

Memorandum

To: Jonathan Ikan, Cultural Resources Manager, NASA Ames Research Center
CC: Larry Hennessey, AECOM
Subject: Section 106 Consultation on Building 45 Garage Door Replacement Project, NASA Ames Research Center, Moffett Field, Santa Clara County, California
From: Trina Meiser, Senior Architectural Historian
Heather Miller, Architectural Historian
Date: June 16, 2023

1. Introduction

The National Aeronautics and Space Administration (NASA) Ames Research Center (ARC) proposes the Building 45 Garage Door Replacement Project (project or undertaking) at ARC, Moffett Field, Santa Clara County, California. As the lead federal agency, NASA is responsible for compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (54 United States Code [USC] 300101 et seq.), which requires federal agencies to take into account the effects of their activities and programs on historic properties, and its implementing regulations in 36 Code of Federal Regulations (CFR) Part 800. The purpose of this memorandum is to provide necessary information for compliance with Section 106, including a description of the undertaking and the Area of Potential Effects (APE), the methodology used to identify and evaluate historic properties within the APE, a description of the affected historic properties, and an assessment of potential effects resulting from the undertaking.

1.1 Project Location

Building 45 is within the NASA Ames Research Park at ARC, Moffett Field, Santa Clara County, California (see Appendix A; Map Figures 1 and 2). The building is northwest of the intersection of North Akron Road and Cummins Avenue, west of Hangar 1. Building 45 is within the U.S. Naval Air Station (NAS) Sunnyvale Historic District boundaries, which is listed in the National Register of Historic Places (NRHP). Building 45 is in the industrial zone of the historic district that is east of Shenandoah Plaza and west of the airfield.

1.2 Project Personnel

This study was conducted by cultural resources professionals who meet the Secretary of the Interior's Professional Qualifications Standards (48 Federal Register 44738). Trina Meiser, M.A., Senior Architectural Historian, served as the Principal Investigator; Heather Miller, M.A., Architectural Historian, prepared the analysis; Rob'yn Johnston, M.A., RPA, provided map figures; and Kirsten Johnson, M.A., served as the lead verifier of this document.

2. Description of the Undertaking

The project is considered an undertaking per 36 CFR § 800.3(a) and involves the replacement of a bi-fold utility door within a high-bay opening on the south side of Building 45. The extant bi-fold door requires at least two people to operate. In order to improve egress and building security, the existing bi-fold door would be removed and replaced with hinged double doors able to be opened and closed by one person.

The high-bay opening originally featured a pair of monumental bi-fold doors that completely filled the 24'-0" wide by 23'-6" high opening, but the doors were subsequently altered to their current condition. The entire east half of the bi-fold section of door was fixed in place with plates attached at the head on the interior. The head of the west half was also fixed, and two door leaves were cut down in height above the midpoint. A metal header was installed above the cut to fix the upper section in place, leaving the lower section as the only operable section of the original doors. The overall size of the remaining operable section is 12'-0" wide by 14'-6" high. The original doors are of wood construction, clad with smooth wood panel board and have deteriorated.

The project would:

- Remove the existing fixed, wooden panels and the bi-fold door inside the 24'-0" wide by 23'-6" high cast concrete door opening.
- Replace the fixed, wooden panels with new walls constructed of metal studs and gypsum board with an air and vapor barrier, 2" rigid insulation, metal lathe, and a painted, smooth finish 3-coat cementitious plaster on the exterior.
- Replace the existing bi-fold door with new painted and insulated hollow metal double doors with a structural steel frame and concealed hinged hardware.
- Salvage and reinstall existing hardware (or reproduction) on exterior of doors to replicate the original exterior appearance of the existing door.

The staging area for this project would be limited to the paved parking area immediately north of Building 45.

Project drawings are provided in Appendix B.

3. Area of Potential Effects

The APE was defined to address both direct and indirect impacts on historic properties and encompasses areas that may be affected by both temporary and permanent construction activities. The APE is within the NAS Sunnydale Historic District and accounts for potential indirect effects on the district as a whole, but does not include the entire district boundary due to the project's scale. No below-grade activities are proposed for this project; therefore, archaeological resources are not considered in this study. Because the exterior alterations to Building 45 are relatively minor due to the scale of the visible changes, it is unlikely that this undertaking would have indirect effects on other significant buildings or resources within view of Building 45. Therefore, the APE was defined as the limits of staging and construction for the undertaking, as well as a 50' buffer around the Building 45 footprint to address potential visual intrusions related to the exterior alterations (see Appendix A; Map Figure 3).

4. Identification of Historic Properties

Historic properties are defined as any district, site, building, structure, or object that is included in or is eligible for listing in the NRHP. The following sections address the methodology and efforts to identify historic properties in the APE.

The APE has been previously studied for cultural resources, and those studies included a comprehensive historic context for ARC, including NAS Sunnyvale/Moffett Field (AECOM 2014, 2017). Building 45 is within the boundaries of the NAS Sunnyvale Historic District, but was identified as a non-contributing resource in the NRHP nomination (NRHP 1994). The historic district is listed based on its significance under NRHP Criteria A and C, and originally included only the earliest Spanish Colonial campus buildings and Hangars 1, 2, and 3. The original periods of significance of the district were identified as 1930 through 1935 and 1942 through 1946. The utilitarian style of later buildings was noted in the NRHP nomination; however, at the time of the nomination, several buildings were not yet 50 years old and were not considered contributing under the statement of significance that focused on Spanish Colonial Revival-style architecture and the engineering feat related to the airfield hangars.

In 2013, AECOM conducted a study of Moffett Field and areas outside of the historic district to determine the eligibility of airfield resources (AECOM 2013). As a result of that study, NASA determined that the airfield was eligible as an extension of the NAS Sunnyvale Historic District and expanded the boundary of the historic district (see Figure 2). The State Historic Preservation Officer (SHPO) concurred with the expanded district boundary and a revised period of significance of 1942 through 1961 for the airfield on June 6, 2013 (NASA_2013_0417_001). It also revised the historic district's statement of significance to include World War II military missions. However, the 2013 study did not revisit the previously listed areas of the historic district or its contributing and non-contributing resources.

Building 45 was identified as one of three Assembly Buildings within the historic district in the 1994 NRHP nomination. All three of these buildings were found to be non-contributing resources. Building 45 was built in 1944 as part of the continuing development of facilities at the naval air station during World War II and served as a support building for the naval air station at the end of World War II. Research does not indicate that any specific mission-related or notable activities were conducted within the building. In 1999, the building was leased by the Computer History Museum for storage (CORE 1999:8), and since 2019, NASA Ames Research Park has used the building as a drone testing facility (NOREAS 2018:5-20). The building does not meet the NRHP criteria for individual listing, but retains sufficient historic integrity to be considered a contributing resource to the historic district under the district's revised statement of significance. Although it is listed in the NRHP as a non-contributing resource, it is considered a contributing resource for the purposes of this study.

4.1 Archaeological Resources

The land that comprises ARC has changed dramatically since the early twentieth century from predominantly agricultural use to an extensive military airfield installation beginning in 1931 and aeronautical research and development beginning in 1939. Extensive surface disturbance occurred throughout ARC with grading and fill to create the airfield and the campuses with hundreds of buildings and structures to support operations.

A comprehensive investigation of previous archaeological studies at ARC was completed in 2017 (AECOM 2017). This investigation involved a desktop survey of archival resources and a geoarchaeological assessment of the entire ARC site and included an assessment of archaeological sensitivity and the potential for buried archaeological resources. The study concluded that there is low potential for more deeply buried prehistoric archaeological resources across ARC.

No ground disturbance would be necessary to complete the proposed project work. The APE is entirely paved, and further archaeological survey or testing related to the undertaking is not necessary, and no potential effects on archaeological resources are anticipated.

4.2 Architectural Resources

AECOM conducted a survey of the APE in April 2023 and identified Building 45 as the only potential historic property in the APE.

Building 45 is a one-story, reinforced concrete, utilitarian warehouse/research facility on a concrete slab foundation. The high-bay core of the building has a rectangular plan and is three bays wide and five bays long. Each bay is delineated by concrete pilasters and recessed concrete wall panels. A shorter, one-story wing containing offices and other rooms is located on the east side of the building, and a small wing with mechanical equipment is located on the north side. The roof of the main building is a barrel-truss with high parapet walls, and the roofs of the smaller building sections are flat with shallow parapet walls. The south side of the building contains the high-bay entrance, which consists of a full-height, multi-panel, wood folding door in the oversized westernmost bay. The west side contains a centered single-entry metal door in its central bay. The small mechanical equipment wing features fans and vents. The east elevation contains two single-entry flush metal utility doors and the eastern wing, which features a rectangular plan and two single-entry doors, three square windows, and a covered walkway. The east and south sides contain single-entry flush metal doors.

The interior of the building includes a high-bay work area with smaller mechanical rooms, restrooms, and offices. The interior has been modified over the years with new partitions, utilities, and other equipment.



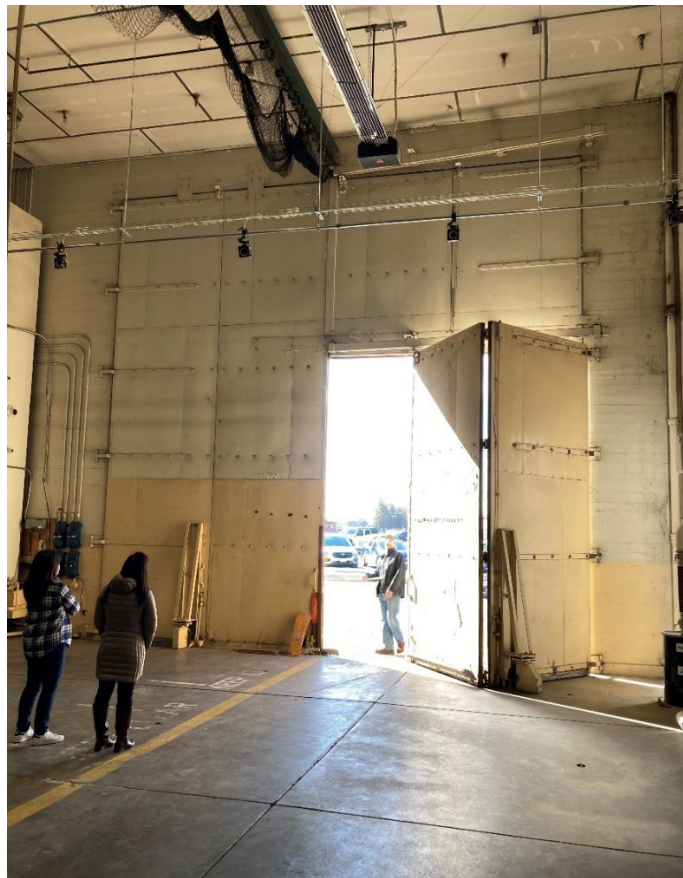
Photograph 1. Building 45, west and south sides, with Hangar 1 in background, view facing northeast.



Photograph 2. Exterior view of bi-fold door and fixed panels to be replaced on south side of Building 45, view facing northeast.



Photograph 3. Detail of deterioration on exterior of bi-fold door and fixed panels on south side of Building 45, view facing northeast.



Photograph 4. Interior detail of bi-fold door and fixed panels to be replaced on south side of Building 45, view facing south.

5. Assessment of Effects

Per 36 CFR § 800.5(a)(1), an adverse effect results when an undertaking may alter, either 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 historic property's integrity. Building 45 is within the NRHP-listed NAS Sunnyvale Historic District. The building's contributing or character-defining features are its utilitarian, reinforced concrete walls; lack of fenestration; and high-bay utility door. Interior configuration and finishes are not contributing features. The project proposes changes to the character-defining high-bay utility door.

The Criteria of Adverse Effect pursuant to 36 CFR 800.5(a)(1) are applied to assess effects of the undertaking on historic properties within the APE:

An adverse effect is found 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. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

Several examples of adverse effects are listed in 36 CFR 800.5(a)(2). The following assessment examines the undertaking under each of those examples, including an analysis of compliance with the Standards.

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

The project would not demolish the building but would include demolition of the high-bay utility door, which is a character-defining feature of Building 45.

Aside from alterations to Building 45, no other contributors to the NAS Sunnyvale Historic District would be physically impacted by this project.

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

With the SHPO's agreement, if a property is restored, rehabilitated, repaired, maintained, stabilized, remediated, or otherwise changed in accordance with the Standards, then it will not be considered an adverse effect. The following is an assessment of the undertaking for compliance with the Standards and guidelines (NPS 2017).

1. *A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.*

Building 45 historically served as a support building for the naval air station at the end of World War II, was later leased as storage space, and most recently used as a drone testing facility. The intent of this project is to improve egress and security to continue to use the building as a support building. The proposed project would replicate the original exterior appearance of the high-bay utility door and would not alter the features, spaces, and/or spatial relationships of the high-bay utility door to the building.

2. *The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.*

Although the proposed project would remove the wood and metal materials and change the operation of the door from bi-fold to hinged double doors, these elements were not identified as character-defining features of the high-bay utility door. The proposed project would replicate the original exterior appearance high-bay utility door and would not alter the features, spaces, and/or spatial relationships of the high-bay utility door to the building.

3. *Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.*

No conjectural features or elements from other historic properties would be added to Building 45 because the goal is to replicate the exterior appearance of the original high-bay utility door.

4. *Changes to a property that have acquired historic significance in their own right will be retained and preserved.*

The high-bay utility door was previously altered into the current single, bi-fold door within fixed door panels at an unknown date. There is no indication that this change in the door operation has acquired historic significance and requires retention.

5. *Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.*

The project is designed to replicate distinctive materials, features, and finishes, as discussed above under Standard 2. The fixed and operable metal-framed wood paneled doors would be removed and replaced with new materials and paint match the texture, color, and overall appearance of the original doors. These materials are not applied in a distinctive manner in a way that are significant for its workmanship.

6. *Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.*

The original doors are of wood panel construction and portions of the exterior panels are deteriorated, exposing the wood core. Exposure had led to warping and deterioration of the doors to the extent that repair or modifications to make them function are not warranted. The wood paneled doors would be replaced with hollow core metal doors that would match the original design, color, and texture with paint, and existing hardware (or reproduction) would be installed on the exterior to replicate the original exterior appearance of the high-bay utility door.

7. *Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*

This project does not propose any chemical treatments.

8. *Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*

This project does not propose any ground disturbance. There are no known archaeological resources within the project footprint, however, in the event of discovery of unknown subsurface archaeological resources, NASA would follow its standard operating procedures for unanticipated discoveries as outlined in the 2014 Draft Integrated Cultural Resources Management Plan (AECOM 2014), which would halt work in the vicinity of the discovery and engage a qualified archaeologist to evaluate the discovery and determine the need for mitigation and consultation with the SHPO.

9. *New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.*

This project does not propose any new additions or related new construction. As described under Standard 2, exterior alterations consist of installation of replacement doors that would replicate the

original exterior appearance and would not alter the features, spaces, and/or spatial relationships that characterize the building.

10. *New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*

This project does not propose any new additions and adjacent or related new construction. If the replacement doors need to be removed in the future, the essential form and integrity of Building 45 would remain intact because the original cast concrete door opening would not be altered as part of this project.

In summary, the project meets the Standards for Rehabilitation, as it would continue to be used as a support building; the original exterior appearance of the high-bay utility door would be replicated; the features, spaces, and/or spatial relationships of the door to the building would not be altered; and no new additions or related new construction is proposed.

(iii) Removal of the property from its historic location

No historic properties within the APE would be relocated.

(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

Building 45 would continue to be used as a support building. The setting of Building 45, as well as the setting of all the historic properties within the NAS Sunnyvale Historic District, would remain the same.

(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features

No visual, atmospheric, or audible elements would be introduced by this project that would diminish the integrity of Building 45 or the other historic properties in the NAS Sunnyvale Historic District.

(vi) Neglect of a property which causes its 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

This standard is not applicable.

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

This standard is not applicable.

6. Summary of Findings

The criteria of adverse effect were applied to historic properties in the APE, including the NAS Sunnyvale Historic District and Building 45, which is a potential district contributor under the expanded statement of significance. The proposed undertaking involves the replacement of the high-bay utility door in Building 45, which is a character-defining feature of the building. Based on this analysis, the proposed undertaking would not alter, directly or indirectly, any of the characteristics of a historic property that could qualify it for inclusion in the NRHP, including Building 45 or other contributors to the NAS Sunnyvale Historic District. Therefore, the proposed undertaking would result in No Adverse Effect on historic properties per 36 CFR § 800.5(b).

7. References

AECOM. 2013. *Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California*. Accessible online at https://historicproperties.arc.nasa.gov/downloads/hpsr_airfield.pdf.

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National Register of Historic Places (NRHP). 1994. U.S. Naval Air Station Sunnyvale, California, Moffett Field, Santa Clara County, California, NRHP # 94000045.

NOREAS. 2018. *Draft Installation Restoration (IR) Site 28 Air Sampling and Vapor Intrusion Tier Response Evaluation Report, Former Naval Station (NAS) Moffett Field, Mountain View, CA*. Accessible online at <https://semspub.epa.gov/work/09/100009676.pdf>.

National Parks Service (NPS). 2017. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*. Washington, D.C.: Department of the Interior, National Park Service, Technical Preservation Services.

Attachments

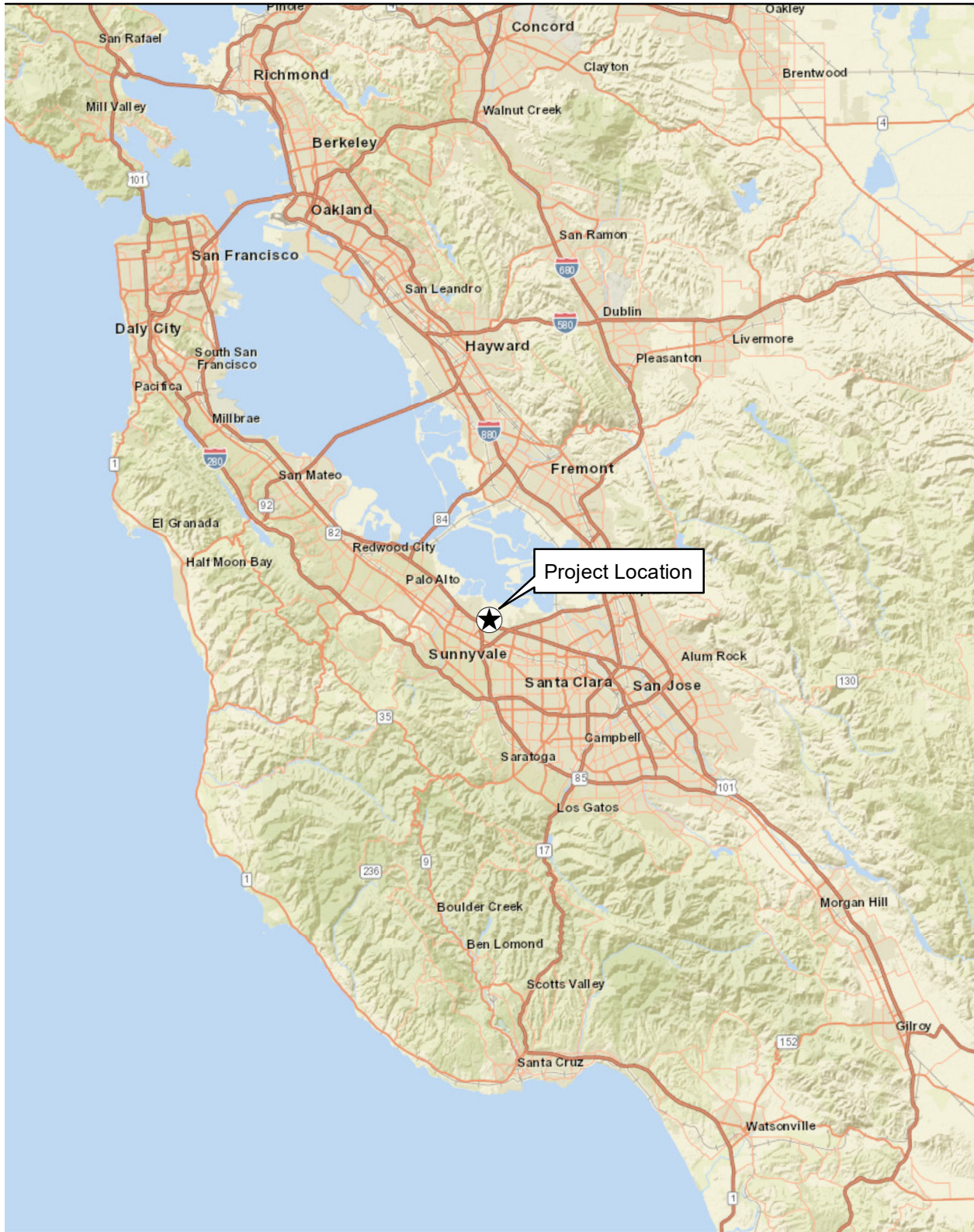
Appendix A: Map Figures 1-3 (Project Location, Project Vicinity, APE)

Appendix B: Project Drawings

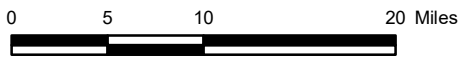
Attachment A

Figures

- Figure 1 – Project Location**
- Figure 2 – Project Vicinity**
- Figure 3 – APE Map**



Source: ESRI, AECOM, NASA

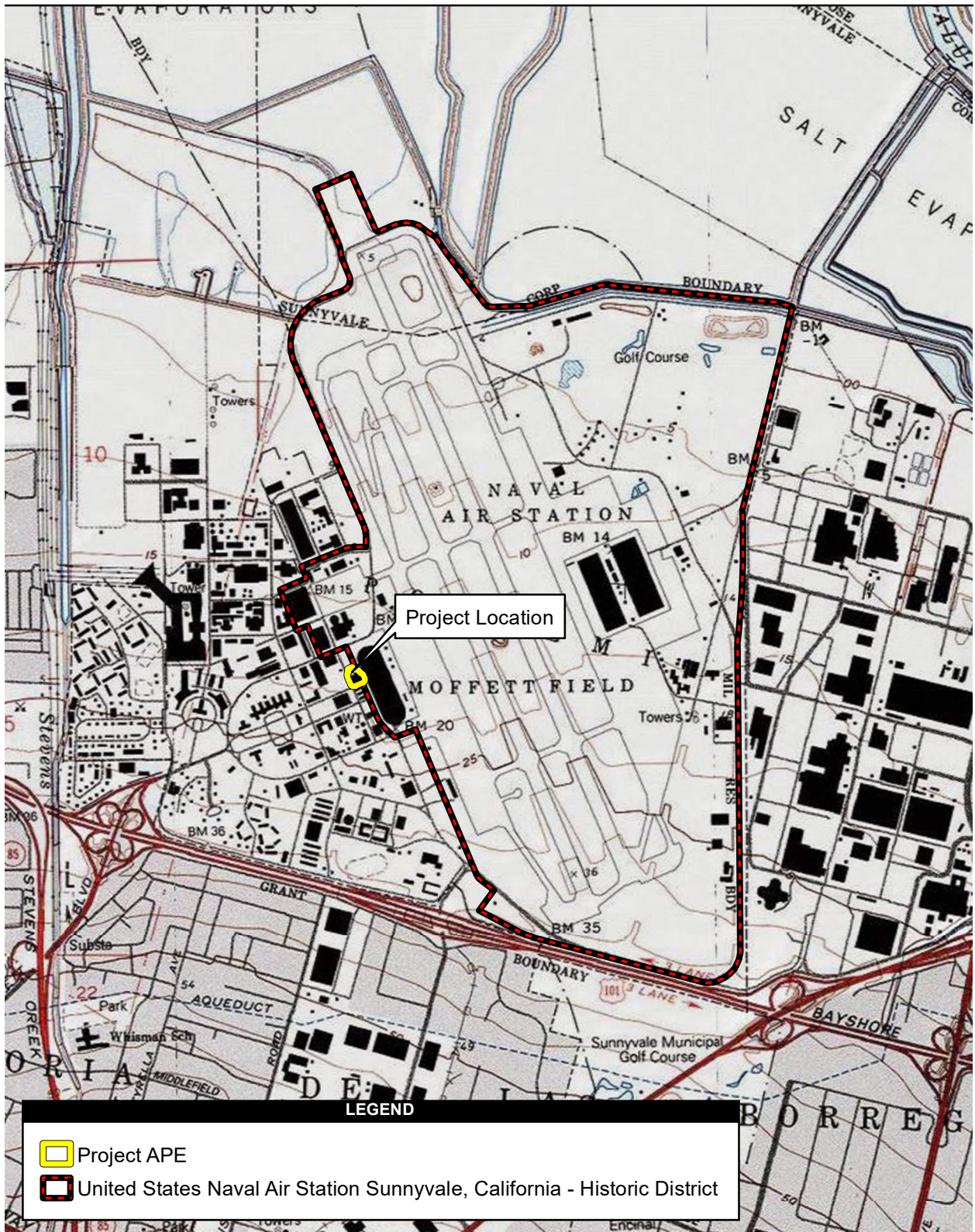


Scale: 1 = 633,600; 1 inch = 10 mile(s)

Figure 1
Project Location

Building 45 Garage Door Replacement Project

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Source: ESRI, AECOM, NASA, National Geographic Society; USGS 7.5' Topographic Quadrangle: Mountain View

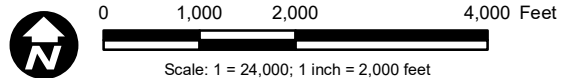


Figure 2
Project Vicinity Map

Building 45 Garage Door Replacement Project

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Source: ESRI, AECOM, NASA

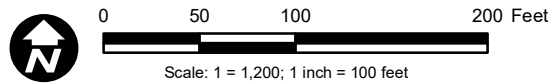


Figure 3
APE Map

Building 45 Garage Door Replacement Project

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Attachment B
Project Drawings

The following content was redacted from this public posting:

Attachment B. Project Drawings