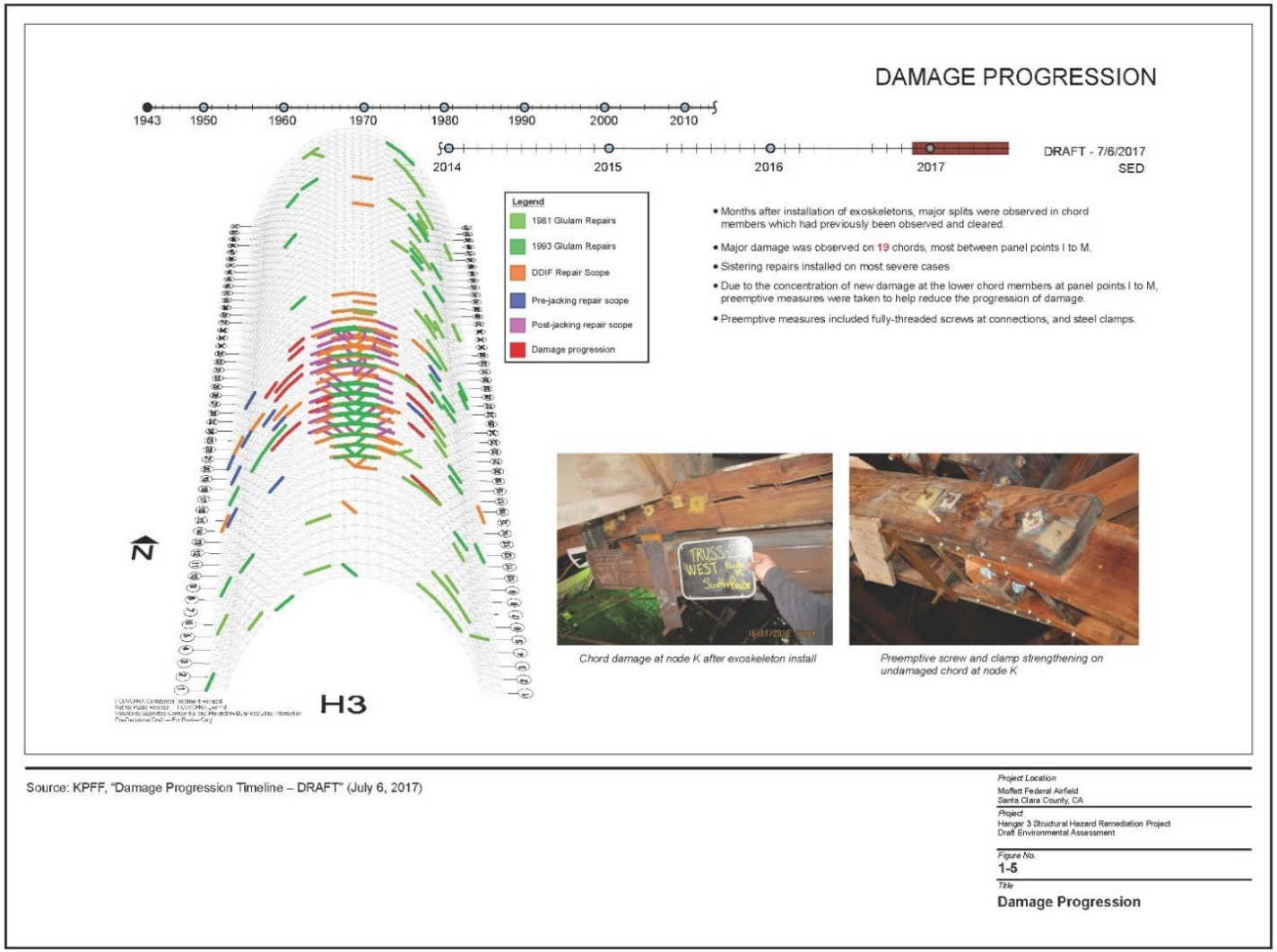

Figure 1-5 Damage Progression

Due to the progression of damage to the existing structure, a quarterly monitoring program was initiated in 2017 to evaluate the movements of the structure. Overall, the monitoring has shown that the stabilization efforts have abated further deterioration. While a temporary internal shoring and hydraulic jacking system is in place, the building is currently unsafe for occupancy and vulnerable to further damage and collapse, especially from seismic or high wind load events.

1.3 Purpose and Need

NEPA regulations require that a federal agency describe the purpose and need for the Proposed Action. In proposing to lease the MFA premises, NASA identified several criteria that provide the overall context and foundation for the purpose of this Project, including eliminating NASA's escalating operating and maintenance requirements for MFA. Based on the terms of the lease, it was anticipated that Hangar 3 would be rehabilitated for use as a research and development facility. However, since the effective date of the Lease, ongoing efforts to rehabilitate Hangar 3 have proven to be ineffective. While PV has undertaken significant efforts to repair the damaged trusses since commencing the Lease, it was not possible to keep up with the damage progression continuously advancing throughout the structure (Appendix A.4, KPFF Memos). Shoring and bracing has been installed to temporarily reduce the chance of further collapse under normal conditions (Appendix A.4, KPFF Memos). The building is currently unsafe for occupancy and vulnerable to further damage and collapse, especially from seismic or high wind load events. The unstable condition of Hangar 3 does not meet NASA's obligation to manage historic structures in accordance with the National Historic Preservation Act (NHPA), California Building Code 2016 (Chapter 1, Part 2, [A] 116.1 - Unsafe Structures and Equipment), and 2019 California Building Code Section 102.6.2). The purpose of the Project is to remedy this unsafe and non-compliant condition and eliminate an unacceptable structural hazard. The need for the Project is a long-term solution that eliminates the potential for continued degradation or collapse of Hangar 3 under normal or adverse conditions, thereby protecting life and property.

1.4 Regulatory Framework

Table 1-1 lists statutes, regulations, Executive Orders (EOs), as well as NPRs, NASA Policy Directives, and NASA Policy Guidance that potentially apply to the scope of this EA. Potentially applicable regulations are cited in resource sections below.

Table 1-1 Summary of Potentially Applicable Regulatory Requirements

Statutes
NEPA of 1969 (42 United States Code [USC] Section 4321-4347)
NHPA of 1966 (16 USC Section 470 et seq.) (89 Public Law 966)
Clean Air Act (CAA) of 1970 as amended (42 USC Section 7401 et seq.)
Clean Water Act (CWA) of 1977 as amended (33 USC Section 1251 et seq.)
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 USC Section 9601 et seq.)
Archaeological and Historic Preservation Act (1974)
American Indian Religious Freedom Act (1978)
Archaeological Resource Protection Act of 1979 (16 USC Section 470aa-mm)
Native American Graves Protection and Repatriation Act (1990)
Endangered Species Act of 1973 (16 USC Section 1531-1544)
Resource Conservation and Recovery Act (42 USC Section 6901 et seq.)
Regulations
CEQ Regulations (40 CFR Parts 1500-1508)
14 CFR Subpart 1216.3 – NASA Regulations for Implementing NEPA
36 CFR Part 800 – Protection of Historic Properties
32 CFR Part 229 – Protection of Archaeological Resources: Uniform Regulations
40 CFR Parts 6, 51, and 93 – Conformity of General Federal Actions to State or Federal Implementation Plans
29 CFR Part 1910 – Occupational Safety and Health Standards
40 CFR Part 261 – Regulation on Identification and Listing of Hazardous Waste
40 CFR Part 279 – Regulation on Standards for the Management of Used Oil

40 CFR Parts 300-399 – Hazardous Substance Regulations
40 CFR Part 302 – Regulation on Designation, Reportable Quantities, and Notification
40 CFR Part 61 Subpart M – National Emission Standard for Asbestos
Secretary of the Interior Standards and Guidelines for Archeology and Historic Preservation (Federal Register Vol. 48, No. 190, 44716-44742)
Executive Orders
EO 11593 – Protection and Enhancement of the Cultural Environment
EO 12898 – Environmental Justice
NASA Procedural Requirements, Policy Directives, and Policy Guidance
NPR 8553.1, “NASA Environmental Management System”, July 1, 2020
NPR 8580.1A, “Implementing the National Environmental Policy Act and EO 12114”, August 1, 2012
NASA ARC “Stormwater Pollution Prevention Plan,” June 2021
APR 8500.1 “Ames Environmental Procedural Requirements” October 27, 2020

1.5 Environmental Review Process

Consistent with NPR 8580.1 Section 2.3.1(a), NASA prepared a Public Involvement Plan to encourage dialogue and sufficiently inform the public and resource agencies during the planning process. In accordance with the CEQ regulations (40 CFR Parts 1500-1508) and NASA Regulations (14 CFR Subpart 1216.3) for implementing NEPA, NASA is soliciting comments on the Draft EA from the public including agencies and interested parties. The Draft EA is being released for a 30-day review and comment period. Per NPR 8580.1A (Section 2.4.2), a Notice of Availability for the Draft Finding of No Significant Impact and accompanying EA has been published in the following newspapers for one day: Mountain View Voice; Palo Alto Weekly; Sunnyvale Sun; and San Jose Mercury News. In addition, the Draft EA is available for review at the City of Mountain View Public Library and the City of Sunnyvale Public Library. NASA has also notified community organizations, elected officials, businesses, federal, state, and local agencies, and other interested parties including the NASA Ames community of the Draft EA’s availability for comment.

Following the 30-day comment period on the Draft EA, NASA will review and address all comments as part of the administrative record. Responses to comments will be included as an appendix in the Final EA.

2.0 Description of Proposed Action and Alternatives

This section describes details related to the Proposed Action (Building Demolition) and the No Action Alternative evaluated in this EA. Guidance for complying with the NEPA and NPR 8580.1A requires an assessment of potentially effective and reasonably feasible alternatives. Details related to the proposed alternatives, as well as a description of alternatives that were considered but eliminated from further analysis, are provided below.

2.1 Introduction

The proposed alternatives, described below, were screened against the following criteria:

- An alternative must eliminate existing life safety and property damage hazards created by the deteriorating condition of Hangar 3 in a timely manner.
- An alternative must be reasonably feasible from a cost, logistical, and engineering perspective.

Alternatives not meeting these criteria were not carried forward for further analysis within this EA (see Section 2.4, Alternatives Considered but Eliminated).

2.2 Proposed Action – Building Demolition

This alternative, previously referred to as Structural Hazard Remediation in the supporting studies found in the appendices, would involve the demolition of Hangar 3 (including removal and management of contaminated materials, equipment, and environmental media[3]) to remedy its unsafe condition and eliminate the unacceptable structural hazard it poses. Prior to initiation of any construction activities associated with demolition of Hangar 3, the Lessee or contractor would comply with Title 14, CFR, Part 77, and submit plans to the Federal Aviation Administration (FAA) Form 7460-1, Notice of Proposed Construction or Alteration for review and approval. The total area bounded by the temporary fence line associated with demolition, including equipment staging, is estimated to encompass 784,000 sf (approximately 18 acres) as shown in Figure 2-1. Upon completion of the Proposed Action, all above ground Hangar 3 components would be removed and only the concrete slab would remain, consistent with pre-Project conditions. No land use is planned for the site after demolition. The following activities are anticipated to occur in phases under this alternative.

[3] Soil, water, air, plants, and animals, or any other parts of the environment that can contain contaminants.

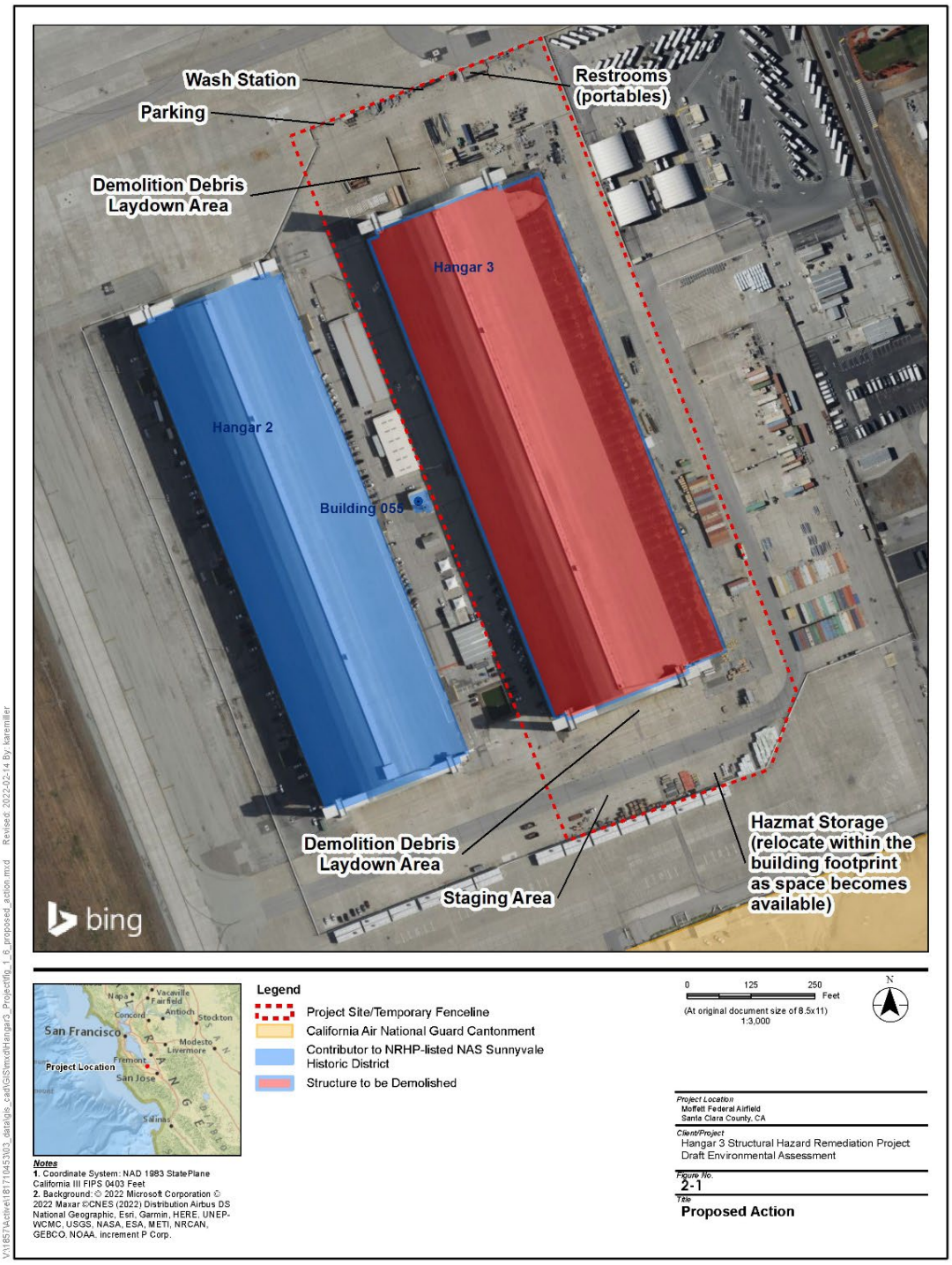

Figure 2-1 Proposed Action

2.2.1 Phase 1 – Pre-Demolition Activities

Phase 1 would commence with installation of a 6-foot-high temporary fence around the demolition area to control entry within the work area, as shown in Figure 2-1. All of the work would be within the fenced area, including all staging and laydown areas. Prior to demolition, a pre-demolition survey would be conducted to characterize non-hazardous and hazardous materials including lead and asbestos containing material (ACM) in accordance with the framework established by applicable federal, state, and local regulations. All features of Hangar 3 would be inspected for flaking paint, soil staining, or other conditions that could affect the demolition of Hangar 3. The roof would be evaluated for the presence of any fire-proofing material prior to abatement. If material deemed to be hazardous is found, encapsulation (or containment) would be considered prior to abatement by covering the material with an appropriate spray. The contractor would prepare an ACM and lead-based paint (LBP) abatement plan that would adhere to the U.S. Environmental Protection Agency (USEPA) and the Bay Area Air Quality Management District (BAAQMD) requirements. Structural features would be contained, and any LBP and ACM from non-metal components would be removed prior to demolition and transported and disposed of at an appropriate disposal facility. PV would coordinate these activities with NASA.

Pre-demolition activities would require installation of scaffolds for workers, and all scaffolding would be removed as necessary once Phase 1 is complete. A site-specific health and safety plan would be prepared for all phases of the Project and shared with all on-site workers including other staff such as biologists conducting surveys, monitors, etc.

2.2.2 Phase 2 – Demolition Activities

Hangar 3 is primarily constructed of lightweight material and is currently supported by a system of large pipe shores, steel exoskeletons, and an internal shoring and hydraulic jacking system that was installed in 2015 (Figure 2-2 and Figure 2-3). Demolition activities would commence from the outside of the building by first removing outside doors, then moving on to the high end of the bay and working from south to north. A bay is approximately 20 to 40 feet between trusses, and bays would be removed one at a time. Materials demolished would either be tethered and mechanically lowered to the floor or would be mechanically cut and dropped onto the floor. Steel trench plates would be placed on the slab to protect underground communication infrastructure and vaults. The trusses would be supported by the existing hydraulic jack system that would remain in place until trusses were removed. Once all the trusses were removed, the concrete bents and brick masonry shed structures, the door towers, box beam, and door tracks would be demolished (Figure 2-2). The bents and the brick walls would be demolished last. A

structural engineer would inspect and validate whether the bents are self-supporting and not relying on the removed structure for structural stability. Temporary shoring may be required if bents would become structurally unstable.

Demolition would remove all above ground components. No work is proposed to occur below the slab. The door track system would be chipped with a concrete cruncher and potentially crushed to a size consistent with Class 2 baserock specifications (size range from 0.75 inch to fine dust). All debris would be mechanically tipped toward the inside of Hangar 3 to control the footprint of the demolition. Dust control measures required by the BAAQMD would be implemented during demolition. Water would primarily be used for dust control and wetting ACM, as needed. Water would either be provided by nearby hydrants or water trucks. Water use is expected to be no more than 5,000 gallons per day. All water used for dust control would be collected in covered and secured Baker tanks and tested prior to being transported offsite or discharged to the sanitary sewer. The specific location of Baker tanks would be determined during final design but would be located within the temporary fence line shown on Figure 2-1.

Building 055 is located approximately 50 feet from Hangar 3 and could be temporarily covered with plywood if determined necessary to protect the building from inadvertent flying debris. Hangar 2 is located farther away at approximately 200 feet from Hangar 3 and would not be impacted from demolition activities. In addition, protective screens to prevent flying debris would be installed within the fence line to ensure the safety of nearby structures. The fence would be outside of the airfield operations area so that Project activities would not need to be coordinated with airfield operations. However, the Lessee or contractor would notify FAA of the construction activities. Demolition activities would be temporarily stopped when sustained winds, or gusts, reach or exceed 25 miles per hour to prevent flying debris and possible dust migration.

2.2.3 Phase 3 – Waste Disposal and Recycling

All waste materials would be characterized in Phase 1 and in Phase 2, and waste disposal and recycling (Phase 3) would occur concurrently throughout the Project[4]. In Phase 1, *in situ* characterization would be completed to characterize materials in place before demolition to assist in efforts to segregate non-hazardous wastes from hazardous or incompatible wastes during demolition. There may be some hazardous waste generated during Phase 1 that would be managed in compliance with applicable regulatory requirements and disposed of at a facility permitted to accept them.

[4] Phase 3 would be concurrent with Phases 1 and 2.

In Phase 2, materials removed would be characterized after demolition but before being loaded onto trucks or trailers for transport to an offsite approved construction waste facility. Waste contents would be confirmed by the demolition contractor or via sampling before transferring offsite, and wastes would be managed in compliance with applicable regulatory requirements. All hazardous materials from demolition would be staged in a hazardous materials storage area within the fenced work area (Figure 2-1).

Throughout Phase 2, the handling and management of waste generated during demolition would follow a hierarchical approach of source reduction, recycling, treatment, and disposal to the extent possible. Non-hazardous materials that were determined to be candidates for recycling would be separated from other materials and would be transported to a licensed recycling facility to reduce the amount of waste being disposed of at landfills. Potentially reusable electronic and electrical devices and components (such as wiring) would be segregated for reconditioning. Depending on the types, sizes, volumes, hazardous contents, or ultimate destinations of materials, containment would be in drums, cubic yard boxes, roll-off bins, lined trucks or trailers, or tanks to prevent the release of materials or hazardous contents. Bins containing hazardous wastes would be kept securely closed, except when wastes would be transferred into or out of them and would be manifested and transported for offsite disposal. Clean up and disposal of all debris would occur in accordance with foreign object debris, health and safety, and environmental requirements.

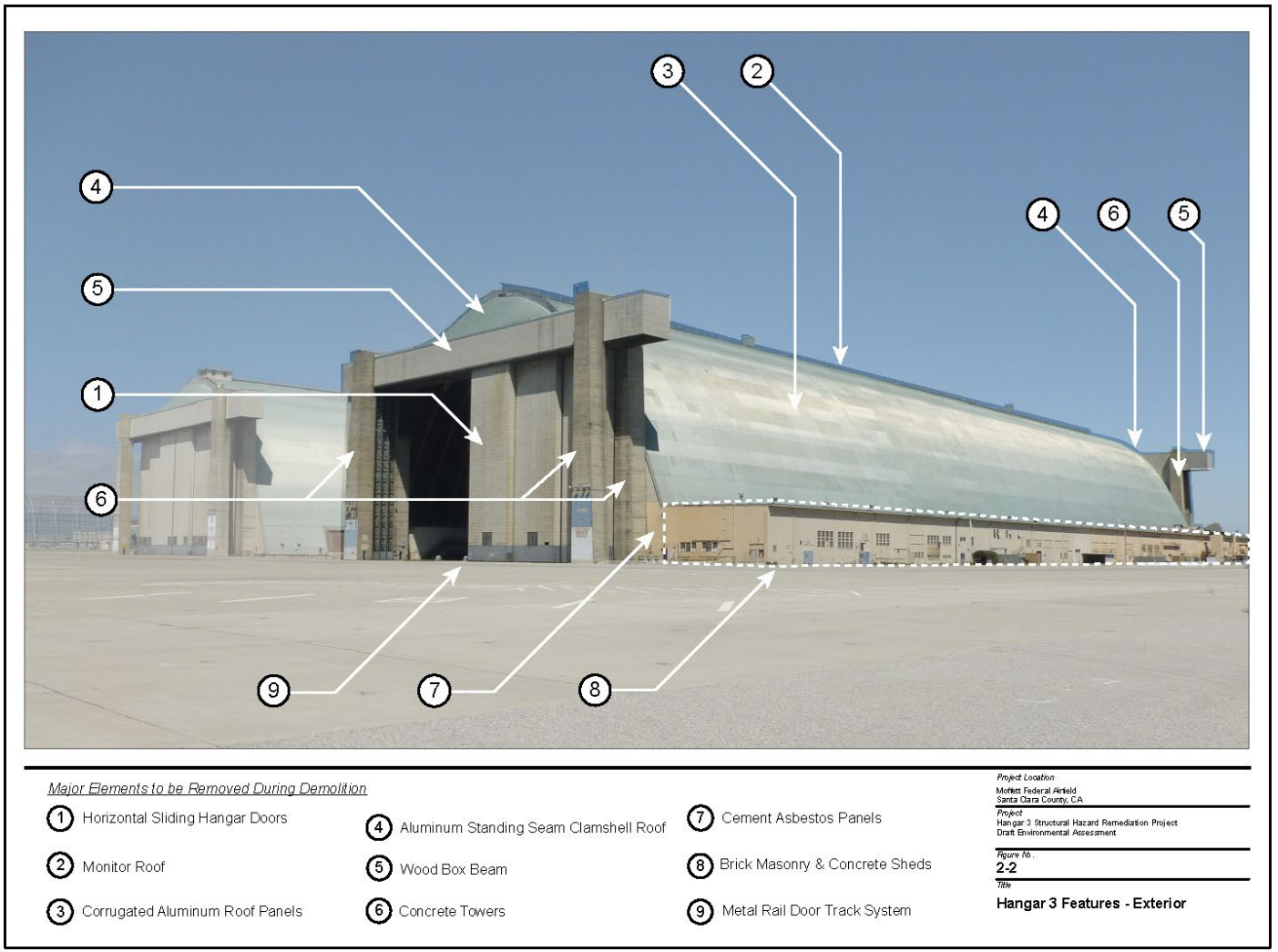

Figure 2-2 Hangar 3 Features – Exterior

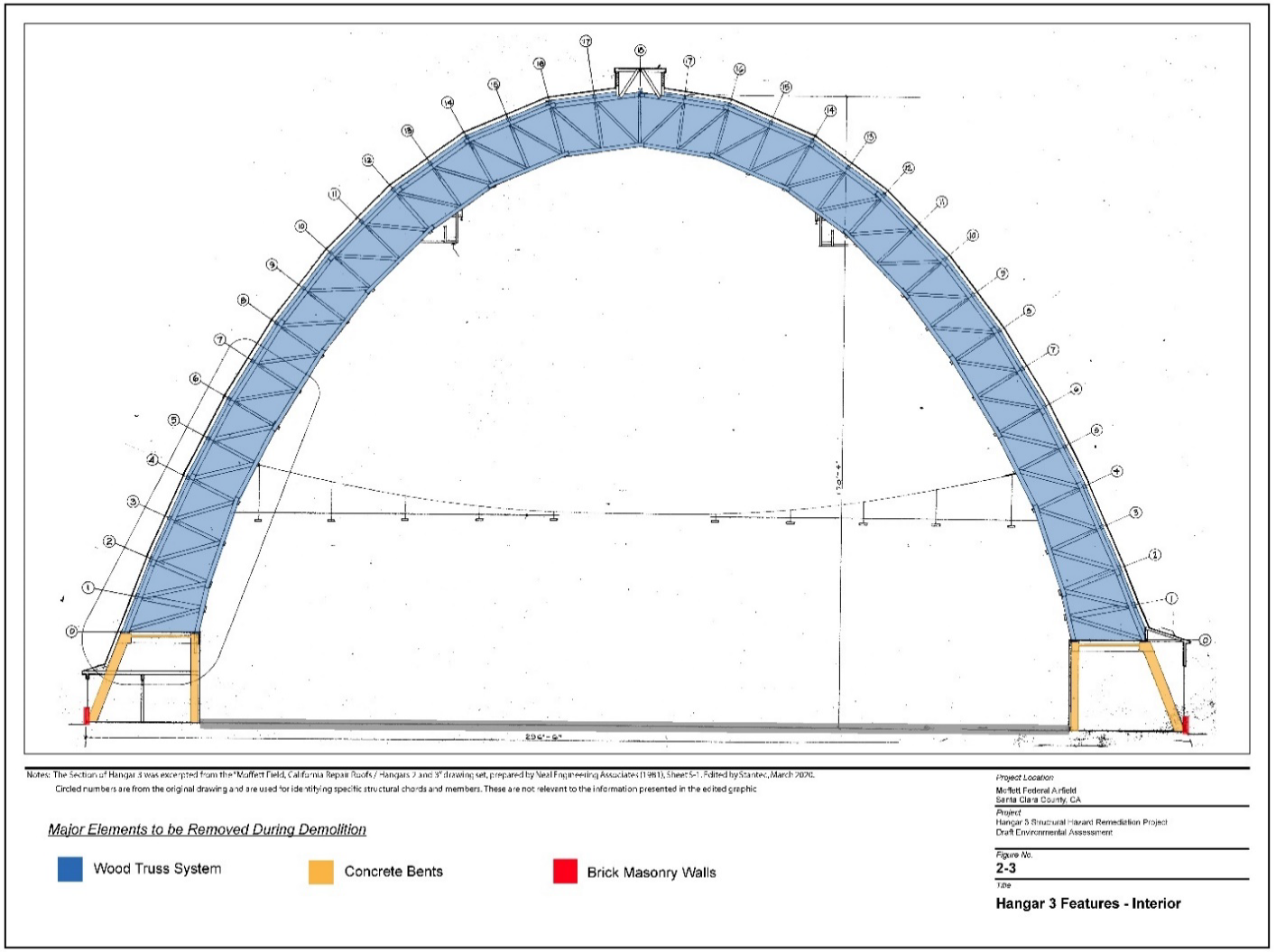

Figure 2-3 Hangar 3 Features – Interior

The approximate amount of demolition material to be generated would include 6,000 tons (4,000 cubic yards) of debris, 650 tons (435 cubic yards) of bricks, and 30,500 tons (20,300 cubic yards) of concrete from bents and support structures. Most of this could be transported offsite to a recycling facility, including bricks, and at least 90 percent of the material would be expected to be salvaged. The demolished material would likely be transported to the following facilities (other facilities might be used once demolition begins) and identified for possible export, resale, disposal, or reuse:

- Non-hazardous waste would be transported to either Zanker Recycling or Guadalupe Landfill; and
- Hazardous waste would be transported to either Kettleman Hills Hazardous Waste Facility or US Ecology Nevada, Inc.

2.2.4 Utilities

There are existing underground utilities near and around Hangar 3. A low-pressure water line is installed to the north and south of Hangar 3, and along the east and west facades. A sanitary sewer line runs from the CAANG Cantonment along the east side of Hangar 3. A separate sewer line that serves the area east of the airfield is installed along the west side of Hangar 3. Storm drains are also installed to the west and east of Hangar 3. An electrical feeder line and a telecommunication line run underneath the center of Hangar 3 in the east-west direction. Both lines cross the airfield and connect to the NASA Research Park to the west.

Prior to pre-demolition and/or demolition, all existing service connections to Hangar 3 would be capped in accordance with NASA's Underground Utility Abandonment Requirements and Procedures. Above-ground water line connections serving Hangar 3 would be drained, terminated, and capped at the connection to the service line where it goes below ground. No subsurface activity would occur in the area of the Proposed Action. Existing transformers and above-grade electrical facilities serving Hangar 3 would be demolished in accordance with Avoidance and Minimization Measure (AMM)-1: Environmental Issues Management Plan (EIMP) described in Section 2.2.7, Avoidance and Minimization Measures, below. All underground NASA communication infrastructure and vaults would be protected during demolition by placing steel trench plates on the slab. Active utility infrastructure connected to Hangar 3 or in areas anticipated to be disrupted would be identified and capped before initiating any site work. If any utilities could not be protected in place and would need to be rerouted, reroutes would occur within the Proposed Action footprint either on the north or south side and would be determined during final design. There are no known utility lines feeding from Hangar 3 to other users in the MFA Lease Area.

2.2.5 Construction Activities and Schedule

Construction activities for the Proposed Action would occur in two distinct, phases: pre-demolition and demolition. Phase 3, waste disposal and recycling, would be concurrent with Phases 1 and 2. The total duration for all phases would take approximately nine months starting in 2022. Pre-demolition would be anticipated to take approximately 80 to 90 working days demolition would take approximately 125 working days. Hazardous waste may be generated during pre-demolition (Phase 1) activities requiring an average of two truck trips per day for a total of four daily truck trips (two inbound, two outbound). The number of truck trips for Phase 2 would vary from 10 to 100 one-way trips per day. Demolition and transport activities would typically occur during daylight hours from 7:00 AM to 3:30 PM on weekdays. Up to 50 workers could be on-site per day during pre-demolition, and 20 workers would be anticipated to be on-site during demolition activities. Approximate locations for equipment staging are shown in Figure 2-1 but would be confirmed on-site during demolition activities. Construction equipment to be used would include demolition excavators, crane, manlift, skid steer, water trucks, and dump/haul trucks. Once construction was completed, all temporary laydown and staging areas would be removed and restored to pre-Project conditions to the extent feasible.

2.2.6 Access Routes

Construction-related traffic is expected to follow two routes to the Project site. Construction truck traffic would be expected to travel along Macon Road between the Project site and the 5th Avenue Gate. Construction workers would travel along Macon Road between the Project site and the Ellis Street Gate. Both truck and worker traffic would travel to the gates via State Route (SR) 237 and U.S. Highway 101 (US 101). Both SR 237 and US 101 are located approximately one mile south of Hangar 3 and would be the most logical routes to and from the site for haul-in and haul-out and for construction personnel. A detailed construction traffic route to Hangar 3, with appropriate traffic controls, would be developed as part of Phase 1 efforts, as noted in the AMM-3: Construction Traffic Control Plan (describe in Section 2.2.6, Access Roads below); however, no new access road would be needed.

2.2.7 Avoidance and Minimization Measures

The general avoidance and minimization measures (AMMs) described here have been developed to avoid and minimize effects that could result from the Project. As such, these AMMs would be implemented as part of the Proposed Action.

AMM-1 - Environmental Issues Management Plan (EIMP). The Lessee has prepared an EIMP, dated 2017, which has been approved by the USEPA and the San Francisco Regional Water Quality Control

Board (RWQCB) that identifies measures specific to the Project site that shall be implemented during all construction activities related to the Proposed Action. The EIMP includes detailed procedures and measures to address known environmental conditions as well as contingency actions to be taken if previously unknown environmental conditions are encountered within the MFA Lease area. Project construction/demolition activities shall comply with the EIMP requirements. Risk management measures described in the EIMP are briefly summarized below:

- 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. The following protection measures shall be implemented during construction:

- Truck traffic associated with demolition work is expected to travel along Macon Road between the Proposed Action site and the 5th Avenue Gate. Demolition workers would travel along Macon Road between the site and the Ellis Street Gate. Neither the truck traffic nor worker traffic would pass through any noise-sensitive neighborhoods before merging onto the freeway.
- All demolition activities would 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.

- Hangar 2 and Building 055 would be protected by carefully lowering materials to the floor of Hangar 3. All demolition materials would either be tethered and mechanically lowered to the ground or mechanically cut and dropped to the floor. If materials are dropped to the floor, consideration would be made including limiting fall distances and the weight of the material being dropped to minimize impacts to the slab. Reducing stress on the slab lowers the vibrational energy that enters the slab and reduces the vibration impact that could propagate through the ground to Hangar 2 and Building 055.
- The trusses would be supported by the existing hydraulic jack system that would remain in place until trusses were removed, thus limiting the opportunity for structural elements to fall to the slab reducing the vibration energy that enters the slab.

AMM-3 – Construction Traffic Control Plan. The Lessee shall 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. The approved Construction Traffic Control Plan would be followed for the duration of project activities.

2.3 No Action Alternative

For the purpose of this analysis, the No Action Alternative considers a continuation of current activities, and Hangar 3 would not be demolished and remain unoccupied. Maintenance of the temporary internal shoring and hydraulic jacking system would continue under this alternative to try to maintain structural integrity, and no further attempts to complete structural upgrades on Hangar 3 would be undertaken. No use of Hangar 3 would be allowed. Under the No Action Alternative, there is a potential for physical hazards from structural failure.

2.4 Alternatives Considered but Eliminated

2.4.1 Reconstruction of Hangar 3

The possibility of fully stabilizing and rehabilitating Hangar 3 was also assessed. However, full rehabilitation that does not require destruction of the essential components that make Hangar 3 a valuable historic structure would not be feasible (essential components include: parabolic roof; sliding

hangar doors with supporting concrete towers, wood box beams, and adjoining clamshell roof; wood frame truss construction set on repeating concrete bents; expansive interior concrete decking; and the vast open interior volumes). From a construction standpoint, it is not feasible to replace damaged components in sequence (i.e., remove and replace individual components). Full rehabilitation of Hangar 3 would require bringing the structure up to code; however, in order to bring the structure into prevailing seismic code regulations for safety, Hangar 3 would effectively have to be deconstructed and then reconstructed into an entirely new structure using new materials. The cost for reconstruction of the hangar would be more than 50 times higher than the Proposed Action and is not reasonably feasible from a cost perspective; therefore, this alternative does not meet NEPA regulations and CEQ guidance for a reasonable alternative.

2.4.2 Partial Preservation of Hangar 3

A partial preservation of Hangar 3 was considered that would have removed the safety hazard associated with the main hangar structure while restabilizing and preserving independent features of the structure. This alternative is referred to as Alternative 2 – Partial Preservation in the supporting studies found in the appendices. Under this alternative, the two sets of concrete towers and box beam structures (at the northern and southern ends) would be retained, and the entire main hangar structure would be demolished. Appendix A, KPFF Memos provides memorandums that address the feasibility of retaining portions of Hangar 3. Under this alternative, both sets of hangar doors, machinery, and existing tracks would be removed with the demolition of the main hangar structure. Demolition activities related to this alternative would include the three phases discussed in the Proposed Action. This alternative would also include an additional Phase 4 for activities required for abatement and stabilization of the remaining Hangar 3 elements. These activities would include: 1) box beam rehabilitation, shoring, and strengthening; 2) concrete door tower rehabilitation and strengthening; and 3) foundation strengthening. The total duration for this alternative would take approximately 21 months.

The costs associated with the partial preservation of Hangar 3 was determined to be considerably higher than the Proposed Action. This alternative would also effectively reduce Hangar 3 to two smaller structures, which would relate in form to each other, but would, as a result, contrast with the overall visual character of Hangar 2. Therefore, this alternative was dismissed from further study.

3.0 Affected Environment and Environmental Consequences

NEPA requires that the analysis address areas and components of the environment that may be potentially affected and eliminate issues that are not relevant to the scope of analyses consistent with CEQ regulations in 40 CFR 1500. As directed by NEPA, CEQ regulations on implementing NEPA (40 CFR 1500-1508), NASA's regulations for implementing NEPA (14 CFR 1216), and NASA NEPA management requirements (NPR 8580.1A), the description of the affected environment focuses on those resource areas potentially subject to impacts. Therefore, the level of detail used in describing a resource is in accordance with the anticipated level of environmental impact. An EA has been prepared for NASA to evaluate potential effects that could occur as a result of the work proposed by the Lessee to address existing hazardous structural conditions at Hangar 3. The preparation of an EA was determined to be the appropriate level of analysis as the Proposed Action is not anticipated to result in significant impacts to the environment.

Section 3.1, Environmental Resources Eliminated from Detailed Consideration discusses which resources were eliminated from detailed consideration, and Section 3.2, Environmental Resources Included for Detailed Consideration analyzes those resources considered for detailed analysis. Each environmental resource discussion begins with an explanation of the affected environment and ends with a discussion of potential environmental consequences. The affected environment for each relevant environmental resource is described to provide meaningful points from which the public and agency decision-makers can compare potential future environmental, social, and economic effects. The baseline conditions described in this section constitute conditions under the No Action Alternative. Additionally, the geographic area over where an effect may occur is defined for each resource analyzed. For the purpose of analysis, Project area refers to the general vicinity around the specific Project site.

Potential impacts have been evaluated to determine whether they would constitute a "significant effect" on a particular environmental resource area. The terms "impact" and "effect" are used synonymously in this EA. Impacts occurring only during construction are described as short-term or temporary. In this EA, "construction" refers to the demolition of Hangar 3. Impacts may apply to the full range of natural, aesthetic, historic, cultural, and socioeconomic resources.

The following resources were eliminated from detailed analysis in the EA: floodplains and wetlands; geological resources; land use; and socioeconomics and environmental justice. The following were carried through for detailed analysis: air quality; biological resources; cultural resources; greenhouse

gases (GHG) and climate change; hazards, safety and waste management; noise and vibration; transportation and circulation; utilities; visual resources; and water resources. The following supporting technical studies were conducted in preparation of this EA: Air Quality CalEEMod Modeling (Appendix B); Section 106 Report (Appendix C); Noise Technical Memorandum (Appendix D); and Traffic Analysis Memorandum (Appendix E).

3.1 Environmental Resources Eliminated from Detailed Consideration

It was determined that the following environmental resources either would not be present or would not be impacted by the Project: floodplains and wetlands (Section 3.1.1); geological resources (Section 3.1.2); land use (Section 3.1.3); and socioeconomics and environmental justice (Section 3.1.4).

3.1.1 Floodplains and Wetlands

Historically, flooding at ARC, primarily in the northern portions of the site, originated from the San Francisco Bay and Stevens Creek. Improvements to the bay-side levees and subsequent flood control improvements to Stevens Creek have provided greater protection from flooding in recent years but have not removed the risk entirely. The stormwater drainage and retention systems at ARC lack the capacity to handle high water volumes and have on occasion caused general and localized flooding in certain areas during peak rainfall events (NASA 2015). Per Federal Emergency Management Agency Flood Insurance Rate Map No. 06085C0045H, MFA is located within an area designated as Zone D, indicating areas of undetermined, but possible, flood hazards. Modeling shows roughly the northern third of MFA would be affected during the 100-year flood (NASA 2015). However, the Project would not directly or indirectly impact floodplains since the amount of impervious area, runoff volume, and drainage patterns would stay the same as under existing conditions. The Project site is approximately 1.5 miles from the nearest tsunami inundation area and impacts from a tsunami are not anticipated (California Department of Conservation 2020).

The Project site is limited to the area immediately surrounding Hangar 3, a developed site not located within or near a wetland (NASA 2002) or near any water bodies. The nearest water body to the Project area is associated with Marriage Road Ditch approximately 1,000 feet north of the Project area. Under existing conditions, stormwater from the airfield (including Hangar 3) discharges to the Marriage Road Ditch. Demolition of Hangar 3 would not have a significant impact on the ditch as the stormwater runoff volume and rate from the Project site would remain the same under after demolition. Surface water quality impacts are discussed in Section 3.2.10, Water Resources.

3.1.2 Geological Resources

Geological resources include soil types and their engineering properties, and the potential for seismic hazards such as surface fault rupture, strong seismic ground shaking, and liquefaction. Paleontological resources consist of the fossilized remains of ancient plants and animals.

There are no active faults near ARC. Furthermore, ARC is not within any Earthquake Fault Zone as identified by the Alquist-Priolo Earthquake Fault Zoning Act. Consequently, surface rupture is considered unlikely. Nonetheless, because several active faults are in the region (San Andreas, Hayward, and Calaveras) the Project site could experience strong ground shaking from earthquakes (NASA 2015). According to the United States Geologic Survey (USGS), the MFA is in an area identified as having a high risk of liquefaction (USGS 2021). The Project would result in demolition of an above-ground structure that has occupied the site for approximately 77 years and would not include any subsurface work or ground disturbance. Therefore, the Proposed Action would have no impact from soil resources or on paleontological resources. The Project will not result in the construction of any new structures that will be at risk of liquefaction or strong seismic ground shaking. Construction best management practices (BMPs) intended to address potential effects of soil erosion on water quality are discussed in Section 3.2.10, Water Resources and no topographical alterations would occur from the Project. Therefore, there would be no significant construction and/or operation-related impacts to geological resources from the Project.

3.1.3 Land Use

The Proposed Action would involve the demolition of Hangar 3. Any land use impacts from construction activities would be localized, temporary, and minimal. Once construction was completed, all temporary laydown and staging areas would be removed and restored to pre-Project conditions to the extent feasible. The Project does not have any operational uses and would not foreclose or impede the future use of the airfield in accordance with the applicable policies of the San Francisco Bay Plan (Bay Plan) as adopted by the San Francisco Bay Conservation and Development Commission (BCDC).

BCDC is a state agency created by the McAteer-Petris Act of 1965 (Cal. Government Code sections 66600 et seq.) to regulate the filling, dredging, and changes in use in the San Francisco Bay. BCDC has permit jurisdiction over shoreline areas subject to tidal action up to the mean high tide line, including all sloughs, tidelands, submerged lands, and marshlands lying between the mean high tide and 5 feet above mean sea level for the nine Bay Area counties with Bay frontage. In addition, BCDC regulates new development within 100 feet of the shoreline to ensure the provision of public access to and along the San Francisco Bay. BCDC is also responsible for ensuring that shoreline property suitable for regional

high-priority water-oriented uses, such as ports, water-related industry, water-oriented recreation, airports, and wildlife areas, is reserved for these purposes (BCDC 2021). In addition to its permit authority under state law, BCDC exercises authority under Section 307 of the federal Coastal Zone Management Act (16 U.S.C. section 1456) over federal activities and development projects and non-federal projects that require a federal permit or license or are supported by federal funding. The consistency provisions of Section 307 of the Coastal Zone Management Act provide that any federal activity, including a federal development project, which affects any land or water use or natural resource of BCDC's coastal zone, must be conducted in a manner that is "consistent to the maximum extent practicable" with the enforceable policies of the BCDC's federally-approved coastal management program. Similarly, any nonfederal activity that requires either a federal permit or license or is supported by federal financial assistance that affects BCDC's coastal zone must be conducted in a manner that is fully consistent with the enforceable policies of the BCDC's federally-approved coastal management program, including the McAteer-Petris Act and the Bay Plan (BCDC 2021).

The Project would not involve any construction activities at or near the shoreline of the Bay or within BCDC's 100-foot shoreline band. Further, the Project would not result, either directly or indirectly, in any fill of any portion of the Bay, or of any wetlands, tidal marshes or mudflats, or other aquatic features or resources. The Project would not have an adverse effect on coastal resources within BCDC's jurisdiction, or on the implementation and attainment of the governing objectives and policies of BCDC's Bay Plan.

The Project site is a small portion of the MFA, which is identified as an "Airport" in Plan Map 7 of the Bay Plan. The Bay Plan states MFA is not within BCDC permit jurisdiction, and if and when the airfield is not needed by the Navy, the site should be evaluated for use as a commercial airport (BCDC 2020).

With respect to other potentially applicable Bay Plan policies, the Project's impacts would be outside of the coastal areas subject to BCDC jurisdiction. In addition, the impacts would be minimized through mitigation as detailed in this EA, including mitigation to protect any upland habitat or species present in and around the Project site. The Project would be in accord with any applicable Bay Plan policies on the environment, including policies that pertain to aquatic resources, water quality, tidal marshes and flats, transportation, and other environmental resource categories.

Additionally, with respect to public access, the Project does not include any modifications that would adversely affect access to the Bay. Current public access and recreational opportunities associated with the Bay would be fully maintained.

The Bay Plan states that "airports on the shores of the Bay should be permitted to include within their premises terminals for passengers, cargo, and general aviation; parking and supporting transportation

facilities; and ancillary activities such as aircraft maintenance bases that are necessary to the airport operation. Airport-oriented industries (those using air transportation for the movement of goods and personnel or providing services to airport users) may be located within airports designated in the Bay Plan if they cannot feasibly be located elsewhere, but no fill should be permitted to provide space for these industries directly or indirectly" (BCDC 2020). The Project would not change the current airfield operation at MFA and does not involve any fill of coastal or tidal waters, either directly or indirectly.

In sum, the Project would not affect the existing use of MFA or foreclose or impede the site's future use as an airfield in accord with the applicable Bay Plan policies. Further, the Project would not adversely affect coastal resources or interfere with the implementation or attainment of Bay Plan policies.

3.1.4 Socioeconomics and Environmental Justice

The Project is not expected to have a measurable effect on the regional economy or surrounding community. Implementation of the Project would not affect employment of PV or NASA employees. Additionally, Hangar 3 is currently unoccupied, and therefore the Project would not result in loss of employment. A temporary need for a moderate number of construction workers would result in a slight increase in the total number of persons working at MFA. Additional support facilities (e.g., housing, transportation) would not be necessary to accommodate the increase in workforce as necessary construction workers are expected to be available locally. Changes to employment and expenditures resulting from the Project would be short-term and beneficial, creating short-term employment opportunities for local contractors. With the exception of employment opportunities, no impacts to socioeconomics would be anticipated for the Project.

EO 12898 directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on low-income populations and minority populations in the U.S. According to USEPA's Environmental Justice Screening and Mapping Tool, the minority population within the Project vicinity falls in the 60 to 70 percentile compared to other communities nationwide (i.e., 30 to 40 percent of other communities in the nation have a higher minority population) and the Project vicinity is bounded to the east by a community with a minority population in the 80 to 90 percentile (Census Tract 5046.02). The Project and immediate vicinity are located in an area where less than 50 percent of the population is low income (EJSCREEN 2022). Information from Metropolitan Transportation Commission Equity Priority Communities, which takes into account more census factors, shows two communities of concern in the vicinity of the Project but more than 1 mile away (Census Tract 5116.08 and 5090.00). The Project is a remediation of an existing building with temporary construction. As described in Section 3.2, Air Quality, nearby communities would not have any increased

health risk from project demolition. Moreover, as discussed in Section 3.5, Hazards, Safety, and Waste Management, nearby sensitive populations would not be impacted by hazardous waste or the transport of hazardous materials since the project would be required to comply with all applicable regulations and trucks transporting hazardous materials would not drive through Equity Priority Communities. Once demolition was complete, the Project would not have any long-term operation that may impact nearby communities. Therefore, the Project would not be expected to result in any disproportionate impacts to minorities or low-income populations.

3.2 Environmental Resources Included for Detailed Consideration

This section provides detailed analysis for the following resources: air quality, biological resources, cultural resources, GHG and climate change, hazardous materials and waste management, noise and vibration, transportation and circulation, utilities, visual resources, and water resources. Each section defines the resource; summarizes the relevant regulations that affect the analysis; and discusses the affected environment and environmental consequences of the Proposed Action and the No Action Alternative.

3.2.1 Air Quality

This section provides a discussion of air pollutants and health risks posed to nearby sensitive receptors from construction and operation of the Proposed Action. This evaluation relies on guidance and thresholds established by the United States Environmental Protection Agency (USEPA) and the Bay Area Air Quality Management District (BAAQMD).

Criteria Pollutants

Criteria air pollutants include ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (measured both in units of smaller than 2.5 microns in diameter [$PM_{2.5}$], and in units of particulate matter smaller than 10 microns in diameter [PM_{10}]), and lead (Pb).

Ozone: The majority of ground-level ozone (more commonly known as “smog”) is formed as a result of complex photochemical reactions in the atmosphere between reactive organic gases (ROGs), nitrogen oxides (NO_X), and oxygen. ROGs and NO_X are considered precursors to the formation of ozone, a highly reactive gas that can damage lung tissue and affect respiratory function. While ozone in the lower atmosphere is considered a damaging air pollutant, ozone in the upper atmosphere is beneficial, as it protects the earth from harmful ultraviolet radiation. However, atmospheric processes preclude ground-level ozone from reaching the upper atmosphere (USEPA 2019).

Carbon Monoxide: CO is a colorless, odorless, poisonous gas produced by the incomplete combustion of fossil fuels. Elevated levels of CO can result in harmful health effects, especially for the young and elderly, and can also contribute to global climate change (USEPA 2019).

Nitrogen Dioxide: NO_2 is a brownish, highly reactive gas primarily produced from the burning of fossil fuels. NO_2 can also lead to the formation of ozone in the lower atmosphere. NO_2 can cause respiratory ailments, especially in the young and elderly, and can lead to degradations in the health of aquatic and terrestrial ecosystems (USEPA 2019).

Sulfur Dioxide: SO_2 is primarily emitted from the combustion of coal and oil by steel mills, pulp and paper mills, and non-ferrous smelters. High concentrations of SO_2 can aggravate existing respiratory and cardiovascular diseases in asthmatics and others who suffer from emphysema or bronchitis. SO_2 also contributes to acid rain, which in turn, can lead to the acidification of lakes and streams (USEPA 2019).

Particulate Matter: Airborne particulate matter (PM) is a complex mixture of solids and aerosols composed of small droplets of liquid, dry solid fragments, and solid cores with liquid coatings. Particles vary widely in size, shape, and chemical composition, and may contain inorganic ions, metallic compounds, elemental carbon, organic compounds, and compounds from the earth's crust. Particles are defined by their diameter for air quality regulatory purposes. Those with a diameter of 10 microns or less (PM_{10}) are inhalable into the lungs and can induce adverse health effects. Fine particulate matter is defined as particles that are 2.5 microns or less in diameter ($PM_{2.5}$). Therefore, $PM_{2.5}$ comprises a portion of PM_{10} (CARB 2021). Emissions from combustion of gasoline, oil, diesel fuel or wood produce much of the $PM_{2.5}$ pollution found in outdoor air, as well as a significant proportion of PM_{10}. PM also includes dust from construction sites, landfills and agriculture, wildfires and brush/waste burning, industrial sources, wind-blown dust from open lands, pollen, and fragments of bacteria.

PM may be either directly emitted from sources (primary particles) or formed in the atmosphere through chemical reactions of gases (secondary particles) such as sulfur dioxide (SO_2), nitrogen oxides (NO_X), and certain organic compounds.

Lead: Sources of lead (Pb) include pipes, fuel, and paint, although the use of Pb in these materials has declined dramatically in recent years. Historically, a main source of Pb was automobile emissions. Pb can be inhaled directly or ingested indirectly by consuming Pb-contaminated food, water, or dust. Fetuses and children are most susceptible to Pb poisoning, which can result in heart disease and nervous system damage (USEPA 2019). Through regulations, USEPA has gradually reduced the Pb content of gasoline, essentially eliminating violations of the Pb standard in urban areas except those areas with Pb point sources.

Diesel Particulate Matter (DPM)

In 1998, the California Air Resources Board (CARB) identified DPM as a toxic air contaminant based on published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects. This determination is based primarily on evidence from occupational studies that show a link between exposure to DPM and lung cancer induction, as well as death from lung cancer. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources, such as trucks and buses, are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways. BAAQMD staff has estimated incremental cancer risk due to measured Toxic Air Contaminants (TAC) in the Bay Area. According to the most recent analysis (BAAQMD 2014), the average regional cancer risk was about 300 per million. That is, for every million residents exposed for 70 years to current levels of TAC, 300 residents would be expected to develop cancer as a result of the exposure. According to the analysis, more than 70 percent of the cancer risk related to air pollution in the Bay Area is due to DPM, and 90 percent of the total risk is due to three compounds: DPM; benzene; and 1,3-butadiene. All three of these compounds are emitted via fuel combustion.

3.2.1.1 Regulatory Setting

Under the federal CAA as amended, states are responsible for enforcing the established air quality regulations. CARB enforces air pollution regulations and sets guidelines, as contained in the California State Implementation Plan (SIP), to attain and maintain National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). The CAA Amendments of 1990 established new federal nonattainment[5] classifications, new emission control requirements, and new compliance dates for nonattainment areas. The CAA identifies two types of NAAQS. Primary standards provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings (USEPA 2021). The CAAQS are equal to or more stringent than the NAAQS and include pollutants for which national standards do not exist. Table 3-1 presents the applicable NAAQS and CAAQS for the Project area.

[5] Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for a NAAQS.

Table 3-1 California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard Concentration[1]	National Standard Primary[2]	National Standard Secondary
Ozone	1 Hour	0.09 ppm (180 µg/m^3)	—	Same as Primary Standard
	8 Hour	0.070 ppm (137 µg/m^3)	0.070ppm (137 µg/m^3)	
Respirable Particulate Matter	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m^3	—	
Fine Particulate Matter	24 Hour	—	35 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	
Carbon Monoxide	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	—	—
Nitrogen Dioxide	1 Hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	—
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
Sulfur Dioxide	1 Hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—
	3 Hour	—	—	0.5 ppm (1300 µg/m^3)
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (for certain areas)	—

Pollutant	Averaging Time	California Standard Concentration[1]	National Standard Primary[2]	National Standard Secondary
	Annual Arithmetic Mean	—	0.030 ppm (for certain areas)	—
Lead	30-Day Average	1.5 µg/m^3	—	—
	Calendar Quarter	—	1.5 µg/m^3	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 µg/m^3	
Visibility-Reducing Particles	8 Hour	See Footnote 1	No National Standards	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)		

Notes
1. CO, NO_2, Ozone, PM10, and visibility reducing particles standards are not to be exceeded.
2. Not to be exceeded more than once a year except for annual standards.
-- = no standard established
µg/m3 = micrograms per cubic meter
mg/m3 = milligrams per cubic meter
ppm = parts per million
Source: CARB 2016

The severity of the nonattainment classification drives the associated requirements and compliance dates. The San Francisco Bay Area Air Basin (SFBAAB) is in nonattainment for ozone and particulate matter. The following section provides a summary of the air quality rules and regulations that apply to the Proposed Action.

General Conformity Rule (40 CFR 51.850-860 and 40 CFR 93.150-160). Section 176(c) of the 1990 CAA Amendments contains the General Conformity Rule (40 CFR 51.850-860 and 40 CFR 93.150-160). The General Conformity Rule requires any federal agency responsible for an action in a nonattainment or

maintenance area[6] to determine that the action conforms to the applicable SIP. This means that federally supported or funded activities will not: (1) cause or contribute to any new air quality standard violation; (2) increase the frequency or severity of any existing standard violation; or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone. The rule allows for approximately 30 exemptions, assuming that they conform to an applicable SIP. Emissions of attainment pollutants are exempt from conformity analyses. Actions would conform to a SIP if their annual direct and indirect emissions remain less than the applicable *de minimis* thresholds. Formal conformity determinations are required for any actions that exceed these thresholds.

California Clean Air Act. The California CAA of 1988, as amended in 1992, outlines a program to attain the CAAQS for ozone, NO_2, SO_2, PM, and CO by the earliest practical date. As shown in Table 3-1, the CAAQS are more stringent than the NAAQS. CARB delegates the authority to regulate stationary source emissions to local air quality management districts. CARB requires these agencies to develop their own strategies for achieving compliance with the NAAQS and CAAQS, but maintains regulatory authority over these strategies, as well as all mobile source emissions throughout the state.

Bay Area Air Quality Management District (BAAQMD). BAAQMD is responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SFBAAB. BAAQMD has developed the following attainment plans and rules and regulations applicable to the Project:

2017 Clean Air Plan

The 2017 Clean Air Plan includes control strategies to reduce ozone precursors (ROG and NOx), particulate matter, TACs, and GHG emissions. The SFBAAB is in nonattainment for state and federal ozone standards due to tightened national ozone standards as well as population and economic growth. The SFBAAB meets state and federal $PM_{2.5}$ standards, however localized levels of PM still impact communities in the Bay Area. The Clean Air Plan included several measures for reducing PM emissions from stationary sources and wood burning.

Regulation 6, Rule 1: General Requirements. The purpose of this regulation is to limit the quantity of PM in the atmosphere through the establishment of limitations on emission rates, emission concentrations, visible emissions, and opacity.

[6] Areas that were previously designated as nonattainment areas but have now met the standard (with USEPA approval of a suitable air quality plan) are called "maintenance" areas.

Regulation 6, Rule 6: Prohibition of Trackout. This rule reduces the quantity of particulate matter in the atmosphere by prohibiting the trackout of solid materials onto paved public roads outside the boundaries of Large Bulk Material Sites, Large Construction Sites, and Large Disturbed Surface sites including landfills if those areas are more than 1 acre.

Regulation 11, Rule 2: Asbestos Demolition, Renovation, and Manufacturing. BAAQMD regulates the emissions of asbestos to the atmosphere during demolition activities and also establishes appropriate water disposal procedures. The rule states that ACM must be adequately wetted prior to demolition to prevent the release of asbestos-containing particles.

3.2.1.2 Affected Environment

Climate and Meteorology

At an elevation just above sea level and adjacent to the moderating influence of San Francisco Bay and the nearby Pacific Ocean, the climate of MFA is characterized by warm dry summers and cool, moist winters. During the warmer months of the year (normally May through October), the airfield is subject to morning and evening low clouds and fog with primarily sunny conditions occurring during the day. Most of the annual average of 13.5 inches of rainfall occurs between November and April. The annual average high and low temperatures at MFA are 68 degrees Fahrenheit (°F) and 50°F, respectively. Prevailing winds blow from the north-northwest in the region during daytime hours. Nocturnal winds and land breezes during the colder months of the year blow from the south.

Regional and Local Air Pollutant Sources

MFA is located in the SFBAAB, which includes the counties of San Francisco, Santa Clara, San Mateo, Marin, Napa, Contra Costa, and Alameda, along with the southeastern portion of Sonoma County and the southwestern portion of Solano County. As discussed above, the local air quality regulatory agency responsible for the basin is BAAQMD.

BAAQMD periodically updates emissions for the entire SFBAAB for the purposes of forecasting future emissions and analyzing emission control measures, and for use in regional air quality modeling. The largest regional sources of air emissions are on-road vehicles. The 2011 BAAQMD emissions inventory determined that on an average daily basis, on-road vehicles emitted 30 percent of volatile organic compounds (VOCs), 56 percent of NO_X, and 58 percent of CO emissions within the Bay Area (BAAQMD 2014). Combustion sources produce both primary fine particulate matter and fine particulate precursor pollutants, such as NO_X, which react in the atmosphere to produce secondary fine particulates. Coarser

particles (PM_{10} and $PM_{2.5}$) mainly occur from soil-disturbing activities, such as construction, mining, agriculture, wildfires, and vehicular road dust.

The SFBAAB is in "marginal"[7] nonattainment of the federal (i.e., NAAQS) 8-hour ozone standards, and "moderate"[8] nonattainment of the federal $PM_{2.5}$ standard (USEPA 2020a). The SFBAAB is in attainment for California (i.e., CAAQS) standards for CO, NO_2, SO_2, and sulfates and nonattainment for California standards for ozone, PM_{10} and $PM_{2.5}$, and is unclassified for California standards for hydrogen sulfide and visibility reducing particles.

Baseline Air Quality

USEPA designates all areas of the U.S. as having air quality better than, equal to (attainment)[9], or worse than (nonattainment) the NAAQS. The criteria for nonattainment designation vary by pollutant. An area is in nonattainment for ozone if ozone concentrations exceed the NAAQS more than three discontinuous times in three years, and an area is generally in nonattainment for the other criteria pollutants if concentrations exceed the NAAQS more than once per year. USEPA designates former nonattainment areas that have attained the NAAQS as maintenance areas. As discussed above, the SFBAAB (including Santa Clara County) is in nonattainment of the federal ozone and $PM_{2.5}$ standards. Table 3-2 presents representative air quality data for MFA from monitoring data compiled by CARB for the San Jose – Jackson Street Monitoring Station, the closest monitoring station to the site, between 2018 and 2020.

Table 3-2 San Jose – Jackson Street Ambient Air Monitoring Data

Pollutant	Most Stringent National Standard	Number of Days Standards Were Exceeded and Maximum Concentrations Measured		
		2018	2019	2020
Ozone				
Maximum 1-hour Concentration (ppm)	>0.09	0.078	**0.095**	**0.106**
Days 1-hour Standard Exceeded		0	1	**1**
Maximum 8-hour Concentration (ppm)	>0.070	0.061	**0.081**	**0.085**
Days 8-hour Standard Exceeded		0	**2**	**2**

[7] Area has a design value of 0.071 up to but not including 0.081 ppm for 8-hour ozone.

[8] Area has a design value of 36 µg/m3 for 24-hour $PM_{2.5}$.

[9] Any area that meets the national primary or secondary ambient air quality standard for the pollutant.

Pollutant	Most Stringent National Standard	Number of Days Standards Were Exceeded and Maximum Concentrations Measured		
		2018	2019	2020
Respirable Particulate Matter (PM_{10})				
Maximum 24-hour Concentration (µg/m^3)	>50	**121.8**	**77.1**	**137.1**
Days 24-hour Standard Exceeded		**4**	**4**	**10**
Fine Particulate Matter ($PM_{2.5}$)				
Maximum 24-hour Concentration (µg/m^3)	>35	**133.9**	34.4	**120.5**
Days 24-hour Standard Exceeded		**15**	0	**12**
Annual Average (µg/m^3)	>12	12.9	9.1	11.5

Notes:

Bold values are in excess of the applicable standard.

Number of days exceeded is for all days in a given year, except for PM_{10}, which has been monitored every 12 days as of January 2013.

µg/m^3 = micrograms per cubic meter

> = greater than

ppm = parts per million

Source: CARB Air Pollution Summary for San Jose- Jackson Street Monitoring Station, 2018-2020

Sensitive Receptors

Sensitive receptors are children, elderly, asthmatics, and others who are at a heightened risk of negative health outcomes due to exposure to air pollution. Where these sensitive receptors congregate are considered sensitive receptor locations and may include hospitals, schools, and day care centers, and such other locations as CARB may determine (California Health and Safety Code § 42705.5(a)(5)). There are no existing sensitive receptors near (within 1,000 feet)[10] of the Project site. The primary pollutant of concern with regard to exposure of sensitive receptors is DPM generated by construction related vehicles and equipment. The actual risk of adverse air quality effects depends on a person's current health status, the pollutant type and concentration, and the length of exposure to the polluted air. Health risk is a function of the concentration of contaminants in the environment and the duration of exposure to those contaminants. Health effects from TACs are often described in terms of individual cancer risk, which is based on a 30-year lifetime exposure to TACs (OEHHA 2015). Construction activities were modeled based upon an approximately 8-month construction duration, which would be approximately 2 percent of

[10] For assessing community risks and hazards, a 1,000-foot radius is recommended by BAAQMD around the project property boundary.

the total exposure period used for typical health risk calculations. Concentrations of mobile-source DPM emissions are typically reduced by 70 percent at a distance of approximately 500 feet (CARB 2005). The nearest existing sensitive receptors are the multifamily residential buildings at Wescoat Village approximately 5,330 feet to the southwest of MFA. Therefore, construction would take place substantially farther than 500 feet from the nearest sensitive receptors. Due to the temporary nature of construction activities and the dispersive properties of DPM, the nearest residential receptors would not be impacted in regard to air quality. Other exterior active-use areas in the Project vicinity include the Bay Trail and golf course. Those uses are not considered sensitive receptors for air quality purposes because the time spent at those locations is transient. The Project's northern edge is located approximately 3,512 feet from the Bay Trail and about 550 feet from the golf course.

3.2.1.3 Approach to Analysis

Temporary construction-related emissions of criteria air pollutants and precursors were calculated using the California Emissions Estimator Model (CalEEMod) Version 2020.4.0 computer program (California Air Pollution Control Officers Association 2017). CalEEMod was used to calculate emissions from demolition and partial preservation of Hangar 3. Modeling was based on Project-specific information (e.g., building type and size, amount of demolition, estimated construction equipment) where available, and default values in CalEEMod that are based on the Project's location, land use type, and type of construction. CalEEMod modeling assumptions are included in Appendix B, Air Quality CalEEMod Modeling Assumptions.

There are no operational impacts to air quality associated with the demolition of Hangar 3 because no land use or activity is proposed following demolition and clean-up under the Proposed Action and, therefore, operational air quality impacts are not discussed further.

General Conformity and *De Minimis* Thresholds

The 1990 Amendments to the CAA require that Federal agency activities conform to the SIP with respect to achieving and maintaining attainment of NAAQS and to addressing air quality impacts. If total emissions of individual pollutants resulting from an action exceed ***de minimis*** threshold values for nonattainment pollutants, then the General Conformity Rule requires that a conformity analysis be performed. A conformity analysis would need to demonstrate that a Proposed Action does not: 1) cause or contribute to any violation of any NAAQS in the area; 2) interfere with provisions in the SIP for maintenance or attainment of any NAAQS; 3) increase the frequency or severity of any existing violation of any NAAQS; or 4) delay timely attainment of any NAAQS, any interim emission reduction goals, or

other milestones included in the SIP. If *de minimis* thresholds are not exceeded, no conformity analysis is required.

Table 3-3 details the *de minimis* thresholds for all criteria pollutants. Based on the present attainment status of the SFBAAB (Section 3.2.1.3, Affected Environment), the Proposed Action would conform to the most recent USEPA-approved SIP if annual construction emissions do not exceed the thresholds of 100 tons per year of NO_X, VOCs (modeled as ROGs for the purposes of this analysis), CO, PM_{10}, and $PM_{2.5}$. Impacts to air quality would be considered significant if the emissions from construction of the Project would result in exceedances of the *de minimis* thresholds.

Table 3-3 Federal *De Minimis* Thresholds

Pollutant	Area Type	Tons per Year
Ozone (VOCs or NO_X)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	**100**
Ozone (NO_X)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
Ozone (VOCs)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
CO, SO_2 and NO_2	**All nonattainment and maintenance**	**100**
PM_{10}	Serious nonattainment	70
	Moderate nonattainment and maintenance	**100**

Pollutant	Area Type	Tons per Year
$PM_{2.5}$ Direct emissions, SO_2, NO_X (unless determined not to be a significant precursor), VOCs or ammonia (if determined to be significant precursors)	**Moderate nonattainment and maintenance**	**100**
Pb	All nonattainment and maintenance	25

Notes:
CO = carbon monoxide
Pb = lead
NO_2 = nitrogen dioxide
NO_X = nitrogen oxide
$PM_{2.5}$ = particulate matter smaller than 2.5 microns in diameter
PM_{10} = particulate matter smaller than 10 microns in diameter
SO_2 = sulfur dioxide
VOCs = volatile organic compounds
Bolded thresholds indicate the thresholds applicable to the Proposed Action.
Source: USEPA 2020b

Bay Area Air Quality Management District Thresholds

The BAAQMD adopted regional air quality thresholds in May 2010 to establish the level at which the BAAQMD believed air pollution emissions would cause adverse air quality impacts to the region. The thresholds represent the levels at which a project's individual emissions of criteria air pollutants (PM_{10} and $PM_{2.5}$) or ozone precursors (VOC and NOx) would result in a cumulatively considerable contribution to the SFBAAB existing air quality conditions. Project emissions were compared against the BAAQMD's construction regional air quality thresholds and are presented in Table 3-4.

Table 3-4 BAAQMD Regional Air Quality Thresholds

Pollutant	Construction Thresholds (average lbs/day)
VOC	54
NOx	54
PM_{10} (exhaust)	82
$PM_{2.5}$ (exhaust)	54

Pollutant	Construction Thresholds (average lbs/day)

Notes:
NOx = nitrogen oxide
$PM_{2.5}$ = particulate matter smaller than 2.5 microns in diameter
PM_{10} = particulate matter smaller than 10 microns in diameter
VOC = volatile organic compound
lbs/day = pounds per day
Construction particulate matter thresholds only account for exhaust particulate matter emissions. Fugitive dust particulate matter emissions from construction-related activities are required by BAAQMD to be minimized through compliance with Best Management Practices.
Source: BAAQMD 2017

3.2.1.4 Environmental Consequences

Proposed Action: Building Demolition

The Proposed Action includes demolition of the existing Hangar 3 at MFA and would occur in three phases with Phase 1: Pre-Demolition Activities lasting approximately 80 to 90 working days and Phase 2: Demolition lasting approximately 125 working days. Phase 3: Waste Disposal and Recycling would occur concurrently with Phases 1 and 2. The total construction duration would take approximately nine months. The construction equipment to be used during each construction phase is detailed in Table 3-5.

Table 3-5 Construction Equipment for Proposed Action: Building Demolition

	Demolition Phase	Demolition Equipment		On-Road Construction Vehicles
Phase 1 and Phase 3	Pre-Demolition Activities and Waste Disposal and Recycling	● Boom Lifts Tier 4 (2) ● Reach Forks (2) ● Bobcats (2) ● Manlift Tier 4 (1)	● Generators (2) ● Demolition Excavators (2) ● Swing Stages (2)	● 100 worker trips per day (light-duty vehicle mix) ● 360 hauling truck trips total (heavy-duty diesel trucks)
Phase 2 and Phase 3	Demolition and Waste Disposal and Recycling	● Demolition Excavators Tier 4 (5) ● Crane Tier 4 (1) ● Manlifts Tier 4 (2)	● Demolition Excavators (2) ● Skid Steers Tier 4 (2) ● Water Truck (1)	● 40 worker trips per day (light-duty vehicle mix) ● 4,000 hauling truck trips total (heavy-duty diesel trucks)

Criteria Air Pollutants

As discussed above, the SFBAAB is in nonattainment for federal ozone and $PM_{2.5}$ standards; therefore, these are the potential criteria air pollutants of concern regarding the Proposed Action's environmental

effects. To assess potential effects, localized criteria pollutant emissions were modeled and analyzed. Potential localized effects would include exceedances of federal standards for ozone and $PM_{2.5}$.

Air quality modeling was performed using Project-specific details to determine whether the Proposed Action would result in criteria air pollutant emissions in excess of the applicable *de minimis* thresholds and BAAQMD project-level thresholds. Presented in Table 3-6 and Table 3-7, the Proposed Action's construction-related emissions have been estimated using the CalEEMod version 2020.4.0 software. The results of the construction emissions estimates were compared to the federal *de minimis* (Table 3-6) and BAAQMD thresholds (Table 3-7) to determine if the demolition of Hangar 3 would result in exceedances of the thresholds. The following discussion provides Project-specific emissions evaluations for construction in a summary format; all CalEEMod modeling outputs are also included in Appendix B, Air Quality CalEEMod Modeling Assumptions.

Table 3-6 Estimated Construction Emissions for the Proposed Action

Parameter	Air Pollutants (tons)					
	ROG	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Total Emissions (tons) 2022	0.06	0.65	0.71	0.00	0.07	0.03
Total Emissions (tons) 2023	0.20	1.84	3.30	0.01	0.33	0.10
Maximum annual emissions	0.205	1.84	3.30	0.01	0.33	0.10
Total Construction Emissions	0.26	2.49	4.01	0.01	0.40	0.13
De Minimis Thresholds (annual)	100	100	100	100	100	100
Exceeds *De Minimis* Thresholds?	No	No	No	No	No	No

es:

CO = carbon monoxide

NO_X = nitrogen oxides

$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

PM_{10} = particulate matter less than 10 microns in diameter

ROG = reactive organic gas

SO_X = sulfur oxides

CalEEMod modeling was performed assuming a 2021 construction start date, however, construction would not begin until 2022. Due to stricter on-road and off-road emissions controls with each passing year, the emissions presented above are a conservative estimate and would likely be lower if construction is pushed into a later start date.

Source: Appendix B, Air Quality CalEEMod Modeling Assumptions.

Table 3-7 Estimated Average Daily Construction Emissions for the Proposed Action

Parameter	Air Pollutants (Average lbs/day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Average Daily Construction Emissions	2.33	23.18	37.32	2.20	0.66	0.63
BAAQMD Thresholds	54	54	None	None	82*	54*
Exceeds BAAQMD Thresholds?	No	No	No	No	No	No

Notes:

BAAQMD = Bay Area Air Quality Management District

CO = carbon monoxide

lbs/day = pounds per day

NO_X = nitrogen oxides

$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

PM_{10} = particulate matter less than 10 microns in diameter

ROG = reactive organic gas

SO_X = sulfur oxides

* Exhaust only

Emissions are based on the total tons over the construction period divided by the total number of construction days (215 days).

Source: Appendix B, Air Quality CalEEMod Modeling Assumptions.

During construction of the Proposed Action, various types of equipment and vehicles would temporarily operate on the Project site. Construction exhaust emissions would be generated from construction equipment, on-site workers' commutes, and transportation of demolition material. The aforementioned activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants. As shown in Table 3-6 and Table 3-7, Project-associated emissions would be below the *de minimis* and BAAQMD thresholds for all criteria pollutants, respectively.

Fugitive Dust

Project construction activities would also result in the generation of fugitive dust, which includes PM_{10} and $PM_{2.5}$ emissions. Total PM_{10} and $PM_{2.5}$ emissions for the Proposed Action are reported in Table 3-6, which includes fugitive dust and exhaust emissions. Fugitive dust would be generated from demolition activities associated with the removal of building components as well as re-entrained roadway dust from off-road construction equipment and worker, vendor, and haul vehicles. Most of this fugitive dust would remain localized and would be deposited near the Project site. In addition, a water truck would be staged on-site to apply water to building components that could generate dust during demolition activities. BAAQMD

regulatory measures and best management practices for addressing fugitive dust would be followed. Potential fugitive dust control activities include adequately wetting fugitive dust sources such as building components, roadways and limiting vehicle speeds.

Asbestos Containing Materials

Asbestos containing materials (ACM) are discussed and addressed in Section 3.2.5, Hazards, Safety, and Waste Management. Compliance with regulatory measures would address potentially significant impacts. Any ACM would be watered prior to demolition to prevent impacts related to air quality during demolition activities.

Lead

There are no existing or proposed Pb point sources within the Project area, however, as discussed in Section 3.2.5, Hazards, Safety, and Waste Management, the Proposed Action would include demolition of a structure that was constructed prior to 1978, and therefore may contain hazardous materials such as lead-based paint (LBP). Per lease requirements, the contractor would prepare an abatement plan for removal of LBP prior to initiating any construction activity. The abatement plan would prevent potential air quality impacts from Pb.

Diesel Particulate Matter

In addition to criteria pollutants, the diesel-powered trucks and demolition equipment would also generate DPM. CARB identified DPM as a TAC in 1998. Exposure to DPM from diesel vehicles and generators can result in health risks to nearby sensitive receptors. Although demolition of Hangar 3 would involve the use of diesel-fueled vehicles, Wescoat Village, the nearest air quality sensitive receptor, is located approximately 5,330 feet southwest from the Project site. As discussed previously, although the golf course is located just over 500 feet from the Project site, it would not be considered a sensitive receptor for air quality purposes. A sensitive receptor is a person in the population who is particularly susceptible to health effects due to exposure to an air contaminant, such as children, the elderly, convalescent centers, hospitals, etc. People visiting the golf course would not be exposed to substantial pollutant concentrations as their time at the golf course is transient and pollutants would be dispersed. Additionally, considering the distance to sensitive receptors, temporary DPM emissions would not pose a health risk because concentrations of mobile-source DPM emissions have been shown to be reduced by approximately 60 percent at a distance of around 300 feet (Zhu et.al. 2002), and CARB notes that DPM from high-volume roadways is typically reduced by at least 70 percent at 500 feet (CARB 2005).

Therefore, the Proposed Action would not result in significant air quality impacts as demolition activities would be temporary and emissions would be below the BAAQMD and federal *de minimis* thresholds. Specifically, construction particulate matter emissions would be less than one ton per year and emissions would disperse as particulate matter travels from the Project site. As a result, the concentration of DPM would be substantially reduced at the distance of the identified sensitive receptors.

No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. There would be no immediate air quality impacts. In the event of a structural failure, air quality impacts would likely be temporary. Structural collapse would result in an uncontrolled release of fugitive dust as Hangar 3 components collapse. Subsequent clean-up would require haul trucks and construction equipment, similar to those needed for the Proposed Action, that would emit criteria air pollutants and DPM. Equipment would need to be mobilized immediately to address the hazard and Tier 4 equipment, equipment that would be used under the Proposed Action which meets more stringent emissions standards, may not be available, resulting in more emissions from equipment. Quantification of the emissions from the No Action Alternative would not be possible because it would be speculative to determine the extent of an unplanned collapse. However, there would be a short-term temporary effect that could result in exposure of nearby users to fugitive dust from building collapse and exhaust emissions from cleanup construction vehicles and equipment. Proximity to sensitive receptors for the No Action Alternative would be the same as under the Proposed Action, and DPM generated from clean-up would similarly disperse from the Project site. As a result, the concentration of DPM under the No Action Alternative during any clean-up activities would be substantially reduced at the distance of the identified sensitive receptors and would not result in a localized health risk due to exposure to DPM. However, the potential increase in exhaust emissions associated with potential use of equipment that does not meet Tier 4 emissions standards could result in the generation of temporary emissions that were higher than those from the Proposed Action but would not likely exceed the BAAQMD thresholds of significance. Therefore, potential impacts to air quality from the No Action Alternative could be greater than the Proposed Action.

3.2.2 Biological Resources

This analysis focuses on biological resources that are important to the function of the ecosystem, of special importance, or protected under federal or state law or statute, including special-status species and sensitive natural communities, habitats, and vegetation alliances.

"Special-status species" are defined as those species that are protected by state, federal, or local governments as threatened, rare, or endangered. For this environmental review, "special-status plants" are considered plant species that are as follows:

- Listed under the Federal Endangered Species Act (FESA) as threatened, endangered, proposed threatened, proposed endangered, or a candidate species.
- Listed under the California Endangered Species Act (CESA) as threatened, endangered, rare, or a candidate species.
- Listed by the California Native Plant Society as California Rare Plant Rank 1A, 1B, 2, 3, or 4.

For purposes of this analysis, special-status animals are considered animal species that are:

- Listed under FESA as threatened, endangered, proposed threatened, proposed endangered, or a candidate species.
- Listed under CESA as threatened, endangered, or a candidate threatened or endangered species.
- Designated by the California Department of Fish and Wildlife (CDFW) as a California species of special concern.
- Listed in the California Fish and Game Code (CFGC) as fully protected species (fully protected birds are provided in Section 3511, mammals in Section 4700, reptiles and amphibians in Section 5050, and fish in Section 5515).
- Protected under the federal Migratory Bird Treaty Act (MBTA).
- Protected by the Bald and Golden Eagle Protection Act.

Assessment of a project's effect on migratory birds places an emphasis on "species of concern" as defined by Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. Additional assessment of potential impacts on migratory birds that are regionally rare occurs under the special-status species category. The burrowing owl (*Athene cunicularia*) is the most prominent example of a special-status species that occurs at MFA and is considered in NEPA evaluations.

Within California, the state has developed a Natural Heritage Program to classify natural resources, including natural communities and plants and animals of conservation significance. Natural communities are categorized using a hierarchical approach that considers patterns of plant distribution, plant type,

landscape and climate characteristics and other environmental factors. “Vegetation alliances” is a categorization of natural community that reflects the number, distribution, and relationship of plants in a regional context. Vegetation alliances are commonly used to assess a project’s effects. CDFW determines the level of rarity and imperilment of vegetation types and tracks sensitive communities in its RareFind database (CNDDB 2020). Rankings of natural communities are provided that reflect both global conditions (G) and conditions within California (S). Global and state conditions are ranked 1 (very rare and threatened) to 5 (demonstrably secure). Natural communities ranked S1 through S3 are considered Sensitive Natural Communities. CDFW provides the Vegetation Classification and Mapping Program’s currently accepted list of vegetation alliances and associations (CDFG 2010).

Impacts on CDFW sensitive natural communities, vegetation alliances and associations, or any such community identified in local or regional plans, policies, and regulations should be considered and evaluated under NEPA. Furthermore, aquatic, wetland, and riparian habitats are also protected under applicable federal, state, or local regulations and are generally subject to regulation, protection, or consideration by the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), CDFW, and/or the U.S. Fish and Wildlife Service (USFWS).

3.2.2.1 Regulatory Setting

Biological resources in the vicinity of the Project site are regulated by several federal, state, and local laws and ordinances, as described below. However, the entire Project site and immediately adjacent areas consist of artificial structures and surfaces, with no listed species, designated habitat or jurisdictional features present that would be subject to federal or state regulatory agency permitting requirements (such as the USACE under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act; the RWQCB under Section 401 of the Clean Water Act or the Porter-Cologne Water Quality Control Act; the USFWS or the National Marine Fisheries Service (NMFS) under the FESA; the CDFW under the CESA or Section 1602 of the California Fish and Game Code; or NMFS under the Magnuson-Stevens Fishery Conservation and Management Act). Therefore, the Project is not anticipated to affect any of these resources, and no permits related to biological resources would be required.

The following sections focus on regulations that pertain to biological resources that are present on the Project site.

Federal

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA), 16 U.S.C. Section 703, prohibits killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. The MBTA protects whole birds, parts of birds, and bird eggs and nests, and it prohibits the possession of all nests of protected bird species whether they are active or inactive. An active nest is defined as having eggs or young, as described by the USFWS in its June 14, 2018, memorandum "Destruction and Relocation of Migratory Bird Nest Contents". Nest starts (nests that are under construction and do not yet contain eggs) and inactive nests are not protected from destruction.

In recent years, there have been changes to how the MBTA is implemented and enforced with respect to incidental take of protected birds. However, on October 4, 2021, the USFWS published a final rule revoking a January 7, 2021, regulation that limited the scope of the MBTA. The final rule took effect on December 3, 2021. With this final and formal revocation of the January 7, 2021, rule, the USFWS returns to implementing the MBTA as prohibiting incidental take and applying enforcement discretion, consistent with judicial precedent.

California

California Fish and Game Code

Specific sections of the California Fish and Game Code (CFGC) describe regulations pertaining to protection of certain wildlife species. For example, Code Section 2000 prohibits take of any bird, mammal, fish, reptile, or amphibian except as provided by other sections of the code.

The CFGC Sections 3503, 3513, and 3800 (and other sections and subsections) protect native birds, including their nests and eggs, from all forms of take. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the CDFW. Raptors (i.e., eagles, hawks, and owls) and their nests are specifically protected in California under Code Section 3503.5. Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

Bats and other non-game mammals are protected by CFGC Section 4150, which states that all non-game mammals or parts thereof may not be taken or possessed except as provided otherwise in the code or in accordance with regulations adopted by the commission. Activities resulting in mortality of non-game

mammals (e.g., destruction of an occupied nonbreeding bat roost, resulting in the death of bats), or disturbance that causes the loss of a maternity colony of bats (resulting in the death of young), may be considered “take” by the CDFW.

3.2.2.2 Affected Environment

The entire Project site is located on developed land consisting of Hangar 3, other smaller buildings and structures located between Hangars 2 and 3, as well as concrete, asphalt, other impervious materials. The entire Project site is devoid of vegetation.

Wildlife

Wildlife species found in the vicinity of the Project site are those that are tolerant of periodic human disturbances, including introduced species such as the European starling (*Sturnus vulgaris*), rock pigeon (*Columba livia*), house mouse (*Mus musculus*), Norway rat (*Rattus norvegicus*), and black rat (*Rattus rattus*). A number of common native species also use this habitat, including the western fence lizard (*Sceloporus occidentalis*), gopher snake (*Pituophis catenifer*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), and a variety of birds, such as the common raven (*Corvus corax*), house finch (*Haemorhous mexicanus*), black phoebe (*Sayornis nigricans*), barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), mourning dove (*Zenaida macroura*), and white-throated swift (*Aeronautes saxatalis*), all of which nest inside and outside of Hangar 3 and on other structures on the site. In addition, American kestrels (*Falco sparverius*) and barn owls (*Tyto alba*) nest and roost in the rafters and box beams of Hangar 3, and red-tailed hawks (*Buteo jamaicensis*) and prairie falcons (*Falco mexicanus*) use Hangar 3 as both day and night-time roosts, as well as hunting perches. Numerous suitable roosting locations for bat species, including the Mexican free-tailed bat (*Tadarida brasiliensis*) and Yuma myotis (*Myotis yumanensis*), are present in Hangar 3, and both species have been observed roosting in the hangar.

Special-Status Plants

California Native Plant Species (2020) and the California Natural Diversity Database (CNDDB) (2020) identify 58 special-status plant species as potentially occurring in at least one of the nine U.S. Geological Survey quadrangles containing or surrounding the Project site, and Figure 3-1 depicts CNDDB records of special-status plant species in the general vicinity of the Project site. However, all 58 potentially occurring special-status plant species were determined to be absent from the Project site for at least one of the following reasons: (1) lack of suitable habitat types; (2) absence of specific microhabitat or edaphic

requirements, such as serpentine soils; (3) the elevation range of the species is outside of the range on the Project site; and/or (4) the species is considered extirpated.

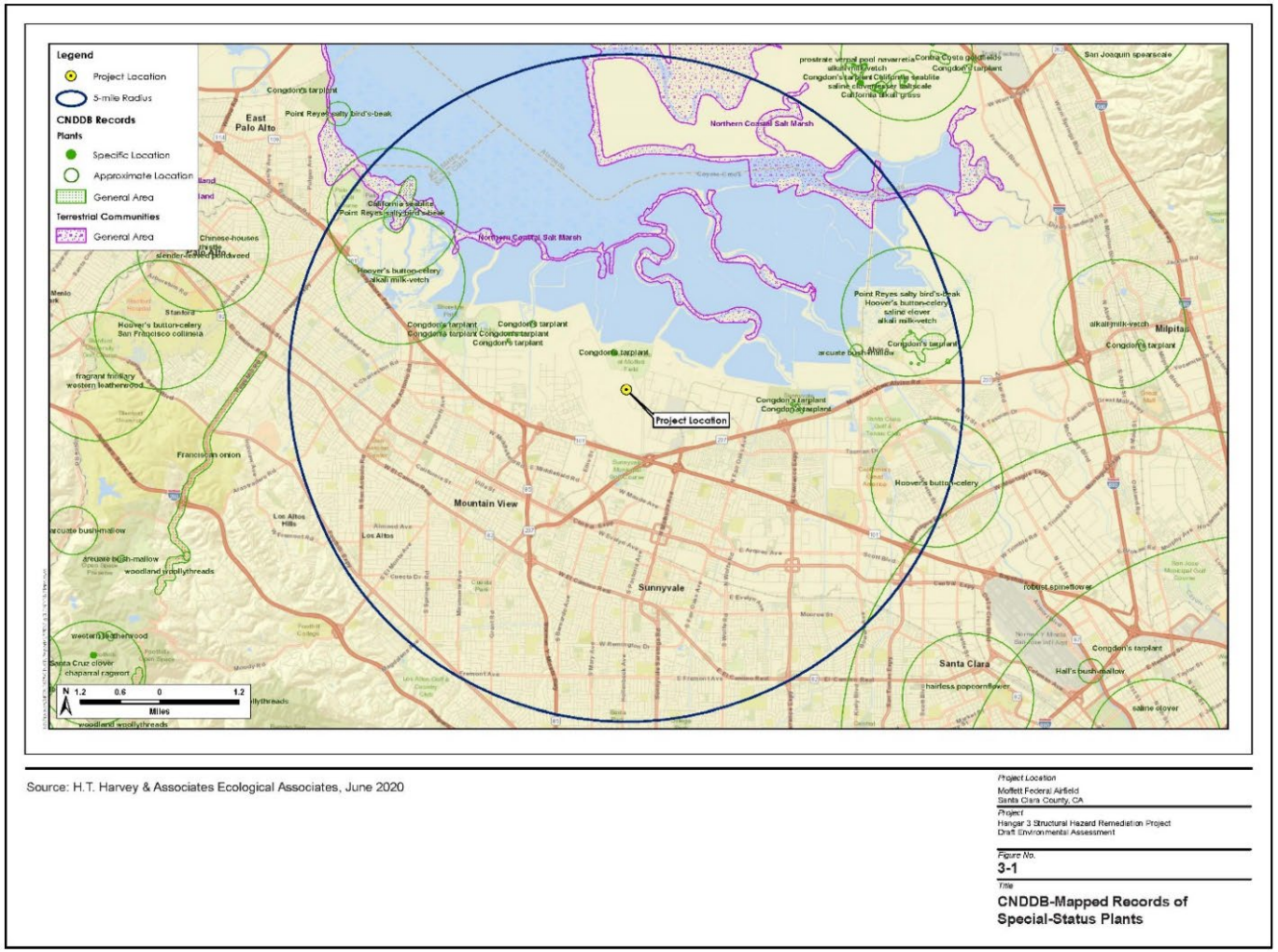

Figure 3-1 CNDDB-Mapped Records of Special-Status Plants

Special-Status Animals

Several special-status animal species are known to occur in the general vicinity of the Project site (CNDDB 2020) (Figure 3-2). However, most of these species were determined to be absent from the Project site because it lacks suitable habitat, is outside the known range of the species, and/or is isolated from the nearest known extant populations by development or otherwise unsuitable habitat. Animal species considered for occurrence but rejected, as well as the reasons for their rejection, include the following (among others):

- The Project site lacks suitable marsh or Bay shoreline habitat for species associated with the South Bay, which includes the federally and/or state-listed California Ridgway's rail (*Rallus obsoletus obsoletus*), California black rail (*Laterallus jamaicensis coturniculus*), California least tern (*Sternula antillarum browni*), western snowy plover (*Charadrius nivosus nivosus*), and salt marsh harvest mouse (*Reithrodontomys raviventris*), as well as the San Francisco common yellowthroat (*Geothlypis trichas sinuosa*) and Alameda song sparrow (*Melospiza melodia pusillula*), both California species of special concern. The nearest tidal marsh habitat is located approximately 1.6 miles to the northwest of Hangar 3 along Stevens Creek, and the nearest nontidal marsh/salt panne habitat is located nearly one mile northwest of the hangar. Therefore, these species are not expected to occur on the Project site or close enough to the site to be affected by Project activities.

- Freshwater marsh habitat, which is located approximately 1,000 feet north of Hangar 3 in the southern end of the Marriage Road ditch, provides suitable nesting and year-round foraging habitat for the San Francisco common yellowthroat. Suitable brackish marsh habitat for the Alameda song sparrow is present even further from Hangar 3, with the closest area of brackish marsh approximately 3,200 feet to the north. Therefore, neither species would occur on the Project site or close enough to the site to be affected by Project activities.

- The American peregrine falcon (*Falco peregrinus anatum*), a state fully-protected species, has been known to nest in the MFA vicinity, though not on the Project site itself. As recently as 2018, the species nested on an 80-foot by 120-foot wind tunnel structure in ARC, located approximately 1.15 miles northwest of the Project site, across the airfield from the Project site (NASA 2015; H.T. Harvey and Associates 2021). Peregrine falcons were previously thought to have nested at the top of Hangar 1, located approximately 0.67 miles west of (and across the

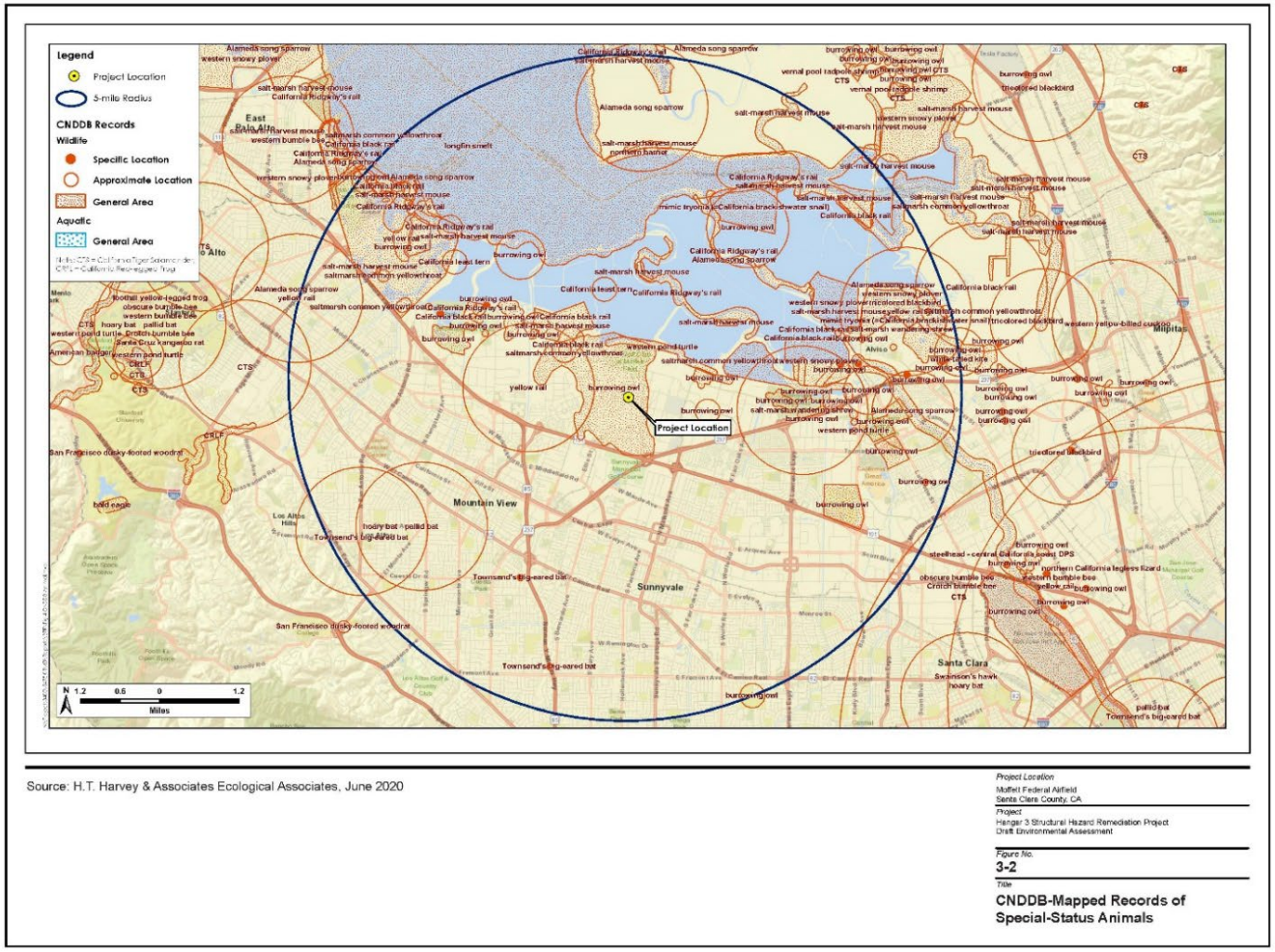

Figure 3-2 CNDDB-Mapped Records of Special-Status Animals

airfield from) the Project site, more than five years ago, though there is no evidence that they have attempted nesting there recently (NASA 2015; H.T. Harvey and Associates 2021). MFA provides suitable foraging habitat for the peregrine falcon, and the species has been observed during the breeding and non-breeding season, transiting through the Project area, hunting for prey on the airfield in the salt-panne habitats and salt marsh ponds located north of the airfield, and occasionally perched on both Hangars 2 and 3. However, peregrine falcons have never been suspected of nesting on Hangars 2 and 3. Also, given the on-going preservation and maintenance disturbance on both hangars, it is highly unlikely that peregrine falcons would attempt to nest on Hangars 2 and 3. The species may infrequently move across the Project site, forage nearby on MFA on occasion, and perch briefly on Hangars 2 and 3, but peregrine falcons would not be expected to reside or nest on the Project site, or otherwise make substantial use of the Project site. Project activities would at most cause very minor, short-term disturbance of the species. However, any short-term disturbance to a perching peregrine falcon (which would simply fly away from or avoid perching close to any perceived disturbance) from Project activities would not be substantial enough to be considered a significant impact.

- The white-tailed kite (*Elanus leucurus*), a state fully protected species, and the loggerhead shrike (*Lanius ludovicianus*), a California species of special concern, are known to breed in the Project vicinity using tall trees and shrubs for nesting and open grasslands, marshes, and ruderal habitats for foraging. Both species are known to occasionally forage in the nearby sod and grass areas of MFA and the golf course during the winter and may pass through the Project site during local migration events. However, no suitable nesting or foraging habitat for either species is present on or directly adjacent to the Project site. Therefore, the white-tailed kite and loggerhead shrike are not expected to occur on the Project site and would not be affected by Project activities.

- Historically, the pallid bat (*Antrozous pallidus*) and Townsend's big-eared bat (*Corynorhinus townsendii*), which are both California species of special concern, were likely present in a number of locations throughout the Project vicinity, but both of their populations have declined in recent decades. Both species have been extirpated as breeders from urban areas close to the Bay, as is the case in the Project vicinity (Pierson and Rainey 1998a and 1998b, CNDDB 2020). Although suitable roosting habitat is present within the box beams of Hangar 3 on the Project site, neither species was detected during visual and acoustic preconstruction surveys as part of the implementation of the MFA Hangars 2 and 3 Due Diligence Wildlife Protection Plan (H. T. Harvey & Associates 2015). During follow-up inspections of bat deterrence devices of box beams in both

Hangars 2 and 3 in 2017 and 2018, these species were not observed. Thus, these two species are not expected to occur in Hangar 3, and they would not be affected by Project activities.

- A population of western pond turtles (*Actinemys marmorata*), a California species of special concern, is known to occur in aquatic habitats (i.e., ponds and drainage canals) north of the Project site. The Marriage Road ditch, located approximately 1,000 feet north of the Project site, is the nearest aquatic habitat. Several years ago, an H. T. Harvey & Associates ecologist discovered a very small hatchling pond turtle just north of Hangar 3 on the open, concrete tarmac. It is unknown whether this individual turtle was a hatchling that had recently emerged from an off-site nest and was in search of aquatic habitat or had dispersed from the Marriage Road ditch. Nonetheless, this finding is anomalous. The Project site does not contain any suitable aquatic or upland habitat, nor nesting habitat, for western pond turtles, and this species would not be expected to regularly disperse across hundreds of feet of open, concrete areas into the Project site with any regularity. Thus, western pond turtles are not expected to occur on the Project site during Project activities, and they would not be affected by Project activities.

One California species of special concern, the burrowing owl, has the potential to occur on the Project site. This species is discussed in detail below.

Burrowing Owl (*Athene cunicularia*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The burrowing owl is a small, terrestrial owl of open country. It prefers annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies. In California, burrowing owls are found in close association with California ground squirrels (*Otospermophilus beecheyi*); owls use the abandoned burrows of ground squirrels for shelter and nesting. The nesting season, as recognized by CDFW, runs from February 1 through August 31. After nesting is completed, adult owls may remain in their nesting burrows or in nearby burrows, or they may migrate (Gorman et al. 2003). Adult owls disperse across the landscape from 0.1 to 35 miles from their nesting burrows (Rosier et al. 2006). Burrowing owl populations have declined substantially in the San Francisco Bay area in recent years, with declines estimated at four to six percent annually (DeSante et al. 2007; Rosenberg et al. 2007).

The ruderal grassland habitats with numerous ground squirrel burrows on the nearby airfield and in other surrounding areas provide suitable breeding and foraging habitats for burrowing owls. MFA supports one of the last remaining burrowing owl population centers in the South Bay, with numerous records of both nesting and wintering owls in areas surrounding the Project site, documented most recently by H. T. Harvey & Associates pre-activity and winter owl surveys (H. T. Harvey & Associates 2019, 2020a, 2020b), and NASA biologist breeding-season surveys (Chromczak 2018, 2019). Based on a review of data provided by NASA indicating the locations of burrowing owl nests dating back to 1999, the most recent

and closest burrowing owl nesting in the Project area occurred in 2013, when a pair of owls nested approximately 775 feet east of Hangar 3 in the old fuel farm depot field, east of Macon Road (Chromczak 2013). Elsewhere, the most recent nests occurred in a gravel lot approximately 630 feet north of Hangar 3 (which has since been paved for bus operations, with PV providing habitat mitigation) and over 1,000 feet north of Hangar 3, north of Macon Road, both in 2012 (Chromczak 2012). However, no suitable nesting or foraging habitat for owls is located on the Project site or within 250 feet of the site. The nearest suitable nesting or foraging habitat for owls is located approximately 460 feet southeast of Hangar 3 in the sod area of the current fuel farm[11].

Nonetheless, staged construction materials (e.g., scaffolding, lumber, etc.) may provide temporary refugia for individual owls moving between areas of suitable habitat. For example, a single wintering owl was observed in January 2018, roosting amongst construction materials found on the east side of Hangar 3. Although no burrows existed in the area, this individual owl persisted in the Project area for approximately one month before moving on. Burrowing owls are not expected to nest or forage on the Project site, nor to roost or overwinter on the Project site, given the lack of suitable habitat; however, the possibility of an individual owl occurring on the Project site as an infrequent wintering, dispersing, or migratory burrowing owl cannot be discounted.

Sensitive Natural Communities, Habitats, and Vegetation Alliances

Sensitive Natural Communities. A query of sensitive habitats in RareFind (CNDDB 2020) identified five sensitive habitats as occurring within the nine U.S. Geological Survey quadrangles containing or surrounding the Project area: north central coast California roach/stickleback/steelhead stream (Rank GNR/SNR[12]); north central coast steelhead/sculpin stream (Rank GNR/SNR[13]); serpentine bunchgrass (Rank G2/S2.2), valley oak woodland (G3/S2.1), and northern coastal salt marsh (Rank G3/S3.2). However, none of these sensitive natural communities occurs adjacent to or on the Project site.

Sensitive Vegetation Alliances. No sensitive vegetation alliances occur adjacent to or on the Project site.

Sensitive Habitats (Waters of the U.S./State). No aquatic habitats considered waters of the U.S. or waters of the state occur on or adjacent to the Project site. The nearest aquatic habitat is the Marriage Road ditch, which is located approximately 1,000 feet north of Hangar 3.

[11] Fuel farm refers to the fuel facility which includes fuel storage, pumps, and associated infrastructure.

[12] GNR = Global Rank Not Yet Assessed; SNR = Unranked - State Conservation Status Not Yet Assessed

[13] Ibid.

Non-Native and Invasive Plant Species

The project site is occupied completely by development consisting entirely of buildings/structures, concrete, asphalt, and other impervious materials. The project area is entirely devoid of vegetation. Thus, no non-native or invasive plant species occur in the project area.

3.2.2.3 Approach to Analysis

Determination of the potential environmental consequences to biological resources is based on the following: 1) the importance (i.e., legal, commercial, recreation, ecological, or scientific) of the resource; 2) the proportion of the resource that would be affected relative to its occurrence in the region; 3) the sensitivity of the resource to proposed activities; and 4) the duration of ecological ramifications.

Effects on biological resources would be considered adverse if species or habitats of concern were adversely affected over relatively large areas, or if disturbances cause reductions in population size or distribution. Potential physical effects, such as habitat loss, noise, and effects on water resources, were evaluated to determine the type and magnitude of these effects to biological resources resulting from the proposed alternatives.

Impacts to biological resources would be considered significant if the Project resulted in (a) adverse effects on special-status species or populations of other native species that were substantial (i.e., resulting in a measurable decline in regional populations) and that could be permanent in their effect on population or subpopulation survival without active management, (b) loss (in terms of extent) or degradation (in terms of habitat quality) of sensitive or regulated habitats such as aquatic, wetland, or riparian habitats, or (c) violate federal or state regulations related to biological resources.

3.2.2.4 Environmental Consequences

Proposed Action - Building Demolition

The proposed demolition of Hangar 3 may affect burrowing owls, nesting and roosting common (i.e., non-special status) species of birds and roosting common species of bats. The Project would not result in impacts to wetlands, aquatic habitats, riparian habitats, or other sensitive habitats; threatened or endangered species or their habitats; special-status plants; trees; or wildlife movement corridors.

What follows is a description of the potential impacts of the Proposed Action on biological resources, as well as measures that are recommended to mitigate these impacts.

Impacts on Burrowing Owls

Project activities would not result in the loss of burrowing owl nesting and foraging habitat or habitat that is routinely used for overwintering. The Project area is surrounded by pavement, and no suitable nesting or foraging habitat, or natural overwintering habitat (such as burrows in grassland or ruderal habitat) is present within 250 feet of the Project site (250 feet is the typical buffer distance that should be maintained free from new disturbance around active burrowing owl nests [Trulio 2001]). In addition, no burrowing owls have nested anywhere near the Hangar 3 Project area in recent years. CDFW's 2012 Staff Report on Burrowing Owl Mitigation defines occupied burrowing owl habitat as follows: "Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years." The report also states in its habitat assessment reporting guidelines that burrowing owls identified on or adjacent to a site within the last 3 years should be considered when scoping a project and its effects on burrowing owls. This approach (i.e., using occupancy within the last 3 years) is consistent with that used by the Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (ICF 2012). Therefore, given the lack of suitable habitat on and within 250 feet of the Project site, and data reporting that owls have not nested on or within 250 feet of the Project site in the past three years, neither pre-demolition nor demolition activities at Hangar 3 would impact any burrowing owl nesting, overwintering, or foraging habitat, and would not disturb nesting owls to the point of causing nest abandonment.

Natural habitat (e.g., grassland and ruderal habitat with ground squirrel burrows) where burrowing owls might nest or overwinter is present in areas along the access routes where vehicles would pass as they travel to and from Hangar 3. Although no burrowing owls are known to be present in (or have recently nested in) areas within 250 feet of access routes, it is possible that burrowing owls could nest or overwinter in habitat adjacent to access routes. Vehicular activity associated with the Proposed Action would not represent a novel source of disturbance, as any owls using habitat within 250 feet of the access routes would already be habituated to the noise and movement of buses, construction equipment, and other vehicles. As an example, H. T. Harvey & Associates biologists monitored a single owl at an occupied burrow, located approximately 130 feet north of pavement improvement activities along Macon Road, over the course of seven days in January and February 2020. The biologists took sound level measurements using a decibel (dB) level meter during the monitoring and recorded a maximum of 58 dB from general traffic – which was heavy and concentrated to one lane at the time – and recorded a maximum of 79 dB during all road work, which included not only the continuing general traffic but multiple dump truck deliveries of asphalt, water truck passes, and asphalt paving equipment. The owl remained at its burrow and showed no behavioral signs of disturbance during all road work that was being performed nearby. Further, after the work had been completed, H. T. Harvey & Associates continued to observe this

owl in the same burrow location over the next three weeks. In addition, burrowing owls at MFA have consistently selected burrows right along the edges of runways, despite the extremely loud noises associated with aircraft.

Burrowing owls at MFA are not expected to be substantially affected by noise (H.T. Harvey and Associates 2021). However, due to the low and declining population levels of burrowing owls in the region, any impacts from the Project that may result in the injury or mortality of an individual owl would be considered a significant impact owing to potential effects on regional populations of this species. Therefore, a significant impact could occur if an owl were to abandon a nest due to construction traffic along the access routes. Implementation of Mitigation Measure BIO-1A would ensure that the temporary increase in traffic along the access routes associated with pre-demolition or demolition activities would not result in a substantial impact on or disturbance of any burrowing owls that may be present along this route by identifying the locations of any owls nesting or overwintering along the access routes and identifying any necessary measures to reduce the potential for construction vehicles to disturb those owls.

Although no known nesting or overwintering sites are present within 250 feet of the Project site, small numbers of burrowing owls could occasionally use staged equipment and construction materials (e.g., scaffolding, lumber, etc.) as temporary refugia while wintering, dispersing across the Project site between suitable habitat areas at the airfield, or migrating. If an owl is present within piles of such materials, physical disturbance of those materials could result in injury or death of an owl. Ground disturbance, noise, and vibrations caused by Project activities could potentially disturb an individual owl and cause it to move away from work areas, possibly exposing it to increased competition with other birds in the areas to which it disperses, and a greater likelihood of predation caused by unfamiliarity with the new area. As described above, the loss of a single owl from Project Activities would be considered a significant impact. Implementation of Mitigation Measures BIO-1B, BIO-1C, and BIO-1D would avoid injury or mortality of burrowing owls from activities at the Project site.

- **Mitigation Measure BIO-1A. Pre-activity Survey of Project Access Route.** 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.

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.

- **Mitigation Measure BIO-1B. Pre-activity Survey of Project Site.** 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. 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.

- **Mitigation Measure BIO-1C. Materials Monitoring and Relocation.** If Project-related activities will directly impact a pile of materials that is occupied by a perching owl, the qualified biologist will coordinate with 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). 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.

- **Mitigation Measure BIO-1D. Materials Storage.** 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.

With implementation of Mitigation Measures BIO-1A, BIO-1B, BIO-1C, and BIO-1D the Proposed Action would not have a significant impact on burrowing owls.

Impacts on Nesting and Roosting Birds

Several species of common native birds protected by the MBTA and CFGC are known to nest within Hangar 3 and on associated structures. As described in Section 3.2.2.2, Affected Environment, these species include the barn owl, which nests in the box beams; the white-throated swift, which nests in small, concealed crevices throughout the box beams and the roof of the hangar; the common raven, which is known to nest high on the sidewall truss beams and in the box beams; and the American kestrel, which has nested in a cavity formed by the truss beams and box beam. A number of other species, such as barn swallows, cliff swallows, black phoebes, and house finches, may attach nests to or build nests on top of supports on the exterior or interior of the hangar. Birds may also nest on adjacent structures, potentially close enough to Project activities to be disturbed by pre-demolition or demolition activities. Project-related disturbance during the avian nesting season (February 1 to August 31 for most species in Santa Clara County) could result in the incidental loss of eggs or nestlings either directly through the destruction or disturbance of active nests or indirectly by causing the abandonment of nests.

As described in Section 2.0, Description of Proposed Action and Alternatives, pre-demolition activities would include a survey to identify hazardous non-structural elements comprised of ACM and LBP that would then be removed and use of scaffolding. Demolition activities would be carried out in a phased process, beginning from the outside of the building by first removing outside doors, then moving on to the high end of the bay working from south to north, removing trusses as the demolition advances. The multiple components, varied timing and execution of pre-demolition activities, and the phased approach to demolition would be expected to create enough disturbance to discourage birds from nesting in Hangar 3, helping to avoid impacts. However, as stated above, Project activities could result in the incidental loss of eggs or nestlings either directly through the destruction or disturbance of active nests or indirectly by causing the abandonment of nests, which could violate the MBTA and CFGC thus resulting in a significant impact. Therefore, Mitigation Measures BIO-2A to BIO-2D would be implemented to avoid

impacts to nesting birds prior to pre-demolition activities and during each phase of demolition. With implementation of these mitigation measures, the Proposed Action would not have a significant impact on nesting birds resulting in violation of the MBTA and CFGC. In the past, pre-activity surveys conducted for nesting birds, ahead of prior renovation efforts (not part of this Project) in Hangars 2 and 3, proved to be successful in protecting active nests from disturbance, because buffer/no-construction activity zones were delineated, and construction personnel were informed that construction work must avoid those areas while nests were active. Therefore, Mitigation Measures BIO-2A to BIO-2D would be implemented to avoid impacts to nesting birds and as a result the Proposed Action would not have a significant impact on nesting birds.

- **Mitigation Measure BIO-2A. Avoidance of the Nesting Season.** 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. If Project activities begin before nesting starts, active nests will not be destroyed or disturbed by pre-demolition or demolition activities, and the pre-demolition and demolition activities themselves would discourage birds from establishing nests in areas where they could be physically impacted or indirectly disturbed once the nesting season begins.

- **Mitigation Measure BIO-2B. Pre-Activity Surveys for Nesting Birds.** 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.

- **Mitigation Measure BIO-2C. Non-Disturbance Buffers around Active Nests.** 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 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). 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.

- **Mitigation Measure BIO-2D. Nesting Bird Deterrence.** 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 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; or 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). 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.

In addition to nesting, several species of birds roost within the hangar. For example, larger birds, such as the barn owl or red-tailed hawk, may enter the hangar and roost in the box beams or the eaves of the hangar, and white-throated swifts roost in crevices in the box beams or the hangar's roof. Although birds that roost near hangar exits would be able to escape from the hangar once removal of materials begins during pre-demolition or demolition, it is possible that some birds, such as barn owls within box beams or roosting high near the ceiling in the hangar's interior, may have difficulty escaping the hangar during demolition activities. Though causing the abandonment of a nonbreeding roost site would not represent a significant impact on these species given these species' local and regional abundance and the availability

of alternative roost sites, pre-demolition activities that include the removal of non-metal components that are comprised of ACM or LBP or the demolition of structures that contain roosting birds could potentially cause injury or mortality. All native migratory birds are protected under the MBTA and CFGC. Therefore, injury or mortality of birds protected under these regulations would result in a significant impact due to the violation of the MBTA or CFGC. Such impacts could occur year-round. Therefore, Mitigation Measures BIO-2E and BIO-2F would be implemented to avoid impacts to roosting birds. With implementation of these mitigation measures, the Proposed Action would not have a significant impact on roosting birds resulting in violation of the MBTA and CFGC.

- **Mitigation Measure BIO-2E. Pre-Activity Surveys for Roosting Birds.** 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 potentially be injured or killed during pre-demolition or demolition activities.

- **Mitigation Measure BIO-2F. Passive Relocation of Roosting Birds.** 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 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, or the use of 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. 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.

Impacts on Roosting Bats

Although no special-status bats are known or expected to roost in Hangar 3, common bat species such as the Mexican free-tailed bat and Yuma myotis are known to roost in the cement towers and box beams

of Hangar 3. The proposed demolition of Hangar 3 could result in the direct physical disturbance of any roosting bats that may be present, as well as the loss of roosting sites. In addition, demolition of structures during the bat maternity season (approximately March 15 to August 31) could result in the injury or mortality of young and lactating females within a roost site. Impacts on a large day roost (i.e., 100 or more bats) of common species of bats would be considered a significant impact due to the potential effect on regional populations of the species. However, only a small number of bats (i.e., 10 to 15 bats), were detected during visual and acoustic preconstruction surveys as part of the implementation of the MFA Hangars 2 and 3 Due Diligence Wildlife Protection Plan (H. T. Harvey & Associates 2015). These surveys were conducted at the end of the maternity season (late August and early September), and larger numbers of bats, as well as substantially greater amounts of recent sign (i.e., fresh guano and urine staining), would have been present in the hangars if a large maternity roost were present. The amount of guano and staining present in the box beams, in the hangar interiors, and beneath the box beams was consistent with the small numbers of bats observed during the surveys and using the hangars year-round. Therefore, it was concluded that small numbers of bats use the hangars, and evidence does not support historical use of the hangars by large numbers of bats – although Hangars 2 and 3 have been available for use for many years, they have remained little used by local bat colonies (H. T. Harvey & Associates 2015). Further, bats are not known or expected to use adjacent structures, including nearby Building 055 or other locations that are close enough to be disturbed by Project activities.

Proposed pre-demolition activities may have a minor indirect impact on roosting bats, via disturbance of roost areas where hazardous, non-structural elements are removed. However, Project activities (both pre-demolition and demolition activities) would not be expected to have a significant impact on common species of roosting bats due to the small number of bats that could be impacted. However, activities resulting in the destruction of an occupied nonbreeding bat roost and thus potentially in the death of bats may be considered “take” by the CDFW under the CFGC. Therefore, the death of roosting bats could result in a significant impact due to a violation of the CFGC. Mitigation Measures BIO-3A through BIO-3D would be implemented to avoid injury or mortality of common species of roosting bats. With implementation of these mitigation measures, the Proposed Action would not have a significant impact on roosting bats resulting in violation the CFGC

- **Mitigation Measure BIO-3A. Exclude Bats Prior to Disturbance.** 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 (which were used successfully during restoration activities in Hangars 2 and 3 to encourage bats to leave roosts in the hangars and avoid returning [H. T. Harvey & Associates 2016]). 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.

- **Mitigation Measure BIO-3B. Conduct Pre-Activity Surveys for Roosting Bats.** 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.

- **Mitigation Measure BIO-3C. Avoid Disturbance of Maternity Roosts.** 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, despite the use of ultrasonic bat deterrence devices, 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. 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 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.

- **Mitigation Measure BIO-3D. Eviction of Roosting Bats.** If an active non-maternity roost is present in Hangar 3, despite the use of ultrasonic bat deterrence devices, 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. 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. One-way doors or other deterrence devices should be left in place for

a minimum of two weeks with a minimum of five fair-weather nights with no rainfall and temperatures no colder than 50°F.

No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, potential impacts would be uncontrolled and would result in greater direct and immediate impacts to wildlife in the vicinity of the Project site as mitigation measures identified for the Proposed Action would not be implemented. Therefore, wildlife impacts could be significant as the No Action Alternative could result in the loss of bird eggs or nestlings, the death or injury of a burrowing owl (if present in debris or materials near the hangar), and the injury or mortality of bats within a roost site in Hangar 3, thus violating the MBTA and/or CFGC or potentially affecting the regional population of burrowing owls.

3.2.3 Cultural Resources

Cultural resources are historic properties as defined by the NHPA, cultural items as defined by the Native American Graves Protection and Repatriation Act, archaeological resources as defined by the Archaeological Resources Protection Act (ARPA), sacred sites as defined by EO 13007 to which access is afforded under the American Indian Religious Freedom Act (AIRFA), and collections and associated records as defined by 36 CFR 79. For the purposes of this EA, cultural resources are divided into three major categories: archaeological resources (prehistoric and historic), architectural resources, and traditional cultural resources.

3.2.3.1 Regulatory Setting

NEPA

NEPA provides a broad framework to ensure that agencies take into consideration significant cultural and historic resources when completing projects (40 CFR 1508.8). Under NEPA, cultural and historic resources are part of the “human environment” and cultural aspects of the environment can include the natural environment, the built environment, and human social institutions. Analysis of cultural and historic resources under NEPA addresses archaeological sites, architectural resources, and traditional cultural resources.

Only significant cultural resources, known or unknown, warrant consideration with regard to potential impacts resulting from a proposed action. To be considered significant, cultural or historic resources must meet one or more significance criteria as defined in 36 CFR 60.4 for inclusion in the NRHP, similar to the

qualifications for being considered a historic property under the NHPA, or be identified as a significant resource through consultation.

NHPA

The NHPA provides a regulatory framework to ensure that significant cultural resources are recognized and protected during federal projects and programs through the Section 106 (36 CFR 800) consultation process. For compliance with the NHPA, cultural resource significance is evaluated in terms of eligibility for listing in the National Register of Historic Places (NRHP). Properties listed, or determined eligible for listing, in the NRHP are considered historic properties. Section 106 of the NHPA requires federal agencies to consider the potential effects of undertakings on historic properties. This requires identifying an Area of Potential Effects (APE), which is a geographic area where a federal undertaking may affect historic properties. Potential effects to any historic properties identified within the APE are then considered. If the federal agency determines that an undertaking would result in an adverse effect, then the federal agency must consult with the State Historic Preservation Officer (SHPO) and other relevant parties to resolve the adverse effect through avoidance, minimization, or mitigation.

Per 36 CFR 800.5(a)(1) of the NHPA, the Criteria of Adverse Effects are used to evaluate “when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.” Under 36 CFR 800.5(a)(2), examples of adverse effects include the following:

i) Physical destruction of or damage to all or part of the property.

ii) Alteration of a property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped accesses that is not consistent with the Secretary of the Interior’s standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines.

iii) Removal of the property from its historic location.

iv) Change of the character of the property’s use or of physical features within the property’s setting that contribute to its historic significance.

v) Introduction of visual atmospheric, or audible elements that diminish the integrity of the property’s historic features.

vi) Neglect of a property which causes deterioration except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.

vii) Transfer, lease, or sale of a property out of Federal ownership or control without adequate legally enforceable restrictions or conditions to ensure long-term preservation of the property's significance.

In the event an undertaking results in adverse effects to historic properties, the lead federal agency, through consultation with SHPO and other interested parties, resolves the adverse effects through the preparation of a Memorandum of Agreement (MOA), which stipulates a series of mitigating actions that must take place in order to resolve the adverse effects identified. Through the execution of an MOA, adverse effects are then resolved in accordance with the NHPA.

While Section 106 consultation under the NHPA identifies potential adverse effects to historic properties, these adverse effects do not always equate to significant impacts under NEPA, as outlined under 36 CFR 800.8(a)(1), which states, "[a] finding of adverse effect on a historic property does not necessarily require an Environmental Impact Statement (EIS) under NEPA." An EIS is only required when a significant impact cannot be mitigated. Consultation and review under the NHPA and NEPA are two different types of Federal environmental procedure and the integration of NEPA in the Section 106 process is encouraged but not required, and agencies are authorized to coordinate and integrate aspects of both into their reporting (Council on Environmental Quality, Executive Office of the President, and Advisory Council on Historic Preservation 2013). If mitigation is implemented under the Section 106 process, then significant impacts under NEPA could be reduced to less than significant and the lead federal agency could complete a mitigated Finding of No Significant Impact (FONSI).

3.2.3.2 Affected Environment

The Project area is located entirely within the expanded boundaries of the NAS Sunnyvale Historic District. The APE identified as part of the Section 106 consultation process is primarily defined by the boundaries of the historic district, although the eastern boundary extends into the eastern adjacent parcels in neighboring Sunnyvale, California, before extending north through the Lockheed Martin Missile and Space Division campus toward the San Francisco Bay.

Identified Cultural Resources

Archaeological Resources

In 2017, AECOM prepared the *NASA Ames Research Center Archaeological Resources Study* on behalf of NASA. This study identifies potential archaeological resources throughout MFA and is intended to support the NASA ARC Integrated Cultural Resources Management Plan (AECOM 2014), which provides guidance for the treatment of cultural resources, both archaeological and architectural, on the NASA ARC property. The AECOM study includes a thorough collection of previous archaeological and geotechnical studies, previously recorded resources, historical maps, Sacred Land File searches from the Native American Heritage Commission (NAHC), and other sources, to outline and identify the potential for archaeological resources throughout the site. Based upon these records, an archaeological sensitivity map was created that illustrates areas where archaeological properties are more likely to be extant. The identified areas of sensitivity are organized into four categories:

- Heightened Historic-era Archaeological Sensitivity
- Heightened Prehistoric-era Archaeological Sensitivity
- Heightened Geoarchaeological Sensitivity
- Low Archaeological Sensitivity

The Project area overlaps with areas of heightened historic-era and prehistoric-era archaeological sensitivity, but there are no known archaeological sites within the APE. Although not expected, subsurface cultural resources may be present at or near the Project site, particularly in relation to the overlapping heightened prehistoric-era and historic-era archaeological sensitivity zones.

Architectural Resources

Numerous studies have documented and evaluated the historical significance of the architectural resources at MFA. In 1994, the NAS Sunnyvale Historic District was identified and listed on the NRHP. This discontinuous historic district is made up of the original 1930s portion of MFA, also known as Shenandoah Plaza, which centered around Hangar 1 and the western portion of the MFA property, as well as the eastern side of the airfield surrounding Hangars 2 and 3. In 2013, additional survey work identified the NRHP-eligible expanded boundaries for the NAS Sunnyvale Historic District, which encompasses the entirety of the airfield at MFA, primarily the runway network and buildings directly associated with significant missions and operations during World War II through 1961 (AECOM 2013).

Hangars 2 and 3 are large, wood framed dirigible hangars located on the eastside of the airfield. Constructed between 1942 and 1943, Hangars 2 and 3 are nearly identical hangars based upon a standardized plan that was utilized for similar hangars located at a handful of other airfields that were in operation during World War II. Hangar 2, located directly east adjacent to the airfield, was constructed first, whereas Hangar 3 was constructed second, immediately adjacent to Hangar 2. Both were designed to facilitate the lighter than air coastal defense program at MFA during World War II, and both were used to house fixed wing aircraft that operated out of MFA over the following decades (Stantec 2021).

In 1988, both hangars were determined to be individually eligible for listing on the NRHP for significance associated with events during World War II, and for their overall engineering and design. In 1994, Hangars 2 and 3 were each listed on the NRHP as contributors to the NAS Sunnyvale Historic District as excellent examples of military engineering and design during World War II. In 2013, Hangars 2 and 3 were also identified as contributors to the NRHP-eligible expanded NAS Sunnyvale Historic District, which also includes the airfield features at MFA that were significant to the various missions that took place between 1933-1961 (Stantec 2021).

Traditional Cultural Resources

In 2021, NASA ARC requested an updated Sacred Land files search from the NAHC for MFA, and the results were negative. There are no federally recognized tribes as defined by the U.S. Department of the Interior's Bureau of Indian Affairs and listed in 81 Federal Register 5019. A list of non-federally recognized Native American tribes and/or representatives who may have interest in NASA ARC and future undertakings and Section 106 consultation was provided. NASA ARC has consulted with these representatives on other undertakings at MFA that have had the potential to affect cultural resources at known sites and in areas with high sensitivity for prehistoric archaeological resources. However, these representatives have not provided any additional information regarding known sacred lands or previously undocumented archaeological resources.

Native American Consultation

For this Project, because none of the tribes in the area are federally recognized and the Sacred Lands File search (dated July 28, 2021) did not identify any known Sacred Land Files cultural resources in the area, tribal consultation was not undertaken. No cultural resources significant to tribes were identified within the APE.

3.2.3.3 Approach to Analysis

To communicate Section 106 information and meet the requirements under the NHPA, a cultural resources technical study identified potential historic properties within the APE and assessed potential adverse effects on historic properties. Pursuant to Section 106 of the NHPA, NASA made a determination of eligibility on historic properties in the APE and a finding of adverse effect. The SHPO concurred with NASA's findings on August 21, 2020. The Advisory Council on Historic Preservation elected to participate in Section 106 consultation. Additional consulting parties for the development of an MOA to resolve adverse effects to historic properties include the City of Mountain View and the Moffett Field Historical Society. For the purposes of review under NEPA, the adverse effects on historic properties identified through Section 106 consultation are addressed as potentially significant impacts on cultural resources. The Section 106 technical study and correspondence related to the Section 106 process can be found in Appendix C, Section 106 Report of this document, with complete findings, analyses, and letters produced for the Section 106 process.

For the purpose of this analysis, impacts to cultural and historic resources would be considered significant if the Project results in an adverse effect on a historic property that cannot be mitigated. There are no identified Traditional Cultural Resources in the Project area; therefore, no impacts are anticipated on this resource type.

3.2.3.4 Environmental Consequences

Proposed Action - Building Demolition

Impacts to Archaeological Resources

As part of the Proposed Action, there are no ground disturbing activities located within the identified areas of heightened prehistoric-era and historic-era archaeological sensitivity or areas with known sites. In the event ground disturbing activities are required as part of the Proposed Action and archaeological materials were discovered, all work would be halted, the NASA Cultural Resources Manager would be notified, and per the requirements of the lease agreement between NASA and PV, the appropriate steps outlined in the Integrated Cultural Resources Management Plan Standard Operation Procedure 8: Inadvertent Discovery would be implemented (AECOM 2014). Therefore, with the implementation of these measures, the Proposed Action would not result in a significant impact to archaeological resources.

Impacts to Architectural Resources

As concurred upon by the SHPO through the Section 106 consultation process in a letter provided to NASA on August 21, 2020 (SHPO 2020), the Proposed Action would adversely affect Hangar 3 and the NAS Sunnyvale Historic District, primarily through the complete physical loss of Hangar 3, which is both a an individually eligible historic structure and a significant contributor to the NRHP-listed district. The removal of the structure would also disrupt the visual qualities and historic character within the NAS Sunnyvale Historic District as a whole, resulting in indirect adverse impacts. This would impact the historic setting of the individual contributors, particularly on the eastside of the airfield, which includes Hangar 2, Building 055, the East Aircraft Parking Apron, other contributing airfield infrastructure (runways and taxiways), operations and support buildings, and the munitions magazines and historic handling facilities.

While the Proposed Action would result in adverse effects to the NAS Sunnyvale Historic District, the NAS Sunnyvale Historic District and its remaining various contributors would retain sufficient, albeit diminished, historic integrity following the completion of the Proposed Action and would continue to qualify for listing on the NRHP. Additionally, the Proposed Action would include execution of a MOA with stipulations to resolve adverse effects under Section 106 of the NHPA. The MOA is being developed as part of the ongoing Section 106 process and may include stipulations for the archival documentation of Hangar 3, such as a Historic American Engineering Record (HAER), or other methods of recording its history for posterity. With implementation of the MOA, adverse effects would be resolved under Section 106 and the impact on architectural resources would be less than significant.

Additional information regarding the Section 106 process for the Project is located on the NASA ARC website (https://historicproperties.arc.nasa.gov/section106.html) and can be found in Appendix C, Section 106 Report.

No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, direct and indirect impacts to Hangar 3, the NAS Sunnyvale Historic District, and the other contributors to the NAS Sunnyvale Historic District in the vicinity including the adjacent Hangar 2 (individually eligible and a contributor to the historic district) and Building 055 could occur from the collapse of Hangar 3. Potential impacts to NAS Sunnyvale Historic District contributing buildings in the vicinity include damage to the exterior of the structures from the uncontrolled collapse of Hangar 3, as well as the potential for long-term structural damage to the contributors from the force of collapse of Hangar 3, which could also cause damage across the Historic District from the sheer size of Hangar 3. Under the No Action Alternative,

there would not be a Section 106 process or resulting MOA to address and resolve adverse effects to historic properties. Therefore, the No Action Alternative could result in a significant impact to cultural resources.

3.2.4 Greenhouse Gases and Climate Change

This section provides background information about greenhouse gas (GHG) emissions and climate change. GHG emissions have the potential to adversely affect the environment because such emissions contribute cumulatively to global climate change. It is unlikely that a single project will contribute significantly to climate change, but cumulative emissions from many projects could affect global GHG concentrations and the climate system. Therefore, impacts are analyzed within the context of the Proposed Action's potential contribution to the cumulatively significant impact of climate change.

Natural processes and human actions have been identified as affecting the climate. The Intergovernmental Panel on Climate Change (IPCC) has concluded that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward (IPCC 2021).

However, increasing GHG concentrations resulting from human activity since the 19th century, such as fossil fuel combustion, deforestation, and other activities, are believed to be a major factor in climate change (IPCC 2021). GHGs in the atmosphere naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back into space—a phenomenon sometimes referred to as the "greenhouse effect." Some GHGs occur naturally and are necessary for keeping the Earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years, largely as a result of human activity, have trapped solar radiation and decreased the amount that is reflected back into space, intensifying the natural greenhouse effect, and resulting in the increase of global average temperature.

Carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are the principal GHGs. When concentrations of these gases exceed historical concentrations in the atmosphere, the greenhouse effect is intensified. CO_2, methane, and nitrous oxide occur naturally and are also generated through human activity. With regard to human activity emissions sources, emissions of CO_2 are largely by-products of fossil fuel combustion; methane results from off-gassing, natural gas leaks from pipelines and industrial processes, and incomplete combustion associated with agricultural practices, landfills, energy providers, and other industrial facilities; nitrous oxide emissions are also largely attributable to agricultural practices and soil management. CO_2 sinks include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution, and are two

of the largest reservoirs of CO_2 sequestration. Other human-generated GHGs include fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, which have much higher heat-absorption potential than CO_2 and are byproducts of certain industrial processes.

CO_2 is the primary anthropogenic (human-caused) GHG and has been established as the reference gas to demonstrate the relative effect of different GHGs of equal mass. The effect that each of the GHGs has on global warming is the product of the mass of their emissions and their global warming potential (GWP). GWP indicates how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2. For example, methane and nitrous oxide are substantially more potent GHGs than CO_2, with GWPs of 25 and 298 times that of CO_2 respectively, which has a GWP of 1, as the reference gas.

In emissions inventories, GHG emissions are typically reported as metric tons (MT) of CO_2 equivalent (CO_2e). CO_2e is calculated as the product of the mass emitted of a given GHG and its specific GWP.

3.2.4.1 Regulatory Setting

There are numerous regulations regarding GHGs and climate change that have been enacted at the federal and state level. The following includes the key federal, state, and regional GHG regulations applicable to the Project.

Federal

Greenhouse Gas Endangerment. On April 2, 2007, in Massachusetts v. USEPA, 549 US 497, the Supreme Court found that GHGs are air pollutants covered by the CAA. The Court held that the USEPA must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the USEPA is required to follow the language of Section 202(a) of the CAA.

On April 17, 2009, the USEPA Administrator signed proposed “endangerment” and “cause or contribute” findings for GHGs under Section 202(a) of the CAA. The USEPA held a 60-day public comment period, considered public comments, and issued final findings. The USEPA found that six GHGs taken in combination endanger both the public health and the public welfare of current and future generations. The USEPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse effect as air pollution that endangers public health and welfare under CAA Section 202(a).

Mandatory Reporting of Greenhouse Gases. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, USEPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S. and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the USEPA

Executive Order 13990. On January 20, 2021, President Biden issued Executive Order (EO) 13990, "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis." Section 7(e) of this EO directs CEQ to rescind the 2019 Draft GHG Guidance and review, revise, and update its 2016 GHG Guidance. The withdrawal of the 2019 guidance did not change any law, regulation, or other legally binding requirement. In the interim, before CEQ updates the 2016 guidance, agencies should consider all available tools and resources in assessing GHG emissions and climate change effects of their proposed actions, including, as appropriate and relevant, the 2016 GHG Guidance.

California

California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this legislation establishes a broad framework for the state's long-term GHG reduction and climate change adaptation program. The governor has also issued several EOs related to the state's evolving climate change policy. Of particular importance are the following:

Executive Order S-3-05. In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Arnold Schwarzenegger issued EO S-3-05, which set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Executive Order B-30-15. Governor Brown signed EO B-30-15 on April 29, 2015, which:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030;

- Ordered all state agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets; and
- Directed CARB to update the Climate Change Scoping Plan (Scoping Plan) to express the 2030 target in terms of million metric tons of CO_2 equivalent.

Assembly Bill (AB) 32 and Senate Bill (SB) 32. In September 2006, Governor Schwarzenegger signed the California Global Warming Solutions Act of 2006 (AB 32). AB 32 established regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and established a cap on statewide GHG emissions. AB 32 required that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction was to be accomplished by enforcing a statewide cap on GHG emissions that would be phased in starting in 2012. To effectively implement the cap, AB 32 directed CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specified that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also included language stating that if the AB 1493 regulations could not be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

In 2016, SB 32 and its companion bill AB 197 amended Health and Safety Code Division 25.5, establishing a new climate pollution reduction target of 40 percent below 1990 levels by 2030, and included provisions to ensure that the benefits of state climate policies reach disadvantaged communities.

Climate Change Scoping Plan. A specific requirement of AB 32 was to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020. CARB developed and approved the initial scoping plan in 2008, outlining the regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs that would be needed to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives.

CARB approved the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan Update) in December 2017. The 2017 Scoping Plan Update outlines the proposed framework of action for achieving the 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels. Through a combination of data synthesis and modeling, CARB determined that the target statewide 2030 emissions limit is 260 million metric tons of carbon dioxide equivalents ($MMTCO_2e$), and that further commitments would need to be made to achieve an additional reduction of 50 $MMTCO_2e$ beyond current policies and programs.

In the 2017 Scoping Plan Update, CARB recommends statewide targets of no more than 6 metric tons of CO_2e ($MTCO_2e$) per capita by 2030 and no more than 2 $MTCO_2e$ per capita by 2050. CARB acknowledges that because the statewide per-capita targets are based on the statewide GHG emissions inventory that includes all emissions sectors in the state, it is appropriate for local jurisdictions to derive evidence-based local per-capita goals based on local emissions sectors and growth projections.

3.2.4.2 Affected Environment

U.S. Emissions

In 2018, U.S. GHG emissions totaled 6,677 $MMTCO_2e$, or 5,903 $MMTCO_2e$ after accounting for sequestration from the land sector (USEPA 2020b). Emissions increased from 2017 to 2018 by 3.1 percent (after accounting for sequestration from the land sector). This increase was largely driven by an increase in emissions from fossil fuel combustion, which was a result of multiple factors, including more electricity use due to greater heating and cooling needs resulting from a colder winter and hotter summer in 2018 in comparison to 2017. GHG emissions in 2018 (after accounting for sequestration from the land sector) were 10.2 percent below 2005 levels.

According to the 2018 inventory, CO_2 emissions make up over 81 percent of the total GHG emissions with methane at 10 percent, and nitrous oxide and fluorinated gases at 7 and 3 percent, respectively.

California Greenhouse Gases Emissions Inventory

The CARB compiles GHG inventories for the state. The annual statewide GHG emission inventory is an important tool in tracking progress towards meeting statewide GHG goals. This document summarizes the trends in emissions and indicators in the California GHG Emission Inventory (the GHG Inventory). The 2020 edition of the inventory includes GHG emissions released during 2000-2018 calendar years. In 2018, emissions from GHG emitting activities statewide were 425 $MMTCO_2e$, 0.8 MMTCO2e higher than 2017 levels and 6 $MMTCO_2e$ below the 2020 GHG Limit of 431 $MMTCO_2e$.

Consequences of Climate Change in California

In California, climate change may result in consequences such as the following (from Moser et al. 2009):

- A reduction in the quality and supply of water from the Sierra snowpack.
- Increased risk of large wildfires.
- Reductions in the quality and quantity of certain agricultural products.

- Exacerbation of air quality problems.
- A rise in sea levels resulting in the displacement of coastal businesses and residences.
- An increase in temperature and extreme weather events.
- A decrease in the health and productivity of California's forests.

3.2.4.3 Approach to Analysis

GHG emissions were calculated using the same methodology and assumptions as the air quality analysis (see Appendix B, Air Quality CalEEMod Modeling Assumptions). The CalEEMod Version 2020.4.0 computer program (California Air Pollution Control Officers Association 2021) was used to generate the emissions estimate for construction GHG emissions from off-road vehicles (e.g., excavators, boom lifts, etc.) and on-road mobile vehicles (e.g., on-site worker vehicles, haul trucks). CalEEMod was updated in June 2021 after completion of construction estimates. Off-road emission factors have not been updated in the latest version of CalEEMod (Version 2020.4.0), but the on-road emission factors were updated to reflect the CARB EMFAC2017 updates (the previous CalEEMod version used CARB EMFAC2014 data). Other updates to the model reflect changes to building energy use, trip generation, and air-district specific updates for architectural coatings, trip lengths, and trip type allocations (BAAQMD not included). Given that most emissions generated by the Project are from off-road construction equipment, the previous modeling was retained. Impacts from GHG emissions would be considered significant if Project GHG emissions exceed the federal thresholds for Mandatory Reporting or exceed regional thresholds of significance established by BAAQMD.

Thresholds

There are no federal numeric thresholds that delineate when a proposed action may have an adverse impact. The CEQ Draft Guidance indicates where possible GHG emissions should be quantified and reported. As noted by CEQ, "climate change is a particularly complex challenge given its global nature and inherent interrelationships among its sources, causation, mechanisms of action and impacts…" (CEQ 2016).

While the federal government has not adopted any numeric thresholds to determine what constitutes a substantial amount of GHG emissions, the Final Mandatory Reporting of Greenhouse Gases Rule uses a metric of 25,000 $MTCO_2e$ for establishing the level a source becomes substantial enough that it should be reported and is used to define a significant impact for purposes of this EA.

Similarly, BAAQMD does not provide a threshold recommendation for construction related GHG emissions. In April 2022, the BAAQMD Board of Directors adopted the BAAQMD guidance, *CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans*. The BAAQMD concurrently developed an updated *Thresholds of Significance Justification Report*. This guidance and associated justification report are not regulatory but present the BAAQMD's recommended thresholds of significance for use in determining whether a proposed project would have a significant impact on climate change and provides the substantial evidence that lead agencies may need to support their use of these thresholds. The *Thresholds of Significance Justification Report* includes acknowledgement by BAAMQD that the updated threshold recommendations do not include a proposed construction-related threshold. BAAQMD's updated recommended thresholds of significance address long-term operational GHG emissions sources associated with proposed projects. Because construction emissions typically occur over a relatively short duration, they generally represent a small portion of a typical project's lifetime generation of GHG emissions. Oftentimes, an accepted practice is to amortize construction emissions over the anticipated lifetime of a Project, so that GHG reduction measures would address construction GHG emissions as part of the operational GHG reduction strategies. However, there is no anticipated increase in operational activities due to the Proposed Action, as such there is no increase in operational GHG emissions. In addition, the updated BAAQMD thresholds focus on best management practices and design features that can be incorporated into project operations, and do not provide quantitative GHG emissions rates or bright-line annual emissions limits to which construction-related emissions could be compared.

Nonetheless, a project's incremental generation of GHG emissions contributes to global GHG concentrations and related impacts to the global climate system. Therefore, construction related GHG emissions were calculated and disclosed, consistent with CEQ guidance. The project's overall contribution to global GHG concentrations was evaluated semi-quantitatively, considering both the projects quantified emissions in comparison to the federal GHG Mandatory Reporting Threshold, as a point of reference, and any emissions benefits the Proposed Action may have.

3.2.4.4 Environmental Consequences

Proposed Action – Building Demolition

The Proposed Action construction emissions are provided in Table 3-8. As shown below, the total construction emissions from the Proposed Action would be 1,124 $MTCO_2e$. These emissions would be generated over an approximately 9-month construction duration; at the completion of construction, the generation of emissions associated with the Proposed Action would cease. The emissions generated by the Proposed Action would occur over a short duration of time and would not exceed the Federal

Mandatory Reporting Threshold. In addition, while not quantified, the ongoing emissions generated by equipment and vehicle use to support intermittent repairs and maintenance activities to address the existing structure's damage and temporarily reduce the chance of further collapse would be eliminated with implementation of the Proposed Action. Therefore, impacts would result in a less than significant contribution to the significant cumulative impact to global climate change.

Table 3-8 Estimated Construction GHG Emissions for the Proposed Action

Parameter	Metric Tons CO2e
Total Emissions 2022	216
Total Emissions 2023	908
Total Project Emissions[1]	1,124
Federal Mandatory Reporting Threshold	25,000
Does the Proposed Action exceed threshold?	No

Note:
BAAQMD = Bay Area Air Quality Management District
CO2e = carbon dioxide equivalent
[1] CalEEMod modeling was performed assuming a 2021 construction start date, however construction would not begin until 2022. Due to stricter on-road and off-road emissions controls with each passing year, the emissions presented above are a conservative estimate and would likely be lower if construction is pushed into a later start date.
Source: Appendix B, Air Quality CalEEMod Modeling Assumptions.

No Action Alternative

Under the No Action Alternative there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, demolition, waste removal, and recycling activities like the Proposed Action would be required. GHG emissions would be generated from construction activities and would be comparable to the Proposed Action. Therefore, the No Action Alternative would have a less than significant contribution to the significant cumulative impact to global climate change.

3.2.5 Hazards, Safety, and Waste Management

This section provides a discussion of storage and handling, waste management, and health and safety hazards related to human health (construction crews and operational employees) and the environment .

This evaluation includes risks of material exposures, operational safety hazards, solid waste disposal and structural hazards.

The terms “hazardous materials” and “hazardous waste” refer to substances defined as hazardous by CERCLA and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA). In general, hazardous materials include substances that because of their quantity, concentration, or physical, chemical, or infectious characteristics, may pose risk to public health or the environment when released into the environment. Issues associated with hazardous material and waste typically center around waste streams, underground storage tanks, aboveground storage tanks, and the storage, transport, use, and disposal of fuels, lubricants, and other industrial substances. When such materials are improperly stored, handled, or disposed of, they can threaten the health and well-being of wildlife species, habitats, and soil and water systems, as well as humans.

3.2.5.1 Regulatory Setting

The management of hazardous materials and hazardous waste is governed by specific environmental statutes. The following includes the key federal and state regulations applicable to the Project.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 USC 9601–9675) as amended by the Superfund Amendments and Reauthorization Act of 1986. CERCLA/Superfund Amendments and Reauthorization Act regulate the cleanup of hazardous substance releases in soil and groundwater.

Department of Transportation Hazardous Materials Transportation Act (49 USC 5101). The Department of Transportation, in conjunction with the USEPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to safe storage and transportation of hazardous materials.

Emergency Planning and Community Right-to-Know Act of 1986 (42 USC 11001–11050). The Emergency Planning and Community Right-to-Know Act requires emergency planning for areas where hazardous materials are manufactured, handled, or stored and provides citizens and local governments with information regarding potential hazards to their community.

Federal Facility Compliance Act of 1992 (Public Law 102-426). This act provides for a waiver of sovereign immunity on the part of federal agencies with respect to state and local requirements relating to RCRA solid and hazardous waste laws and regulations. This makes federal agencies subject to the state and local requirements and enables states to impose civil fines on federal agencies.

Occupational Safety and Health Administration (OSHA) Act of 1970. Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. OSHA is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. At the federal level, the Hazard Communication Standard requires that workers be informed of the hazards associated with the materials they handle.

Pollution Prevention Act of 1990 (42 USC 13101–13109). This act encourages minimization of pollutants and waste through changes in production processes.

Resource Conservation and Recovery Act (RCRA) (42 USC 6901–6992). RCRA, including the 1986 Federal Hazardous and Solid Waste Amendments, is the primary law governing generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1984 Federal Hazardous and Solid Waste Amendments focused on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

USEPA Regulation on Identification and Listing of Hazardous Waste (40 CFR Part 261). This regulation identifies solid wastes subject to regulation as hazardous and addresses notification requirements under RCRA.

USEPA Regulation on Standards for the Management of Used Oil (40 CFR Part 279). This regulation delineates requirements for storage, processing, transport, and disposal of oil that has been contaminated by physical or chemical impurities during use.

USEPA Regulation on Designation, Reportable Quantities, and Notification (40 CFR Part 302). This regulation identifies reportable quantities of substances listed in CERCLA and sets forth notification requirements for releases of those substances. It also identifies reportable quantities for hazardous substances designated in the CWA.

Title 14, California Code of Regulations, Division 7. CalRecycle regulations pertaining to nonhazardous waste management in California include minimum standards for solid waste handling and disposal; regulatory requirements for composting operations; standards for handling and disposal of asbestos containing waste; resource conservation programs; enforcement of solid waste standards and administration of solid waste facility permits; permitting of waste tire facilities and waste tire hauler registration; special waste standards; used oil recycling program; electronic waste recovery and recycling;

planning guidelines and procedures for preparing, revising, and amending countywide Integrated Waste Management Plans; and solid waste cleanup program.

Hazardous Waste Control Law of 1972. The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to but more stringent than the federal RCRA program. The Act is implemented by regulations contained in Title 26 of the California Code of Regulations (CCR), which describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transportation; design and permitting of recycling, treatment, storage, and disposal facilities; treatment standards; operation of facilities and staff training; and closure of facilities and liability requirements. These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste.

Bay Area Air Quality Management District (BAAQMD) Regulation 11, Rule 2: Asbestos Demolition, Renovation, and Manufacturing. BAAQMD regulates the emissions of asbestos into the atmosphere during demolition activities and also establishes appropriate water disposal procedures. The rule states that ACM must be adequately wetted prior to demolition to prevent the release of asbestos-containing particles and requires the visual inspection, sampling, and laboratory analysis prior to demolition for all suspected ACM.

California Labor Code Section 6716 to 6717. The Labor Code Section 6716 to 6717 provides for the establishment of standards that protect the health and safety of employees who engage in lead-related construction work, including construction, demolition, renovation, and repair.

3.2.5.2 Affected Environment

Hangar 3 was built in 1943 and has been unoccupied since 2017. Considering the age of the structure, there is a potential for the presence of ACM and LBP. LBP was common in buildings built before 1978. Many of the surveyed buildings at ARC have been found to contain LBP. Previous surveys of Hangar 3 have indicated presence of asbestos in the cement panels and LBP in peeling paint (Page & Turnbull 2006). Similarly, PCB have been found in many buildings constructed before 1978 when use of these chemicals in construction materials was common and could potentially be present in Hangar 3 and existing transformers serving Hangar 3. In addition, the wood in Hangar 3 may be treated with fire proofing material that could be hazardous. Asbestos containing materials (ACM) were banned due to their potential to increase the risk of lung disease and cancers. Lead and lead-based paint have been banned due to their toxicity and potential for harming developing tissues and organs. PCB are also carcinogenic and are known to accumulate in the environment. All of these materials are considered hazardous and

the proper assessment for and removal of them during demolition and ground disturbance is governed by existing regulations.

ARC is home to several research development projects that potentially use hazardous materials. However, there is no current use of these materials immediately adjacent to Hangar 3. The 2002 NASA Ames Development Plan Final Programmatic Environmental Impact Statement noted that the unpaved and paved areas north of Hangar 3 were potentially used for dumping solvents, paints, and industrial wastewater by past Navy operations, before this area was paved in 1979. The 2014 sub-slab soil vapor sampling indicated presence of VOCs underneath Hangar 3. The Navy is performing ongoing remedial activities in the Project area to address groundwater contamination from past activities and a final workplan was submitted to the RWQCB in February 2020 (NAVFAC 2020a). More recent soil and groundwater sampling was conducted in April 2020 to assess whether shallow groundwater contamination might be associated with, and/or the likely potential source of, the sub-slab vapor contamination previously detected beneath Hangars 2 and 3 (NAVFAC 2020b). The results indicated exceedances in contaminants and sub-slab vapor contamination. The data generated from the annual monitoring provide evidence of generally decreasing concentration of contaminants over time, and a general decrease in the extent of groundwater plumes, which are likely attributable to ongoing natural attenuation (NAVFAC 2020a).

3.2.5.3 Approach to Analysis

The level of potential impacts associated with hazardous substances is based on their toxicity, reactivity, ignitability, and corrosivity. Impacts associated with hazardous materials and wastes would be considered significant if the storage, use, transportation, or disposal of hazardous substances and solid waste activities would substantially increase human health risk, environmental exposure, or physical safety or would exceed landfill capacity. The Project would not result in any operational impacts since no use has been proposed post-demolition, and contaminated materials within the Hangar 3 building would be removed and only the concrete slab would remain under the Proposed Action. Therefore, operational impacts from hazardous materials or wastes are not discussed further.

3.2.5.4 Environmental Consequences

The Proposed Action would address impacts from structural failure of Hangar 3 and, therefore, impacts to physical safety from collapse of Hangar 3 would not occur.

Proposed Action – Building Demolition

Demolition of Hangar 3 could potentially expose on-site workers and other MFA users in the vicinity of the Project site to contaminants or hazardous materials. Demolition could also generate hazardous waste as discussed below.

Hazardous Materials and Worker Safety

The Proposed Action would include demolition of a structure that was constructed prior to 1978, and therefore may contain hazardous materials such as LBP, asbestos, and PCB, to which on-site workers and other MFA users could be exposed during pre-demolition and demolition activities. As required by BAAQMD Regulation 11 Rule 2, visual inspection, sampling, and laboratory analysis would be conducted prior to demolition for all suspected ACM. Additionally, a visual inspection for flaking paint, soil staining, or other conditions that could result in exposure to hazardous materials such as lead and PCB would be implemented. If lead/asbestos/PCB were found to be present, USEPA, BAAQMD, and OSHA requirements would be implemented. Prior to initiating pre-demolition and demolition activities, the contractor would prepare an abatement plan for removal of asbestos, PCB, and/or LBP. The Lessee would coordinate all pre-demolition and demolition activities with NASA.

The roof of Hangar 3 would be evaluated for the presence of any fire-proofing material prior to abatement. If material deemed to be hazardous was found, as identified in USEPA Regulation on Identification and Listing of Hazardous Waste (40 CFR Part 261), encapsulation (or containment) would be considered prior to abatement by covering the material with an appropriate spray.

Scaffolding would be required for the workers during pre-demolition (Phase 1) and could result in hazards such as a slip, trip, or fall. The scaffolding would be installed per OSHA's standards that include provisions such as, but not limited to fall protection, guardrail height, training, and inspection. All scaffolding would be removed once abatement was complete in Phase 1.

Demolition in Phase 2 would occur by mechanical equipment and potential hazards during this phase could include mishandling of equipment or falling debris. All demolition would occur in compliance with OSHA standards for Safety and Health Regulations for construction. In addition, a site-specific health and safety plan would be prepared in accordance with AMM-1: EIMP and shared with all on-site workers to minimize potential safety concerns associated with both phases. The Proposed Action would be limited to removal of above-ground components, and exposure to subsurface soil contamination would not be anticipated. However, the health and safety plan would include safety measures and protocols for all construction activities related to the Proposed Action to ensure that demolition would not inadvertently expose personnel to site contaminants or release additional contaminants into the environment.

Therefore, the Proposed Action would not result in significant impacts from exposure to hazardous materials or worker safety by implementing appropriate plans and complying with applicable regulations.

Waste Management

All waste materials would be characterized during both Phases 1 and 2 as noted in Section 2.2, Proposed Action – Building Demolition. Once characterized, the handling and management of waste generated during demolition would follow a hierarchical approach of source reduction, recycling, treatment, and disposal to the extent possible as part of Phase 3. Non-hazardous wastes would be segregated from hazardous wastes or from incompatible wastes before being loaded onto trucks or trailers for transport to an offsite approved disposal facility. Waste contents would be confirmed by the demolition contractor or via sampling before being transferring offsite, and wastes would be managed in compliance with applicable regulatory requirements. All hazardous materials would be staged in a Hazardous Materials Storage Area within the fenced work area shown in Figure 2-1, and clearly labeled or marked.

Non-hazardous materials that were determined to be candidates for recycling would be stored securely and transported to a licensed recycling facility. Depending on the types, sizes, volumes, hazardous contents, or ultimate destinations of materials, containment would be in drums, cubic yard boxes, roll-off bins, lined trucks or trailers, or tanks to prevent the release of materials or hazardous contents. Bins containing hazardous wastes would be kept securely closed when not in use and would be transported offsite for disposal. Transportation of all materials would occur in compliance with applicable regulations that include but are not limited to packaging, labeling, and markings. The approximate amount of demolition material to be generated is 6,000 tons (4,000 cubic yards) of debris, 650 tons (435 cubic yards) of bricks, and 30,500 tons (20,300 cubic yards) of concrete from bents and support structures. As noted in Section 2.2.3, Phase 3 – Waste Disposal and Recycling, most of this could be transported offsite to a recycling facility, including bricks, and at least 90 percent of the material would be expected to be salvaged. Therefore, it is reasonable to assume the amount of material requiring disposal would be much less than 24,375 cubic yards (the sum total of debris, brick and concrete to be generated). The demolished material would likely be transported to one or more of these facilities: Zanker Recycling or Guadalupe Landfill, Kettleman Hills Hazardous Waste Facility, and/or US Ecology Nevada, Inc. As of 2012, the Zanker Landfill has a remaining capacity of 640,000 cubic yards (CalRecylce 2019). The Kettleman Hills facility has a remaining capacity of approximately 4.9 million cubic yards (WM, Inc. 2020). The US Ecology facility had approximately 45.5 million cubic yards of remaining permitted capacity as of December 2018 (US Ecology, Inc. 2019). Therefore, all of these facilities have adequate capacity to accept demolition waste from the Proposed Action. Implementation of the Proposed Action would create short-term impacts with regard to generation of hazardous wastes during pre-demolition and demolition

activities. However, no significant impacts would occur as there is adequate capacity at the landfills and storage and transportation of hazardous materials would comply with applicable regulations.

No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, the No Action Alternative could result in the uncontrolled release and exposure of MFA users to hazardous materials, including those containing asbestos, lead, or PCB. The No Action Alternative would not include hazardous material abatement activities described under the Proposed Action. As such, the No Action Alternative could potentially release hazardous materials into the environment causing greater risk to human health and the environment compared to the Proposed Action, resulting in a potentially significant impact. Clean up following structural collapse would be required to follow all applicable federal, state, and local regulations pertaining to the clean-up, abatement, and transport of hazardous materials.

3.2.6 Noise and Vibration

This section summarizes the discussion of noise and vibration generated from the Project and the potential impacts on the neighboring sensitive receptors.

Noise is generally defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, evaluation of noise is necessary when considering the environmental impacts of a proposed project. Further definitions and how noise is measured can be found in the noise technical memorandum in Appendix D, Noise Technical Memorandum.

3.2.6.1 Regulatory Setting

The Noise Control Act of 1972 (Public Law (PL) 92-574) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. The Project site borders the cities of Mountain View and Sunnyvale; therefore, the policies and regulations of these cities are relevant to the Project. The following includes the noise regulations applicable to the Project.

Federal Aviation Administration (FAA), 14 CFR Part 150 "Airport Noise Compatibility Planning." This is the primary Federal regulation guiding and controlling planning for aviation noise compatibility on and around airports. This part prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs.

Mountain View 2030 General Plan. Chapter 7, Noise, of the Mountain View 2030 General Plan (City of Mountain View 2012a) offers policies for addressing exposure to current and project-related noise sources in Mountain View. Table 7.1, Outdoor Noise Environment Guidelines, in the Mountain View 2030 General Plan identifies land use compatibility noise standards for land uses affected by transportation and non-transportation noise sources (see Appendix D, Noise Technical Memorandum).

Mountain View Municipal Code. Chapter 8, Buildings, Article VI. Construction Noise, Section 8.70 Construction noise, of the Mountain View Municipal Code generally restricts construction activity to between 7:00 a.m. and 6:00 p.m., Monday through Friday and provides a procedure for modified construction hours at the discretion of the chief building official.

Sunnyvale General Plan. Chapter 6, Safety and Noise, of the Sunnyvale General Plan (adopted July 2011) offers policies for addressing exposure to current and project noise sources in Sunnyvale. Figure 6-5, State of California Noise Guidelines for Land Use Planning Summary of Land Use Compatibility for Community Noise Environment, identifies noise standards for specific land uses affected by noise.

Figure 6-6 in the Sunnyvale General Plan determines the severity of noise impacts using the day-night noise level (L_{dn}) category of an existing development, the exterior noise exposure category listed in Figure 6-5, and the noise increase estimated from a particular new development. For example, if an existing property currently experiences ambient noise levels that are “conditionally acceptable”, a significant impact would occur if a new project caused the ambient noise levels to increase more than 3 dB.

Sunnyvale Municipal Code. Paragraph 16.080.030 “Hours of Construction – Time and Noise Limitations” in the Sunnyvale Municipal Code restricts the acceptable hours of construction to generally between 7:00 a.m. and 6:00 p.m. Monday through Friday and between 8:00 a.m. and 5:00 p.m. on Saturday. Certain exceptions from the noise restrictions may be granted by the chief building official.

3.2.6.2 Affected Environment

Sensitive Receptors

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than commercial or industrial activities. Ambient noise levels can also affect the perceived desirability or livability of a development.

Hangar 3 is located at MFA near the cities of Mountain View and Sunnyvale, California. The nearest existing noise-sensitive receptors are the multifamily residential buildings at Wescoat Village approximately 5,330 feet to the southwest. Exterior active-use areas, such as the Bay Trail and the golf course could also be considered noise-sensitive receptors since walkers, joggers, cyclists, and golfers

use these spaces for recreation. The Project's northern edge is located approximately 3,512 feet from the Bay Trail and about 550 feet from the golf course.

The nearest vibration-sensitive structure to Hangar 3 is Building 055, which is located about 57 feet from Hangar 3. Hangar 2 is approximately 180 feet from Hangar 3.

Ambient Noise Levels

The existing noise environment in a project area is characterized by the area's general level of development due to the high correlation between the level of development and ambient noise levels. The area surrounding the Project site contains several major noise sources, including highways and busy roadways, such as US 101, SR 85, SR 237, Central Expressway, and West El Camino Real. Other sources of noise, including rail lines, such as freight rail and Caltrain, as well as aircraft traffic from MFA, also contribute to the background noise environment.

Noise contours in the Cities of Mountain View and Sunnyvale General Plans were referenced to consider the ambient noise levels at the neighboring properties around the Project site. Figure 7.3, Noise Contours, 2030, in the City of Mountain View 2030 General Plan indicates that the nearest noise-sensitive receptor, Wescoat Village, is located within the 60-70 A-weighted decibels (dBA) Community Noise Equivalent Level (CNEL)/L_{dn} contour area because of the community's proximity to US 101.

The 2010 Noise Conditions in Sunnyvale, presented in Figure 6-4, 2010 Noise Conditions Map, in the Sunnyvale General Plan shows the noise levels experienced by the commercial properties along Enterprise Way south of 5th Avenue range between below 60 dBA L_{dn} to greater than 75 dBA L_{dn} with the loudest ambient noise levels experienced closest to the intersection of SR 237 and US 101.

Figure 5, 2022 Aircraft Noise Contours, in the November 2012 *Comprehensive Land Use Plan Santa Clara County Moffett Federal Airfield* document, was also referenced to determine previously determined noise conditions at the Project site (SCC ALUC 2012). The figure shows the western edge of the Project site falls between the 70-75 CNEL noise contour. Noise levels from the airfield decrease to the east, away from the runway. The golf course is located outside the 65 dBA CNEL noise contour.

Given the range and age of data in the existing planning documents, noise levels at Wescoat Village were projected using measured ambient noise levels from the May 16, 2019, *East Whisman Precise Plan Noise and Vibration Assessment* document prepared by Illingworth & Rodkin, Inc. The ambient noise levels from this study were used to estimate the conditions experienced at Wescoat Village referenced because of the more recent timing of the measurements and the similarity between the distance to US 101 measurements were made and distance to US 101 of Wescoat Village.

Long-term and short-term ambient noise measurement locations taken for the East Whisman Precise Plan noise monitoring survey are shown in Figure 1 in the above-cited document. While noise measurements for that Project were taken on the south side of US 101, and varying terrain, screening, and vehicle fleet mix volumes could impact overall noise levels, for the purposes of this analysis, it was considered reasonable to estimate noise north of US 101 at Wescoat Village from these measurements. To be conservative, a line source hemispherical radiation pattern for traffic[14] on US 101 was used and only losses from distance (i.e., not from other sources such as varying terrain or screening) from the roadway were considered. When doing so, it appears that measurements made south of US 101 were comparable to those at the same distance to the north of the US 101.

The noise monitoring survey for the East Whisman Precise Plan was conducted between Tuesday, November 15, and Thursday, November 17, 2016. Measurement Location ST-2 at the corner of National Avenue and Fairchild Drive was approximately 142 feet from the edge of US 101. Measurement Location ST-9 at the parking area west of 516 Clyde Avenue was about 1,481 feet from the edge of US 101. The ambient noise levels measured at these locations were 73 dBA L_{dn} at ST-2 and 52 dBA L_{dn} at ST-9.

Wescoat Village occupies an area that is as close as 80 feet and as far as 1,074 feet away from US 101. Accounting for distance attenuation from a line source, expected noise levels at Wescoat Village could be as high as 74 dBA L_{dn} at the edge of the property closest to US 101 and about 54 dBA L_{dn} at the edge of the property farthest away from US 101. This estimate presents a slightly wider range of noise levels than shown in the City of Mountain View 2030 General Plan contours. Since this estimation is based on actual noise measurements conducted later than the measurements for the General Plans, the ambient noise levels at Wescoat Village were assumed to range between 54 dBA L_{dn} and 74 dBA L_{dn}.

3.2.6.3 Approach to Analysis

Construction Traffic

Impacts from future demolition-related traffic, both vehicular and heavy truck, were estimated using predicted traffic counts for the Project prepared by Stantec and included in Appendix D, Noise Technical Memorandum. Noise levels generated by heavy construction truck traffic along 5th Avenue was estimated using the SoundPLAN acoustic modeling software. The impact of noise generated from demolition worker and truck traffic on the surrounding neighborhood was determined using the guidelines listed in

[14] Please see the "Noise Fundamentals and Terminology" section of Appendix C, Section 106 Report. For a point source such as a stationary compressor or demolition equipment, sound attenuates based on geometry at a rate of 6 dB per doubling of distance. For a line source such as free-flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance.

the USEPA Region 10 Environmental Impact Statement Guidelines, April 1973. These guidelines have been used as an industry standard to determine the potential impact of noise increases on communities.

Traffic noise primarily depends on traffic volumes, speed (tire noise increases with speed) and the proportion of truck traffic (trucks generate engine, exhaust, and wind noise in addition to tire noise). For example, it takes 25 percent more traffic volume with the same vehicle mix to produce an increase of only 1 dBA in the ambient noise level. A doubling of traffic volume with the same vehicle mix results in a 3 dBA increase in noise levels. Increases in the proportion of truck traffic may result in the same ambient noise level increase even if the total traffic volume is less than the examples described above.

Most people would tolerate a small increase in background noise (up to about 5 dBA) without complaint, especially if the increase is gradual over a period of years (such as from gradually increasing traffic volumes). Increases greater than 5 dBA may cause complaints and interference with sleep. Increases above 10 dBA (heard as a doubling of judged loudness) are likely to cause complaints and should be considered a serious increase. See Appendix D, Noise Technical Memorandum, for a detailed description of the USEPA Region 10 Environmental Impact Statement Guidelines.

Demolition Noise and Vibration

The Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) was used to estimate noise generated from construction and demolition activities. The RCNM is FHWA's national standard for predicting noise generated from demolition activities. The RCNM analysis includes the calculation of noise levels (maximum level of a noise source [L_{max}] and equivalent continuous sound pressure level [L_{eq}]) at incremental distances for a variety of construction and demolition equipment. Demolition noise levels were calculated for each phase of construction based on a specific equipment list for each phase.

The Cities of Mountain View and Sunnyvale do not have explicit noise limits for construction/demolition work to determine impacts. Therefore, noise limits from the 2018 Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual were used to determine impacts from demolition activity. The noise limits are presented in Table 3-9. Since demolition activities would occur during daytime hours only and the closest noise sensitive receptors are residential or recreational uses, the Residential Daytime L_{eq} (8 hour) level from Table 3-9 was used as a threshold. Noise impacts associated with the Project would be considered significant if levels exceed 80 dBA L_{eq} at the closest sensitive receptors.

Table 3-9 Construction Noise Criteria

Land Use	L_{eq} Equipment (8 hour), dBA		L_{eq} Equipment (30 day), dBA 30-day average
	Day	Night	
Residential	80	70	75
Commercial	85	85	80[1]
Industrial	90	90	85[1]

Note:
[1] Use a 24-hour L_{eq} (24hr) instead of L_{dn} equipment (30-day)
Source: FTA 2018

Vibration from demolition equipment is analyzed at the surrounding buildings and compared to the applicable California Department of Transportation (Caltrans) building damage criteria to determine whether demolition activities would generate vibration at levels that could result in building damage. Vibration impacts would be significant if any vibrations from continuous/frequent sources would exceed 0.25 in/sec peak particle velocity (PPV) for “historic and some old” buildings. The “historic and some old buildings” category was considered the most appropriate category considering the structure and condition of Building 055. Please refer to Table 4 in Appendix D, Noise Technical Memorandum, for the guideline vibration damage potential criteria for other building conditions.

The Proposed Action would not result in any operational noise as no use is proposed post-demolition. Therefore, operational noise is not discussed further.

3.2.6.4 Environmental Consequences

Proposed Action – Building Demolition

Short-Term Noise Impacts

Construction Traffic

Demolition worker traffic would incrementally increase noise levels on access roads leading to the Project site on a temporary and intermittent basis. Medium and heavy truck traffic would travel along Macon Road between the Project site and the 5th Avenue Gate, which is closer to the Project site than the Ellis Street Gate and is designed to accommodate larger vehicles. Demolition workers would travel along Macon Road between the Project site and the Ellis Street Gate. By utilizing these routes, neither the

construction worker vehicles nor the construction trucks would be traveling by any noise sensitive receptors or through any noise sensitive neighborhoods on the way to the project site.

As noted in the Air Quality analysis, the pre-demolition phase of this project would involve the highest number of workers on-site per day with a maximum of 50 construction workers per day traveling to and from the site. As stated above, on-site workers would travel along Macon Road between the Project site and the Ellis Street Gate. Assuming a worst-case of all workers driving individual vehicles and entering or exiting the site at the same time, this would add 50 vehicles to the peak hour traffic volumes approaching the Ellis Street Gate. According to the traffic analysis memorandum provided by Stantec (Appendix E, Traffic Analysis Memorandum), the 2022 peak hour background traffic volumes at the intersection of Ellis Street and Manilla Avenue are 1,427 vehicles in the AM and 1,147 vehicles in the PM. Adding 50 construction worker vehicles to the background traffic along Macon Road and Ellis Street represents a maximum 4.4% percent increase in traffic volumes, which equates to a 0.17 dBA increase in noise. This small change in ambient noise due to construction worker traffic would result in a less than significant impact.

As stated above, medium and heavy truck traffic would travel along Macon Road between the Project site and the 5th Avenue Gate, which is designed to accommodate larger vehicles. According to the traffic analysis memorandum provided by Stantec (Appendix E, Traffic Analysis Memorandum), the 2022 AM peak hour traffic traveling on 5th Avenue near N Mathilda Avenue is 46 vehicles in the westbound direction and 323 vehicles in the eastbound direction. Figure C, “Proposed Action Phase 2 AM Peak Hour Trips – Truck Trips” in Appendix E, Traffic Analysis Memorandum, shows the project would add 12 heavy trucks in the westbound direction and 13 heavy trucks in the eastbound direction to the background vehicular traffic on 5th Avenue.

To determine the impact of the construction trucks on overall traffic noise levels, the SoundPLAN acoustic modeling software was used as an analysis tool. The SoundPLAN software models both Ldn and Leq traffic noise levels based on a peak hour traffic volume and considers vehicle type (vehicle, heavy truck, medium truck, bus, motorcycle), vehicle speed, and traffic control devices, such as stop signs and traffic lights. Using the 2022 AM peak hour traffic volumes and expected peak hour heavy truck volumes on 5th Avenue listed above, traffic-related noise levels from construction truck traffic on 5th Avenue were modeled to increase 2.3 dB(A). This change in ambient noise due to construction truck traffic is below 3 dB(A) and therefore, would result in a less than significant impact.

Demolition Activity

In addition to noise from construction traffic, noise would result from the demolition of Hangar 3.

The demolition of Hangar 3 would be conducted in three phases, each with its own mix of equipment and resulting noise characteristics and potential effects:

- Phase 1 – Pre-Demolition Activities
- Phase 2 – Demolition
- Phase 3 – Waste Disposal and Recycling

Phase 3 would occur concurrently with both Phase 1 and Phase 2. The main types of noise-producing equipment for each demolition phase are shown in Table 3-10.

Table 3-10 Proposed Action Phases Equipment

Phase	Demolition Equipment	
Phases 1 and 3 - Pre-Demolition Activities and Waste Disposal and Recycling	• Boom Lifts (2) • Reach Forks (2) • Bobcats (2) • Manlift (1)	• Generators (2) • Demolition Excavators (2) • Swing Stages (2) • Haul Trucks (2)*
Phases 2 and 3 - Demolition and Waste Disposal and Recycling	• Demolition Excavators (7) • Crane (1) • Manlifts (2)	• Skid Steers (2) • Water Truck (1) • Haul Trucks (12)*

Note:
* The number of haul trucks per phase represents the worst-case peak hour volume as taken from the traffic analysis memorandum (Appendix E, Traffic Analysis Memorandum).

Table 3-11 lists types of Project-related equipment and the maximum and average equipment operational noise level presented in the RCNM at various distances from the operating equipment. The 5,330-foot distance represents the approximate distance between the Project and the closest residential receptors at Wescoat Village; the 3,512-foot distance is the closest distance between the edge of the Project area and the Bay Trail, and the 550-foot distance represents the closest distance between the Project and the golf course. The usage factor in Table 3-11 is as defined by the RCNM program.

Table 3-11 Calculated Noise Level from Each Piece of Demolition Equipment

Demolition Equipment Source	Distance to Nearest Noise-Sensitive Receptor	Sound Level at Noise Sensitive Receptors		
		Usage Factor	L_{max}, dBA	L_{eq}, dBA
Man Lift (Boom Lift)	5,330 feet	20%	34.1	27.2
	3,512 feet		37.8	30.8

Demolition Equipment Source	Distance to Nearest Noise-Sensitive Receptor	Sound Level at Noise Sensitive Receptors		
		Usage Factor	L_{max}, dBA	L_{eq}, dBA
	550 feet		53.9	46.9
Reach Fork[1]	5,330 feet	40%	38.6	34.6
	3,512 feet		42.2	38.2
	550 feet		58.3	54.3
Bobcat[2]	5,330 feet	40%	43.4	39.5
	3,512 feet		47.1	43.1
	550 feet		63.2	59.2
Generator	5,330 feet	50%	40.1	37.1
	3,512 feet		43.7	40.7
	550 feet		59.8	56.8
Excavator	5,330 feet	40%	40.2	36.2
	3,512 feet		43.8	39.8
	550 feet		59.9	55.9
Swing Stage[3]	5,330 feet	20%	34.1	27.2
	3,512 feet		37.8	30.8
	550 feet		53.9	46.9
Crane	5,330 feet	16%	40.0	32.0
	3,512 feet		43.6	35.7
	550 feet		59.7	51.8
Skid Steer[4]	5,330 feet	40%	38.6	34.6
	3,512 feet		42.2	38.2
	550 feet		58.3	54.3
Water Truck[5]	5,330 feet	40%	33.7	29.7

Demolition Equipment Source	Distance to Nearest Noise-Sensitive Receptor	Sound Level at Noise Sensitive Receptors		
		Usage Factor	L_{max}, dBA	L_{eq}, dBA
	3,512 feet		37.3	33.3
	550 feet		53.4	49.4
Haul Truck[6]	5,330 feet	40%	35.9	31.9
	3,512 feet		39.5	35.5
	550 feet		55.6	51.6

Notes:

1. The RCNM program does not have sound levels for a reach fork. Therefore, the noise levels from a front-end loader were used in the analysis to simulate the reach fork.

2. The RCNM program does not have sound levels for a small Bobcat. Therefore, the noise levels from a tractor were used in the analysis to simulate the small Bobcat.

3. The RCNM program does not have sound levels for a swing stage. Therefore, the noise levels from a man lift were used in the analysis to simulate the swing stage.

4. The RCNM program does not have sound levels for a skid steer. Therefore, the noise levels from a front-end loader were used in the analysis to simulate the skid steer.

5. The RCNM program does not have sound levels for a water truck. Therefore, the noise levels from a flatbed truck were used in the analysis to simulate the water truck.

6. The RCNM program does not have sound levels for a haul truck. Therefore, the noise levels from a dump truck were used in the analysis to simulate the haul truck.

Source: Appendix D, Noise Technical Memorandum, FHWA 2008

A worst-case condition for demolition activity is presented assuming that all noise-generating equipment would be operating at the same time and at the nearest distance from the closest noise-sensitive receptor. Based on this assumption, Table 3-12 shows the L_{eq} and L_{max} noise levels from each phase of demolition were estimated using the RCNM program.

Table 3-12 Calculated Noise Level from Each Demolition Stage

Demolition Phase	Distance to Closest Noise-Sensitive Receptor	Calculated L_{eq}, dBA	Calculated L_{max}, dBA
Phases 1 and 3: Pre-Demolition Activities and Waste Disposal and Recycling	5,330 feet (WV)	46.8	50.8
	3,512 feet (BT)	50.4	54.5
	550 feet (GC)	66.5	70.6
Phases 2 and 3: Demolition and Waste Disposal and Recycling	5,330 feet (WV)	47.6	51.8
	3,512 feet (BT)	51.2	55.4
	550 feet (GC)	67.3	71.5

Notes:
WV = Wescoat Village, BT = Bay Trail, GC = Golf Course

As shown in the table, demolition noise levels at all closest noise-sensitive receptors would be well below the Residential Daytime level of 80 dBA L_{eq} (8 hour) impact threshold as defined in Table 3-12. Therefore, the impact of demolition activity noise to the sensitive receptors would not be significant.

Short-Term Vibration Impacts

Table 7-4 “Vibration Source Levels for Construction Equipment” in the FTA Transit Noise and Vibration Impact Assessment Manual identifies average vibration source levels, in PPV at 25 feet, for the construction and demolition equipment that generates the greatest levels of vibration. Comparing the equipment list in FTA Table 7-4 to the Project’s equipment list in Table 3-10, the equipment most likely to generate perceptible vibrational energy for the Proposed Action would be large and small bulldozers and loaded trucks.

During demolition, equipment such as small bulldozers (Bobcats) and loaded trucks could be used as close as 57 feet from the nearest vibration-sensitive receptor (Building 055). The 57-foot distance represents the separation between the edge of the Hangar 3 Project fence line to Building 055.

The assessment method in the FTA Transit Noise and Vibration Impact Assessment Manual assesses potential annoyance and damage effects from construction (demolition) vibration for each piece of equipment individually. Multiple pieces of equipment operating simultaneously could increase vibration levels but predicting any increase would be difficult. Following the FTA methodology, the vibration levels from the demolition equipment would range from 0.0009 to 0.0259 PPV (in inches/second) at 57 feet, as shown in Table 3-13. This vibration level would not be expected to cause damage to the existing nearby buildings onsite.

Table 3-13 Vibration Source Levels for Construction/Demolition Equipment

Type of Equipment	Peak Particle Velocity (PPV) at 57 Feet (inches/second)	Threshold at which Building Damage Could Occur (PPV) (inches/second)	Exceed Threshold?
Large Bulldozer	0.0259	0.25	No
Loaded Trucks	0.0221	0.25	No
Small Bulldozer	0.0009	0.25	No

Source: Calculation Result FTA 2018, Building Damage Threshold, California Department of Transportation 2004

In addition to the equipment, the activity of demolition, such as felling and dropping pieces of structure, could also cause perceptible vibrational energy. For the Proposed Action, materials would either be tethered and mechanically lowered to the ground or mechanically cut and dropped to the floor if this could be accomplished without damaging the Hangar 3 slab. If materials are dropped to the floor, considerations need to be made including limiting fall distances and the weight of the material being dropped to minimize impacts to the slab. The trusses would be supported by the existing hydraulic jack system that would remain in place until trusses were removed, thus limiting the opportunity for the structure to fall to the slab. Reducing stress on the slab lowers the vibrational energy that enters the slab and reduces the vibration impact that could propagate through the ground to Hangar 2 and Building 055.

Therefore, demolition activities would cause minor short-term localized impacts from vibration to the surrounding buildings but would not result in a significant impact. In addition, the Proposed Action would implement the protection measures noted in AMM-2: Noise and Vibration to further reduce temporary construction noise and vibration impacts on adjacent sensitive receptors.

No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In an event of a structural failure, there may be instantaneous loud noise from the structural collapse that may be higher than the acceptable noise levels defined in the General Plans for the City of Mountain View and the City of Sunnyvale. In addition, depending on the level of emergency response required, there could be nighttime and weekend activity noise generated that is not contemplated under the Project. However, these noise impacts would not be considered significant since they would be temporary and short-term. Noise levels from worker and truck trips would be expected to be similar to the Proposed Action and thus would not be significant.

However, sudden collapse could have an adverse impact on surrounding structures; if vibration levels were to exceed 0.25 in/sec PPV then damage to nearby structures could result.

3.2.7 Transportation and Circulation

This analysis focuses on Project activities and potential transportation impacts on the surrounding street system, pedestrian access, and parking. Traffic conditions such as trip generation and trip distribution are summarized from the traffic analysis memorandum included as Appendix E, Traffic Analysis Memorandum.

3.2.7.1 Regulatory Setting

The Project site is located on federal property, but demolition traffic would use roadways under local and state jurisdiction. The federal government does not employ its own specific standards for intersection operation or other modes that would be used to identify significant environmental impacts. To determine the environmental impacts of its actions, NASA uses the criteria of the local, county, and state jurisdictions. Therefore, the following describes the applicable regulations from those jurisdictions.

Mountain View General Plan. The Mobility Element of the Mountain View General Plan includes goals and policies to address circulation, safety, multi-modal transportation, walkability, and accessibility. Until adoption of the mobility plans described in Action MOB 1.1.1 of the General Plan Environmental Impact Report, the Citywide vehicle level of service (LOS) standards from the 1992 General Plan would be used, which include a target peak-hour LOS policy of LOS D for all intersections and roadway segments (City of Mountain View 2012b).

Sunnyvale General Plan. The Land Use and Transportation Element of the City of Sunnyvale General Plan includes a series of land use and transportation goals, policies, and actions to provide a framework for how various land uses, developments, and transportation facilities would function together. The City of Sunnyvale uses a LOS D standard for local street intersections and LOS E standard for “regionally significant roadways” (a designation that includes Congestion Management Program facilities) (City of Sunnyvale 2016).

Caltrans. Caltrans has authority over the state highway system, including freeways, interchanges, and arterial state routes. Caltrans approves the planning, design, and construction of improvements for all state-controlled facilities, including US 101 and SR 237 located near MFA. Caltrans strives to maintain a LOS of C on all its facilities, but LOS D is acceptable on facilities in urban areas.

3.2.7.2 Affected Environment

There are two major highways that provide access to MFA and are described below:

US 101 is located to the south of the airfield and is a major north-south route through the entire length of California. US 101 is an eight-lane freeway that provides regional access to the Project area and has three mixed-flow lanes and one high occupancy vehicle lane in each direction.

SR 237 runs east-west and intersects with US 101 near the southeast corner of MFA. SR 237 forms the southern border of the Moffett Park area. SR 237 is a four- to six-lane freeway that provides access between SR 82 (El Camino Real) to the west and Interstate 880 to the east.

The main access to the Hangar 3 site for on-site workers would be from the Ellis Street Gate and for construction trucks would be from the 5th Avenue Gate located southeast of Hangar 3.

Ellis Street is a four-lane arterial running between the Ellis Street Gate at ARC and Middlefield Road in Mountain View. Between Middlefield Road and the interchange with US 101, Ellis Street includes marked bicycle lanes in each direction.

5th Avenue is a two-lane roadway linking Macon Road within MFA to Bordeaux Drive east of Mathilda Avenue in Sunnyvale. A security gate is located at the west end of the street at the edge of NASA property. This street also crosses the Valley Transportation Authority (VTA) light rail line at Mathilda Avenue.

Transit and Active Transportation

Public transportation is available within the study area. Valley Transportation Authority (VTA) provides light rail service (Orange Line) in the area with three nearby stations:

- Bayshore/NASA (Manila Drive at Ellis Street, northeast corner)
- Moffett Park (Moffett Park Drive between Enterprise Way and Innovation Way, north side)
- Lockheed Martin (North Mathilda Avenue at 5th Avenue, southwest corner)

VTA provides local bus routes, rapid bus lines, and shuttle services in the general area. Bus Route 51 serves ARC directly, entering via the Moffett Boulevard Gate and stopping along North Akron Road and South Akron Road at Shenandoah Plaza. Rapid Bus Route 523 and Local Bus Route 56 serve the Lockheed Martin Transit Center at Mathilda Avenue and 5th Avenue. VTA also operates a shuttle service (ACE Red line) to connect passengers with Altamont Corridor Express (ACE) commuter rail trains at Great America Station; these shuttles terminate at the Lockheed Martin Transit Center. The City of Mountain View also provides MVgo shuttle services in the general area; however, none of the shuttle routes serve MFA directly.

Bike lanes are striped on 5th Avenue and on Enterprise Way. Within MFA, sharrows are striped on Macon Road in the vicinity of the golf course; approaching the 5th Avenue Gate and continuing south towards Ellis Street Gate, a shared multi-use path is provided along the east side of Macon Road.

Sidewalks are provided on most surrounding streets but may only be present on one side of the street (e.g., west side of Ellis Street, north side of Manila Avenue, east side of Enterprise Way, and south side of 5th Avenue). Within MFA, the quality of pedestrian facilities varies, and sidewalks may not be provided in all locations. However, traffic volumes are generally low on internal streets. Along Macon Road, pedestrian access is accommodated through paved shoulder areas, transitioning to a shared multi-use path closer to the 5th Avenue Gate.

3.2.7.3 Approach to Analysis

Potential impacts to transportation are assessed with respect to the potential for disruption or improvement of circulation patterns and traffic operations (as described by LOS). The Project would result in a significant transportation impact if it resulted in a substantial increase in traffic generation or a substantial increase in the use of connecting street systems. Transportation effects may arise from changes in traffic circulation or operations, such as through changes in traffic volumes or physical changes to roadways or traffic control devices.

There is no use proposed at the Project site post-demolition; therefore, no new traffic would occur, and no long-term parking would be required. Thus, no analysis of operational impacts is provided for traffic, transit, bicycle, and pedestrian access; emergency access; or parking. An analysis of construction traffic is provided below.

Existing Offsite Conditions

Due to current conditions in California associated with closures and modified work conditions from the COVID-19 pandemic, new traffic counts taken at this time would not be representative of typical

conditions. Therefore, intersection turning movement volumes collected in 2018 and 2019 during the typical weekday morning and evening commute periods (7:00 – 9:00 AM, 4:00 – 6:00 PM) were obtained from several sources noted below. Traffic volumes during the peak one hour within the morning and evening count periods were used for the analysis and are referred to as the AM peak hour and PM peak hour.

Figure 3-3 shows the study intersections. NASA provided turning movement counts collected in May 2018 at the following study intersections:

- Ellis Street and Manila Drive
- Ellis Street and US 101 northbound
- Ellis Street and US 101 southbound
- Enterprise Way and Manila Drive/Moffett Park Drive
- Mathilda Avenue and Moffett Park Drive
- Mathilda Avenue and SR 237 westbound
- Mathilda Avenue and SR 237 eastbound

PV provided turning movement counts collected in November 2018 at the following study intersections:

- Enterprise Way and 11th Avenue
- US 101 Northbound and Moffett Park Drive
- Innovation Way and Moffett Park Drive

Counts at the following study intersections were collected in January 2019 by Quality Counts:

- Enterprise Way and 5th Avenue
- Innovation Way and 11th Avenue
- Mathilda Avenue and 5th Avenue

Peak hour factors for each intersection were determined from the intersection count data for use in the intersection delay analysis. Subsequent to the counts being collected in 2018 and 2019, the 5th Avenue Gate was re-opened to commuter bus traffic after being temporarily closed. A conservative assumption of approximately 30 percent of the existing commuter bus traffic using the Ellis Street Gate was rerouted to the 5th Avenue Gate for the purpose of this analysis. These bus trips were added to the counts to approximate existing conditions. Table 3-15 provides the condition of each intersection under existing conditions. All intersections operate at or better than LOS C under the AM and PM peak hour except for the Mathilda Avenue and Moffett Park Drive intersection. Under the AM peak hour this intersection operates at LOS D.

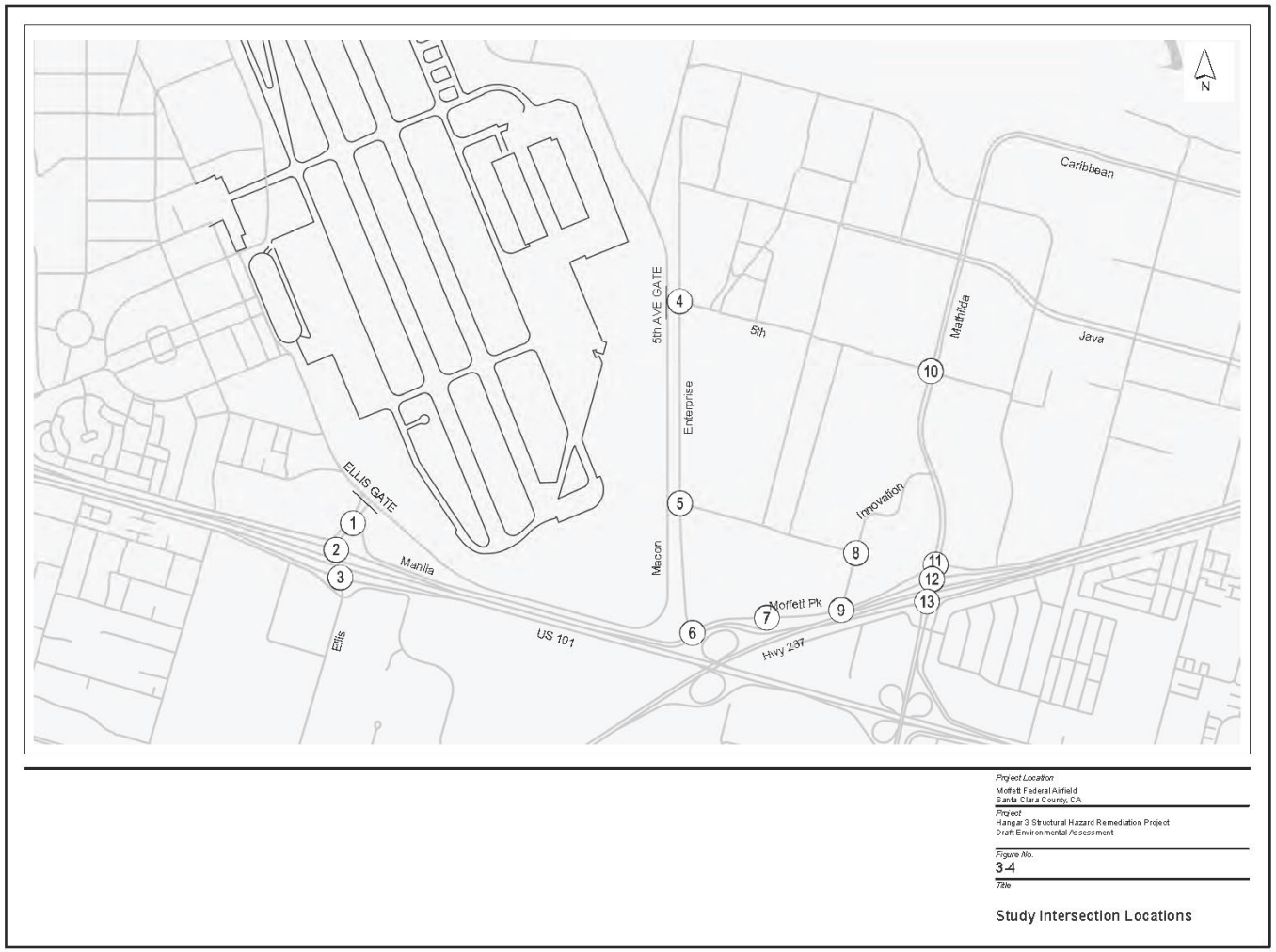

Figure 3-3 Study Intersection Locations

Existing On-Site Conditions

Truck traffic is expected to travel along Macon Road between the Project site and the 5th Avenue Gate. On-site workers would travel along Macon Road between the site and the Ellis Street Gate. Macon Road carries approximately 170 vehicles during the AM peak hour, 250 vehicles during the PM peak hour, and 4,130 vehicles daily based on December 2018 counts. Based on these traffic levels, Macon Road currently operates at LOS A.

Intersection Analysis Assumptions

The study intersections are located in the cities of Mountain View and Sunnyvale. Traffix software was used to analyze performance of the study intersections. Consistent with the cities of Mountain View and Sunnyvale, LOS D was defined as the threshold for adverse effects.

Existing traffic controls at the study intersections were assumed to remain unchanged under the future analysis conditions, with the exception of the improvements that are currently under construction as part of the SR 237/Mathilda Avenue Interchange improvement project by the VTA.

The criteria for evaluation of the study intersections and on-site roadways are as follows:

1. A significant impact occurs when the background LOS is degraded from LOS D or better to LOS E or F, or
2. If background LOS is E or F, a significant impact occurs when the Project increases delay by 4.0 seconds or more AND increases the volume-to-capacity (v/c) ratio by 0.01 or more, or
3. If background LOS is E or F, a significant impact occurs when the Project decreases delay and increases the v/c ratio by 0.01 or more.

3.2.7.4 Environmental Consequences

Proposed Action – Building Demolition

Hangar 3 would be demolished in phases and the construction traffic for each phase is discussed below.

Phase 1

Phase 1 is anticipated to take 80 to 90 working days, and the typical workday hours are expected to be from 7:00 AM to 3:30 PM. Once the heavy equipment used in the abatement work is delivered to the Project site, this equipment would be expected to remain on-site for the duration of Phase 1 work. Off-

haul truck trips are estimated to average two per workday for a total of four daily truck trips (two inbound, two outbound) during Phase 1.

The off-haul truck trips are assumed to be spread out at an average rate as they are loaded throughout the workday. It is estimated that one truck would enter, and one truck would exit the site during the 1-hour AM peak hour, and one truck would enter (under a worst-case condition) and one truck would exit the site during the 1-hour PM peak hour, after construction activities conclude for the workday. As noted in Section 2.0, Description of Proposed Action and Alternatives, typical construction hours are expected to be until 3:30 PM. However, standard peak hours are used for a conservative analysis.

Trucks take more space and have slower acceleration than passenger cars; therefore, a passenger car equivalent (PCE) factor is applied to the Proposed Action truck trips. The exact types of off-haul trucks are not known at this time. An average PCE of 2.0 is applied to the truck trips for the purpose of roadway capacity analysis.

During the Phase 1 pre-demolition work, 50 workers are estimated to be on-site each day. Nearly all on-site workers would arrive at and leave the Project site before the typical roadway AM and PM peak hours, respectively. A conservative estimate of 10 percent of workers arriving during the AM peak hour and 10 percent leaving during the PM peak hour was assumed. Also, when conservatively assuming each worker arrives in a separate personal vehicle, workers would generate 100 trips daily, of which 5 trips would occur during the AM peak hour and 5 trips would occur during the PM peak hour.

Phase 2

Demolition is estimated to take 125 working days. A total of approximately 2,000 trucks removing materials or equipment (2,000 trips in, 2,000 trips out) are estimated for the duration of the demolition work, with a maximum estimate of 100 trucks per workday (100 trips in, 100 trips out).

Off-haul truck trips would be expected to occur at an average rate of 12–13 trucks per hour, as they are loaded throughout the 8-hour workday. The maximum expected daily number of trucks (100 trucks per workday) is assumed for this analysis as a worst-case assumption; therefore, during the 1-hour AM peak hour it is estimated that 13 trucks would enter and 12 trucks would exit the site, and during the 1-hour PM peak hour it is estimated that 12 trucks would enter, and 13 trucks would exit the site. The remaining trucks would enter and exit the site during the off-peak hours. A PCE of 2.0 is applied to the truck trips for the purpose of roadway capacity analysis.

During Phase 2 demolition, 20 workers are estimated to be on-site each workday. Trips generated by these workers are estimated assuming 10 percent arrive during the AM peak hour and 10 percent depart

during the PM peak hour as discussed above for Phase 1. Phase 2 workers would generate 40 trips daily, of which 2 trips would occur during the AM peak hour and 2 trips would occur during the PM peak hour.

Phase 3

Phase 3 consists of waste disposal and recycling, which would be conducted concurrent with Phases 1 and 2. Therefore, trip estimates for Phase 3 are included in the Phase 1 and 2 trip estimates described above.

Trip Generation

Table 3-14 summarizes the total trip generation for Phase 1 and Phase 2 of the Proposed Action. As shown in the table, Phase 2 generates more PCE trips than Phase 1; therefore, the Phase 2 trip estimates were used for the intersection analysis to provide the most conservative analysis conditions. The Proposed Action would generate 440 daily PCE trips, of which 52 PCE trips would be generated during the AM peak hour and 52 PCE trips would be generated during the PM peak hour.

Table 3-14 Trip Generation Summary (Trips/Day) for the Proposed Action

Phase	Amount	AM Peak Hour			PM Peak Hour			ADT
		In	Out	Total	In	Out	Total	
Proposed Action								
Phase 1 – Pre-Demolition								
Trucks	2 Trucks	1	1	2	1	1	2	4
Truck PCE (2.0)		*2*	*2*	*4*	*2*	*2*	*4*	*8*
Workers	50 Empl	5	0	5	0	5	5	100
Total Phase 1 PCE Trips		7	2	9	2	7	9	108
Phase 2 – Demolition								
Trucks	100 Trucks	13	12	25	12	13	25	200
Truck PCE (2.0)		*26*	*24*	*50*	*24*	*26*	*50*	*400*

Phase	Amount	AM Peak Hour			PM Peak Hour			ADT
		In	Out	Total	In	Out	Total	
Workers	20 Empl	2	0	2	0	2	2	40
Total Phase 2 PCE Trips		28	24	52	24	28	52	440

Note:
ADT = Average daily trips
Empl = Employees
PCE = passenger car equivalent

Off-site Intersection Analysis

Based on the proposed schedule, the peak trip generation would take place during Phase 2 of the Proposed Action, which is assumed to occur in 2022; therefore, the background scenario against which the Proposed Action traffic is analyzed is 2022. Baseline volumes were determined by applying a two percent per year growth factor to the traffic counts to produce a conservatively high future traffic forecast. A two percent per year ambient growth factor is consistent with the City of Sunnyvale annual regional growth factors for arterials and collectors. Furthermore, the existing commuter bus traffic that was assumed to be diverted to the 5th Avenue Gate (30 percent of commuter bus traffic) under existing conditions was included to produce 2022 baseline volumes.

Construction of other projects within the MFA property would overlap with the Proposed Action and thus traffic volumes associated with those projects were added to the 2022 baseline volumes to produce a conservative worst-case analysis. Trips related to the Hangar 1 Rehabilitation and Recladding project were estimated to be 37 trips during the AM peak hour and 37 trips during the PM peak hour in 2022. The amount of Eastside Airfield Improvement Project (EAIP) construction traffic occurring in 2022 was estimated to be 12 trips during the AM peak hour and 12 trips during the PM peak hour. These trips were distributed to the study intersections and added to the 2022 background volumes against which the Proposed Action was evaluated.

The 5th Avenue Gate would continue to be open to PV commuter bus traffic but would not be anticipated to be used by personal vehicles. During the Project, truck traffic would be anticipated to use the 5th Avenue Gate to access SR 237 via 5th Avenue and Mathilda Avenue. On-site workers would access Hangar 3 via the Ellis Street Gate. Peak-hour truck PCE trips and worker trips were assigned to the study intersections and added to the background volumes (as part of 2022 Plus Proposed Action in Table 3-15).

Table 3-15 summarizes 2022 background peak hour delay and LOS at the study intersections. As shown in the table, the surrounding study intersections would operate at LOS D or better during the AM and PM peak hours under 2022 background conditions that include Hangar 1 and EAIP construction traffic. Addition of the peak-hour construction traffic from Phase 2 of the Proposed Action would have negligible impact on the study intersections, which would continue to operate at LOS D or better. Since the LOS at the study intersections would not be degraded to an unacceptable level, the Proposed Action would not result in a significant impact due to construction traffic. In addition, the effects of the Proposed Action on the transportation system would be temporary since the Proposed Action would not generate new operational trips once demolition was complete. No off-site improvements at study intersections would be needed under the Proposed Action.

Table 3-15 Delay and LOS Summary for the Proposed Action

Intersection	Control Type	Existing				2022 Background				2022 Plus Proposed Action			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
1. Ellis & Manila	Stop Sign	B	10.3	C	18.6	B	11.1	D	25.3	C	11.1	D	25.3
2. Ellis & US 101 NB	Signal	C	24.9	C	24.1	C	24.8	C	23.9	C	24.8	C	23.9
3. Ellis & US 101 SB	Signal	C	34.2	C	31.7	D	35.7	C	25.8	D	35.7	C	25.8
4. Enterprise & 5th	Stop Sign	A	8.6	A	8.7	A	8.7	A	8.8	A	9.1	A	9.3
5. Enterprise & 11th	Signal	B	11.4	B	11.7	B	11.6	B	11.8	B	11.6	B	11.8
6. Enterprise & Manila	Signal	C	29.4	B	13.3	C	33.3	B	14.0	C	33.3	B	14.0
7. US 101 NB & Moffett Park	Stop Sign	A	5.3	B	13.7	A	5.4	B	15.3	A	5.4	B	15.3
8. Innovation & 11th	Stop Sign	B	13.2	C	20.3	B	14.4	D	25.1	B	14.4	D	25.1
9. Innovation & Moffett Park	Signal	B	11.3	B	15.4	B	11.7	B	15.7	B	11.7	B	15.7
10. Mathilda & 5th	Signal	B	16.1	B	19.1	B	16.3	B	19.3	B	16.4	B	19.6
11. Mathilda & Moffett Park	Signal	D	42.6	C	28.0	C	32.7	D	43.4	C	32.9	D	43.9

Intersection	Control Type	Existing				2022 Background				2022 Plus Proposed Action			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
12. Mathilda & SR 237 WB	Signal	B	11.4	B	13.6	A	0.3	A	0.4	A	0.3	A	0.4
13. Mathilda & SR 237 EB	Signal	B	14.5	B	11.1	B	17.7	B	11.8	B	17.7	B	12.0

Note:
NB = Northbound
SB = Southbound
EB = Eastbound
WB = Westbound

LOS ranges:		Signal Control	Stop Sign Control
	A	0.0 – 10.0 sec	0.0 – 10.0 sec
	B	10.1 – 20.0 sec	10.1 – 15.0 sec
	C	20.1 – 35.0 sec	15.1 – 25.0 sec
	D	35.1 – 55.0 sec	25.1 – 35.0 sec
	E	55.1 – 80.0 sec	35.1 – 50.0 sec
	F	Delay > 80.0 sec	Delay > 50.0 sec

On-site Traffic Analysis

On Macon Road, north of 5th Avenue, Phase 2 of the Proposed Action would add approximately 52 AM peak hour PCE trips, 52 PM peak hour PCE trips, and 440 daily PCE trips. On Macon Road, south of the 5th Avenue Gate, Phase 2 of the Proposed Action would add 2 AM peak hour trips, 2 PM peak hour trips, and 40 daily trips. Macon Road, north and south of 5th Avenue, would continue to operate at LOS A with the addition of the construction traffic from the Proposed Action. The total ADT on Macon Road north of 5th Avenue would be approximately 4,600 vehicles, which is within the range of LOS A. Similarly, the AM peak hour volume on Macon Road north of 5th Avenue would be approximately 220 vehicles during the AM peak hour and 300 vehicles during the PM peak hour, which is within the range of LOS A. Since the LOS for Macon Road would not be degraded to an unacceptable level, the Proposed Action would not result in a significant impact to this roadway due to construction traffic. In addition, a construction traffic control plan would be prepared as noted in AMM-3: Construction Traffic Control Plan to ensure construction traffic does not block access to nearby users and coordination occurs with other construction activities during the same time period. Since the Proposed Action would not result in a substantial increase in traffic generation or a substantial increase in the use of connecting street systems, the impact on transportation and circulation would be less than significant.

Parking, Emergency Access, Transit, and Pedestrian and Bicycle Circulation

Removal of Hangar 3 would not affect bicycle or pedestrian facilities or emergency access during construction. The construction area for Hangar 3 would be fenced and secured and would not block nearby roadways, parking for non-Lessee employees, or any sidewalks or bicycle routes. Access to nearby buildings—as well as general bicycle, pedestrian, and emergency access—would continue to be provided in accordance with AMM-3: Construction Traffic Control Plan. Parking for construction workers would be needed for the duration of the Project and would be provided within the Project area as shown on Figure 1-1. While the majority of on-site workers are anticipated to drive personal vehicles or carpool to the site, workers traveling by transit, by bike, or on foot would continue to have access via the 5th Avenue Gate, the Ellis Street Gate, the Moffett Boulevard Gate, and on-site roadways. Project construction would not involve physical changes to these facilities or otherwise disrupt emergency access or transit, bicycle, or pedestrian circulation. Therefore, the Proposed Action would have no adverse effect on transit, bicycle or pedestrian circulation, emergency access, or parking in the Project area during construction.

No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, there would be temporary construction traffic for remediation and clean-up activities that would be expected to result in similar LOS at the study intersections as the Proposed Action. As a result, impacts related to temporary construction traffic would be less than significant.

3.2.8 Utilities

This section provides a discussion of activities related to demolition of Hangar 3 and its potential to impact any existing utilities. Impacts related to stormwater are discussed in Section 3.2.10, Water Resources.

3.2.8.1 Regulatory Setting

There are no federal or state regulations concerning utilities that are applicable to the Project.

3.2.8.2 Affected Environment

Water

NASA currently operates much of the existing backbone system through the MFA Lease area, including the high-pressure P500 line that runs up to Hangars 2 and 3 from the east. Low pressure is also supplied from the P500 line and is regulated by two pressure regulation stations located east of Macon Road at the CAANG Cantonment area. The water system on the east side of runways is isolated from the remainder of the NASA system. The Lessee is responsible for operations and upkeep of the water system within the lease boundary.

Sewer

The main sewer trunk line in the MFA Lease area extends across the airfield from the southeastern portion of the Ames Campus area to the northeastern portion of the MFA Lease area near the Northern Channel. This line is a 10-inch vitrified clay pipe running from the CAANG facility along the east side of Hangar 3 and increases to 15 inches at the northeast corner of Hangar 3. Smaller pipelines connect to this trunk line, including pipes serving Hangar 3.

Electrical and Telecommunication

The MFA Lease area is served by electrical power from the Moffett substation located east of Hangar 3. There are existing electrical lines under both Hangars 2 and 3. These include Feeder 47 and services to CAANG facilities to the north from Switchgear D in Hangar 2. Hangar 2 contains a 2.4-kilovolt transformer serving the CAANG facility. There are existing telecommunication lines underneath both Hangars 2 and 3 that run in the east-west direction. No overhead electrical lines exist within or adjacent to the Project fence line.

3.2.8.3 Approach to Analysis

Potential impacts to utilities are assessed with respect to the potential for disruption of any utility. Impacts may arise from construction activity and introduction of construction-related traffic and utility use. Impacts would be significant if existing utilities (water, sewer, electrical, and telecommunication) were either disrupted, or irreparably damaged from Project activities. For this analysis, potential utility impacts associated with implementation of the Project are limited to construction impacts. The Project would not result in operational uses and therefore, no new utility demand would be generated and thus operational utility impacts are not discussed further.

3.2.8.4 Environmental Consequences

Proposed Action – Building Demolition

The Proposed Action would not result in changes to the existing utility infrastructure serving other uses in the MFA Lease area as the Proposed Action does not propose the removal or capping of any utilities that affect other areas or buildings. However, in order to prevent accidental damage or disruption to existing utility lines, the following measures would be implemented as part of the Proposed Action:

- Prior to pre-demolition and demolition activities, all active utility infrastructure connected to Hangar 3 would be identified and disabled to prevent inadvertent loss of service or damage to critical infrastructure such as water lines connecting to Hangar 3, and NASA telecommunication lines that lie underneath the Hangar 3 concrete slab.
- All underground communication infrastructure and vaults would be protected during demolition of Hangar 3 by placing steel trench plates on the concrete slab directly above where the utility lines occur underground.
- All existing service connections to Hangar 3 would be capped or otherwise disabled prior to pre-demolition.

- Above-ground water lines serving Hangar 3 would be drained, terminated, and capped at the connection to the service line where it goes below ground in accordance with NASA's Underground Utility Abandonment Requirements and Procedures.

By taking these steps, the Proposed Action would avoid the potential to disrupt or accidentally damage existing utility lines, and thus impacts to utilities from the Proposed Action would be less than significant.

No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, impacts to utilities could be potentially significant as utility connections to Hangar 3 would not be capped or disconnected systematically and thus structural failure could result in the inadvertent loss of service or damage to critical infrastructure such as water lines connecting to Hangar 3 and NASA telecommunication lines that lie underneath the Hangar 3 concrete slab. Additionally, disruption or damage to utility infrastructure could impact service to other MFA users, including the CAANG facility, resulting in a potentially significant impact.

3.2.9 Visual Resources

This section describes the potential effects on visual resources from the Project. Visual resources are elements of a natural or built environment with aesthetic value based on visual quality and character. They may be formally identified by local, state, or federal governments or recognized by other institutions and organizations. Visual resources may also be components of a natural or built environment that contribute to a memorable or distinct landscape.

3.2.9.1 Regulatory Setting

The Proposed Action is located on federal land held by NASA and is not subject to local discretionary regulations related to visual resources. However, the following state program and plans pertaining to visual resources that is appropriate to consider when assessing potential effects on Visual Resources.

California State Scenic Highway Program. The California State Scenic Highway Program, a provision of the Streets and Highways Code, was established by the legislature in 1963 to preserve and enhance the natural beauty of California. The State Scenic Highway Program includes highways that are either eligible for designation as scenic highways or have been designated as such. The nearest officially designated state scenic highway is SR 9, located about 13 miles south of the Project site (Caltrans 2020).

City of Mountain View 2030 General Plan. The City of Mountain View 2030 General Plan does not contain specific goals and policies related to scenic resources; its references to MFA are related to supporting "the preservation of historic buildings and hangars at Moffett Field and NASA Ames" (Policy LUD 11.4: Moffett Field; City of Mountain View 2012a), not to any aesthetic or scenic value associated to these facilities.

City of Sunnyvale 2011 General Plan. The City of Sunnyvale 2011 General Plan does not contain specific goals and policies related to scenic resources. Chapter 4, Community Character, of the General Plan pertains to the City of Sunnyvale's visual image and contains goals and policies to ensure that new public and private development is well designed and compatible with surrounding properties and districts. Figure 4-1, City Form Map, in the General Plan identifies MFA as a visual landmark (City of Sunnyvale 2011).

3.2.9.2 Affected Environment

The Project area consists of the 1,000-acre MFA Lease area located within the NASA ARC in Santa Clara County, California (Figure 1-1). MFA is the primary land use within the Project area, which is adjacent to the San Francisco Bay to the north, commercial office development to the east, NASA ARC to the west, and US 101 to the south. The San Francisco Bay Trail (Bay Trail), a 500-mile walking and cycling trail that extends along the San Francisco Bay, also borders the northern boundary of MFA.

The Project area is mostly developed, with paved aircraft runways that are part of MFA, several office and administration buildings, buildings owned by the CAANG, and the golf course. There are also three hangars located within the MFA lease area, referred to as Hangar 1, Hangar 2, and Hangar 3 (Figure 1-1). Hangars 2 and 3 are parabolic in shape and appear nearly identical. In views toward the Project area, these hangars are vivid, memorable features and a recognizable source of visual interest in the landscape. Their height and form are identifiable within the broader landscape and contribute to the overall visual character of MFA.

The Project area sits within a larger baylands region that is relatively flat, with elevations ranging from 8 feet to 35 feet above mean sea level. Viewers in the Project area include motorists travelling on the surrounding roadways, recreationists, and workers associated with the nearby office developments. Access to MFA is restricted; however, the public can use Macon Road within NASA's property to access the golf course. Therefore, close-in views are limited to those from publicly accessible locations north of the Project area, such as the Bay Trail and the golf course. Hangar 3 is also visible from more distant locations, including a segment of US 101 and some locations within or along the edge of the surrounding commercial office areas. Distant views of Hangar 3 from these locations are intermittent, as viewers are

typically passing through the area while using the nearby roadways or recreation facilities. In addition, from locations within the Project area that are further removed from MFA, buildings and vegetation partially or completely obscure views toward Hangar 3. These same features also limit views beyond MFA, including views of and from the surrounding hillsides, including the Santa Cruz Mountains to the south and west.

MFA is bordered to the west, south, and east by areas completely developed at a moderate level of density. Therefore, existing buildings, infrastructure, and vegetation obstruct views toward MFA from nearby flatlands. In elevated views, including residential neighborhoods and more distant foothill parkland areas that are located as close as 10 miles to the west, intervening vegetation, buildings, and other structures generally obscure MFA. Where visible in limited, intermittent views, MFA appears as part of a broader landscape containing a variety of land uses, forms, and patterns of development.

No officially designated or eligible State Scenic Highways is within or in the vicinity of the Project area. SR 9, located approximately 13 miles south of the Project area, is the only officially designated State Scenic Highway in Santa Clara County (Caltrans 2020). There are no locally designated scenic roads within or in the vicinity of the Project area (Santa Clara County 2008).

3.2.9.3 Approach to Analysis

A comparison of the existing conditions and the change to the landscape resulting from implementation of the Project was done based on photographs of existing conditions and visual simulations showing the Proposed Action. Aerial imagery was reviewed to identify where the Project could be visible from visually sensitive areas to select viewpoints for site photography. This included a desktop review of potential line-of-sight views of MFA from distant hillsides using Google Street View. There are few direct, sustained views toward MFA from the broader surrounding area, including local hillsides. Additionally, the Project is within a developed area where buildings, vegetation, or topography either obstruct or limit the duration of relatively narrow views. Therefore, the effects assessed are focused on actual or approximated views within 2 miles of Hangar 3 that are publicly accessible. The furthest segment of the Bay Trail from which unobstructed views toward Hangar 3 are available is just under 2 miles away, to the northwest. San Francisco Bay is beyond the Bay Trail to the northwest and north. In all other directions, MFA is bounded by either the wooded golf course or urbanized areas. Views of Hangar 3 from anywhere beyond MFA are therefore generally obstructed or intermittent and partial. In views toward MFA from beyond 2 miles from within and/or toward these developed areas, Hangar 3 would be identifiable, but it would appear at least partially absorbed into the broader built environment.

Site photographs were taken on September 25, 2019, to document current visual conditions and views toward the Project area. A representative subset of photographed viewpoints was selected for use as Key Observation Points (KOPs), which collectively serve as the basis for this assessment. Assessments of existing visual conditions were made based on professional judgment that considered sensitive viewer groups and viewing areas in the lands surrounding the Project area. Sensitive viewer groups and viewing areas include those who occupy or would occupy the Project site or adjacent lands with views of the Project, such as motorists travelling on the surrounding roadways, recreationists using the golf course at MFA or the Bay Trail, and workers associated with the nearby office developments. The locations of the four KOPs in relation to the Project area are presented on Figure 3-4.

The view from each KOP was photographed using a 35-millimeter, 53-megapixel, full-frame, single-lens reflex camera equipped with a 50-millimeter fixed focal length lens. This configuration is the industry-accepted standard for approximating the field of vision in a static view of the human eye. The camera positioning was determined with a sub-meter, differentially corrected global positioning system. The camera was positioned at eye-level for each photograph.

The site photos were used to generate a rendering showing existing conditions with Hangar 3 demolished and removed. The visual simulations provide clear before-and-after images of the location, scale, and visual appearance of the features affected by and associated with the Proposed Action as seen from KOP 1 through KOP 4. The visual simulations showing the Project are included as Figures 3-6 to 3-9 and described in the following paragraphs.

Impacts to visual resources would be considered significant if the Project resulted in substantially adverse effects to existing visual character and scenic quality as visible from publicly accessible areas with potentially high viewer sensitivity.

Figure 3-4 Project Area and Key Observation Points

KOP 1 – View from the Golf Course at Moffett Federal Airfield

Figure 3-5 provides a close-in view to the south from the golf course at MFA, located approximately 0.5 mile from Hangar 3. This viewpoint was selected because it represents views from a publicly accessible vantage point by golf course operators and users. It is also the closest publicly accessible area with views oriented toward MFA.

KOP 2 – View from San Francisco Bay Trail

Figure 3-6 provides a mostly unobstructed view of Hangar 3 to the south-southwest from a segment of the Bay Trail, located approximately 0.75 mile away. This viewpoint was selected as it represents views from a publicly accessible vantage point by Bay Trail users travelling west near the point where they would first have mostly unobstructed views toward the Project area.

KOP 3 – Approximate View from US 101

Figure 3-7 approximates north-northwest views from southbound US 101, located approximately 0.8 mile from Hangar 3. Views of Hangar 3 from US 101 are constrained; the nearest lanes are the northbound ones, from which Hangar 3 is visible in perpendicular or rear-facing views beyond additional frontage roadways and the Caltrain corridor, which includes overhead infrastructure and is bound by fencing. The view from the southbound lanes is oriented more toward the Project area, but the northbound US 101 traffic further obstructs views and makes views of Hangar 3 intermittent. The view from KOP 3 is from the southwest side of the Project area, which is not a publicly accessible location. However, it was selected because it has the same view orientation as the nearby southbound segment of US 101 and thus serves as a conservative approximation of views from the highway.

KOP 4 – View from San Francisco Bay Trail

Figure 3-8 provides a publicly accessible view to the south-southeast while travelling east on a segment of the Bay Trail, located approximately 1.4 miles from Hangar 3. This viewpoint was selected because it represents the vantage point of trail users who have just turned away from a trail segment that provides an open view of the San Francisco Bay and would now be facing the shoreline and lands beyond, with views oriented toward MFA.

a) Close-in view to the south from the golf course at Moffett Airfield. Hangar 3 is visible to the left and Hangar 2 is visible to the right, about 0.5 miles away.

b) View showing the Proposed Action with the demolition of Hangar 3.

Project Location
Moffett Federal Airfield
Santa Clara County, CA

Project
Hangar 3 Structural Hazard Remediation Project
Draft Environmental Assessment

Figure No
3-6

Title
Key Observation Point 1- View from the Golf Course at Moffett Airfield with the Proposed Action

Figure 3-5 Key Observation Point 1 – View from the Golf Course at Moffett Federal Airfield with the Proposed Action

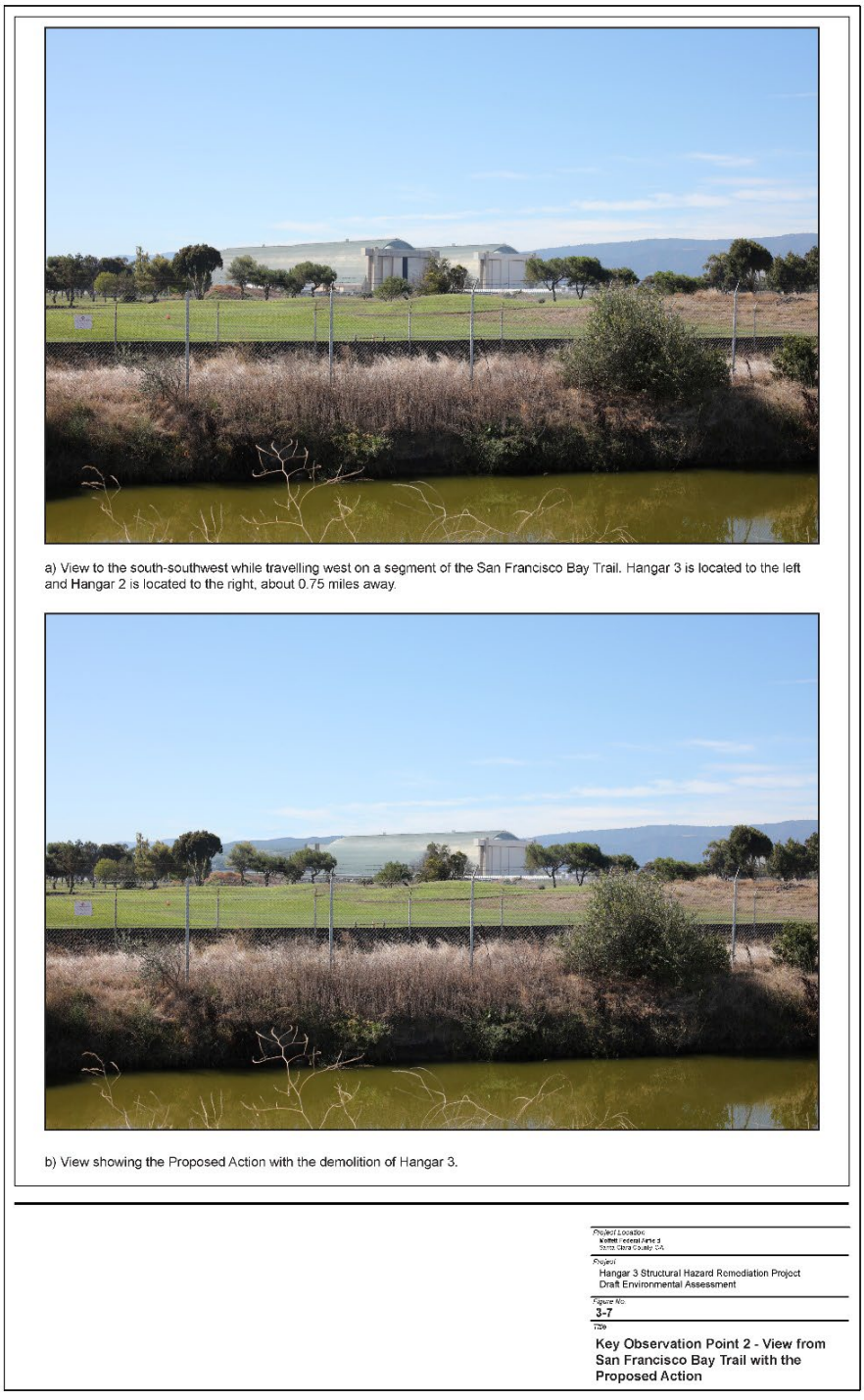

Figure 3-6 Key Observation Point 2 – View from the San Francisco Bay Trail with the Proposed Action

Figure 3-7 Key Observation Point 3 – Approximate View from US 101 with the Proposed Action

Figure 3-8 Key Observation Point 4 – View from San Francisco Bay Trail with the Proposed Action

3.2.9.4 Environmental Consequences

Proposed Action – Building Demolition

Under the Proposed Action, temporary and permanent changes to the existing visual landscape would result from pre-demolition and demolition activities. During pre-demolition and demolition activities, the presence of construction equipment, demolition debris, and vehicles would alter the existing visual character of the Project site. However, once pre-demolition and demolition activities were completed, the temporary materials and equipment would be removed.

All above-ground infrastructure would be removed with the demolition of Hangar 3, and only the concrete slab would remain. The demolition of Hangar 3 would result in permanent changes to the existing visual landscape. As shown in the views from KOP 1 through KOP 4, Hangar 3 is a prominent feature in views toward MFA from nearby locations. Its visual prominence is reinforced by the presence of Hangar 2, which is identical in form and scale to Hangar 3. As a pair, these structures are highly recognizable visual and historic features in the local and regional landscape; therefore, the removal of Hangar 3 would be noticeable by viewers familiar with the area. However, such visual changes would not be substantial, as Hangar 2 would become the focal point in public views and would maintain the overall visual character of the Project area. Additionally, as shown in the close-in views from KOP 1 and KOP 2, the removal of Hangar 3 would allow for greater visibility of the Project area and the surrounding hillsides, as well as of the more distant Santa Cruz Mountain ridgeline.

A similar visual effect would also occur in more distant views. As shown in the views from KOP 3 and KOP 4, Hangar 2 and Hangar 3 appear as prominent, symmetrical structures in MFA, but are partially obscured by existing development and vegetation. With the demolition of Hangar 3, the vividness would be reduced with the elimination of a repeating form. However, Hangar 2 would become the sole dominant feature in public views and would retain the elements that contribute to the overall visual character that is evident in existing views toward this portion of MFA. In the view from KOP 3, there would be increased visibility of the Diablo Range peaks to the east. As such, the Proposed Action would have a less than significant impact on the existing visual character and scenic quality of public views.

Pre-demolition and demolition activities would typically occur during daylight hours from 7:00 AM to 3:30 PM, and no nighttime work would occur. Activities during the Project's pre-demolition and demolition phases would contribute additional light to the site primarily due to the reflection from equipment surfaces and the use of headlights and work lights if activities occur outside of daylight hours. Once demolition of Hangar 3 was completed, all temporary lighting, equipment, and materials would be removed from the

Project site. Therefore, the Proposed Action would not create a new source of substantial light or glare, and the impact would be less than significant.

No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of structural failure, potential damage to Hangar 3 would be uncontrolled and could affect other nearby structures, including Hangar 2. However, it would be speculative to determine the extent of an unplanned collapse and the potential damage to other structures. In the absence of Hangar 3, Hangar 2 would be the sole dominant feature in public views and would retain the elements that contribute to the overall visual character that is evident in existing views toward this portion of MFA. Therefore, visual impacts from the No Action Alternative would be less than significant.

3.2.10 Water Resources

The analysis of water resources in this EA focuses on surface water quality, stormwater runoff, and groundwater. Surface water includes all lakes, ponds, rivers, and streams. Groundwater is water that is below the ground surface. Water quality describes the chemical and physical composition of water as affected by natural conditions and human activities.

3.2.10.1 Regulatory Setting

The following includes the key federal and state regulations applicable to the Project.

Clean Water Act (CWA). The CWA is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. CWA sections 303 (Water Quality Standards and Implementation Plans) and 402 (National Pollutant Discharge Elimination System [NPDES]) are implemented and enforced by the individual states. In California, the nine RWQCBs enforce the provisions under guidance from the State Water Resources Control Board.

NPDES Permit Program. The NPDES Permit Program is administered by the State Water Resources Control Board and RWQCBs under the authority of the USEPA to control water pollution by regulating point sources that discharge pollutants into Waters of the U.S. If discharges from industrial, municipal, and other facilities go directly to surface waters, then dischargers must apply for permits that regulate and authorize the discharge.

Industrial General Permit. NASA's existing facility Industrial General Permit regulates stormwater discharges and authorized non-stormwater discharges from onsite facilities, construction, and municipal sources at ARC as part of the NPDES Permit Program under the CWA. Provisions of this permit would apply to the demolition activity carried out under the Proposed Action.

The permit requires control of pollutant discharges using Best Available Technology (BAT) and Best Control Technology (BCT) to prevent and reduce pollutants and any more stringent controls necessary to meet water quality standards. Dischargers are required to reduce or prevent the discharge of pollutants in stormwater and other water discharges by developing Best Management Practices (BMPs) that comply with the BAT/BCT.

Stormwater Pollution Prevention Plan. The NASA ARC SWPPP has been developed and implemented to comply with the requirements of Title 40, Code of Federal Regulations, Parts 122, 123, and 124 and the requirements of the Industrial General Permit. The SWPPP has two major objectives:

1. Identify and evaluate sources of pollutants associated with industrial activities that may affect the quality of a facility's stormwater discharges and authorized non-stormwater discharges;
2. Identify, describe, and implement site-specific BMPs to reduce or prevent pollutants associated with industrial activities in stormwater discharges and authorized non-stormwater discharges. BMPs shall be selected to achieve BAT/BCT and compliance with water quality standards.

Compliance with the SWPPP during the Proposed Action would be required by the NASA ARC Industrial General Permit.

San Francisco Bay Basin Water Quality Control Plan (Basin Plan). The Basin Plan is the San Francisco Bay RWQCB's master water quality control planning document. The Basin Plan designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater, and also includes programs of implementation to achieve water quality objectives. The current Basin Plan reflects all amendments as of November 5, 2019 (RWQCB 2019).

3.2.10.2 Affected Environment

Precipitation that falls at NASA ARC drains to two distinct watersheds (i.e., drainage areas). These watersheds split NASA ARC into, the western drainage system encompassing 680 acres, and the eastern drainage system encompassing 1,010 acres. The Project site is entirely within the eastern drainage system. All stormwater in this system flows north and discharges to the Marriage Road ditch and the North Patrol Road Channel. This water is discharged downstream to the easternmost Lockheed Pond

through a culvert and is then pumped into the Moffett Channel, where it is ultimately discharged into Guadalupe Slough and then the San Francisco Bay.

Surface water quality at ARC is typical of urban or developed streams where various types of point- and nonpoint-source pollutants affect water quality. Surface water drainage at ARC has been substantially modified for stormwater management, and water quality concerns focus on maintaining compliance with the California NPDES General Permits CAS000001 and CAS000002. Monitoring the quality of stormwater at NASA ARC is also important to track movement of contaminants and contaminated groundwater (NASA 2015). NASA monitors four times per year at the North Patrol Road channel pumpstation prior to leaving NASA's site.

Since the early 1980s, numerous investigations have been conducted at and around ARC to evaluate soil and groundwater contamination in the area. Activities at the MEW Superfund site (which originates in Mountain View), the Navy, and ARC, have all contributed to an area of groundwater contamination consisting of plumes of dissolved VOCs collectively referred to as the regional plume that exists in the groundwater beneath ARC (NASA 2015), including Hangars 2 and 3. MFA is currently covered under a NPDES General Permit (No. CAG912003) to regulate discharge or reuse of extracted and treated groundwater resulting from the cleanup of groundwater polluted by VOCs (NASA 2009).

3.2.10.3 Approach to Analysis

Impacts associated with surface water quality, stormwater runoff and groundwater that could result from construction activities associated with the Project were evaluated based on expected construction practice, the materials to be used, and the locations and duration of the activities. The effects of the Project were compared to environmental baseline conditions (i.e., existing conditions) to determine the duration and magnitude of impacts.

Significant impacts to water resources would result if the Project: (1) discharged construction pollutants or contaminated groundwater into downstream areas such that degradation of water quality would occur; (2) resulted in increased runoff such that stormwater drainage capacity would be exceeded or result in flooding; or (3) interfered with sustainable groundwater management by substantially reducing groundwater recharge or substantially decreasing groundwater supplies.

There are no operational uses proposed as part of the Project; therefore, operational impacts to water resources are not discussed further. Also, given the Project would not change the amount of impervious surface or alter the existing storm drain system. Once Hangar 3 was demolished, stormwater from the site would continue to discharge into the existing storm drains and flow north into the Marriage Road ditch and

the North Patrol Road Channel. Therefore, the Proposed Action would not result in increased runoff and thus the analysis below focuses on surface water quality and groundwater and does not discuss stormwater runoff.

3.2.10.4 Environmental Consequences

Proposed Action – Building Demolition

Under the Proposed Action, construction activities would include abatement, demolition, and waste disposal. All construction activities would be above-ground, and no site grading or ground disturbance would occur. However, demolition activities could result in discharge of pollutants such as asbestos and lead into surface water. Construction equipment used on-site may release small quantities of petroleum products including diesel, gasoline, and grease that could be combined with the wastewater generated during construction.

The Proposed Action would require the management of wastewater generated from dust suppression, potential watering of ACM, and other temporary localized increases in runoff to nearby surface waters as noted in AMM-1: EIMP. All water discharged during demolition would be collected in covered and secured Baker tanks and then tested to determine whether it should be transported offsite to a hazardous waste facility or otherwise discharged to the sanitary sewer in accordance with AMM-1: EIMP. The location of the Baker tanks would be determined during final design but would be located within the temporary fence line.

In the event of a storm or heavy rain event, debris and contaminated materials from the Project site could potentially run off into surface waters and degrade water quality. The Proposed Project would comply with the existing Industrial General Permit and NASA's ARC SWPPP. The SWPPP includes a series of BMPs that are designed to control surface runoff and prevent contamination of surface waters (NASA 2021). For example, all construction activities at ARC would be required to adhere to erosion control and site stabilization stormwater BMPs, which include preventing runoff from flowing across disturbed areas by diverting the flow to vegetated areas and providing drainage ways for increase runoff (NASA 2009b). The Lessee's contractor would be responsible for implementation of the SWPPP.

Collection of all wastewater, implementation of AMM-1: EIMP, and compliance with the existing Industrial General Permit and NASA's ARC SWPPP would control surface water runoff and prevent the discharge of construction pollutants into downstream surface waters such that degradation of water quality would not occur. Therefore, the Proposed Action would have a less than significant impact on surface water quality.

The existing sewer facilities at Project discharge to the City of Sunnyvale's sewer system. While some of the wastewater collected may be suitable for discharge to the City of Sunnyvale's Wastewater Treatment Plant, an Incidental Discharge Permit would be required prior to discharge. This permit would enable the City of Sunnyvale to determine whether discharge was acceptable. If the permit is granted, then the existing sewer facilities would be expected to accommodate the amount of wastewater generated from construction of the Project. If the permit is not granted, wastewater would be hauled offsite for disposal at a suitable facility.

There are Navy groundwater monitoring wells located within the Project area; however, none of the wells are located within Hangar 3 and would not be directly affected by construction activities. Any existing wells in the vicinity of the Project site would be protected in accordance with AMM-1: EIMP. The Proposed Action would not be expected to encounter groundwater or require dewatering as excavation would not occur. In addition, the project would not change the amount of impervious area and thus not change groundwater recharge. Therefore, the Proposed Action would not interfere with sustainable groundwater management and would have a less than significant impact on groundwater resources. Therefore, when considering all potential effects to water, the Proposed Action would not have a significant impact on water resources.

No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, existing lead, asbestos, PCB, and other contaminants from building materials within Hangar 3 could be released into the environment, including surface waters, because no abatement of hazardous materials (lead/asbestos/PCB) would be conducted prior to cleanup. Therefore, the No Action Alternative could degrade downstream water quality through the release of hazardous and other contaminants into surface waters and result in a potentially significant impact to water resources.

3.3 Cumulative Impacts

Federal regulations implementing NEPA require federal agencies to include an analysis of potential cumulative effects of a project. This includes connected, cumulative, and similar actions (40 CFR Section 1508.25). Additionally, the CEQ further explained in *Considering Cumulative Effects Under the NEPA* (CEQ 1997) that, "each resource, ecosystem and human community must be analyzed in terms of its ability to accommodate additional effects, based on its own time and space parameters." A cumulative effects analysis generally encompasses geographic boundaries beyond the immediate area of the Proposed Action, and includes past, present, and reasonably foreseeable future actions to capture these

additional effects. The list of projects included in this cumulative analysis was developed by reviewing the NASA Ames Development Plan (NADP), Moffett Park Specific Plan, East Whisman Precise Plan, the City of Mountain View Planning Division's website (2021), and City of Sunnyvale's Projects in Sunnyvale website (2021). Projects were included in the cumulative analysis if they were in MFA, ARC, or in the immediate vicinity of the Project and would occur in the same timeframe as the Proposed Action.

3.3.1 Cumulative Impact Setting

The geographic area analyzed for cumulative impacts is dependent on the resource being analyzed. The geographic area associated with the proposed Project's environmental impacts defines the boundaries of the area used for compiling the list of past, present, and reasonably foreseeable future projects considered in the cumulative impact analysis. This analysis considers the specific geographic area that is directly related to the individual topic addressed within that section.

For example, the analysis of air quality is based on a regional level because air quality impacts are regional in nature, whereas analysis of impacts to visual resources only considers related projects in the vicinity of the Project site because of the localized nature of the impact.

The geographic area that could be affected by implementation of the Project in combination with other projects varies depending on the type of environmental resource being considered. Table 3-16 provides the geographic area in the cumulative analysis for each resource area.

Table 3-16 Geographic Scope of Cumulative Impact Analysis

Resource	Geographic Area of Cumulative Analysis
Air Quality	SFAAB
Biological Resources	ARC
Cultural Resources	NAS Sunnyvale Historic District and portions of the City of Sunnyvale to the east, including the Lockheed Missile & Space Division Campus
Greenhouse Gases and Climate Change	Global
Hazards, Safety, and Waste Management	ARC
Noise and Vibration	ARC

Resource	Geographic Area of Cumulative Analysis
Transportation and Circulation	Intersections in the cities of Mountain View and Sunnyvale and streets within ARC identified in Appendix E, Traffic Analysis Memorandum.
Utilities	ARC
Visual Resources	ARC
Water Resources	MFA Watershed

The temporal scope for cumulative effects analysis differs between the two alternatives. Under the Proposed Action, demolition would occur over approximately nine months and no operational activities would occur once demolition was completed. This limited duration, without an operational component, minimizes the potential for the Proposed Action to have an additive effect when combined with other reasonably foreseeable future actions. Under the No Action Alternative, Hangar 3 would continue to deteriorate and would result in additional impacts as described in Section 3.2, Environmental Resources Included for Detailed Consideration. Under the No Action Alternative, it is not known how long the existing structure would remain standing given the potential for collapse.

3.3.2 Projects Considered for Cumulative Impact Analysis

Past actions at MFA include repairs to Hangars 2 and 3, 5th Avenue Gate Improvements, Bus Maintenance Facility, CAANG's 129th Rescue Wing Project, and US 101 Northbound Off-Ramp at Moffett Boulevard Improvements. In the past, numerous small-scale construction, operations, and maintenance projects have occurred at MFA. These past projects were conducted in accordance with applicable regulations, resulted in negligible environmental impacts, and are assumed to contribute (in part) to the existing conditions described in Section 3.2, Environmental Resources Included for Detailed Consideration.

Present actions include projects that are currently being implemented or for which a decision to proceed has already been made and would soon be implemented at ARC. These include the Bay View Project, Hangar 1 Rehabilitation and Recladding, Airside Fuel Farm, NASA Housing Project, and the U.S. Geological Survey (USGS) Lab on Parcel 15.

Reasonably foreseeable future actions within MFA and other portions of ARC include the EAIP and future developments as contemplated in the NADP for portions of ARC that are directly west of MFA, including

development by the University of California (UC). The future actions on MFA and other portions of ARC involve federal agency agreements or funding and would require NEPA documentation.

The planning programs in the City of Sunnyvale's Moffett Park Specific Plan and City of Mountain View's East Whisman Precise Plan describe future development over a 10-year+ horizon[15]. Over the period between now and 2030, development would be expected to occur, or has already occurred as part of these plans. However, the location and schedule of such developments are uncertain and thus the potential for effects from the general developments contained in these plans to cumulate with those of the Project, which has a very short near-term timeline, is extremely speculative. Therefore, developments under these two plans were not included as reasonably foreseeable future projects.

Rather, the current project list on the City of Mountain View and City of Sunnyvale's websites were reviewed for pending projects surrounding the 5th Avenue Gate and Ellis Street Gate where Project activities (travel by construction worker vehicles and construction trucks) would occur outside of ARC. Current projects within the City of Mountain View are located south of US 101. Two hotel development projects in Sunnyvale are proposed along North Mathilda Avenue, along the route construction trucks would take from the 5th Avenue Gate to SR 237 and US 101; however, these hotels are currently under construction and are expected to be completed by the time of Project implementation. These foreseeable projects in Mountain View and Sunnyvale could overlap with the Project, but their effects would be localized and to the extent that they generate traffic that could combine with that of the Project along SR 237 and US 101, the traffic analysis for the Project (see Section 3.2.7, Transportation and Circulation) incorporates a two percent per year growth factor to traffic due to future development. Therefore, current City of Mountain View and City of Sunnyvale projects are not discussed specifically within this cumulative analysis.

Table 3-17 summarizes past, present, and reasonably foreseeable future actions included in the cumulative effects analysis, and the location of each of these projects is depicted on Figure 3-9.

[15] The timelines for the East Whisman Plan range from 2019 to beyond 2030. There is no known timeline for development under the Moffett Park Specific Plan as it is currently being updated by the City of Sunnyvale.

Table 3-17 Cumulative Actions

Past Actions	Present Actions	Reasonably Foreseeable Future Actions
● Repairs to Hangars 2 and 3 ● 5th Avenue Gate Improvements ● Bus Maintenance Facility ● CAANG 129th Rescue Wing Project ● Natural Gas Separation Project ● DLA Tank Removal Project ● US 101 Northbound Off-Ramp at Moffett Boulevard Improvements	● Hangar 1 Rehabilitation and Recladding ● Bay View Project ● Airside Fuel Farm ● NASA Housing Project ● U.S. Geologic Survey (USGS) Lab on NRP Parcel 15	● EAIP ● University of California (UC) development

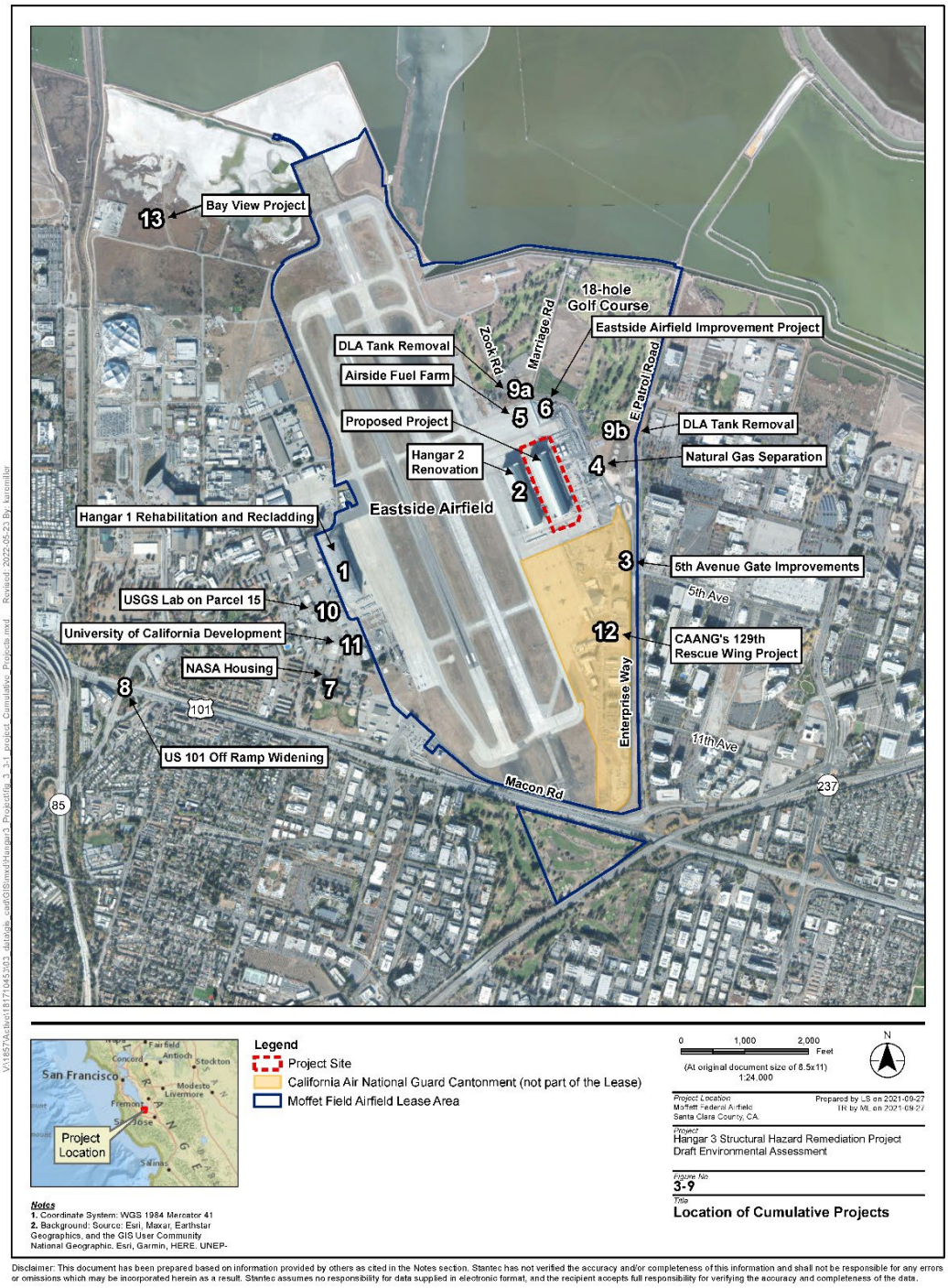

Figure 3-9 Location of Cumulative Projects

3.3.2.1 Past Actions

Hangars 2 and 3 were constructed between 1942 and 1943. Repairs occurred periodically throughout the service life of the hangars, from early repairs in their service life to emergency repairs on Hangar 3 from the 1980s until recently.

The 5th Avenue Gate Improvements project was undertaken to help alleviate traffic congestion at the Ellis Street interchange by providing an alternative point of entry to the Eastside Airfield area for MFA site users through the 5th Avenue Gate, and by providing a larger vehicular queueing area for inspections within the MFA Lease area. This project was completed in 2020.

The Lessee also operates an existing bus maintenance facility at MFA located east of Hangar 3 that is limited to maintenance work on its commuter bus fleet during the daytime layover. Otherwise, the buses use other decentralized facilities in the South Bay. The current bus maintenance facility is roughly 10 acres and has been in operation since 2016. The current bus maintenance facility serves approximately 225 buses and includes four electric bus chargers. The existing maintenance service infrastructure is limited to temporary tents that are used to clean the buses and perform light maintenance activities, such as changing tires and topping off fluids.

CAANG's 129th Rescue Wing Project included a consolidation of their facilities. As part of this project, the 129th Rescue Wing corrected some of their functional space shortfalls by vacating certain facilities and constructing new facilities thereby allowing the 129th Rescue Wing to carry out their mission more effectively. This project was completed in February 2021.

The Natural Gas Separation Project was approved by NASA and replaced the natural gas line at Buildings 934 and 545 with standalone 1,000-gallon propane tank gas systems to separate PV's natural gas utility system from the system serving NASA and the CAANG facility. The existing appliances were retained and retrofitted to operate with propane fuel. Construction began in October 2020 and has been completed.

The Defense Logistics Agency (DLA) Tank Removal Project included removal of five underground storage tanks (USTs) and associated pipelines, truck fill stands, high-speed aircraft fueling hydrants, and related infrastructure from the inactive former Defense Fuel Support Point (DFSP) at Moffett Field. This project was completed in 2021.

The US 101 Northbound Off-Ramp Project at Moffett Boulevard included the widening of the northbound off-ramp to construct a right-turn pocket near the signalized intersection. Construction included land

stripping at the Moffett Boulevard and US 101 northbound intersection as well as adjustments to sidewalks, traffic signals, and curbs-and-gutters. Construction was completed in December 2021.

3.3.2.2 Present Actions

The Hangar 1 Rehabilitation and Recladding Project is currently starting implementation. The rehabilitation and recladding (replacement of original metal panels and glazing) for Hangar 1 would include full scale abatement of the steel superstructure, structural upgrades, metal reskin of hangar, and installation of interior improvements. Although specific users of the hangar are not yet known, the hangar will be designed for a F-1 standard under the California Building Code. The anticipated construction schedule is early 2022 to mid-2025.

The Bay View Project consists of 1.1 million sf of office and 240 short-term employee accommodation units. Construction began in 2017 and will be completed in 2022.

The Airside Fuel Farm Project includes replacing the existing fuel farm facility with a new facility. Fuel farm refers to the fuel facility that includes fuel storage, pumps, and associated infrastructure. The new facility would be designed to accommodate existing and future aviation fuel needs, and the existing and future PV bus maintenance facility. Construction should begin in 2022 and is expected to be completed in 2023.

The NASA Housing Project outlined in the NADP is currently in the planning stage. The project would include up to 2.75 million sf of development consisting of up to 2,068 housing units, 250,000 sf of ancillary uses, and 100,000 sf of retail space on approximately 46 acres with a target to complete in the next 17 years. The project site is located at the Ellis Street Gate between Wescoat Village and MFA. The housing project may include installing a recycled water pipeline along Macon Road from Ellis Street Gate until Macon Road turns north. This off-site improvement would occur at the beginning of the project, which may be midway through 2023.

The USGS Lab on NRP Parcel 15 includes the construction of a new 48,000 sf two-story laboratory building west of Hangar 1. This lab provides a facility suitable for USGS research needs and supports the relocation of the USGS research programs from their current Menlo Park Campus to NASA ARC. The development includes labs, clean rooms, high-bay labs, office, and chemical storage. Demolition of two additions to Building 006, all storage sheds and associated structures within the NRP parcel 15, select underground utilities, and portions of utility vaults would be required. Construction would take approximately 24 months to complete and is expected to be complete in 2024.

3.3.2.3 Reasonably Foreseeable Future Actions

The EAIP is currently in the planning stage. The project would develop approximately 50 acres on the Eastside Airfield portion of MFA and include development of a private aircraft hangar north of Hangar 3 and connected to Building 686, as well as modifications to the existing bus maintenance facility (BMF) adjacent to the Hangar 3 to accommodate more commuter buses. In an effort to electrify the lessee's commuter bus fleet, 26,000 solar panels would be installed over the bus parking stall areas atop a free-standing solar canopy structure. In addition, the Moffett substation east of the BMF would be replaced and a battery energy storage system would be installed. The anticipated construction schedule is from 2022 through 2025.

The University of California (UC) and NASA have signed a lease for possible development of up to 1.4 million sf of commercial, educational, residential, and ancillary lodging and retail space on 36 acres, directly west of MFA in the southeastern portion of ARC (OPR 2020). NASA and UC are in the planning stage, which is expected to continue through the end of 2024. Should the project move forward, construction would be anticipated to begin in approximately 2025.

3.3.3 Cumulative Impact Analysis

Cumulative impacts result from the incremental effect of an action when added to the cumulative effect of other past, present, and reasonably foreseeable future actions. Impacts from individual projects that are less than significant may be or become collectively significant. For each resource evaluated in Section 3.2, Environmental Resources Included for Detailed Consideration, this analysis discusses the cumulative effect of the past, present, and future actions identified in Section 3.3.2, Project Considered for Cumulative Impact Analysis, as well as any incremental effect of the Proposed Action.

3.3.3.1 Resource Topics with No Cumulative Effects

The preceding analyses in Section 3.2, Environmental Resources included for Detailed Consideration, identified a number of resource topics for which there would be no impacts as a result of either alternative. This determination was made because the resource was not present; the Project would have no change to existing conditions; or potential impacts would be avoided or minimized by existing regulations and/or measures included as part of the Project including AMMs 1 (EIMP), 2 (Noise and Vibration), and 3 (Construction Traffic Control Plan). Because cumulative impacts are defined as the combined effect of past, present, and reasonably foreseeable future projects, including the alternative under consideration, if a project alternative (i.e., either Proposed Action or No Action) would have no effect on these resources, then, by definition, there would be no cumulative effect. In other words, the

Project alternatives would not have an incremental impact on these resources, and cumulative effects would be the same with or without the Project alternatives. Table 3-18 below summarizes the resource topics with no cumulative effects and the primary reason(s) for this conclusion based on the analyses in Section 3.2, Environmental Resources Eliminated from Detailed Consideration.

Table 3-18 Resource Topics with No Cumulative Effect

Resource Topics with No Cumulative Effect	Rationale
Floodplains and Wetlands	See Section 3.1.1: no change from existing conditions
Geological Resources	See Section 3.1.2: no change from existing conditions
Land Use	See Section 3.1.3: no change from existing conditions
Socioeconomics and Environmental Justice	See Section 3.1.4: no change from existing conditions
Sensitive Natural Communities/Habitats	See Section 3.2.2: resources not present
Tribal Cultural Resources and Archaeological Resources[1]	See Section 3.2.3: resources not present, subsurface work not anticipated, but if discovered, Project includes avoidance and minimization measures (Integrated Cultural Resource Management Plan Standard 8 for inadvertent discovery).
Hazards and Safety[2]	See Section 3.2.5: existing regulations and avoidance and minimization measures (AMM-1: EIMP). Cumulative effects to waste management are described below.
Transportation and Circulation: Parking, Emergency Access, Transit, and Pedestrian and Bicycle Circulation[3]	See Section 3.2.7: Project includes avoidance and minimization measures (AMM-3: Construction Traffic Control Plan)

Resource Topics with No Cumulative Effect	Rationale
Utilities[4]	See Section 3.2.8: Project includes measures to protect utilities, no changes to utilities that affect other buildings, no change in utility demand
Water Resources	See Section 3.2.10: Project includes avoidance and minimization measures (AMM-1: EIMP)

Notes:

[1] There are potential cumulative effects to architectural resources as a result of the Project; therefore, cumulative effects to architectural resources are described below.

[2] There are potential effects to waste management as a result of the Project; therefore, cumulative effects to waste management are described below.

[3] There are potential effects to traffic as a result of the Project; therefore, cumulative effects to traffic are described below.

[4] There are potential effects to utilities as a result of the No Action Alternative; therefore, cumulative effects to utilities as a result of this alternative are described below.

3.3.3.2 Air Quality

The geographic area of cumulative analysis for air quality emissions is the SFBAAB, which is within the jurisdiction of the BAAQMD (Table 3-16). The CARB geographically divided the state into 15 air basins for the purposes of managing air quality on a regional basis. Air basins were identified based on similarity of meteorological and geographic conditions. Therefore, the SFBAAB is the appropriate geographic analysis area for cumulative air quality impacts. The applicable air district responsible for regional air quality planning, monitoring, and maintaining or reaching attainment of criteria air pollutants within the SFBAAB is the BAAQMD. The existing air quality conditions within the SFBAAB are discussed in Section 3.2.1, Air Quality.

Cumulative Effects without the Proposed Action

By its very nature, regional air pollution is largely a cumulative impact. Past, present, and future development projects contribute to the region‘s adverse air quality impacts on a cumulative basis. A project’s emissions may be individually limited, and no single project is typically sufficient in size to independently affect the region’s attainment of state or federal ambient air quality standards. Rather, a project’s individual emissions contribute to the existing and future ambient air quality and may be cumulatively considerable when taken in combination with past, present, and future development projects.

Air pollutant emissions from the construction of past actions, including repairs to Hangars 2 and 3, 5th Avenue Gate Improvements, Bus Maintenance Facility, the CAANG 129th Rescue Wing project, US 101 Northbound Off-Ramp at Moffett Boulevard Improvements, and the DLA tank removal project, as well as actions throughout the SFBAAB, have already occurred and were temporary in nature, in that such emissions were no longer generated after the completion of construction. These past actions have also resulted in a long-term change in operational activities, which generate ongoing air pollutant emissions from area-, energy-, and mobile-sources. Present and reasonably foreseeable future actions would have construction and long-term operational air quality emissions. The SFBAAB is in "marginal"[16] nonattainment of the federal 8-hour ozone standards, and "moderate"[17] nonattainment of the federal $PM_{2.5}$ standard (USEPA 2020a). The SFBAAB is in attainment for California standards for CO, NO_2, SO_2, and sulfates and nonattainment for California standards for ozone, PM_{10} and $PM_{2.5}$, and unclassified for California standards for hydrogen sulfide and visibility reducing particles. Past actions' criteria air pollutant emissions contribute to the regional air quality and attainment status of the SFBAAB. The region's designation as nonattainment for the aforementioned criteria air pollutants is a result of past and present development in the SFBAAB; this regional impact is cumulative rather than attributable to any one source and is a cumulatively significant impact.

Present and reasonably foreseeable future actions also result in the generation of air pollutant emissions from temporary construction and long-term operational activities. Projects within the SFBAAB would adhere to the BAAQMD 2017 Clean Air Plan, as applicable, and comply with the BAAQMD rules and regulations, including dust control measures during construction. The BAAQMD 2017 Clean Air Plan provides a regional strategy for the BAAQMD to continue to maintain as well as progress toward attaining state and federal ambient air quality standards within the SFBAAB, pursuant to the federal Clean Air Act and California Clean Air Act. Federal projects would also be required to comply with the Clean Air Act General Conformity Rule, which is intended to avoid the potential for federal actions to adversely affect local air quality attainment standards. Despite compliance with regulatory requirements, present and future projects would result in emissions within the SFBAAB that contribute to the current nonattainment status of the region. This is a significant cumulative impact.

Cumulative Effects with the Proposed Action

The Proposed Action would only generate air emissions from temporary demolition-related activity and traffic. Proposed Action construction emissions of criteria air pollutants would not exceed the applicable

[16] Area has a design value of 0.071 up to but not including 0.081 ppm for 8-hour ozone.

[17] Area has a design value of 36 µg/m3 for 24-hour $PM_{2.5}$.

Federal *de minimis* or BAAQMD thresholds. BAAQMD thresholds are more conservative than *de minimis* thresholds and provide a regional context for which to evaluate this Project.

In establishing its recommended significance thresholds, BAAQMD explained as follows in its CEQA Air Quality Guidelines (2017):

> Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.
>
> In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary.

As detailed in Section 3.2.1, Air Quality, the Proposed Action would comply with applicable rules and regulations for the purposes of reducing air pollutant emissions during construction. The limited emissions from the Proposed Action are substantially below the BAAQMD construction thresholds. As BAAQMD explains, "[i]n developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable." If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, because the construction emissions are below the thresholds, construction of the Proposed Action would not result in a cumulatively considerable contribution to the significant impact of regional air quality, even though there are present and reasonably foreseeable future projects that would contribute air emissions in the same timeframe as the Proposed Action. Further, after completion of the short construction period, there would be no operational activities, and thus no operational air emissions associated with the Proposed Action.

In addition, localized exhaust emissions can result in exposure of sensitive receptors to substantial concentrations of DPM, which can result in health effects. However, dispersion of air emissions during the short construction period would be localized as the emissions would dissipate substantially with distance from the source; for example, concentrations of mobile-source DPM emissions have been shown to be

reduced by approximately 60 percent at a distance of around 300 feet [Zhu et.al. 2002], and CARB notes that DPM from high-volume roadways is typically reduced by at least 70 percent at 500 feet (CARB 2005). As detailed in Section 3.2.1, Air Quality, regarding the individual air quality impacts associated with the Proposed Action, no sensitive receptors are located near (within 1,000 feet)[18] the Proposed Action site. Therefore, the DPM emissions generated from construction of the Proposed Action would be insignificant at the sensitive receptors and the Proposed Action would not result in a compounding effect to health risk in combination with other cumulative projects. Moreover, standard fugitive dust suppression protocols would be followed.

Therefore, the temporary air emissions associated with the Proposed Action (no operational impacts), when combined with other past, present, and reasonably foreseeable future actions, would not be cumulatively significant.

Cumulative Effects with the No Action Alternative

Under the No Action Alternative, the existing conditions would remain the same and there would be no immediate impact to air quality. Therefore, the No Action Alternative would not contribute to cumulative impacts. However, as detailed in Section 3.2.1, Air Quality, structural collapse would result in an uncontrolled release of fugitive dust and subsequent clean-up would require haul trucks and construction equipment, similar to those needed for the Proposed Action, that would emit criteria air pollutants and DPM, but Tier 4 equipment (which meets more stringent emissions standards and substantially reduces DPM and NOx emissions from construction equipment) may not be available to support these cleanup activities, thereby resulting in an increase in emissions compared to the Proposed Action. It was concluded for the analysis of the No Action Alternative (Section 3.2.1.4, Environmental Consequences) that potential impacts to air quality from the No Action Alternative could be greater than the Proposed Action but would likely not exceed BAAQMD significance thresholds. Therefore, air quality impacts as a result of the No Action Alternative, when combined with past, present, and reasonably foreseeable future actions, would not be cumulatively significant.

3.3.3.3 Biological Resources

The geographic area of cumulative analysis for biological resources is ARC (Table 3-16) because direct and indirect effects to biological resources are not anticipated to extend beyond the limits of ARC under either of the alternatives considered. There would be no cumulative impacts to wetlands, sensitive natural

[18] For assessing community risks and hazards, a 1,000-foot radius is recommended by BAAQMD around the project property boundary.

communities, or critical biological habitats because these resources are not present in the Project area (Table 3-18). Therefore, this section only addresses cumulative effects to bat and bird species.

Cumulative Effects without the Proposed Action

Impacts to biological resources from past actions have already occurred and resulted in the permanent conversion of natural land to a developed landcover. Present and reasonably foreseeable future actions could have noise-related impacts from increased noise levels associated with construction activities in conjunction with vibrational impacts from heavy equipment, and either a temporary or permanent loss of vegetated habitat and/or artificial, anthropogenic infrastructure that could support roosting habitat for bats and nesting/ roosting habitat for birds.

Prior to the European settlement of the San Francisco Bay Area, landcover at ARC was dominated by tidal marsh bayland, which was converted post-European settlement to grassland and agricultural habitats. When considered together, past actions, spanning from the initial construction of ARC to the present, have affected biological resources, including significant loss of natural habitat resulting in the current conditions at ARC. However, cumulative effects of past actions on birds and bats post-construction have likely been minimal, with the exception of burrowing owls as described below. Roosting habitat for bats and nesting habitat for birds (excluding burrowing owls) may historically have been present in the area. The natural habitats, including mature trees and snags (for birds and bats) and tidal marsh (for birds) were either removed or experienced a temporary loss with the development of ARC. With the expansion of ARC, the conversion of tidal marsh bayland-to-grassland habitat may have attracted burrowing owls from the surrounding areas, which would not have inhabited the tidal marsh habitat previously. Altogether, the availability of bat roosting and bird nesting habitat may have been partially restored, albeit artificially, since development of airfield-related infrastructure at ARC, and provides burrowing owls in particular with additional nesting and foraging habitat. With the exception of the burrowing owl, the composition of bird species that presently nest, roost, or forage at ARC have adapted to disturbed or developed habitat and have likely increased with the changes to landcover from natural to developed habitat over time (Steve Rottenborn, HT Harvey & Associates, personal communication). However, these urban-adapted species only replaced the original, more variable composition of tidal marsh bird species that would have historically occupied the native bayland habitat previously. The present populations of bird (excluding the burrowing owl) and bat species potentially impacted by the cumulative projects (Table 3-17) are more adapted to urban environments and are generally common and abundant; their population numbers are not expected to decline following the completion of cumulative projects.

Unlike other urban-adapted bird species expected in the region, burrowing owls have experienced a significant population decline, especially the San Francisco Bay Area population whose number of nesting pairs decreased by approximately 28 percent between 1991 and 2007 (DeSante et al. 2007, Wilkerson and Siegel 2010). ARC represents one of only five known breeding locations in the San Francisco Bay Area. Although ARC population numbers remained relatively stable between 2000 and 2010, between 2014 and 2016 there was a marked decline of more than 50 percent of the population at ARC and at an additional two of the four other breeding locations in the San Francisco Bay Area (NASA 2022). The present population of burrowing owls potentially impacted by the cumulative projects are sensitive to disturbance and are under pressure from loss of habitat by development. Because the cumulative projects would result in more disturbance, loss of marginal habitat, and increase the presence of humans near breeding areas, the population of burrowing owls at ARC could be adversely affected by the completion of cumulative projects.

The cumulative effects on biological resources from present and reasonably foreseeable future actions include effects on wildlife and vegetation. Such effects could include the introduction of non-native, invasive, or urban-adapted predatory species (e.g. weeds, domestic cats, Norway rats); additional loss and removal of habitat associated with grading, new development, and clearing of vegetation; disruption to wildlife habitat from increased human presence or noise; and direct impacts as a result of the removal of occupied habitat (i.e., viable nests or roosts in vegetation or ground nests impacted by construction or maintenance equipment) for new developments.

The demolition of existing structures and the construction of future structures associated with present and future projects could result in the removal and introduction of artificial, anthropogenic infrastructure that act as incidental bat roosting and bird nesting habitat. However, the demolition and construction of these structures would be considered inconsequential for species populations overall because of the highly disturbed, sterile nature of a built environment where the natural prey base (e.g., insects, seeds) and habitat complexity (e.g., vegetative cover from predators, perching habitat, water sources) are greatly reduced, if not absent. Bat and bird species that would be displaced by present and future projects (e.g., USGS Lab, NASA Housing, UC development) at NASA ARC already have ample artificial, anthropomorphic infrastructure in the built environment to accommodate relocation within ARC and the surrounding area. Where cumulative projects would be located in areas that are less developed, such as EAIP and Bay View, NADP and project specific mitigation measures would mitigate these projects' effects on protected resources such as bat and bird species, including burrowing owls. Therefore, the cumulative impacts on bat and bird species of past, present, and reasonably foreseeable future projects would be less than significant.

Cumulative Effects with the Proposed Action

The Proposed Action has the potential to increase the cumulative effect on biological resources described above through the additional demolition of artificial, anthropogenic infrastructure that acts as incidental bat roosting and bird roosting and nesting habitat. However, the incremental biological impacts of the Proposed Action would be limited in time and space to the structure and location of Hangar 3; specifically, the localized removal of artificial, anthropogenic infrastructure that provides roosting and nesting habitat, and the permanent displacement of roosting/nesting individuals outside of the sensitive breeding seasons. While H3 is a large structure, it is relatively small given the extensive presence of development at the Project site. With the inclusion of 14 mitigation measures addressing burrowing owls, other nesting and roosting birds, and bats (BIO-1A through BIO-3D), the Proposed Action would not be cumulatively significant.

There would be no long-term cumulative impacts because there would be no operational activities associated with the Proposed Action after demolition activities were completed. Therefore, cumulative impacts to biological resources associated with the Proposed Action, when combined with past, present, and reasonably foreseeable future actions, would not be significant.

Cumulative Effects with the No Action Alternative

Under the No Action Alternative, existing conditions would remain the same and there would be no immediate impact to wildlife. The recommended mitigation measures (BIO-1A through BIO-3D) to avoid the direct injury or mortality of bats and birds would not be necessary for the No Action Alternative. However, in the event of a structural failure, potential impacts would be uncontrolled and unmitigated, resulting in greater direct and immediate impacts to wildlife in the vicinity of the Project site as mitigation measures identified for the Proposed Action would not be implemented. Therefore, wildlife impacts could be significant as the No Action Alternative could result in the loss of bird eggs or nestlings, the death or injury of a burrowing owl (if present in debris or materials near the hangar), and the injury or mortality of bats within a roost site in Hangar 3, thus violating the MBTA and/or CFGC or potentially affecting the regional population of burrowing owls. Therefore, impacts to biological resources associated with the No Action Alternative, when combined with past, present, and reasonably foreseeable future actions, could be cumulatively significant.

3.3.3.4 Cultural Resources

The geographic area of cumulative analysis for cultural resources is the APE for the Project (Appendix C, Section 106 Report), which includes the NAS Sunnyvale Historic District and portions of the City of

Sunnyvale to the east, including the Lockheed Missile & Space Division Campus (Table 3-16). There would be no cumulative impacts to tribal cultural resources as these resources are not present within the APE (Table 3-18). In addition, because there would be no subsurface work for either the Proposed Action or No Action Alternative, effects to archaeological resources would not be anticipated. If subsurface work were to occur under either alternative, compliance with NASA's Integrated Cultural Resource Management Plan protocol for inadvertent discovery would be required. Therefore, this section only addresses cumulative effects to architectural resources for both alternatives.

Cumulative Effects without the Proposed Action

Past actions, spanning from the initial construction of the MFA to the present, may have had adverse effects on cultural resources resulting in the current conditions in the APE. Recent past actions (see Table 3-17), including repairs to Hangar 2 and Hangar 3, as well as other building improvements, developments, and maintenance activities may have incrementally affected the historic integrity of historic properties in the APE, including the NAS Sunnyvale Historic District and its contributors, of which Hangars 1, 2, and 3 are individually eligible historic properties. In terms of potential effects from present and reasonably foreseeable future projects, three cumulative projects, the Bay View Project, NASA Housing Project, and UC Development, would not directly affect the Historic District or any other historic properties, and indirect effects to historic properties within the APEs of those projects, particularly due to visual intrusions, would not be adverse. Four reasonably foreseeable future projects would occur within the Historic District, including the Hangar 1 Rehabilitation and Recladding Project, the Airside Fuel Farm Project, the USGS Lab on NRP Parcel 15, and the EAIP and thus could have compounding effects to cultural resources. The Hangar 1 Rehabilitation and Recladding Project would improve Hangar 1, an individually eligible historic property in the APE and a contributor to the Historic District, in conformance with the Secretary of the Interior's Standards for Rehabilitation and would not adversely affect the Historic District. The Airside Fuel Farm Project would install new aboveground fuel storage tanks and other fueling facilities adjacent to the East Aircraft Parking Apron, a contributing feature of the Historic District, but would not alter the feature or adversely affect the Historic District. The USGS Lab on NRP Parcel 15 would entail the infill construction of a modern building in proximity to Shenandoah Plaza and adjacent to several contributors to the Historic District; however, the design of the new building was determined to conform with the Secretary of the Interior's Standards for Rehabilitation and would not adversely affect the Historic District.

The EAIP would alter an area within the Historic District that partially overlaps the APE and includes eligible contributors Building 69, the East Aircraft Parking Apron, Hangar 2, Hangar 3, Buildings 55, 70-74, and 143-147, and the Naval Storage Depot. The EAIP would demolish Building 69, alter the East

Aircraft Parking Apron, and alter the setting of the surrounding contributors, resulting in a loss of integrity and adversely affecting the Historic District. To resolve these adverse effects, an MOA would be developed through the NHPA Section 106 consultation process.

Although the EAIP would diminish its historic integrity through loss and alteration of a small portion of contributors, overall, the combined effects of these projects on the Historic District would not diminish its historic integrity. Despite the EAIP's adverse effects, the Historic District would not be substantially altered and would continue to qualify for listing on the NRHP, because the majority of remaining contributors would be unaffected and would retain sufficient historic integrity to convey its significance. Therefore, the cumulative impact to cultural resources from past, present, and reasonably foreseeable future projects without the Project would be less than significant.

Cumulative Effects with the Proposed Action

The Proposed Action would have adverse effects on Hangar 3, the NAS Sunnyvale Historic District, and other contributors to the Historic District, as described above in Section 3.2.3.4, Environmental Consequences. The demolition of Hangar 3 would eliminate the individually eligible historic property; no future actions would further affect this individual resource. The Proposed Action would also result in indirect effects from the loss of Hangar 3 on the setting of surrounding contributors on the east side of the airfield near Hangar 3, which would diminish the historic integrity of the Historic District.

The Proposed Action in combination with the EAIP (the only cumulative project to adversely affect the Historic District) would further diminish the Historic District's historic integrity due to the additional loss of a contributor and the indirect effects of that loss on the setting of surrounding contributors. Despite these additional effects, the Historic District would continue to qualify for listing in the NRHP, because the majority of remaining contributors would be unaffected and would retain sufficient historic integrity to convey their significance. Each cumulative project that results in an adverse effect must involve consultation with the SHPO and other entities and the development and execution of an MOA as part of the NRHP Section 106 consultation process. This process would address the adverse effects on the Historic District or other historic properties before the projects could be approved. As a result, although the EAIP and the Proposed Action would diminish the Historic District's integrity, the MOAs would provide the requisite measures to resolve the adverse effects on historic properties. Therefore, the cumulative impact to cultural resources from past, present, and reasonably foreseeable future projects when combined with the Proposed Action would be less than significant.

Cumulative Effects with the No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with demolition of Hangar 3. The existing conditions would remain the same and no contribution to cumulative impacts to cultural resources would occur. However, in the event of a structural failure, significant impacts to the NAS Sunnyvale Historic District and its contributors in the vicinity could occur due to the collapse of Hangar 3. No protections afforded by the Section 106 process or an executed MOA would address and resolve potential adverse effects on Hangar 3 or the Historic District. Therefore, the No Action Alternative when combined with past, present, and reasonably foreseeable future actions could result in significant cumulative impacts to cultural resources.

3.3.3.5 Greenhouse Gases and Climate Change

Unlike criteria air pollutants and toxic air contaminants that tend to have localized or regional impacts, GHG emissions tend to disperse more broadly and are more of a global concern because of their relatively longer atmospheric lifetimes compared to air pollutant emissions. The total amount and types of GHG emissions, regardless of their location, have the most significant effect on climate change globally. Therefore, GHG emissions are cumulative in nature and the geographic area of cumulative analysis for GHG and climate change is global (Table 3-16).

Cumulative Effects without the Proposed Action

In its CEQA Air Quality Guidelines (2017), BAAQMD explains:

> Similar to regulated air pollutants, GHG emissions and global climate change also represent cumulative impacts. GHG emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change. Climate change impacts may include an increase in extreme heat days, higher concentrations of air pollutants, sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts. No single project could generate enough GHG emissions to noticeably change the global average temperature. The combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts.

The construction of past actions, including repairs to Hangars 2 and 3, 5th Avenue Gate Improvements, Bus Maintenance Facility, the CAANG 129th Rescue Wing project, and US 101 Northbound Off-Ramp at Moffett Boulevard Improvements, have already occurred but the GHG emissions generated from such

actions persist in the atmosphere. Ongoing operational activities associated with past actions, such as energy and water consumption, waste generation, and vehicle trips, result in the ongoing generation of GHG emissions. Present and reasonably foreseeable future actions would result in the generation of GHG emissions from temporary construction and long-term operational activities, a portion of which could be generated concurrently with those resulting from implementation of the Proposed Action. As described by the BAAQMD, no single project would generate a level of emissions that would individually change the global climate; instead, GHG emissions are inherently cumulative as the combination of GHG emissions from past, present, and future projects have contributed to and will contribute to the significant impact of global climate change.

Cumulative Effects with the Proposed Action

As discussed in Section 3.2.4, Greenhouse Gases and Climate Change, the Proposed Action's GHG emissions were quantified and determined to be less than the federal Mandatory Reporting Threshold. In addition, the Proposed Action's GHG emissions were determined to occur over a short construction duration and the Proposed Action would also provide a benefit of eliminating mobile source GHG emissions from ongoing vehicle and equipment use for repairs and maintenance to the existing structure. Therefore, while the geographic area of consideration for this cumulative impact analysis is global in scale, and although the combination of past, present, and reasonably foreseeable future actions globally result in the cumulatively significant impact of climate change, the Proposed Action's contribution to cumulative GHG emissions and climate change impacts would result in a less than significant contribution to the significant cumulative impact to global climate change.

Cumulative Effects with the No Action Alternative

Under the No Action Alternative, the existing conditions would remain the same and there would be no immediate impact to GHG emissions and climate change. However, some mobile source GHG emissions would be created by ongoing repair and maintenance. Further, in the event of a structural failure, GHG emissions would be generated from vehicles and equipment used in clean-up activities. However, clean-up activities would be temporary, and there would be no long-term operational activities and, therefore, no long-term generation of GHG emissions would be expected to occur once clean-up was completed. In the event of a structural failure, vehicle and equipment use would not be substantially different in scale than that anticipated under the Proposed Action. Therefore, although the combination of past, present, and reasonably foreseeable future actions globally result in the cumulatively significant impact of climate change, the No Action Alternative's contribution to cumulative GHG emissions and climate change impacts would be less than cumulatively considerable.

3.3.3.6 Hazards, Safety, and Waste Management

The geographic area of cumulative analysis for hazards, safety, and waste management is ARC (Table 3-16) because direct and indirect effects to these resources are not anticipated to extend beyond the limits of ARC under either of the alternatives considered. There would be no cumulative impacts related to hazards and safety (Table 3-18) because of existing regulations governing hazards and worker safety and AMM-1: EIMP, which would also apply to the cumulative projects (a specific EIMP or use of the ARC-wide EIMP is required for all NASA lessees). Therefore, the discussion below addresses cumulative effects for waste management only.

Cumulative Effects without the Proposed Action

Past projects have contributed to the available capacity at the nearby hazardous waste and sanitary waste landfills. Although population and employment increases in the region have increased the volume of wastes, state regulations requiring greater recycling, composting, and other actions to divert wastes from landfills have extended the capacity of these facilities, in combination with approvals from the landfill operators to expand their operations. These facilities include Zanker Recycling or Guadalupe Landfill, Kettleman Hills Hazardous Waste Facility, and/or US Ecology Nevada, Inc. As of 2012, the Zanker Landfill has a remaining capacity of 640,000 cubic yards for municipal solid waste (CalRecycle 2019). The Kettleman Hills facility has a remaining capacity of approximately 4.9 million cubic yards for hazardous materials (WM, Inc. 2020). The US Ecology facility had approximately 45.5 million cubic yards of remaining permitted capacity as of December 2018 for both municipal and hazardous wastes (US Ecology, Inc. 2019).

Present and reasonably foreseeable future actions would increase the demand on these facilities. Many of the present and reasonably foreseeable future actions include demolition of existing buildings and would include the disposal of construction debris and materials. Federal requirements for waste management are contained in the Resource Conservation and Recovery Act (Subtitles C and D), but generally rely on local and state ordinances and regulations to implement measures to divert or recycle wastes. California, as part of its efforts to address climate change, requires businesses, multifamily complexes, state universities, and government entities that generate more than 4 cubic yards of waste to recycle. More specifically, under the California Green Building Standards Code, Title 24, Part 11, construction projects must recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, which ever is more stringent. Additionally, per Section 5.410.1 of the California Green Building Standards Code, Title 24, Part 11, once operational, each project would be required to provide readily accessible areas that serve the

entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling or meet a lawfully enacted local recycling ordinance, if more restrictive. Due to regulations for construction and debris diversion, recycling, and the remaining capacity of over 50 million cubic yards in the three landfills that would serve the cumulative projects, it is anticipated that the construction and operational wastes from these cumulative projects could be accommodated and the cumulative impact to waste management would not be significant.

Cumulative Effects with the Proposed Action

The Proposed Action would adhere to all applicable regulations and the associated standard protocols and procedures for the management and disposal of waste from demolition activities. As described in Section 3.2.5, Hazards, Safety, and Waste Management, the Proposed Action would generate approximately 24,375 cubic yards of waste and thus would contribute incrementally to the cumulative impact from development at ARC. However, 65 percent of the non-hazardous waste from the Proposed Action would be recycled in accordance with the California Green Building Standards Code, Title 24, Part 11. Even if all of the waste associated with the Proposed Action were to be disposed of at the landfills stated above, the incremental demand on these facilities would not be cumulatively considerable. The cumulative effect with other present and reasonably foreseeable future projects would not exceed the landfill capacities and therefore the cumulative effect with the Proposed Action would be less than significant.

Cumulative Effects with the No Action Alternative

Under the No Action Alternative, existing conditions would remain the same, and no impacts related to waste would occur. Under these conditions, the No Action Alternative would not contribute to cumulative waste impacts at ARC. However, in the event of a structural failure, the No Action Alternative would result in a waste volume similar to the Proposed Action as described in Section 3.2.5, Hazards, Safety, and Waste Management, and therefore, cumulative effects on waste management and disposal at sanitary landfills would be similar to that described above for the Proposed Action. If there was a structural failure, the No Action Alternative could result in the uncontrolled release and exposure of hazardous materials, including those containing asbestos, lead, and PCB. The No Action Alternative would not include hazard abatement activities described under the Proposed Action. As such, if there was a structural failure, the No Action Alternative could potentially release hazardous materials causing greater risk to human health and the environment compared to the Proposed Action and could be cumulatively significant.

3.3.3.7 Noise and Vibration

The geographic area of cumulative analysis for noise and vibration is ARC (Table 3-16) because direct and indirect effects to these resources are not anticipated to extend beyond the limits of ARC under any of the alternatives considered.

Cumulative Effects without the Proposed Action

Noise impacts from past actions, including repairs to Hangars 2 and 3, 5th Avenue Gate Improvements, Bus Maintenance Facility, US 101 Northbound Off-Ramp at Moffett Boulevard Improvements, and the CAANG 129th Rescue Wing project, have already occurred and are a component of the ambient background conditions at ARC. Present and reasonably foreseeable future actions would contribute to these background conditions, but the overall contribution to ambient noise levels would be largely localized because noise impacts attenuate with distance. Thus, cumulative projects with similar construction schedules (e.g., Hangar 1 Rehabilitation and Recladding, USGS Lab, and NASA Housing in the NRP area and the Airside Fuel Farm and the EAIP on the east side of the airfield) could temporarily increase ambient conditions in these areas of ARC, but the impacts would be temporary and limited to nearby sensitive receptors. The most prominent change would be due to the operational vehicular traffic noise generated by the cumulative projects. However, these changes are not likely to be noticeable since even a doubling of traffic volumes would only increase noise levels by 3 dB, which is barely perceptible and unlikely to trigger complaints by occupants of noise-sensitive land uses along the roadways as described in Section 3.2.6, Noise and Vibration. Therefore, the cumulative construction noise impacts without the Project would be noticeable in portions of ARC, but because of their localized and temporary nature would not be cumulatively significant. The long-term cumulative operational noise effects would be from traffic noise, which would not increase ambient conditions substantially. Therefore, cumulative noise impacts without the Proposed Action would be less than significant.

The cumulative projects would not be located close enough to each other to result in physical damage due to vibration. Therefore, cumulative vibration impacts without the Proposed Action would be less than significant.

Cumulative Effects with the Proposed Action

The incremental noise effects from the Proposed Action would only occur during the limited timeframe for the removal of Hangar 3 (approximately 9 months). Of the cumulative projects that are near the Proposed Action, only the Airside Fuel Farm and possibly the initial phases of the EAIP have similar construction schedules as the Proposed Action. As shown in Table 3-12, worst-case Leq noise levels associated with

the demolition of Hangar 3 were calculated at 67.3 dB(A) at the golf course, 51.2 dB(A) at the Bay Trail, and 47.6 dB(A) at Wescoat Village. Combined noise levels from the construction of the Airside Fuel Farm and the EAIP could reach levels of 78.6 dB(A) Leq at the golf course, 54.1 dB(A) at the Bay Trail, and 48.9 dB(A) at Wescoat Village. Using the principles of decibel addition, Leq noise levels at the golf course, Bay Trail, and Wescoat Village could be increased to 78.9 dB(A), 55.9 dB(A), and 51.3 dB(A), respectively. Even with three active construction projects occurring simultaneously, and using a worst-case scenario, noise levels at all closest noise-sensitive receptors would be expected to be below the Residential Daytime level of 80 dB(A) Leq (8 hour) impact threshold as defined in Table 3-12.

The NASA Housing Project would be located approximately 4,710 feet southwest of Hangar 3. While distant from the Proposed Action in terms of noise impacts (because of the attenuation of noise with distance from the source), this EA examines the potential for cumulative effects of the housing project with that of the Proposed Action. Worst-case noise levels generated from the Project's demolition (Pre-Demolition Activities Phase 1) were calculated at 48.6 dBA Leq at the future NASA Housing Project. Construction noise levels generated on the NASA Housing Project site could be as loud as 95 dBA Leq, depending on the construction equipment used and the distance from the equipment. Using standard logarithmic addition, the noise generated from the demolition activities at Hangar 3 would not increase the noise generated from the construction of the NASA Housing Project. Therefore, demolition noise from the Hangar 3 Building Demolition Project in combination with construction noise from the future NASA Housing Project would not result in a significant cumulative impact to the surrounding community, particularly residents of Wescoat Village.

Thus, the cumulative effect with the Proposed Action would be temporary and limited to the eastern portion of the MFA where users of the Bay Trail and the golf course, who are transient and would not be affected for the duration of construction, are the only sensitive receptors. The incremental traffic noise from construction traffic would not be noticeable compared to ambient conditions, and worst-case noise effects from demolition activities would not be significant. Furthermore, the Proposed Action also would adhere to noise and vibration protection measures as specified in AMM-2. There would be no long-term noise effects from the Proposed Action, which does not include any operational activities after construction and demolition activities are completed.

Therefore, given the limited and temporary nature of the noise impacts as a result of demolition activities (i.e., no operational effects), the cumulative effect of the Proposed Action with other present and reasonably foreseeable future projects would be less than significant.

The cumulative projects would not be located close enough to Hangar 3 or each other to result in physical damage due to vibration. Therefore, cumulative vibration impacts with the Proposed Action would be less than significant.

Cumulative Effects with the No Action Alternative

Under the No Action Alternative, existing conditions would remain the same, and no impacts related to temporary construction noise would occur. Under these conditions, the No Action Alternative would not contribute to cumulative noise or vibration impacts at ARC. In the event of a structural failure, there may be instantaneous loud noise from the structural collapse that would be temporary and short-term and may be higher than the acceptable noise levels defined in the General Plans for the City of Mountain View and the City of Sunnyvale. In addition, depending on the level of emergency response required, there could be nighttime and weekend activity noise generated that is not contemplated under the Project. However, these noise impacts would not be considered significant since they would be temporary and short-term. Noise levels from worker and truck trips would be expected to be similar to the Proposed Action and thus would not be significant. However, sudden collapse could have an adverse impact on surrounding structures if vibration levels were to exceed 0.25 in/sec PPV then damage to nearby structures and utilities could result. Despite these project alternative-specific impacts, it is not possible to anticipate when this event might occur and whether there could be cumulative impacts with other projects in Hangar 3's immediate vicinity. Because the impacts would be sudden and a one-time temporary event, it is not expected that this scenario, in combination with past, present, and reasonably foreseeable future actions, would result in a significant cumulative noise or vibration impact.

3.3.3.8 Transportation and Circulation

The geographic area of cumulative analysis for transportation and circulation includes intersections in the cities of Mountain View and Sunnyvale and streets within ARC as identified in Appendix E, Traffic Analysis Memorandum (Table 3-16). This analysis area was chosen based on the location of these intersections and streets, which provide access to the MFA (see Appendix E, Traffic Analysis Memorandum). There would be no cumulative impacts on transit, bicycle and pedestrian circulation, emergency access, or parking because these resources would not be affected by the Project (Table 3-18) and because circulation and access would continue to be provided in accordance with AMM-3: Construction Traffic Control Plan. Therefore, the discussion below addresses cumulative effects to traffic only.

Cumulative Effects without the Proposed Action

Past actions including repairs to Hangars 2 and 3, 5th Avenue Gate Improvements, Bus Maintenance Facility, US 101 Northbound Off-Ramp at Moffett Boulevard Improvements, and the CAANG 129th Rescue Wing project would have affected transportation facilities temporarily by increasing construction traffic during repairs. There were also changes in the vehicle mix and local circulation because of increased bus traffic within the project area and better access and circulation at the 5th Avenue Gate that also alleviated traffic congestion at the Ellis Street interchange. As shown in Section 3.2.7, Transportation and Utilities, and Table 3-15, existing conditions and future background conditions in 2022 (including a two-percent-per-year increase in traffic volumes to account for background growth) for ARC and nearby streets and intersections show acceptable levels of service.

Present and future actions would result in an increase in traffic on streets and at intersections, both within ARC and offsite, due to construction and operation of those projects. Given the scale and intensity of the cumulative projects, it is reasonable to assume that the cumulative operational impacts could be significant without the Project. The Bay View, NASA Housing, and UC projects collectively account for 5.5 million sf of present and foreseeable development over approximately 125 acres on the western portion of ARC and would be expected to increase trips and travel on local ARC streets, at the Ellis Street Gate, and on the nearby highways and local streets providing access to ARC. Over the short-term (through 2023), cumulative traffic impacts from projects at ARC would be construction related, involving truck movements for delivery of construction materials and equipment and hauling of construction debris, as well as arrival and departure of construction personnel. These cumulative trips would result in congestion on local streets, intersections, and highways providing access to ARC. Although temporary, it is expected that the cumulative impacts from present and foreseeable projects could be significant.

Cumulative Effects with the Proposed Action

Because there is no operational use of the Hangar 3 site, cumulative effects to traffic from the Proposed Action would be limited to the construction period. As noted in Section 3.2.7, Transportation and Circulation, peak trip generation for the Proposed Action would occur during Phase 2, which is anticipated to occur in 2022. Baseline traffic volumes for 2022 incorporate a growth factor (two percent per year), commuter bus use of the 5th Avenue Gate (30 percent of commuter bus traffic), as well as construction traffic from present and future projects that are anticipated to overlap with construction of the Project. These projects include Hangar 1 Rehabilitation and Recladding and EAIP. With the additional peak-hour traffic predicted from the Proposed Action, off-site study intersections would operate at LOS D or better during the AM and PM peak hours under 2022 background conditions.

With respect to onsite construction traffic, the Proposed Action would adhere to AMM-3: Construction Traffic Control Plan to ensure construction traffic does not block access to nearby users and coordination occurs with other construction activities during the same time period. Similar avoidance and minimization measures would also apply to other cumulative projects that would use the 5th Avenue Gate (EAIP, Airside Fuel Farm) and would enable NASA to monitor, coordinate, and control the construction traffic so the cumulative construction traffic impact at the 5th Avenue Gate would be less than significant. Although such similar measures would apply to the cumulative projects at ARC to the west of MFA, the number and scale of those projects are much greater. The use of the Ellis Street Gate by construction workers coming and going to Hangar 3 as a result of the Project would be greatest during Phase 2 but would contribute only 2 trips during the AM and PM peak hours. Therefore, the impact to onsite circulation and the Ellis Street Gate as a result of the Proposed Action would not be cumulatively significant.

Construction and/or operation of the project and other cumulative projects would generally increase traffic along onsite roadways. Because the onsite roadway network operates well below capacity and is used only by site-related traffic (through access is not permitted), impacts to onsite circulation would not be cumulatively significant. Construction activities associated with some of the cumulative projects—such as potential recycled water pipeline construction along Macon Road for the NASA Housing project—may require temporary partial closures of certain onsite roadways from time to time. However, impacts associated with partial closures would typically be limited in scope and duration and would dissipate upon re-opening of the roadway. Application of AMM-3 to project-related construction activities and of similar measures to other cumulative projects would address temporary impacts to on-site circulation and ensure that the cumulative impacts to roadways remain less than significant.

Cumulative Effects with the No Action Alternative

Under the No Action Alternative, there would be no incremental traffic effects on the existing environment as would occur under the Proposed Action. Therefore, under the No Action Alternative, there would be no cumulative traffic impacts. However, in the event of a Hangar 3 structural failure, there would be temporary construction traffic for remediation and clean-up activities that would compound with the effects of other traffic on the streets and highways. Under this scenario, the No Action Alternative would result in similar contributions to traffic and congestion as the Proposed Action, because debris removal efforts under the No Action Alternative would be expected to be similar to demolition efforts under the Proposed Action.

If a structural failure under the No Action Alternative were to occur in 2022, the cumulative effect with other present and reasonably foreseeable future projects would not result in significant traffic impacts to off-site intersections and on-site streets. However, if a structural failure were to occur in a year when there

was additional traffic due to the construction and/or operation of other present or future projects, traffic impacts could be different; predicting specific traffic levels and thus traffic impacts would be too speculative at this time.

3.3.3.9 Utilities

The geographic area of cumulative analysis for utilities is ARC (Table 3-16) because direct and indirect effects to utilities are not anticipated to extend beyond the limits of ARC under either of the alternatives considered. There would be no cumulative impacts to utilities under the Proposed Action (Table 3-18) because the Project would not result in the removal of any utilities that affect other areas or buildings, no additional demand would result from the Project, and the Project would include measures to protect utilities during construction. However, there would be impacts to utilities under the No Action Alternative. Thus, the discussion below addresses cumulative effects to utilities as a result of the No Action Alternative only.

Cumulative Effects without the Proposed Action

Past actions have resulted in the existing use, capacity, and distribution of utilities at ARC. These past actions have resulted in the installation of new utility lines, upgrades to or replacement of aging utility infrastructure, capping or otherwise decommissioning utility infrastructure, and increases in utility demand. Present actions in the vicinity of the project area and reasonably foreseeable future actions would result in similar impacts to utilities due to additional development and demolition of unused facilities. The scale, intensity, and size of the present and foreseeable projects would be expected to increase demand and expansion of the utility infrastructure at ARC. In close proximity to Hangar 3, the EAIP would result in new utility lines (water, reclaimed water, stormwater and sewer) adjacent to Hangar 3, as well as new electrical and telecommunication lines immediately north of Hangar 3. It is anticipated that for all projects at ARC, coordination with federal agencies and local utilities would occur and BMPs would be implemented to prevent potential interruptions in service.

Cumulative Effects with the No Action Alternative

Under the No Action Alternative, there would be no disturbance to the existing environment associated with Project activities including pre-demolition, demolition, and waste removal and recycling. In the event of a structural failure, impacts to utilities could be potentially significant as utility connections to Hangar 3 would not be capped or disconnected systematically and could result in the inadvertent loss of service or damage to critical infrastructure such as water lines connecting to Hangar 3 and NASA telecommunication lines that lie underneath the Hangar 3 concrete slab. Additionally, disruption or

damage to utility infrastructure could impact service to other MFA users, including the CAANG facility and the future EAIP (during construction or operation) as this project would use existing utility infrastructure surrounding Hangar 3 and would include new infrastructure around the Hangar 3 site. Other current and future projects may also rely on utility infrastructure that could be affected by a structural collapse of Hangar 3. Therefore, the cumulative effect of the No Action Alternative with other present and reasonably foreseeable future projects could be potentially significant.

3.3.3.10 Visual Resources

The geographic area of cumulative analysis for visual resources is ARC (Table 3-16) because direct and indirect effects to visual resources are not anticipated to extend beyond the limits of ARC under either of the alternatives considered.

Cumulative Effects without the Proposed Action

Past actions including repairs to Hangars 2 and 3, 5th Avenue Gate Improvements, Bus Maintenance Facility, the CAANG 129th Rescue Wing Project, and US 101 Northbound Off-Ramp at Moffett Boulevard Improvements did not result in significant changes to the existing visual landscape as these projects involved minor improvements to existing facilities within MFA. The overall existing visual context of ARC is defined by several visually prominent features that dominate both distant and close-up views: the three historic hangars (approximately 170 to 200 feet tall) built between the 1930s and the start of World War II, the 80x120 wind tunnel building (approximately 80 feet tall) built in the late 1980s, and the level, wide open paved expanses of the airfields, and undeveloped land to the northwest and the golf course that opened in 1959 to the northeast of Hangars 2 and 3. This visual setting has remained relatively stable for the past 30 years with mostly minor, localized modifications as individual buildings were upgraded or replaced.

Present actions (i.e., Hangar 1 Rehabilitation and Recladding, Bay View Project, Airside Fuel Farm, NASA Housing Project, USGS Lab) and reasonably foreseeable future actions would involve development that cumulatively would alter the existing visual character of ARC by increasing the scale, mix, and intensity of development, primarily in the western portion of ARC. The addition of 1.1 million sf of development associated with Bay View in the northwest portion of ARC, 2.7 million sf, primarily in nearly 2,100 dwelling units, as part of the NASA Housing Project along US 101 in the NRP area, and the new UC development, also in the NRP area, would intensify the development pattern, extending it further to the north (Bay View) and within the NRP area.

These changes to the visual character of ARC, however, would not be particularly visible nor substantially alter views and the changes to the views of ARC resulting from past, present, and reasonably foreseeable future development would not be considered adverse. Views of ARC from higher elevations to the southwest, south, and southeast are distant (more than 2 miles) with few wide, panoramic views of ARC. At this distance, the infill development projects would be barely distinguishable from the broader landscape, although taller buildings that may be developed as part of the NASA Housing Project and the UC development may be identifiable. In general, the present and foreseeable development would blend in with the existing buildings and structures, and at the higher elevations would not obstruct views of the San Francisco Bay or the ridgelines and hillsides of the Diablo Range on the east side of the bay. At lower elevations, distant and close-up views would be obstructed by intervening buildings, highways, and vegetation. There would be occasional intermittent views of portions of ARC but no direct, sustained views that encompass the entire ARC with the cumulative projects.

Views from the nearby freeways are largely limited – occasional distant views of MFA are available from SR 237. These views are largely intermittent and obstructed by the mid-rise, high-tech buildings between SR 237 and ARC. Only at the overcrossing of US 101 are there direct views of ARC, but at this location, ARC is not in the direct viewshed of the motorists. Rather, travelers would need to look towards the north to see get a wider view of ARC. From this location and from US 101 below, which has a more direct northward view towards ARC, the views would not encompass all of the present and foreseeable development. At these locations, which are slightly elevated above the airfield, the development pattern is low-rise, with a strong horizontal element defined by the generally low-rise buildings and trees at ARC, punctuated by Hangar 1, the 80x120 wind tunnel building, and potentially mid-rise development from the NASA Housing Project and the UC development. The latter two projects, in combination with the Hangar 1 Rehabilitation and Recladding Project, would be partially visible and alter the visual landscape for US 101 travelers. The low-rise structures around the existing ballfields would be replaced with multi-story buildings. As travelers come closer to the cumulative project sites, the visual change would be less evident because of intervening vegetation along the north side of US 101 that screens most close-up views.

Because of their height and scale, Hangars 1, 2 and 3, along with the surrounding open area defined by the airfields and the golf course, would continue to be the defining features of the visual setting. The addition of EAIP improvements would increase the amount of development, but would not introduce a substantial alteration, since these improvements would not alter the coherence, vividness, or primary views from US 101 or the Bay Trail. For example, the proposed EAIP would include the demolition and removal of structures, construction of a private hangar, modifications to an existing bus maintenance facility, and construction of a battery energy storage system within MFA. Development associated with the

proposed EAIP would not substantially alter the existing visual character or scenic quality of public views toward ARC. The western portion of ARC is already highly developed and the projects in the NRP area would not be visually prominent from the Bay Trail KOPs; therefore, it is unlikely that other present or reasonably foreseeable future actions would substantially alter the existing visual character or scenic quality of public views toward ARC. These projects would appear as part of the larger ARC landscape. Therefore, cumulative impacts on visual resources would be less than significant.

Cumulative Effects with the Proposed Action

The incremental visual impacts of the Proposed Action would be a noticeable permanent change to the visual setting. The recognizable and memorable distant, mid-range, and close up views of the pair of historic wood hangars would be altered with the removal of Hangar 3 under the Proposed Action. As described above, there are limited vantage points from which cumulative changes at ARC would be noticeable, none of which are mid-range or close up. From the closer vantage points (i.e., KOP 1 through 4), Hangar 2 would become the focal point. The visual setting would be defined by Hangar 2 with the wide-open expanses of the airfields and wooded golf course. There would be only limited glimpses of the other cumulative projects. Thus, the cumulative impacts from mid-range and close-up viewpoints would generally be the same as those described for the Proposed Action – less than significant.

From more distant vantage points in the higher elevations, the cumulative effect without Hangar 3 would be predominantly the same as the cumulative effect with Hangar 3 – that is, a more urban, intensely developed ARC west of the airfields and aircraft-related uses, openness, and Hangars 1 and 2 next to the airfield. Because the overall visual landscape across ARC would generally be the same, views of the Bay would be retained, views across the Bay to the Diablo Range would still be available, and there would be relatively few available sustained views of the entire ARC. The cumulative visual impacts with the Proposed Action for distant views also would be less than significant.

Cumulative Effects with the No Action Alternative

Under the No Action Alternative, there would be no change to Hangar 3 and the cumulative visual impact would be identical to that described for the visual landscape and views under cumulative effects without the Proposed Action. In the event of structural failure, potential damage to Hangar 3 would be uncontrolled and could affect other nearby structures, including Hangar 2. However, it would be speculative to determine the extent of an unplanned collapse and the potential damage to other structures. In the absence of Hangar 3, Hangar 2 would be the sole dominant feature in public views and would retain the elements that contribute to the overall visual character that is evident in existing views

toward this portion of MFA. Therefore, the cumulative impacts with the No Action Alternative would be the same as those described above for the Proposed Action and would be less than significant.

4.0 List of Preparers

The EA was prepared for the proposed building demolition of Hangar 3 by the individuals and organizations listed in Table 4-1.

Table 4-1 List of Preparers

Name	Title	Area of Contribution
NASA		
Andres Estrada	Center NEPA Manager	Reviewer
Brian Lawry	Chief Building Official	Reviewer
Jonathan Ikan	Cultural Resource Manager	Reviewer
AECOM		
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Rod Jeung	NEPA Specialist	Reviewer
Jillian Betro	NEPA Specialist	Reviewer
Anthony Mangonon	Traffic Engineer	Reviewer
Trina Meiser	Cultural Resource Specialist	Reviewer
Mandi McElroy	Biologist	Reviewer
Matthew Bettelheim	Biologist	Reviewer
Suzanne McFerran	Air Quality Specialist	Reviewer
Jim Cowan	Noise Specialist	Reviewer
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Name	Title	Area of Contribution
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Michele Lefebvre	Environmental Scientist	NEPA Specialist
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Name	Title	Area of Contribution
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Steve Rottenborn	Vice President, Wildlife Biologist	Biological Resources
Stephen Peterson	Project Manager, Senior Wildlife Ecologist	Biological Resources

Notes:
QA/QC = quality assurance/quality control

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Appendix A – KPFF Memos (A.1 through A.4)

Appendix B – Air Quality CalEEMod Modeling Assumptions

Appendix C – Section 106 Report

Appendix D – Noise Technical Memorandum

Appendix E – Traffic Analysis Memorandum