Moffett Park Specific Plan

Existing Conditions + Strengths, Weaknesses, Opportunities, & Threats Report

Sunnyvale

Existing Conditions + Strengths, Weaknesses, Opportunities, & Threats Report

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1. Specific Plan Context

Moffett Park Today

The Moffett Park Specific Plan Area is an approximately 1,156-acre site located in the northern most portion of the City of Sunnyvale. The Plan Area is bounded by State Route 237 (SR 237) and U.S. Highway 101 (US 101) to the south, Moffett Federal Airfield to the west, Caribbean Drive to the north, and Sunnyvale Baylands Park to the east. (***Figure 1***)

In 2004, the City published the Moffett Park Specific Plan and updated the Plan in 2013. At the time, great attention was paid to the development of new Class A office spaces in response to rapid demand in the private market. Moffett Park had long been home to several large corporate campuses in keeping with the collective technology environment of Silicon Valley, yet still retained significant areas of industrial facilities.

Over the past decade, shifts in both market demand and population demographics have emphasized the need for a renewed strategy across Moffett Park. Where once the area was considered a vital single-use office hub catering exclusively to corporate firms and campuses, contemporary trends reveal that such a vision has grown outdated. As individual employers, residents, and visitors alike are seeking a more diverse concentration of uses, especially in commercial areas, the City of Sunnyvale has begun to respond.

In 2019, the Sunnyvale City Council authorized an update to the Moffett Park Specific Plan. Although the update will engage with a number of topics, the Council was adamant that a new plan address in particular the need for both commercial spaces and housing, improved infrastructure and transit services, greater connectivity between Moffett Park and the wider Sunnyvale community, and a strong sense of place and local character.

Figure 1. Moffett Park Specific Plan Area

Sunnyvale

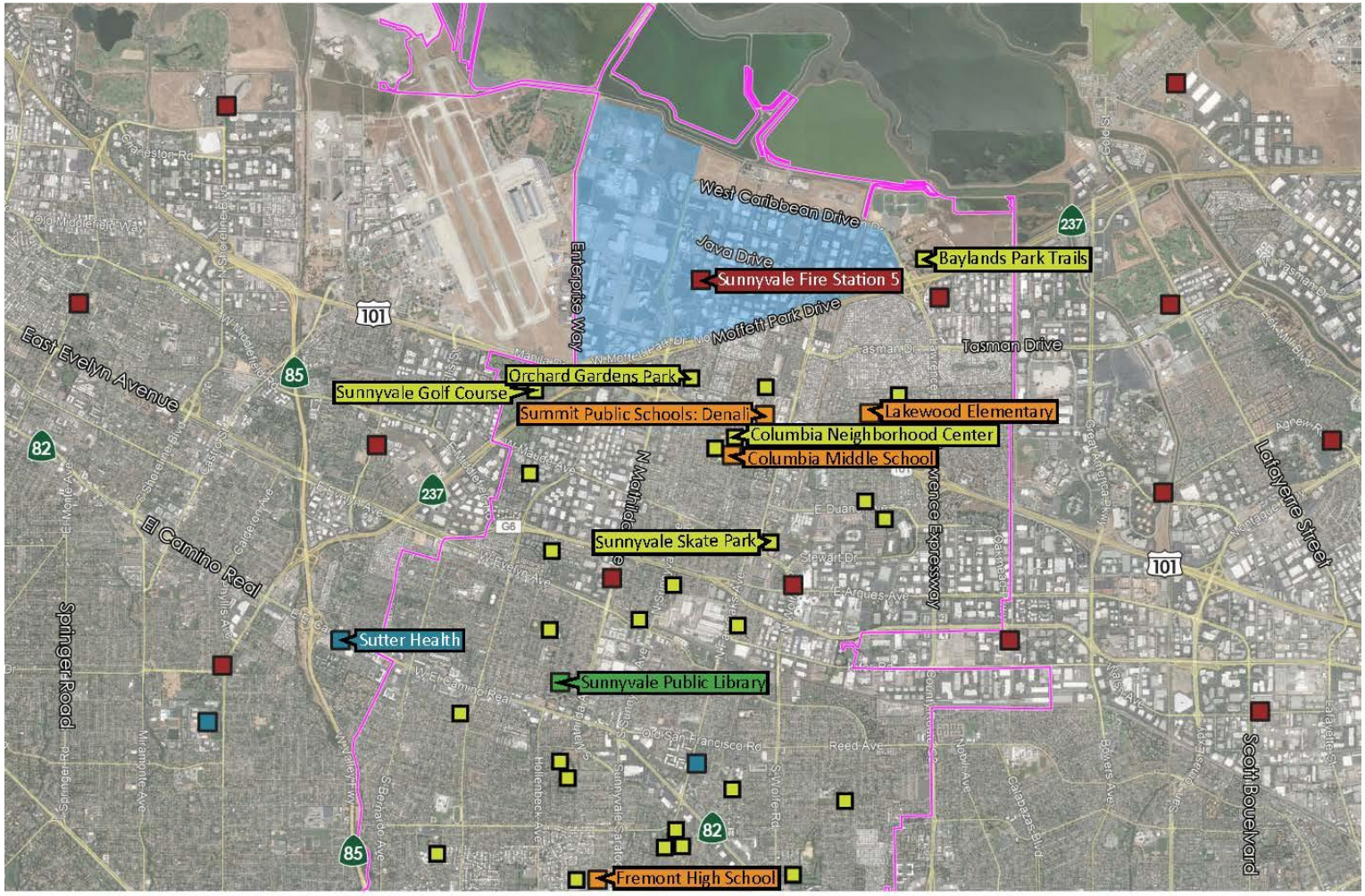
The City of Sunnyvale has grown significantly over the past decade. At present, the City is home to approximately 155,567 people – a 9.4% increase since 2010 (*U.S. Census Bureau*). Furthermore, thousands of workers throughout the Bay Area make their daily commute into Sunnyvale and across the city's borders into surrounding jurisdictions, including Mountain View, Santa Clara, and San Jose. These influxes of permanent residents, commuters, and visitors have placed incredible pressures upon the environment, public health, affordability, and many other aspects of daily life in Sunnyvale.

Regional Context

Moffett Park constitutes the northern-most land area within the City of Sunnyvale's boundary. Its connection to the larger city, especially regarding access to public services and infrastructure, is fragmented with limited services within the Plan Area. Despite its proximity to Baylands Park and a recently completed fire station, Moffett Park is located quite a distance from other vital community resources including hospitals with emergency services, public schools, and civic institutions such as libraries.

Any future development for Moffett Park will likely require the addition of public facilities and infrastructure within the immediate Plan Area. ***Figure 2*** shows public services adjacent to Moffett Park.

Figure 2. Moffett Park Public Service Map



Moffett Park Public Service Map

Legend

- Fire Station
- Hospital
- Library
- School
- Recreational Facility
- Adopted Specific Plan Area
- City of Sunnyvale

0 1000' 4000' 7000'

N

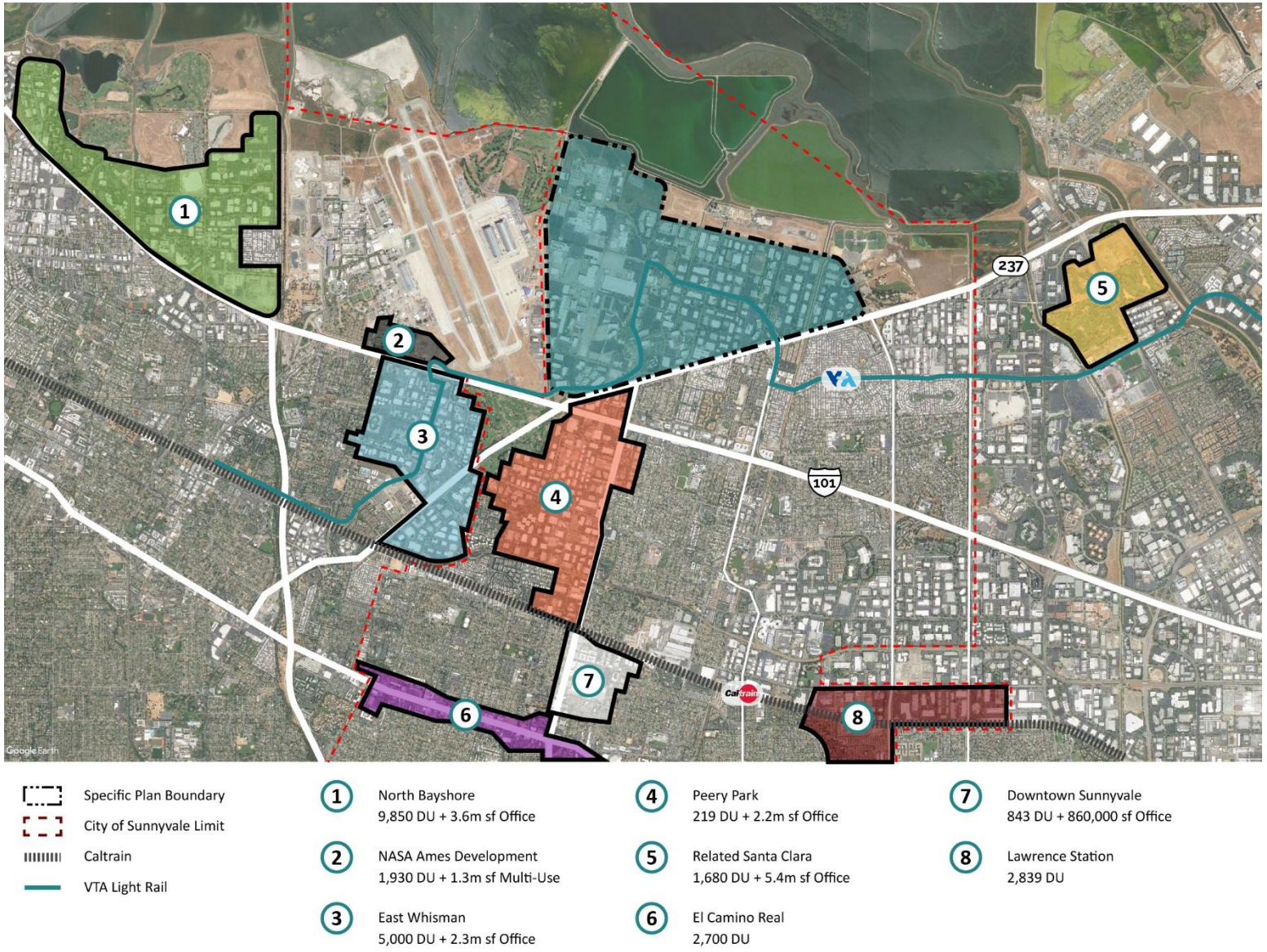
Source: DJPA (2020)

Surrounding Planning Projects

In response to trends in transportation patterns, market demand, and the regional housing crisis, Sunnyvale along with many other nearby communities have created plans to accommodate growth, and approved new developments that would see the construction of thousands of new homes and work spaces. Some projects like the North Bayshore Precise Plan in Mountain View and Downtown Sunnyvale Specific Plan look to upgrade existing infrastructure and reposition already developed areas. Conversely, projects like Related Santa Clara and NASA's Ames Development will be brand new construction projects built atop vacated or repurposed land.

Many of these projects are located adjacent to Moffett Park, as shown in ***Figure 3***.

Figure 3. Surrounding Plans and Projects



Source: North Bayshore Precise Plan (2014); NASA Ames Development Plan (2002); East Whisman Precise Plan (2019); Related Santa Clara; Peery Park Specific Plan (2016); Downtown Specific Plan (2013); Lawrence Station Area Plan (2016)

Key Strengths, Weaknesses, Opportunities, and Threats

By revisiting the Moffett Park Specific Plan Area, the City of Sunnyvale has the opportunity to reevaluate and reassess their strategy for future development and planning efforts. The original plan and its subsequent update offer a foundation, where successful implementation of prior concepts and goals might be reinforced and complemented by new policies and development standards. Simultaneously, the next plan must learn from challenges and instances where a combination of market forces, design and investment decisions, and environmental considerations have necessitated new and innovative strategies for moving forward.

This evaluation begins with an understanding of Moffett Park's inherent qualities and strengths that make it an attractive and inviting space. The Plan Area benefits from several decades of investment, and maintains an advantageous proximity to major highways and transportation hubs, including SR 237, US 101, and VTA light rail. Moffett Park also offers a unique location with close proximity to regional open space and recreational facilities along the San Francisco Bay, including the Bay Trail and Baylands Park.

These strengths have enabled Moffett Park to become one of Sunnyvale's most robust and diverse economic hubs. The plan area welcomes tens of thousands of workers each day across a diverse range of industries and businesses – the most prominent being several large technology firms. Small local businesses however constitute the majority of employers in Moffett Park, with collective property and sales taxes from Moffett Park representing some of the most significant contributors to Sunnyvale's General Fund.

Equally important, however, is understanding the characteristics of Moffett Park that both limit investment and hinder the Plan Area from accommodating a broad range of uses. The Plan Area today can largely be described as a series of auto-oriented industrial and office parks with limited pedestrian and bicycle networks. Some office campuses act as small, isolated communities, where employees are typically the only pedestrians allowed access to facilities and walking paths. Transit and street infrastructure is also limited to a handful of gateways, resulting in significant congestion issues and lack of access to both the commercial establishments as well as recreational areas on the periphery.

Central to much of the work that will be conducted around Moffett Park moving forward is an understanding and awareness that the Plan Area does not operate independently from the rest of the City of Sunnyvale, nor the wider Bay Area region. Many challenges facing the area, such as climate change, housing and office demand, and transportation pressures must be linked to broader trends and patterns, where collective efforts are necessary to address more complex problems that cannot be directly solved at the local level.

While Moffett Park presents a unique context where many of these forces are present, there are many other opportunities and strategies available to address some of these concerns. These strengths, weaknesses, opportunities, and threats are identified at a high level in ***Figure 4***, and are detailed in greater length throughout this document.

Figure 4. Summary of Strengths, Weaknesses, Opportunities, and Threats (SWOT) in Moffett Park

STRENGTHS	WEAKNESSES
• Strategic location • Business/economic diversity • Transportation/transit access (e.g. light rail connection to nearby cities) • Regional open space amenities • Majority of parcels consolidated under a few key landowners • Strong market for housing and office across Sunnyvale • Existing flood infrastructure	• Inadequate infrastructure for high-density development • Isolation and lack of connectivity • Single-use • Traffic and gateway capacity limits • Transit service quality • Flood risk • Air and hazmat contamination
OPPORTUNITIES	**THREATS**
• Underutilized land for development • Motivated/coordinated property owners • TOD around light rail • Scale is walkable and bikeable • Benefits to neighboring areas (e.g. Bay access) • Ecological interventions that produce multiple benefits	• Climate change and sea level rise • Economic downturn • Security needs • Private infrastructure • Transit budgetary and business constraints, and uncertainty • Lack of economic diversity

2. Baseline Conditions in Moffett Park

This report details the existing conditions that characterize Moffett Park today. The City has worked with local interest groups, property owners, residents, and experts to consider a broad range of topics that speak to the demands, pressures, and other factors that must collectively inform a future strategy for Moffett Park.

Consequently, this existing conditions report engages with the following topics:

Land Use

This section details existing land use conditions, including existing uses and building inventory, property ownership, proposed and pipeline projects, site contamination, and public services and facilities in the Plan Area.

Urban Design

This section provides details on the urban form of Moffett Park, including site character, block structure, parking lots, and height restrictions.

Open Space

This section describes existing open spaces in and around Moffett Park, as well as open space access and opportunities.

Urban Ecology

This section details urban ecology conditions in the Plan Area, including habitat biodiversity, regional context, and ecological barriers, assets, and opportunities.

Mobility and Parking

This section provides details on mobility and parking in and around Moffett Park, including walkability and micromobility, multimodal accessibility, traffic congestion and parking, transit connectivity, and regional mobility projects.

Sea Level Rise and Flooding

This section details sea level rise and flooding conditions in and around Moffett Park, including flood hazards, adaptation, and flood management strategies.

Infrastructure

This section describes the infrastructure conditions in the Plan Area for the water supply, sanitary sewer and storm drain systems, natural gas and electricity, and the recycled water system.

Economic and Market Analysis

This section provides details on the economic diversity and business mix in and around Moffett Park, as well as the demand for office, R&D, and industrial uses.

Housing and Market Affordability

This section details the existing housing and market conditions as they relate to Moffett Park, including the current housing market and affordable housing needs, market demand for retail and hotels, and infrastructure funding and fiscal considerations.

Land Use

Site Land Use and Building Inventory

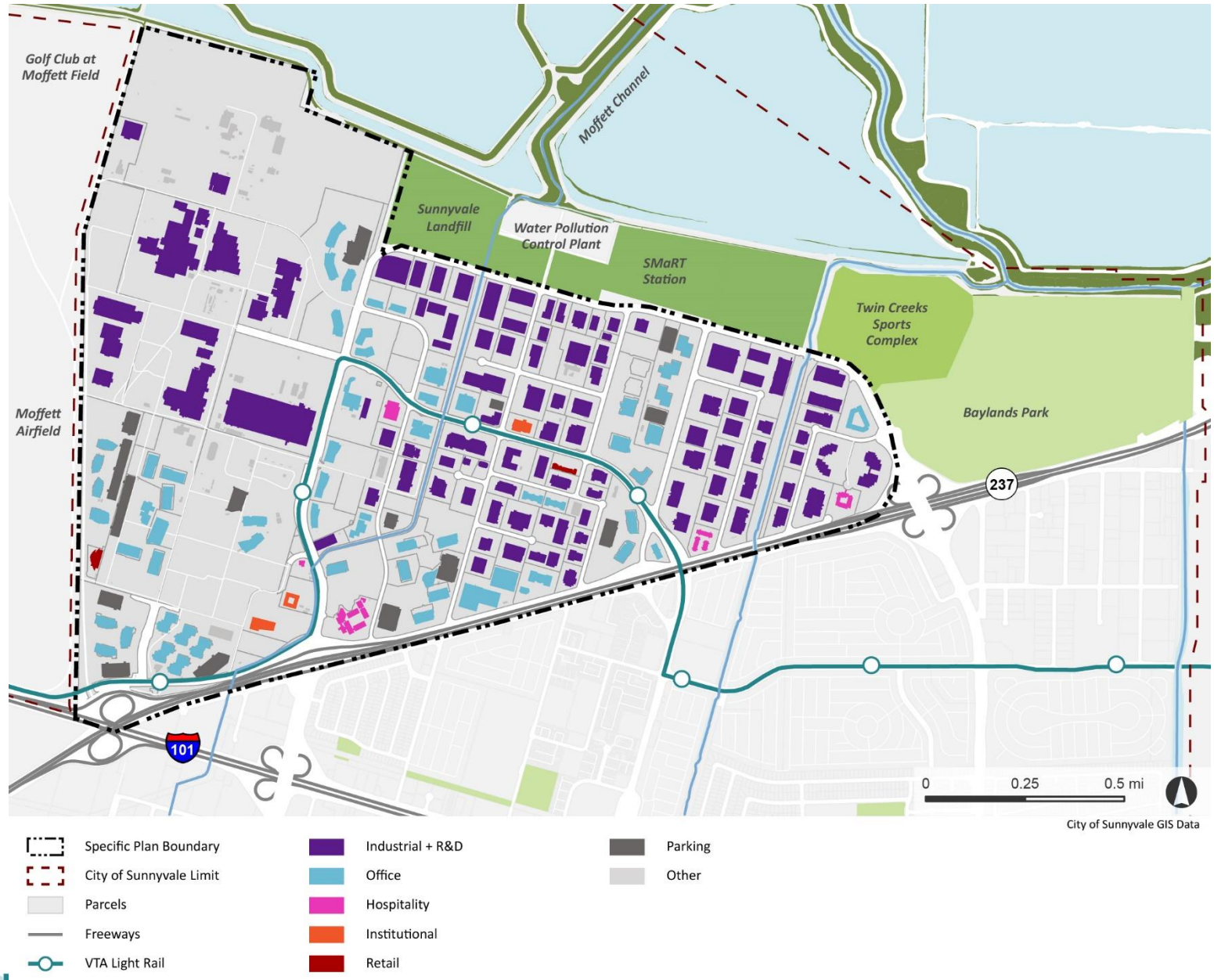
Moffett Park is currently situated as a collection of office parks, corporate campuses, and industrial warehouses. ***Figure 5*** identifies the current distribution of uses across the Plan Area, revealing an absence of residential buildings, and an isolated handful of retail establishments limited to several restaurants and two hotels. Institutional facilities include a fire station, post office, and Foothill College Sunnyvale Center. Just beyond the Plan Area across Caribbean Drive is the City of Sunnyvale Water Pollution Control Plan, SMART Transfer Station, and several large recreational areas consisting of Baylands Park and Twin Creeks Sports Complex. Recreational access via the Bay Trail connects Moffett Park to the San Francisco Bay. Finally, the Plan Area contains four light rail stations along VTA's Orange Line.

Previous efforts by the City to develop Moffett Park as a hub for office space has resulted in a built landscape that varies considerably in both age and composition. Most of these buildings are largely reflective of the type of work and industry of each building's respective tenants. Older buildings consist of mostly 1- and 2-story offices, warehouses, and research facilities. More recent additions to Moffett Park's building inventory however depart significantly from this typology, with new office towers typically standing 8 stories. Parking garages are limited, as most buildings feature expansive surface parking lots.

Key Concept:

Existing land uses are largely homogenous, featuring extensive office uses and concentrations of light industrial or research and development facilities.

Figure 5. Site Land Use and Building Inventory



Property Ownership

Although Moffett Park features dozens of individual businesses, significant portions of the Plan Area are consolidated under six key landowners (see ***Figure 6***). Property consolidation not only plays a key role in allowing corporate campuses to circulate equipment and workers efficiently, but is a pivotal necessity for industrial operations and manufacturing.

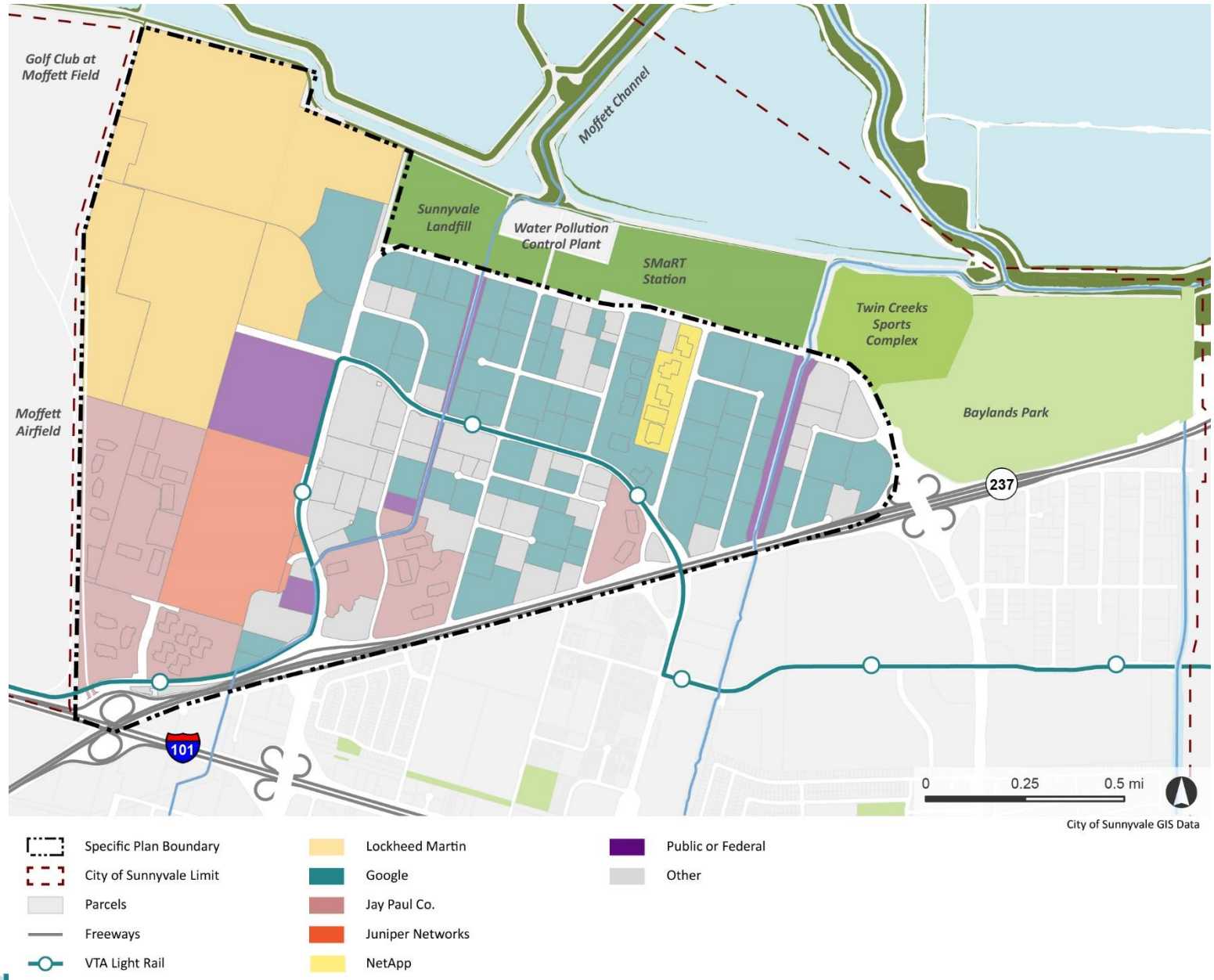
Consistent with the previous efforts of the City to attract technology companies to this area, Google, Juniper Networks, and NetApp all own and lease considerable property throughout the Plan Area. While other tech companies such as Microsoft and Amazon also operate offices within Moffett Park, most of these properties are owned by San Francisco-based Jay Paul Company. Defense contractor Lockheed Martin is perhaps the longest standing property owner, capitalizing on the Plan Area's proximity to Moffett Federal Airfield – Lockheed Martin owns the entire northwest portion of the Plan Area.

Both the City of Sunnyvale as well as the federal government own a select handful of parcels distributed throughout the Plan Area. These sites contain historical buildings, infrastructure, and civic institutions like the fire station. The remaining parcels are held by individual private entities.

Key Concept:

Parcel ownership is consolidated amongst six key landowners, many of them private companies who either operate or lease space to other entities.

Figure 6. Existing Property Ownership in Moffett Park



Proposed and Pipeline Projects

The City of Sunnyvale is currently reviewing nearly a dozen new proposals for projects within the Moffett Park Specific Plan Area (see ***Figure 7***). These projects include office, industrial, and commercial spaces that will add new hotel rooms, research space, and several public-oriented facilities and recreational spaces.

The projects currently under consideration for Moffett Park share several common characteristics. Proposals include significant landscaping features that often coincide with semi-public spaces of recreation that will be accessible to the larger community. New trees, small parks and plazas, and shaded public pathways will begin to create cohesive networks. Parking structures and internal garages located close to major thoroughfares along Moffett Park's periphery are beginning to emerge in several proposals.

Central to the approval process is a sensitivity to the development goals prescribed in the original 2013 Specific Plan. That plan established a maximum buildout of 24.3 million square feet of development for the entire Moffett Park area, with 5.4 million square feet of that total set aside as a development reserve for primary the purpose of encouraging higher intensity development. As Moffett Park has already experienced significant changes in the years since the 2013 figures were set, with old buildings being demolished and new ones taking their place. The challenge today is balancing both the maximum allocation in addition to the available development reserve, as businesses are adapting to changing demand in office practices and space allocation.

The projects under review at this time amount to approximately 6.2 million new square feet.

Key Concept:

The City is already reviewing several projects that propose new office, industrial, and commercial spaces along with parking facilities and open space. No residential projects are currently under review, consistent with existing zoning.

Figure 7. City of Sunnyvale Pipeline Projects within Moffett Park Specific Plan Area (December 2019)

Environmental Considerations

Moffett Park and its surrounding area have long catered to a variety of industrial activities. While many facilities continue to operate, several abandoned sites contain contaminated or sensitive land resulting from decades of industrial operations. A more thorough analysis of these environmental considerations will be conducted later in the process as part of California Environmental Quality Act (CEQA) analysis. Initial analysis identified the following environmental conditions.

Hazards and Hazardous Materials

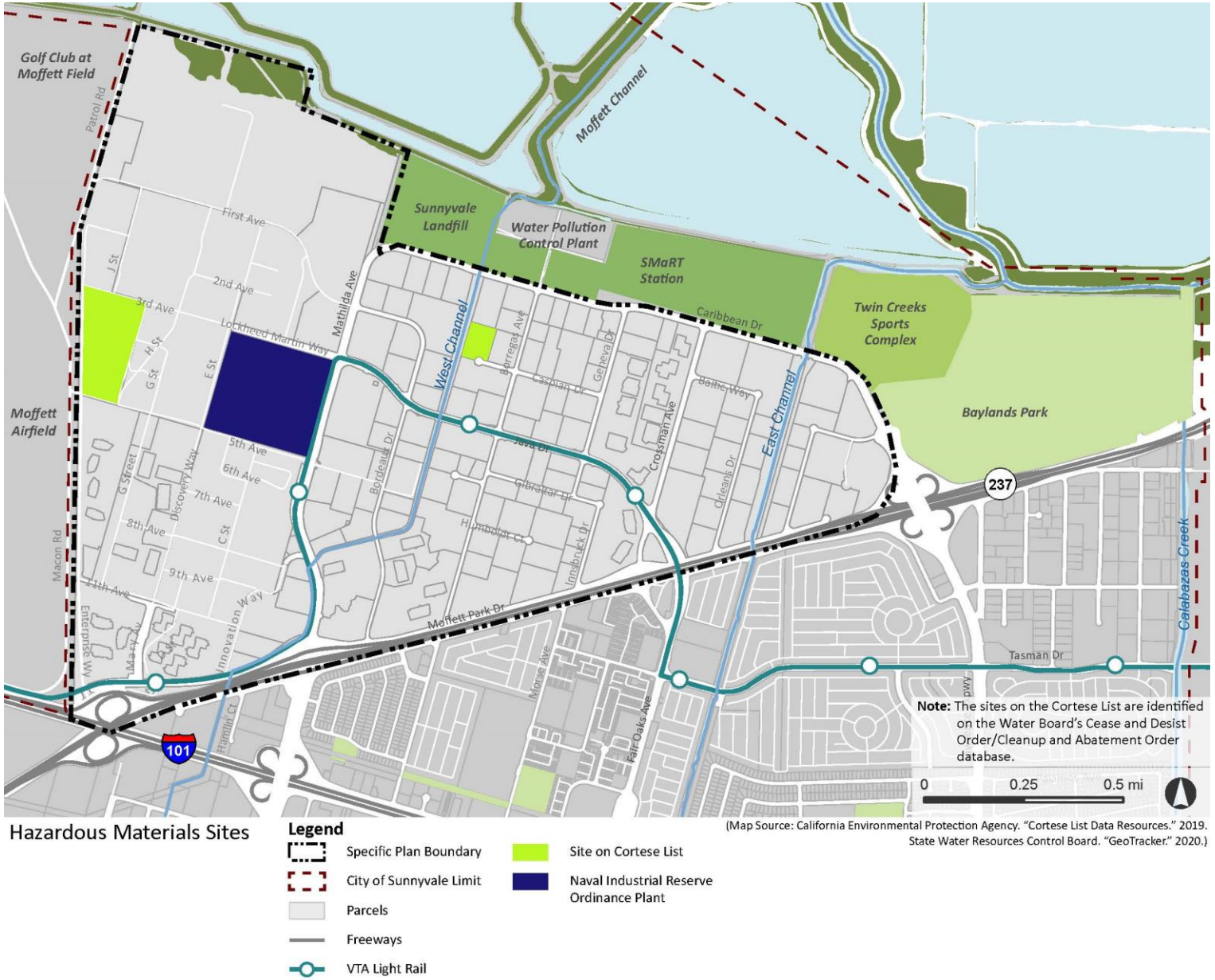
The Plan Area is known for industrial and intensive research development uses. Section 65962.5 of the Government Code requires the California Environmental Protection Agency develop and update a list of hazardous waste and substances sites, known as the Cortese List. The Cortese List includes hazardous substance release sites identified by the Department of Toxic Substances Control (DTSC) and the State Water Resources Control Board (SWRCB). The Cortese List is used by state and local agencies, and developers to comply with CEQA requirements. There are two sites within the Plan Area listed on the Cortese List (***Figure 8***).

In addition, there are other hazardous materials sites that do not meet the requirement to be listed on the Cortese List, but could pose a threat to the environment. One example is the Naval Industrial Reserve Ordnance Plant, a 48-acre facility located at 1235 North Mathilda Avenue (***Figure 8***), which has known groundwater contamination and is undergoing remediation under SWRCB oversight.

Key Concept:

There are several known contaminated sites in the plan area that could pose a threat to the environment and/or human health and may limit development potential on or nearby these sites.

Figure 8. Contaminated Sites listed on the Cortese List



(Map Source: California Environmental Protection Agency. "Cortese List Data Resources." 2019. State Water Resources Control Board. "GeoTracker." 2020.)

Noise and Vibration

The noise environment in the Plan Area is primarily made up of vehicular traffic along SR 237, US 101, North Mathilda Avenue, Caribbean Drive, and Java Drive; aircraft operations from Moffett Federal Airfield; and light rail trains along the Santa Clara Valley Transportation Agency (VTA) tracks (***Figure 9***). Screening distances to minimize noise impacts to sensitive receptors from roadways can range from less than 50 feet to 735 feet.

The southwestern corner of the Plan Area is located within the Moffett Federal Airfield's 65 a-weighted decibel (dBA) noise contour area. Residential use is not recommended within this contour area because the exterior noise levels for common open spaces cannot be reduced to achieve the City's residential exterior noise level goals.

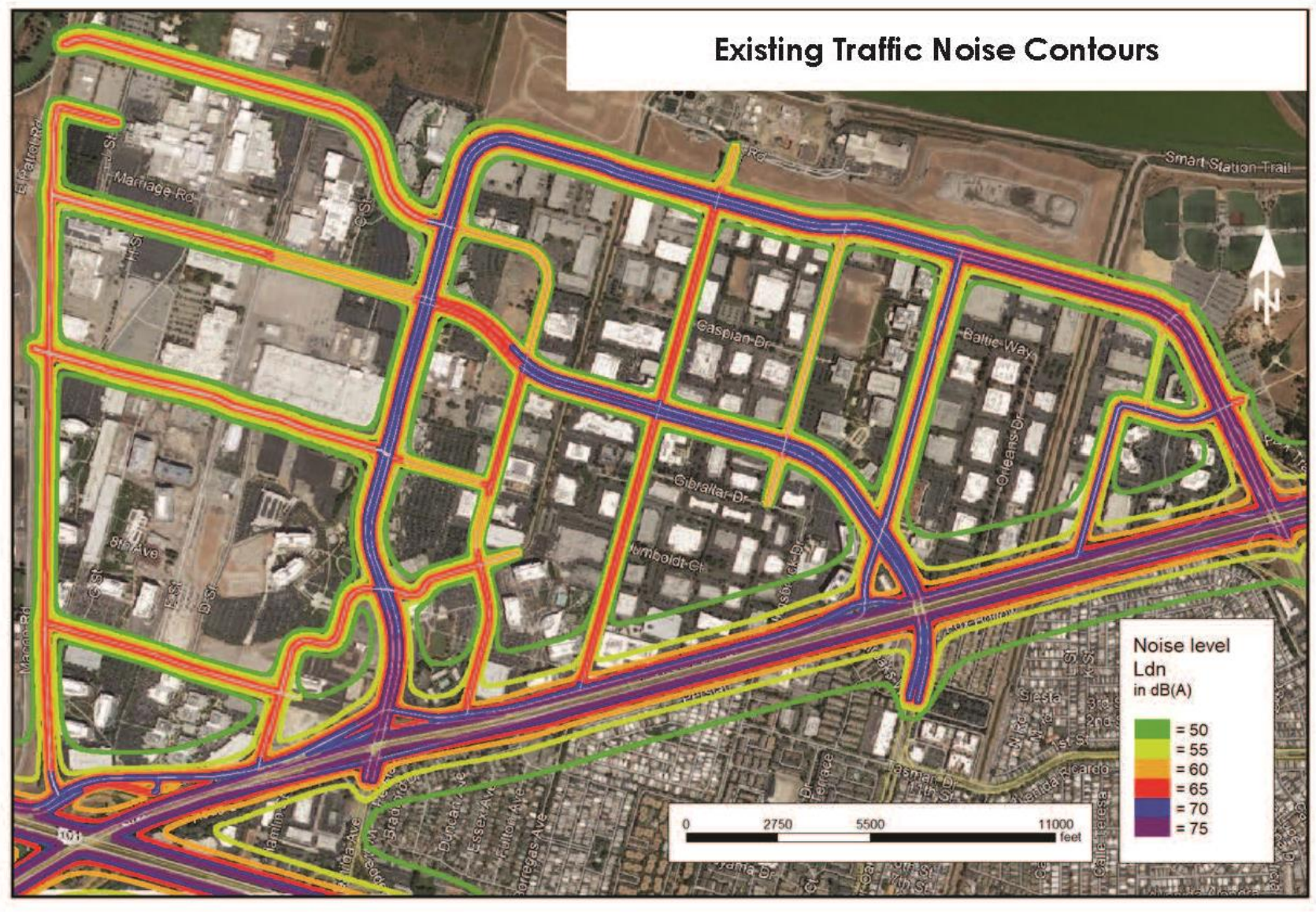
In addition, commercial and industrial uses can generate noise from regular operation of equipment, including fans, blowers, chillers, compressors, boilers, pumps, and air conditioning systems, that may run continuously. Developing sensitive receptors in proximity to these stationary noise sources could result in land use conflicts.

Future sensitive land uses north of West Moffett Park Drive and west of North Mathilda Avenue may be exposed to excessive ground borne vibration levels from VTA light rail. Screening distances from the VTA tracks to avoid significant vibration impacts to sensitive receptors is estimated to be 50 feet.

Key Concept:

Sources of noise, such as vehicular traffic along nearby highways and aircraft operations from Moffett Federal Airfield will require appropriate screening distances to minimize noise impacts to sensitive receptors. In particular, residential uses are not recommended within the Moffett Federal Airfield 65 dBA noise contour area.

Figure 9. Existing Traffic Noise Contours



Source: DJPA (2019)

Air Quality

Both stationary and mobile sources of emissions identified by the Bay Area Air Quality Management District (BAAQMD) are located throughout the Plan Area (***Figure 10***). A broad class of compounds known as Toxic Air Contaminants (TACs) have adverse health effects. US 101, SR 237, North Mathilda Avenue, Caribbean Avenue, and Java Drive are mobile sources of TACs. Screening distances to minimize health risks for the freeways is 400 feet and for the local roadways are 10 to 150 feet.

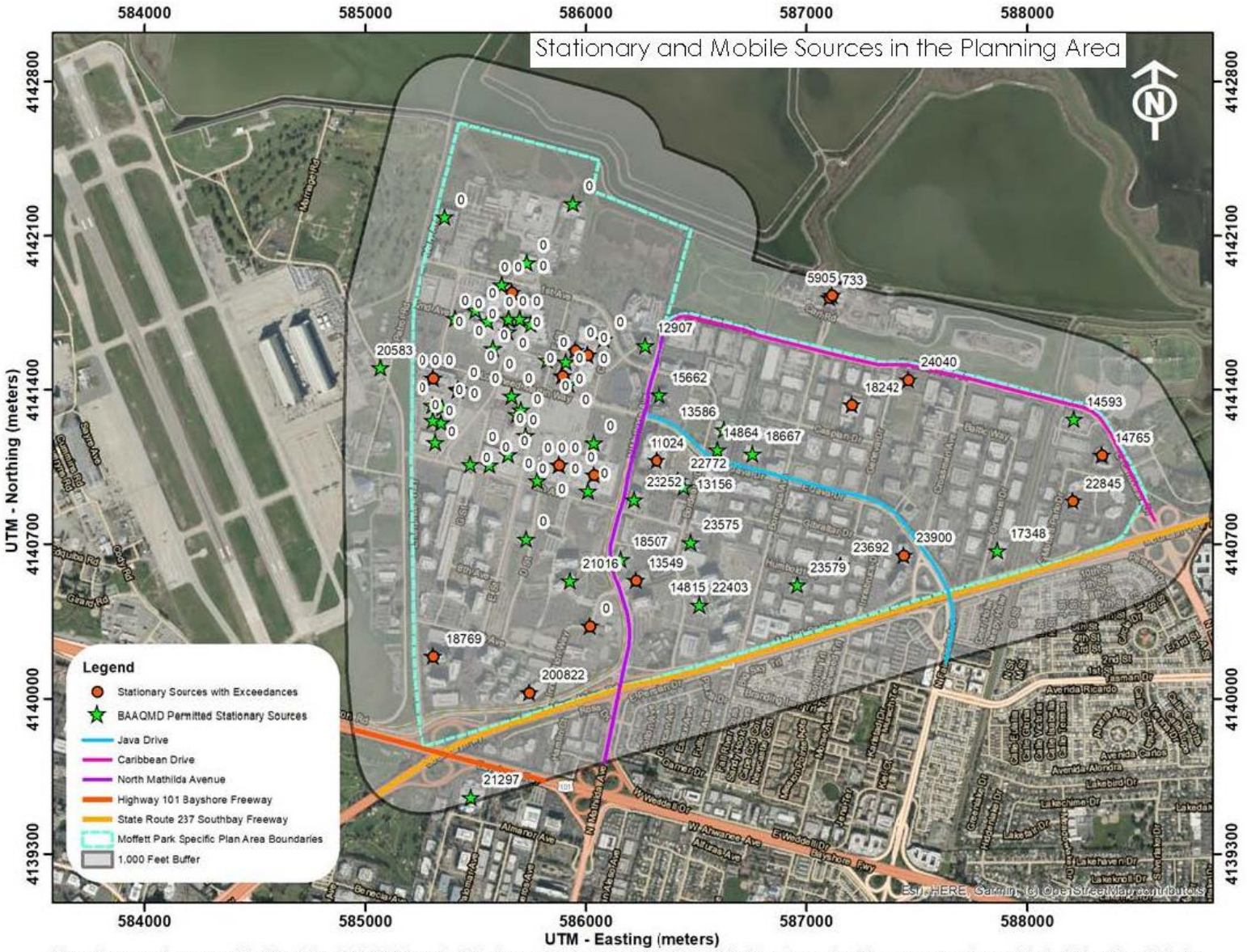
In addition, there are complex stationary sources of TACs and other air pollutant emissions. Industrial sources of TACs and air pollutants are mostly at the northwest portion of the Plan Area, where Lockheed Martin is located ***(Figure 10).*** BAAQMD frequently updates the permitted stationary sources as development and its stationary sources change or move. For example, there are multiple projects recently approved or currently under construction in the Plan Area that may include new stationary sources of TACs. New sensitive uses (especially if considered west or immediately east of North Mathilda Avenue) should perform site specific studies prior to approval of specific development projects. If existing TAC sources result in risks or hazards to future sensitive receptors that exceed the BAAQMD single-source threshold, feasible measures to reduce health risks could include installation of air filtration systems.

There are sources of odors that could cause future complaints if residences are developed near them. The BAAQMD screening distance to avoid odor complaints from wastewater treatment plants and materials recovery resource facilities is two miles. The dominant wind flow is from the north/northwest, therefore, the Plan Area is downwind of these odor sources.

Key Concept:

Both stationary and mobile sources of emissions throughout the plan area could pose hazards for sensitive uses, such as residential development, particularly if situated west or immediately east of North Mathilda Avenue.

Figure 10. Stationary and Mobile Sources of Toxic Air Contaminants identified by BAAQMD



*The unique numbers associated to all the BAAQMD Permitted Stationary Sources are their assigned identification codes. The zeroes are all associated with Lockheed Martin.

Source: DJPA (2019)

Urban Design

Site Character

Today, Moffett Park is a largely homogenous area consisting of low-density office parks connected by a wide and infrequent street grid. Vehicles dominate the district whether through traffic congestion or parking lots.

The district lacks neighborhood identity or connectivity. Office and industrial facilities feature no notable architectural character, and few comfortable gathering or social spaces.

Figure 11. *Moffett Park Site Photos*




Block Structure and Street Network

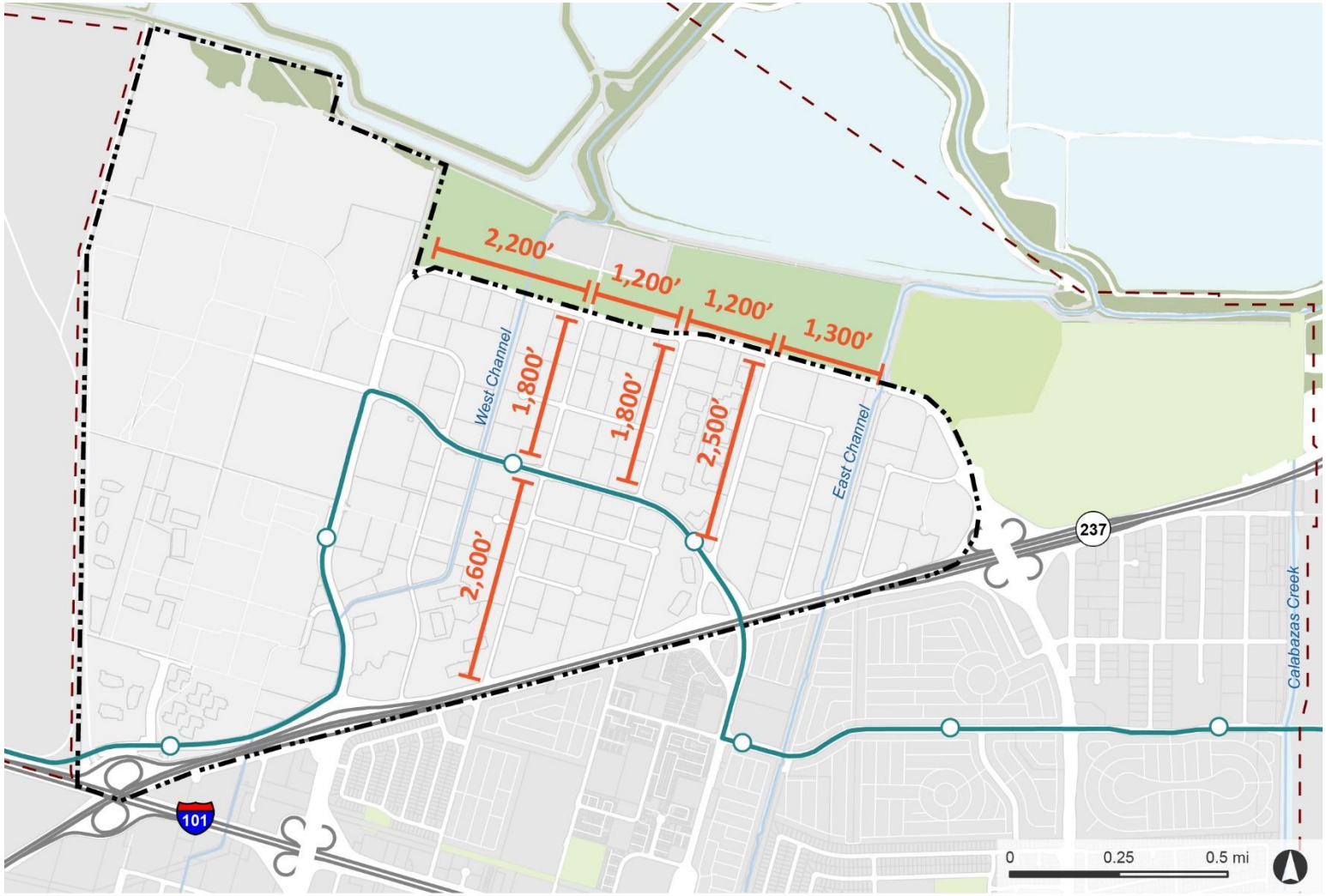
Streets in Moffett Park have wide frontage setbacks, and existing buildings are often buffered by parking, which comprises one-third of the Plan Area. Buildings generally do not have a presence on the street. Ample space within the overly wide right-of-ways, though, can allow the streets to work better for people and contribute ecologically through traffic calming, street-activating uses, stormwater treatment, and groundwater strategies. ***Figure 12*** illustrates the existing block structure within Moffett Park, with major streets typically separated by quarter mile.

Moffett Park contains a variety of opportunities for new approaches in design, circulation, and orientation. For instance, interstitial pedestrian and bicycle connections within these large blocks and ownership holdings could be introduced to create more direct routes and a more walkable environment.

Key Concept:

Moffett Park is characterized by large blocks that were constructed to accommodate large-format office buildings and employment campuses, creating challenges for connectivity and walkability.

Figure 12. Existing Block Structure



Source: R+A (2019)

Parking Lots

Buildings in Moffett Park today are characterized by large parcels surrounded by a ring of surface parking. Much of the existing land is allocated to surface parking facilities, with enough individual spaces to accommodate thousands of vehicles. Nearly all of these lots are private, only accessible to employees and guests. On-street parking is limited to a single span of Borregas Avenue. The adjacent Baylands Park and Twin Creeks Sports Complex each have their own designated interior parking lots.

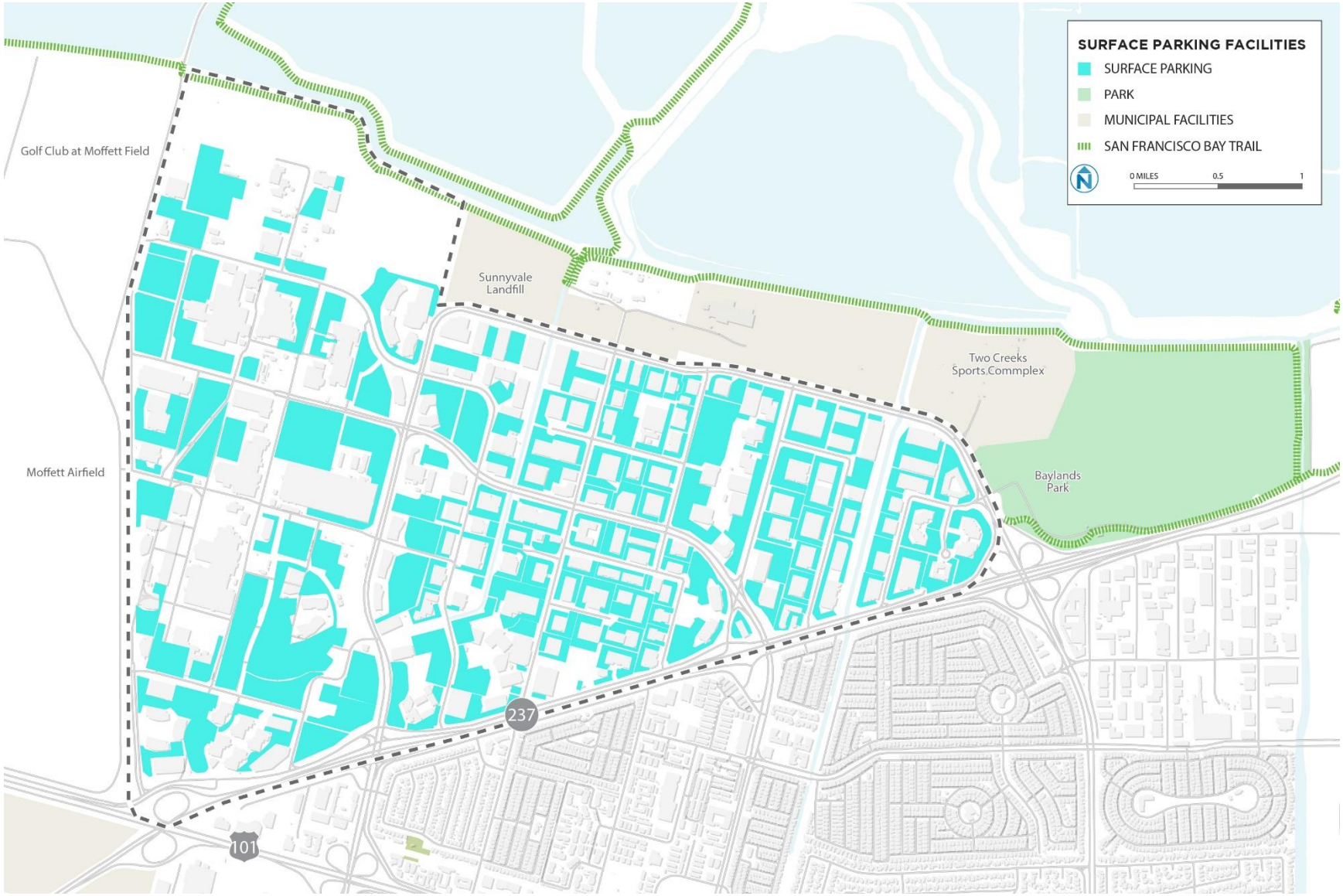
Parking garages have only recently begun emerging within the Plan Area, and at present are limited to about a dozen structures that offer a high-density alternative to surface parking. Like surface lots, these structures are private and accessible only to employees and guests.

Parking in Moffett Park, however, is beginning to shift. Several of the pipeline projects both under review and under construction will introduce integrated structured parking, where garages occupy the lower levels of a building and other activities are accommodated on upper floors. While these structured parking facilities are currently few in number, future multi-level parking facilities could potentially serve to free up land previously allocated to surface parking for other uses. A district-wide approach to parking, where the sole parking facilities within Moffett Park are concentrated in a few key structures, would make considerable land currently dedicated exclusively to surface parking lots available for other uses (see ***Figure 13***).

Key Concept:

Moffett Park contains substantial surface parking facilities mostly catering to private companies, while high-density parking garages are only recently beginning to emerge.

Figure 13. *Surface Parking Facilities*



Source: Nelson\Nygaard (2019)

Height Restrictions

Moffett Park falls within the Moffett Federal Airfield Influence Area. While the City of Sunnyvale typically regulates uses and building heights through local zoning, Moffett Park features an additional level of oversight by the Federal Aviation Administration (FAA) to ensure that buildings do not interfere or conflict with nearby aircraft traffic or activity. While most of the Plan Area falls within the 182-foot height buffer area, portions of Moffett Park are subject to alternate height restrictions, as shown in ***Figure 14.***

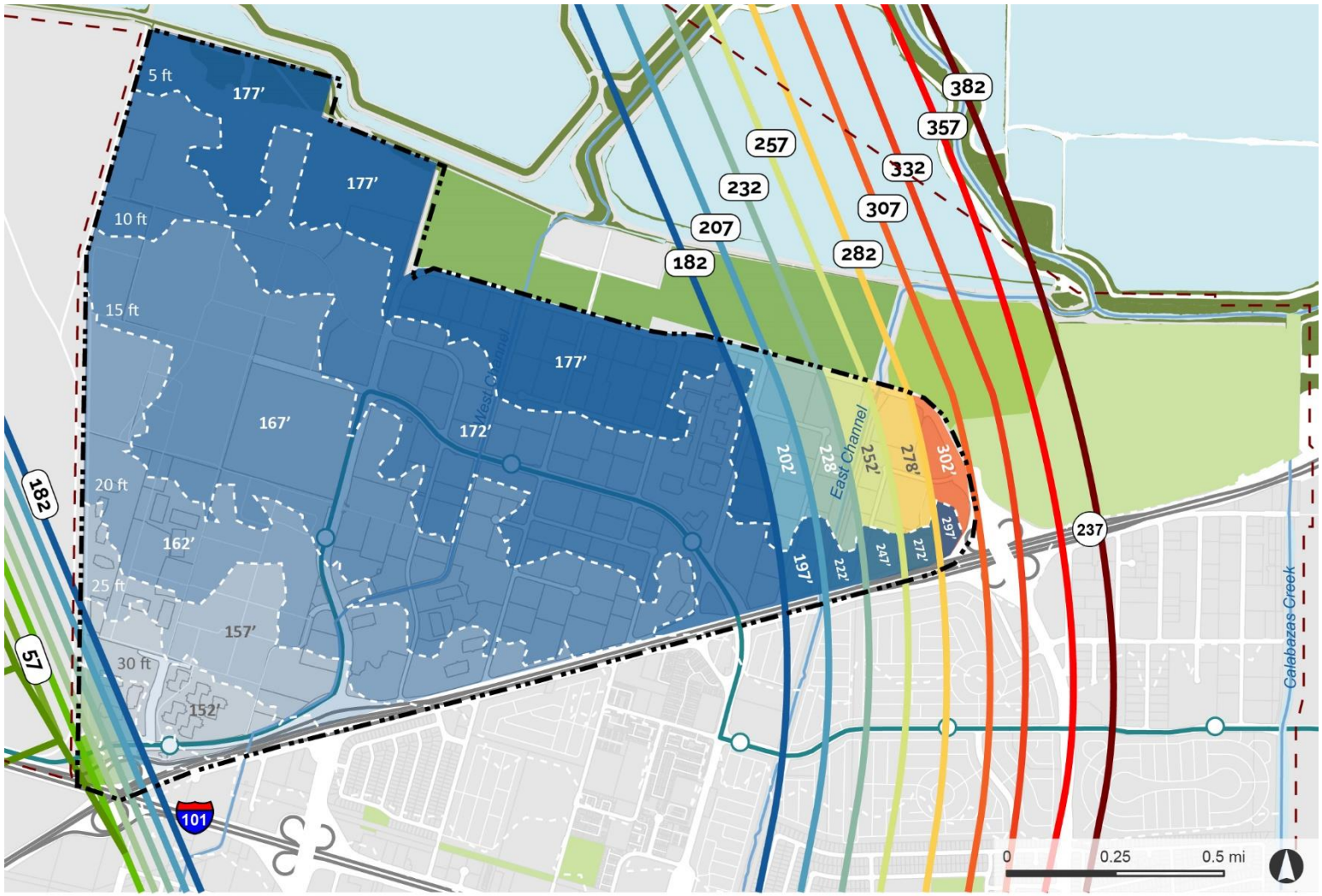
Allowable building height in the FAA Influence Area is measured from mean sea level and is therefore influenced by underlying topography. The Moffett Park Specific Plan Area features a gradual change in topography moving inland away from the San Francisco Bay (measured as 0 feet above sea level). The most restrictive building heights are concentrated at the southwest corner of the Plan Area, nearest to the airfield.

Important to note is that while the FAA establishes strict standards regarding maximum building height, the City of Sunnyvale has the capacity to establish more restrictive building height maximums *below* FAA regulations.

Key Concept:

The MPSP area's proximity to Moffett Federal Airfield limits maximum building height. The City of Sunnyvale may also establish more restrictive regulations beyond the FAA's.

Figure 14. FAA Building Height Limits



Source: FAA; R+A (2019)

Open Space

Existing Open Space

Existing open spaces adjacent to Moffett Park include several public and publicly-accessible waterfront destinations, including the Bay Trail and Baylands Park. The Twin Creeks Recreational Facility is a privately operated facility that includes multiple community-serving active recreation fields. Other open spaces include special use areas, such as salt ponds, trails at the closed landfill facility, as well as the Santa Clara Valley Water District's (SCVWD or Valley Water) East and West channels within Moffett Park.

There are no publicly-accessible open spaces within the Plan Area, but there are a series of campus open spaces within existing office parks. These can be leveraged in the future as components within a district open space network.

Key Concept:

While there are no publicly-accessible open spaces within the plan area, there are several adjacent open space and recreational amenities (e.g. Bay Trail and Baylands Park) as well as office campus open spaces that could be leveraged as components within a larger district open space network.

Figure 15. *Types of Existing Open Space*

Bay Trail

Baylands Park

Source: SCC.gov.

Twin Creeks Recreational Facility

Source: Twin Creeks.

Tech Corners (Google Campus)

Source: Flickr – Travis Wise.

Bay Trail (view from closed landfill)

Source: Flickr – John Morgan.

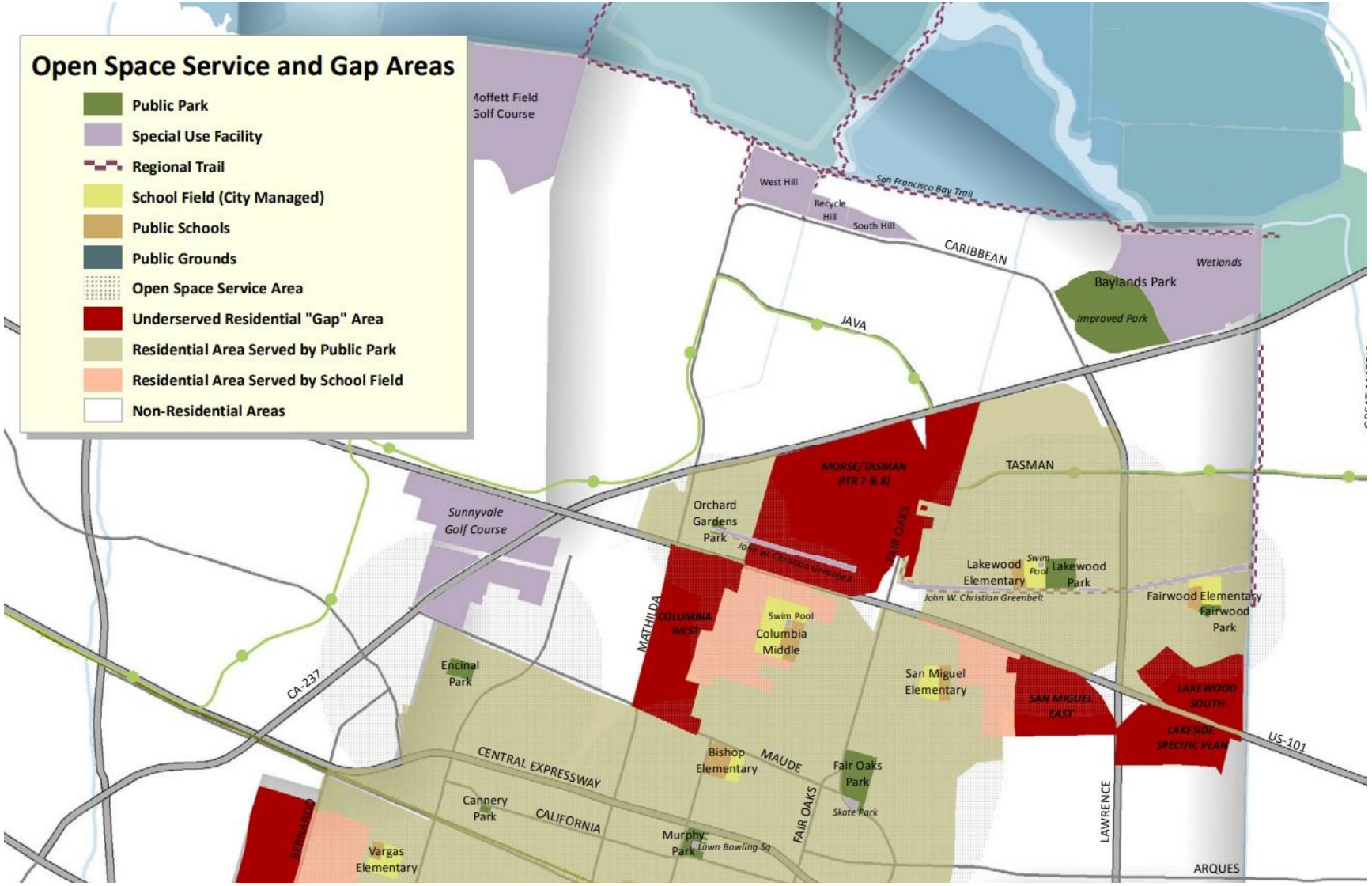
Open Space Opportunities

Moffett Park can help the City of Sunnyvale meet its goals for open space through an expanded and diverse open space network. The unique range of conditions at the Bay's edge can support a wide variety of high-value local habitat types and a diverse waterfront experience.

There are also many opportunities to introduce ecological function, create new habitat, and increase tree canopy cover across the Plan Area. Implementation, governance, finance, and maintenance of public or publicly-accessible open spaces and urban ecology resources are critical aspects to consider in future open space planning.

(Reference ***Figure 16*** and make note of the West and East Channels which are on the map, but are currently considered as *potential* path/trail corridors.)

Figure 16. Open Space Service and Gap Areas



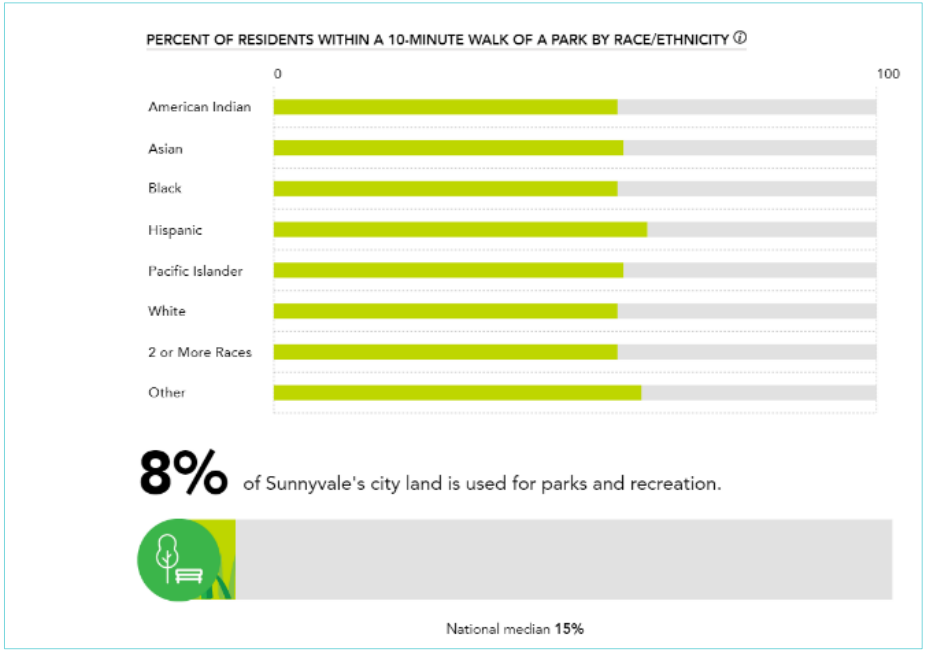
Source: Sunnyvale General Plan (2011)

Open Space Equity and Access

The plan area offers an opportunity to address service needs and open space gaps identified in the City's General Plan. In 2009, Sunnyvale adopted 5.34 acres per 1,000 residents as the targeted level of service to provide parks and open space to its citizens. New open spaces in Moffett Park could augment the amount of parkland available to residents. Furthermore, parks in the Plan Area could connect to neighborhoods located immediately south of Moffett Park (Morse/Tasman) that are currently underserved by parks. These neighborhoods have a high percentage of youth and seniors, two vital demographics for neighborhood park access.

The Trust for Public Land specifies a 10-minute walk (approx. ½ mile) as the maximum distance residents should live from a park. ***Figure 17*** illustrates how Sunnyvale measures up to that goal. Today, there is limited access to the existing open spaces in Moffett Park; highways and traffic are barriers for both people and wildlife. Quantity, quality, and distance to and among existing and new open spaces will be key considerations moving forward.

Figure 17. *Trust for Public Land Park Score for Sunnyvale*



Source: CMG (2019)

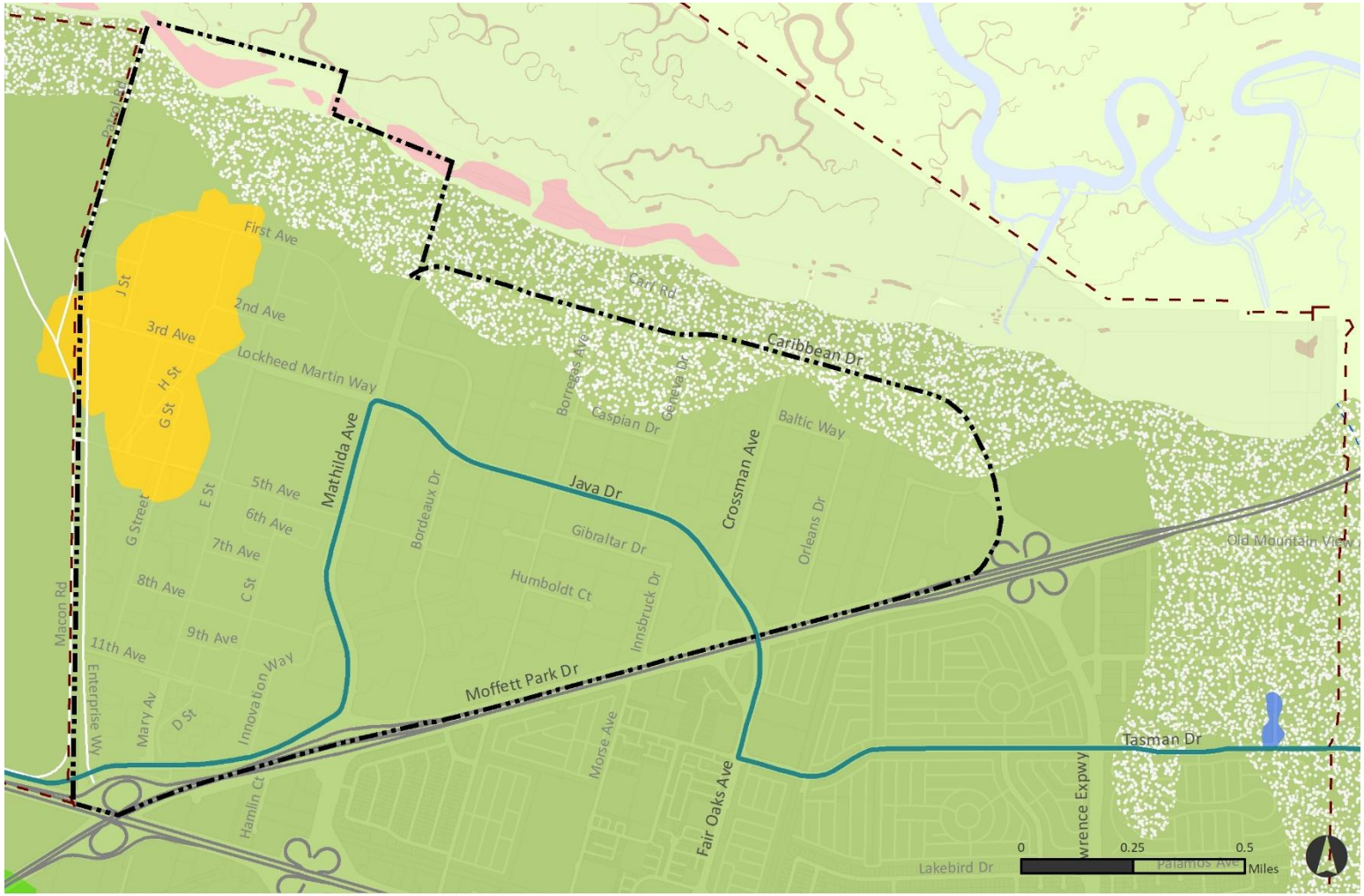
Urban Ecology

Moffett Park's existing landscape is highly fragmented and degraded, characterized by impervious surfaces, low canopy cover, and non-native vegetation. The current tree canopy cover in the district (8.9%) is below targets that promote ecology and a safe urban thermal environment (30-40%). Increasing canopy cover while decreasing impervious surfaces will mitigate against the formation of urban heat islands, sequester carbon, avoid stormwater runoff, and reduce air pollution. Planting native, locally-adapted tree species will also improve the character and performance of the urban forest.

The Plan Area borders the San Francisco Bay and several open space areas, such as Baylands Park and Harvey Marsh to the north. The southwest region of Moffett Park contains no formally protected green spaces and is distant from other existing open space patches which largely limits open space accessibility for both people and wildlife. Enhancing the urban biodiversity of Moffett Park would mutually benefit the ecological performance of both the area and its neighboring open spaces.

Historically, wet meadows of short grasses and flowering plants once dominated the Plan Area, as shown in ***Figure 18***. Knowledge of historical ecology can help define which habitats are appropriate to restore. Landscape modifications such as grading, soil compaction, fill, and groundwater depletion have made parts of the Plan Area more suitable for oak woodland habitats.

Figure 18. Moffett Park Historical Habitat Diversity



(Map Source: San Francisco Estuary Institute)

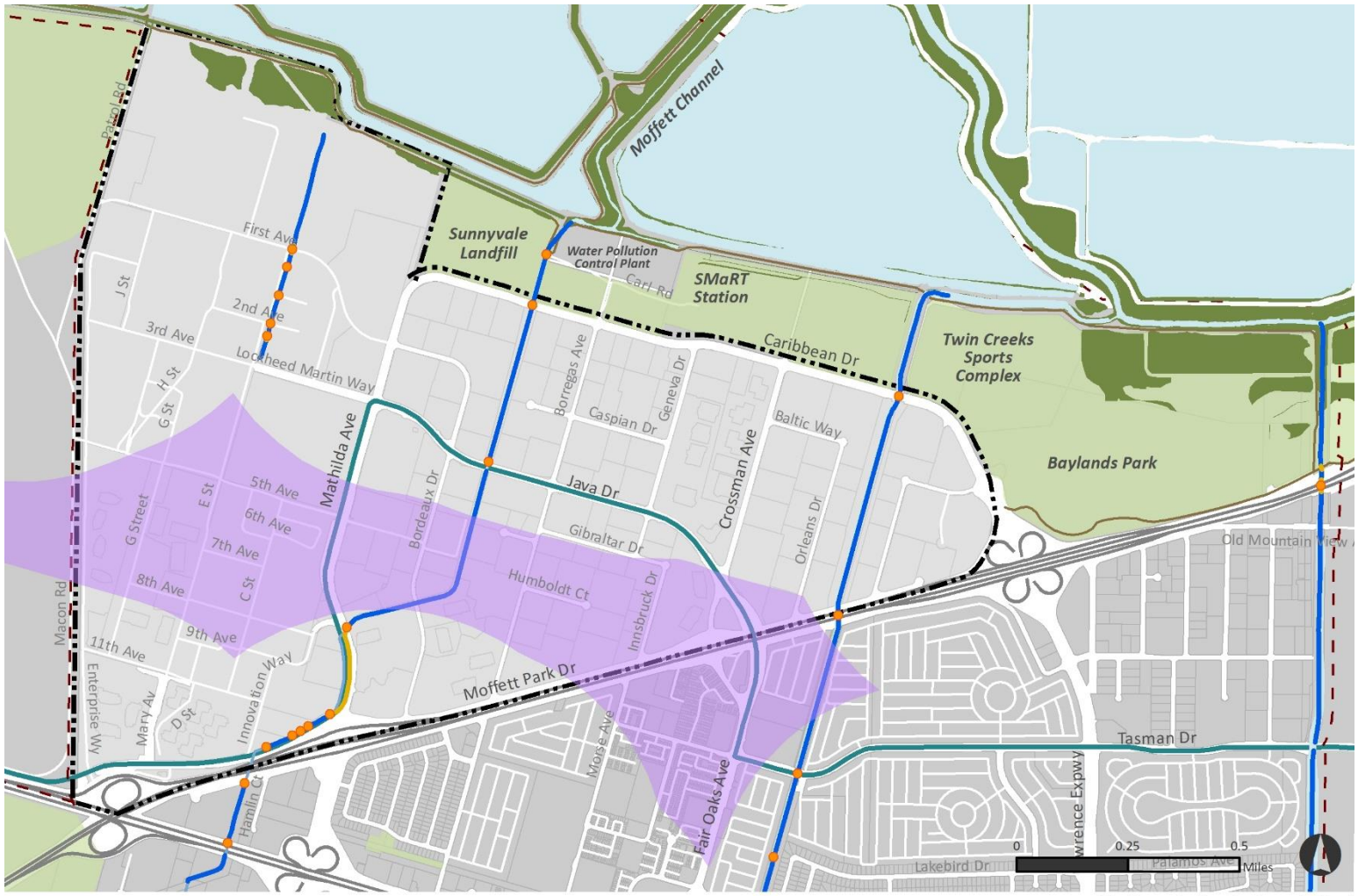
Regional Context and Challenges

Moffett Park's proximity to San Francisco Bay provides a direct connection to larger ecological systems. Investments in Moffett Park's urban ecology, in conjunction with the restoration of tidal marshes in the Bay, can contribute to a larger, functional ecosystem that supports both local and migratory wildlife and begin to address some of the prevailing challenges that currently hinder the Plan Area from reaching its potential as a regional ecological resource.

Key Concept:

Moffett Park's existing landscape is highly degraded and is lacking functional open space. Multi-benefit ecological interventions in the Plan Area can be designed to provide ecosystem services, build climate resilience, contribute to human health, and enhance the outdoor experience.

Figure 19. Ecological Barriers



(Map Source: San Francisco Estuary Institute)

Moffett Park also borders a number of open spaces that already host a variety of species, including the endangered Burrowing Owl, and contain special resources, such as the wetlands found on the Lockheed Martin and Google properties (see ***Figure 20***). Moffett Park has the potential to support a number of relatively rare, high-value local habitat types, such as valley oak groves, willow groves, riparian habitat, alkali/wet meadows, and freshwater marsh because of its high groundwater and low elevation. These are all possible within the urban context, and could potentially take advantage of Moffett Park's large parcels which facilitate the creation of large contiguous habitat patches and corridors.

The Valley Water East and West Channels reduce flood risk and link Moffett Park to the Bay. These waterways can serve as the foundation of ecological and recreational corridors, but currently have little existing riparian or floodplain habitat. Unlike natural streams, the channels do not provide connections to hillside populations. Furthermore, complex crossings and culverted segments create challenges for access and habitat creation. Climate change and sea level rise is likely to further impact both the waterways as well as the bayfront, requiring further ecological planning that is adaptive to nature.

The surface parking lots that cover much of the Plan Area will leave compacted soil and low-nutrient conditions, making the transition to viable open space expensive and challenging. Consolidation of parking could provide an avenue to enhance the character and performance of open space in the Plan Area.

Key Concept:

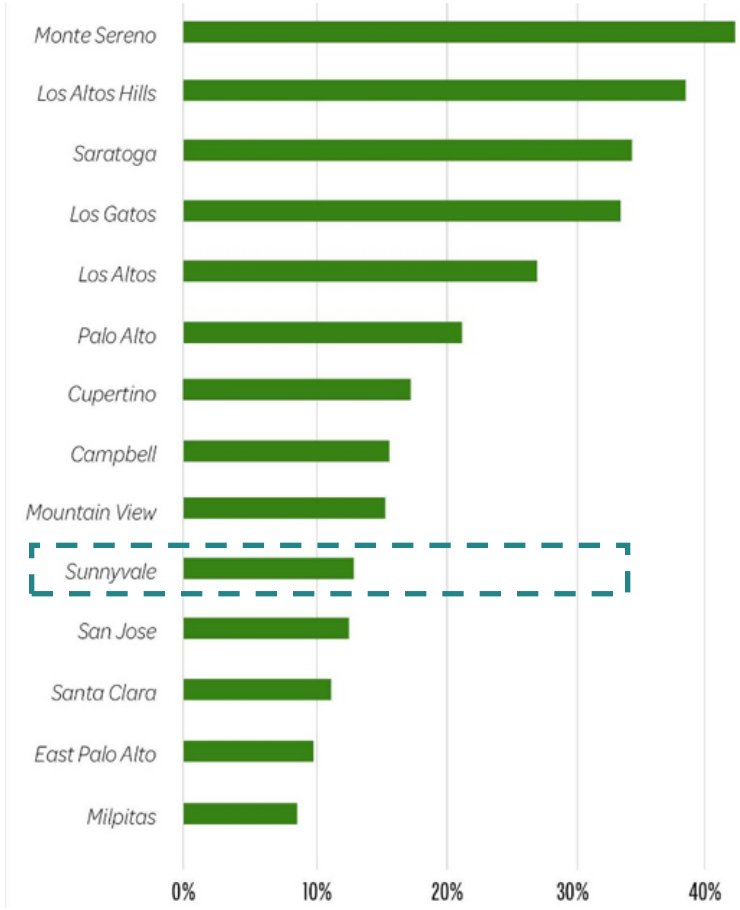
Moffett Park has the potential to create large contiguous habitat patches and corridors that will support a variety of species and habitat types.

Figure 20. Moffett Park Ecological Assets

(Map Source: San Francisco Estuary Institute)

Landscaped area in Moffett Park is currently very low, and is predominantly composed of lawns and non-native ornamental species. The Plan Area's municipally-owned trees are overwhelmingly dominated by non-native species (97.7%) and only three native species are present: coast live oak (*Quercus agrifolia*), white alder (*Alnus rhombifolia*), and Fremont cottonwood (*Populus fremontii*). The tree canopy created by these trees is also extremely low (8.9%), especially compared to other cities in the South Bay (see ***Figure 21***) and is well below targets that promote ecology and a safe urban thermal environment (30-40%). City-wide, Sunnyvale is striving towards an overall canopy coverage of 20%, equating to an additional 30,000 new trees.

Figure 21. *Silicon Valley Canopy Cover*



Source: CalFire (2015)

Opportunities for Future Collaboration

In spite of the challenges, Moffett Park has the potential to become a precedent for the ecological redevelopment of post-modern office parks. Property owners in Moffett Park have already shown interest in ecological master planning that could consolidate efforts to address problems that are multifaceted and require a holistic and collaborative effort.

The benefits of a shared ecological vision are significant. Ecological interventions in Moffett Park can be strategically designed to deliver ecosystem services, build climate resilience, contribute to human health, and enhance the outdoor experience. The East and West channels, for example, present an opportunity to combine flood management needs with the creation of riparian habitat, connections to terrestrial habitats, and migration space.

In addition, the urban forest has existing room to grow. Citywide, approximately 11% of street planting wells are vacant. Additional solutions to increase canopy cover by utilizing these vacant spaces could provide a variety of increasing benefits, such as air filtration, noise reduction, carbon sequestration, and shade. The City of Sunnyvale Urban Forest Management Plan (2014) also reports that street trees provide more than $1 million in annual benefits.

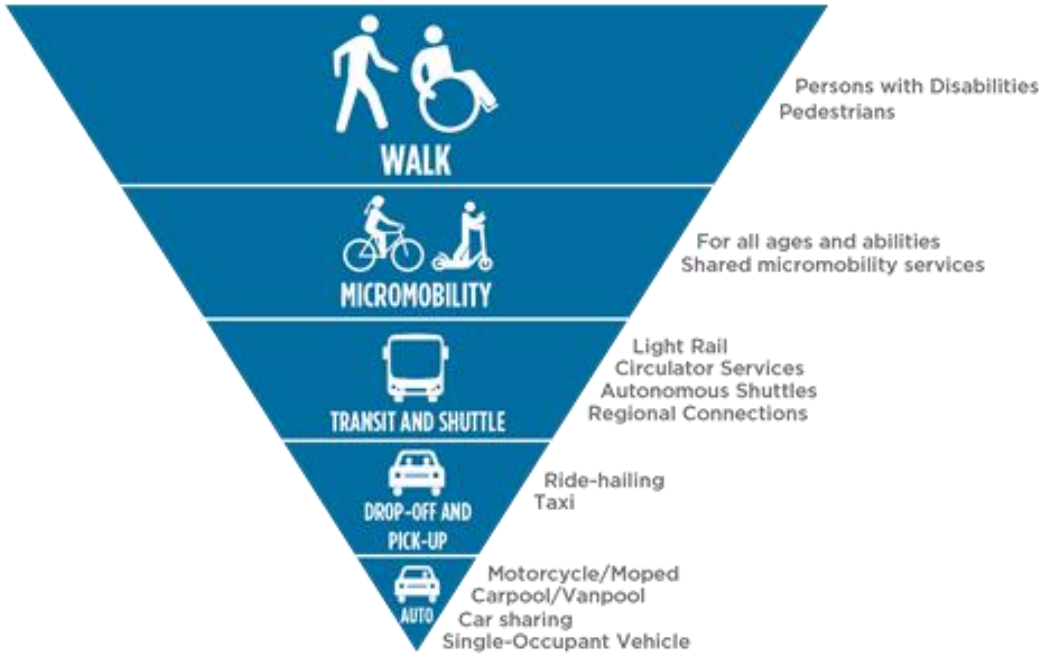
This is also an opportunity for the City to increase its natural capital and address open space “gaps” in the General Plan, providing access to park space and a diversity of public and private areas. Especially for underserved neighborhoods with higher percentages of youth and seniors, supporting a diversification of open spaces in the Plan Area could introduce ecological function, and restore unique habitat types that have been lost in the region and support native wildlife.

Mobility and Parking

Walkability and Micromobility

When people's needs are considered first, streets are designed to promote a safe and comfortable mobility network for all individuals, regardless of which mobility option they use. Moffett Park's streets present an opportunity to put people first when redesigning and prioritizing street space. To accommodate growth in Moffett Park, streets must be designed to move more people in the same amount of space. Walking and biking—mobility options that use very little space and promote health and sustainability — should form the backbone of the local mobility network. Transit and automobile networks that support carpooling, ride-hailing (also known as transportation network companies, or TNCs), and personal driving could be layered on top. This would create an environment that is oriented around people while also accommodating the needs of people who drive and park.

Figure 22. *Mobility Transect*



Source: Nelson\Nygaard (2020)

The streets in Moffett Park today prioritize people who drive. Automobile-oriented street design has resulted in wide streets with multiple vehicle lanes, relatively high speed limits, and a lack of safe and comfortable pedestrian and bicyclist infrastructure. Though the Plan Area is compact, these conditions discourage people from walking and biking between destinations within the Plan Area. The discrepancy between the quality of alternative modes of mobility are reflected in their Accessibility Scores (see ***Figure 23***), a widely used index developed by Walk Score where individual scores for pedestrians, cyclists, and public transit options are measured.

Walk Score is both an empirical methodology as well as an organization whose goal is to promote walkable neighborhoods by taking a data-driven approach to circulation and movement of people. The index awards points for each method of travel (by foot, bicycle, or public transit) based on the distance to the closest amenities, such as restaurants, stores, schools, and parks. A location with a Walk Score higher than 60 offers the possibility to accomplish most errands by foot. A location with a Bike Score higher than 60 means that biking is convenient for most trips, and a location with a Transit Score higher than 60 makes transit convenient for most trips. It is important to note that these Accessibility Scores primarily rate proximity to key destinations as opposed to quality of the underlying infrastructure.

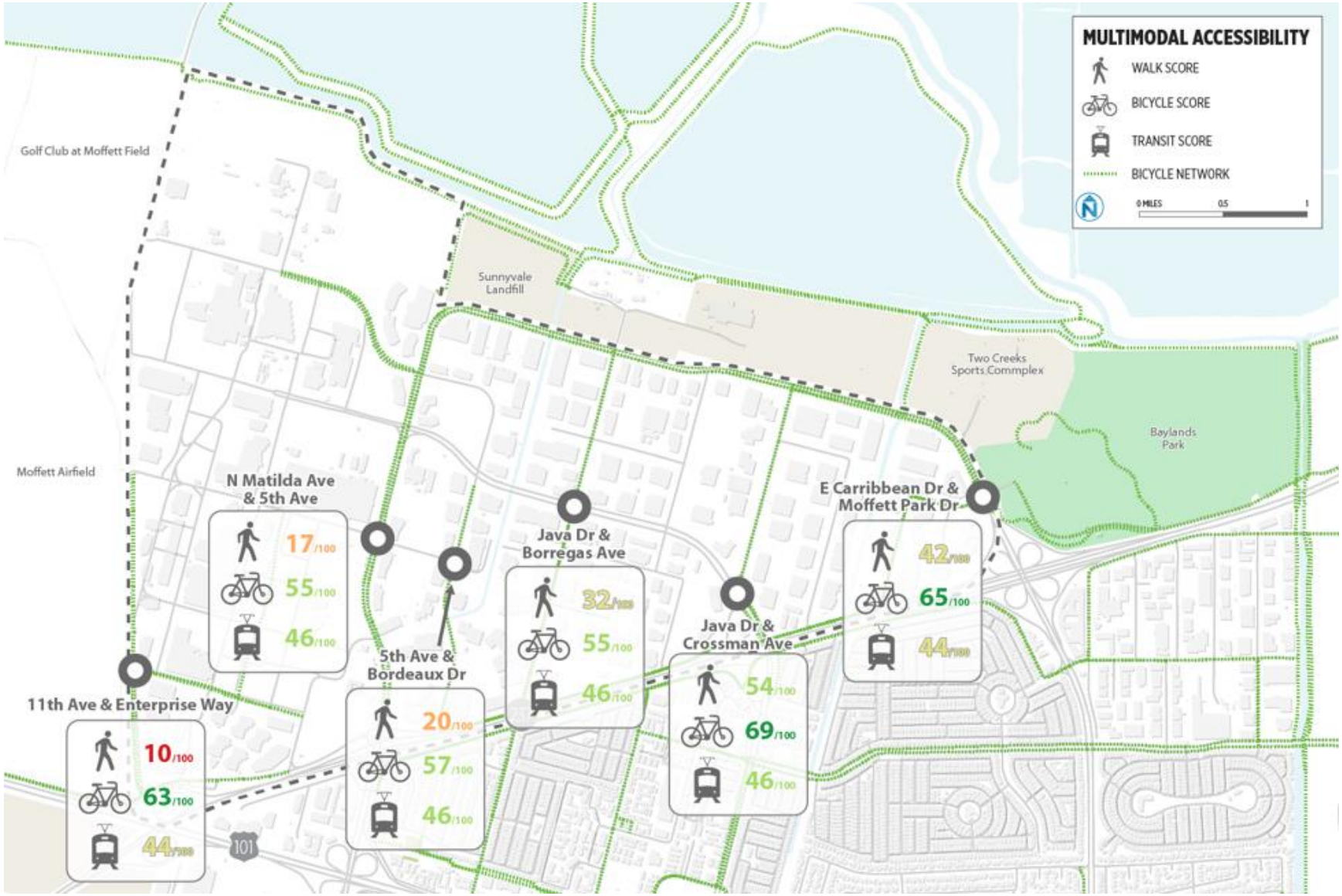
With upgrades to the active transportation network, people could walk from the center of the Plan Area to most internal destinations in 15 minutes or less. People could also bike to these same destinations and to areas outside the Plan Area, including Downtown Sunnyvale, in 15 minutes or less (see ***Figure 24***).

Key Concept:

Though Moffett Park has a compact scale with distances amenable to walking and biking, the streets today are not designed for pedestrian and bicyclist comfort, and do not invite people to walk or bike.

With network upgrades, the entire site, and many nearby destinations, could be in short walking and biking distance.

Figure 23. Multimodal Accessibility Score



Source: Nelson\Nygaard (2019)

Figure 24. Bicycle and Pedestrian Accessibility (15-minute radius)

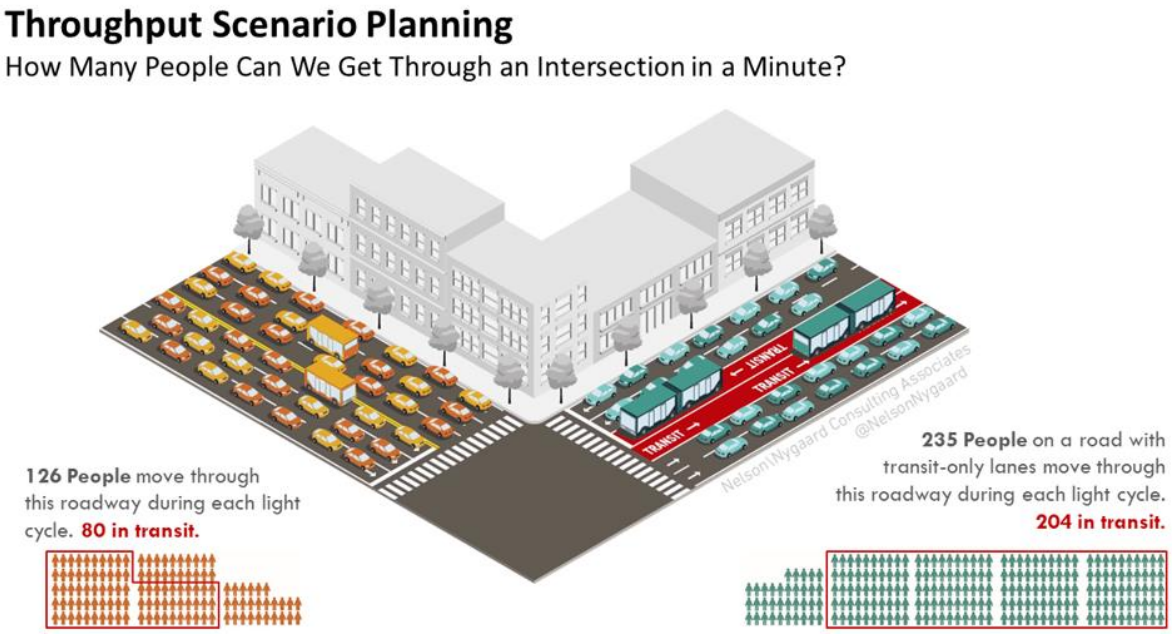
Source: Nelson\Nygaard (2019)

Traffic and Parking

Except for the Borregas Avenue bike and pedestrian bridge over SR 237 and VTA's light rail shared bridge along Java Drive, the gateway streets into Moffett Park at Mathilda Avenue, Java Drive, and Caribbean Drive are designed mostly around one use: automobile traffic. Coupled with the limited diversity of land uses in Moffett Park and inadequate walking and biking facilities, this street design limits site access, and exacerbates the imbalance of trip flows into and out of the Plan Area during peak commute periods (see ***Figure 26***).

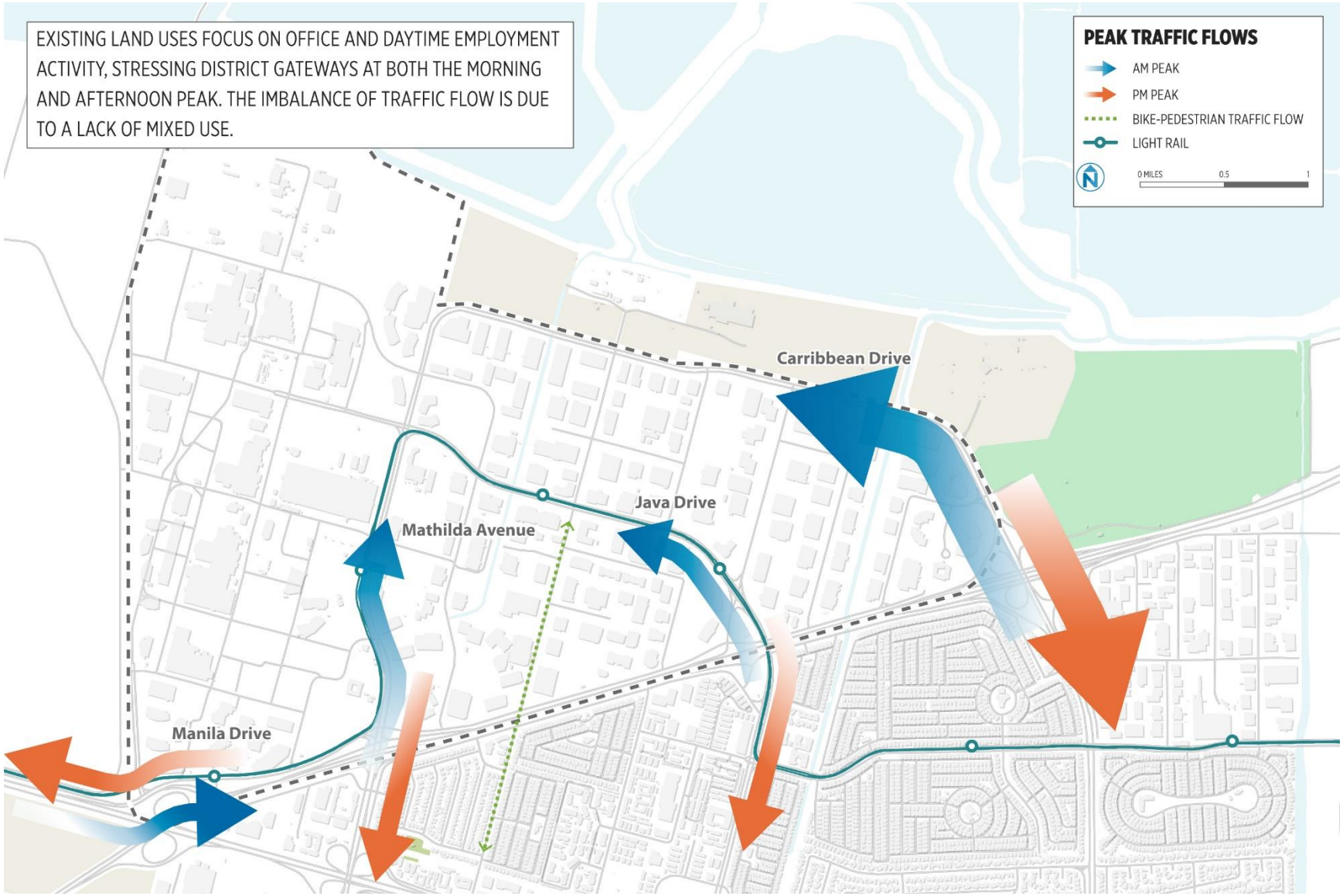
Person throughput is defined as the amount of people that can move through a roadway during a given timeframe. Because of the physical space required to move automobiles, street space that prioritizes automobiles supports much lower person throughput (600 to 1,600 people per hour) than street space that prioritizes transit (4,000 to 8,000 people per hour), walking (9,000 people per hour), or biking (7,500 people per hour), according to the National Association of City Transportation Officials Transit Street Design Guide. Multimodal street design, which includes features like designated right-of-way for transit, protected space for people who bike, and ubiquitous sidewalks, enables more people to travel through the same amount of space (see ***Figure 25***).

Figure 25. *Throughput Scenario Planning*



Source: Nelson\Nygaard (2019)

Figure 26. Peak Traffic Flows



Source: Nelson\Nygaard (2019)

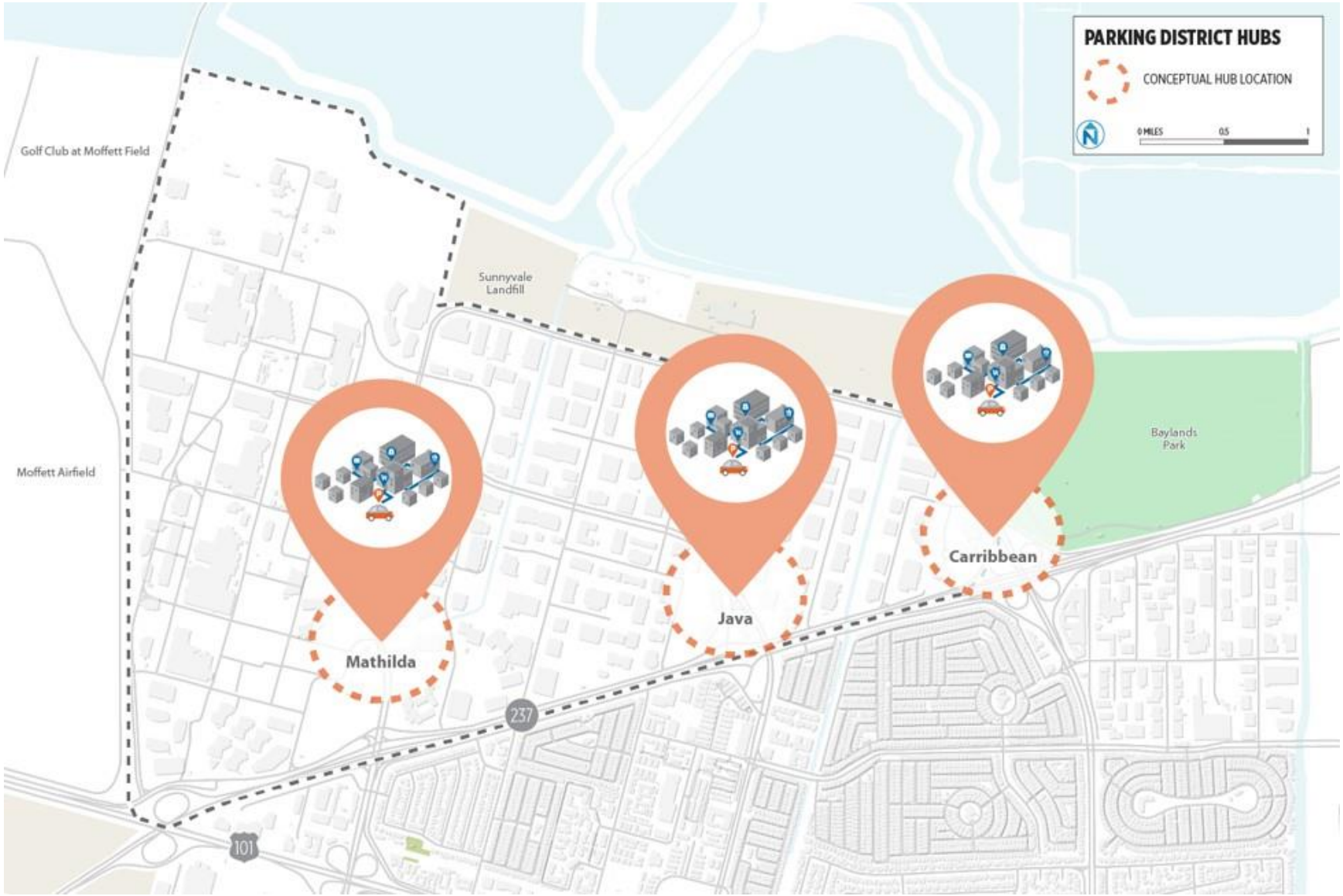
Parking Alternatives

The current pattern of dispersed surface parking lots across Moffett Park today consumes a significant amount of land and the option to park encourages people to drive between destinations. Consolidating parking presents an opportunity to share parking between uses whose demand for parking varies throughout the day in a complementary manner. Shared parking arrangements can generate revenue that can be reinvested into the Plan Area and reduce the amount of space dedicated to storing automobiles. Consolidated parking could be located near the gateways of the Plan Area to reduce driving within Moffett Park and support a people-friendly environment (see ***Figure 27***).

Key Concept:

Unmanaged parking at individual properties, plus a lack of local transit, biking, and walking options requires people to drive and counter-intuitively limits access in and out of Moffett Park. Consolidating parking frees up space for other uses, supports the movement of more people, and increases access to Moffett Park.

Figure 27. Conceptual Parking District Hubs



Source: Nelson\Nygaard (2019)

Transit Connectivity

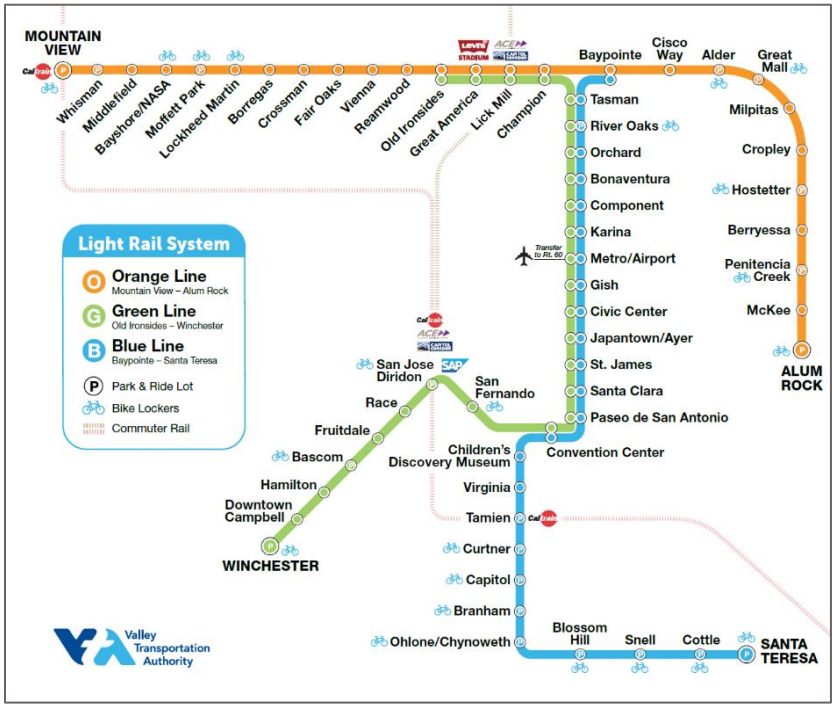
VTA's light rail system has not generated ridership comparable to its peers and as a result, has extremely high operating costs per trip. Underlying this outcome is the fact that parts of the system are not supported by a density of land uses, and portions operate in only semi-exclusive rights-of-way. In Moffett Park, VTA is responding to these challenges through recent service changes that increase frequency, particularly on weekends, and create increased regional connectivity by reorienting direct service to the future Milpitas BART station.

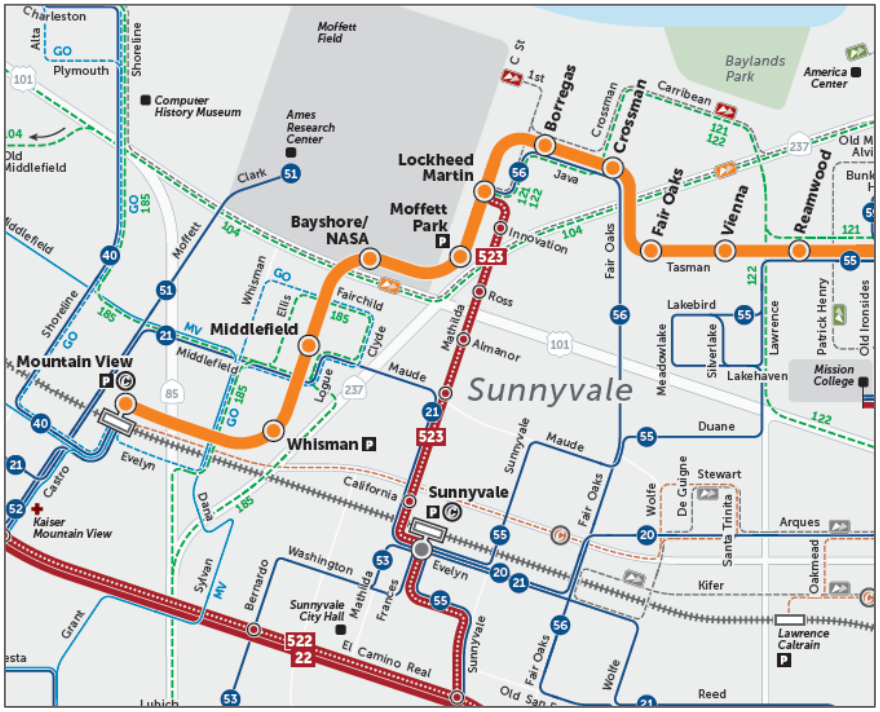
Furthermore, VTA's new Rapid 523 bus facilitates have improved local connections from Moffett Park to Downtown Sunnyvale and San José (see ***Figure 28***). The Rapid 523 bus demonstrates the opportunity of Mathilda Avenue as an enhanced high-capacity transitway, with frequent service encouraging transit access to the Plan Area.

Key Concept:

VTA's light rail system compares unfavorably to peers, but recent service changes and VTA's recently implemented new Rapid Bus between Moffett Park and Downtown Sunnyvale are opportunities for enhanced connections.

Figure 28. VTA Light Rail System Map and Rapid 523 Callout





Source: VTA Bus and Light Rail Map (December 2019)

Regional Mobility Projects

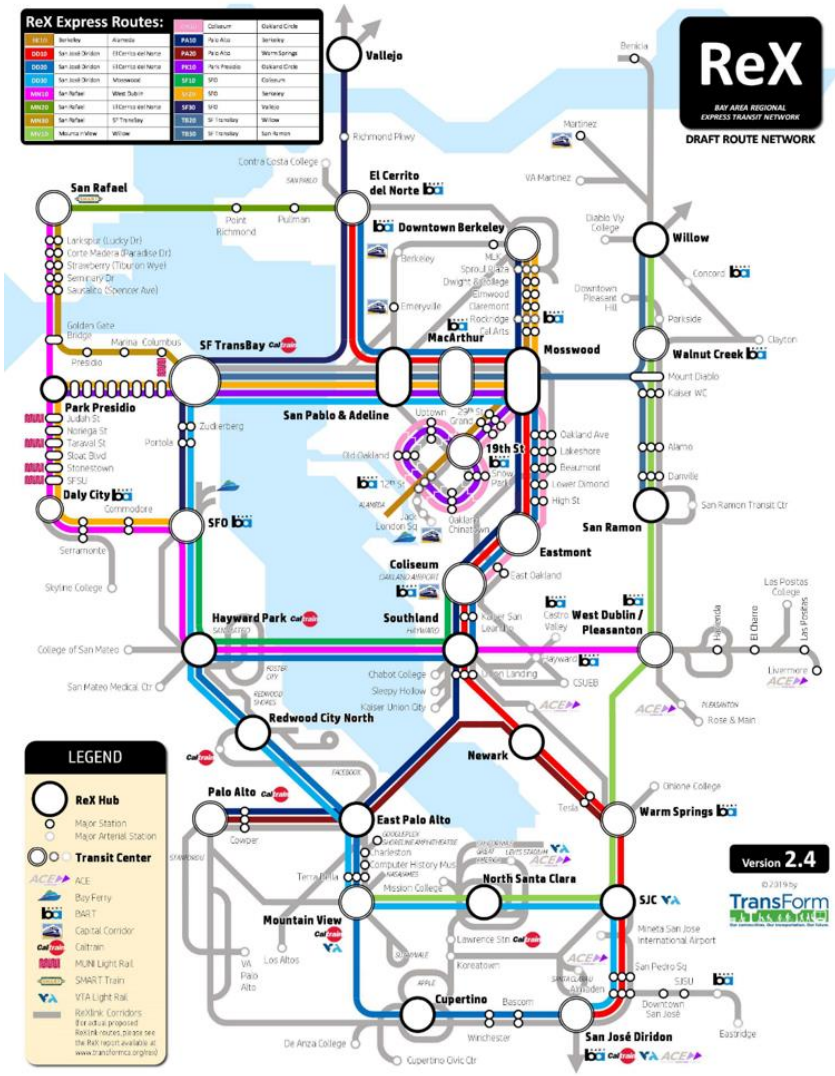
With its partner agencies around the region, the Metropolitan Transportation Commission (MTC) is in the process of implementing a new network of regional Express Lanes across the Bay Area, with full completion by 2035. Express Lanes promote and encourage higher occupancy modes of travel, like transit, carpooling, and vanpooling, and portions of this network benefit Moffett Park via SR 237 and US 101.

Concurrent with this effort, MTC is considering a Regional Express Transit Network (ReX) as a component of its long-range plan, *Plan Bay Area 2050* (see ***Figure 29***). ReX would enhance regional connectivity by leveraging the regional Express Lanes. ReX would offer express bus connections near Moffett Park to Caltrain, BART, ACE, and VTA regional transit services. The City of Sunnyvale would also be positioned advantageously between several major ReX Hubs in Palo Alto, Mountain View, and North Santa Clara, with residents able to make use of all three connections.

Key Concept:

Moffett Park is home to a significant portion of Sunnyvale's jobs – jobs occupied by people who travel from throughout the region. New regional mobility projects offer an opportunity to increase jobs and housing in Moffett Park by enhancing regional access to and from the site.

Figure 29. *ReX Draft Route Network*



Source: Transform. Regional Express (ReX) Transit Network. Available online: https://www.transformca.org/ReX (December 2019)

Sea Level Rise and Flooding

Moffett Park's proximity to water, via San Francisco Bay to the north and the shoreline provides some of the Plan Area's distinctive character. However, these proximal water sources also expose the Plan Area to flood hazards. As indicated by the Federal Emergency Management Agency (FEMA) and the U.S. Army Corp of Engineers (USACE) flood hazard mapping, the Plan Area is currently at risk of inundation from coastal and watershed sources. Climate change will worsen the flood hazard due to sea level rise, and possibly increased rainfall intensity. This section describes the existing flood hazards and identifies adaptation opportunities that could mitigate these hazards.

Flood Hazards

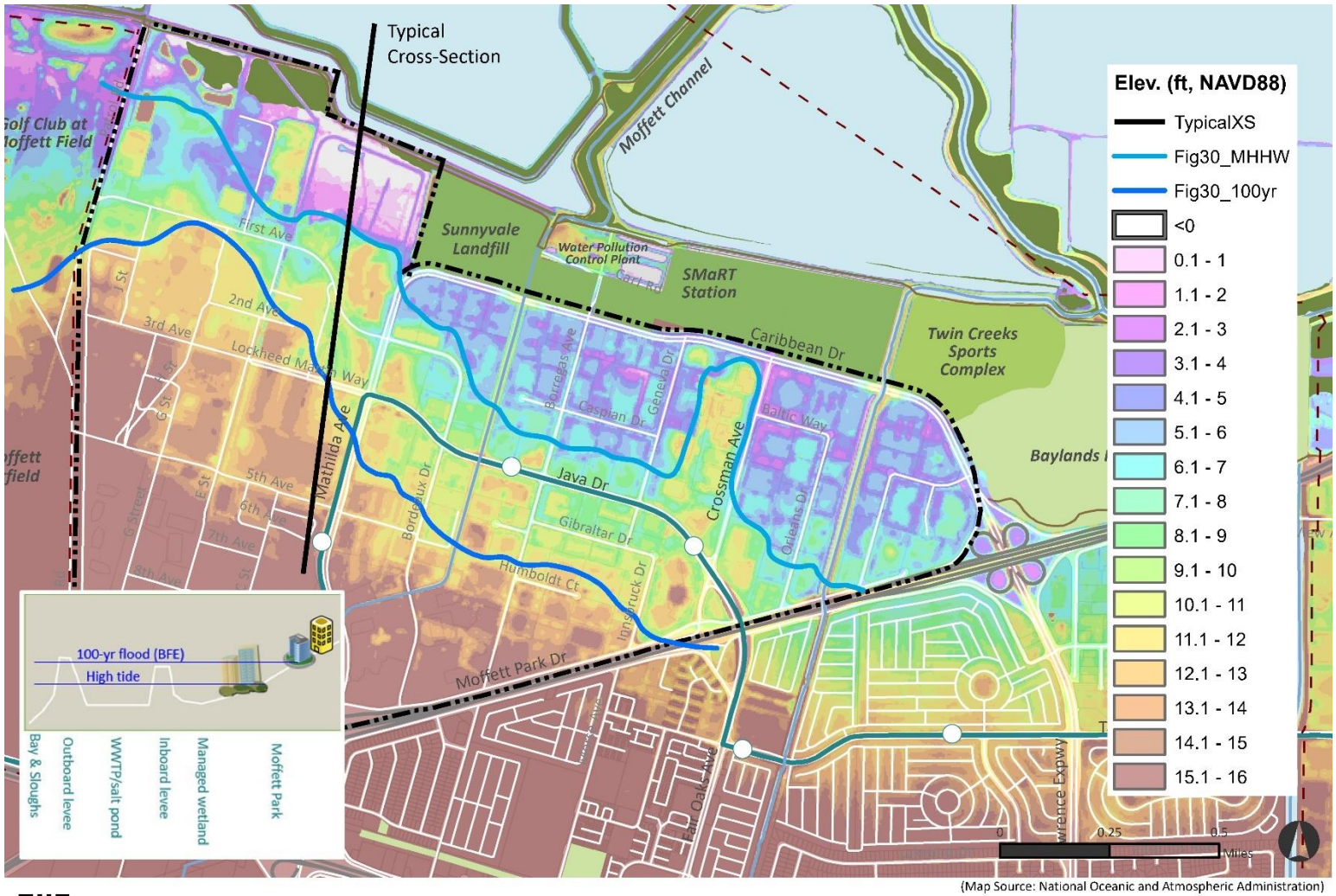
The Plan Area is relatively flat, with a gentle slope downwards from higher ground elevations in the south to lower ground elevations in the north (see ***Figure 30***). In fact, across the northern Plan Area, ground surface elevations are lower than the elevation of average daily highest tide. As such, the northern part of the Plan Area would be inundated each day if not for the existing system of levees, the landfill, and managed wetlands between the Plan Area and the Bay.* These elements block and store water that would otherwise enter the Plan Area. Although these elements are effective enough to impede all but the most extreme flood events, they do not meet the FEMA levee accreditation standards for levee crest elevation and geotechnical engineering. Hence, most of the Plan Area is mapped within FEMA's Special Flood Hazard Area for the 1% annual chance flood (or commonly referred to as the '100-year floodplain'). This flood hazard exposure has also been identified by flood mapping conducted by Valley Water and the U.S. Army Corps of Engineers as part of their Shoreline Study.

** Note: The existing levees and landfill, while not currently constructed to protect against more extreme events and sea level rise, serve as a framework and footprint for a system of flood barriers around the Plan Area to block inundation. Planning to improve the existing levee network is already underway. These levees are being designed to meeting FEMA accreditation requirements even with the addition of several feet of sea level rise as described in the following sections.*

Key Concept:

Due to its low elevation and proximity to water sources, the plan area is at risk for flooding from both coastal and watershed sources. Climate change could worsen flood hazard due to sea level rise.

Figure 30. Coastal Flood Hazard

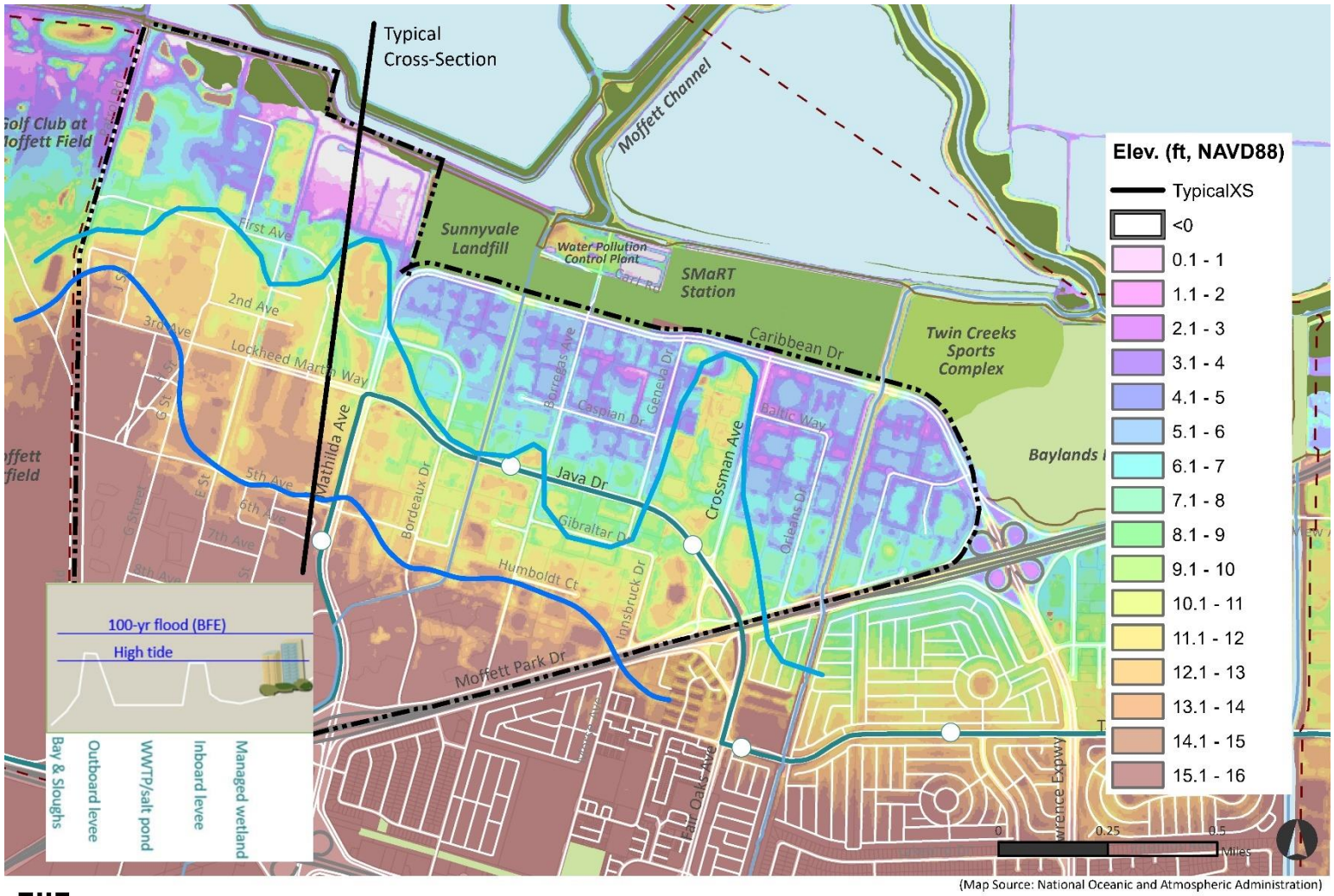


{Map Source: National Oceanic and Atmospheric Administration}

As the lowest and most bay-ward portion of the city, the Plan Area also hosts a complex network of stormwater and flood conveyance channels that drain much of the city's rainfall and runoff to the Bay. A network of storm drain intakes and pipes collect rainfall within the Plan Area. The City owns and manages this network in the eastern two-thirds of the Plan Area and Lockheed Martin owns and manages this network in the western third. These networks drain to flood conveyance channels, either by gravity or with assistance from a pump station. The flood conveyance channels, Sunnyvale East Channel and Sunnyvale West Channel, then convey water downstream to Guadalupe Slough, a natural channel connected to the Bay. The East Channel and West Channel, while large enough to convey substantial flood flows, are not currently designed to meet FEMA levee accreditation requirements. Winter storms can cause coincident stormwater discharge and Bay water level surge. Under these conditions, flood hazards can combine, flooding the Plan Area from stormwater, channel overtopping, and coastal sources.

The flood hazards threatening the Plan Area will increase with future climate change. Sea level rise, which is projected to occur with a high degree of confidence, will elevate all Bay water levels, making both infrequent storm surge events more severe and making nuisance flooding more frequent. ***Figure 31*** depicts the landward progression of inundation from the 1% annual chance coastal flood with three feet of sea level rise. Rising Bay water levels will also raise groundwater levels, which may disrupt buried infrastructure currently below the water table and eventually produce water above the ground surface. Sea level rise will further impede discharge to the Bay from the East and West Channels, backing up water levels in the channels themselves. Although projected modifications to precipitation with climate change are less certain, the possibility of increased rainfall intensity remains possible, which would further exacerbate flood hazard risk.

Figure 31. Coastal Flood Hazard with 3-feet of Sea Level Rise



{Map Source: National Oceanic and Atmospheric Administration)

Specific Plan Boundary
City of Sunnyvale Limit
Parcels
Freeways
VTA Light Rail
High Tide
100-Year Flood

Adaptation Opportunities

Although Moffett Park faces existing and growing flood hazards, the Plan Area also has some strengths, which can be integrated with adaptation opportunities to reduce the Plan Area's exposure to flooding.

The existing flood management infrastructure, as well as other land uses along the north boundary of the Plan Area and bay-ward, provide a starting point for adaptations to improve flood management. The existing levees and landfill, while not currently constructed to protect against more extreme events and sea level rise, serve as a framework and footprint for a system of flood barriers around the Plan Area to block inundation.

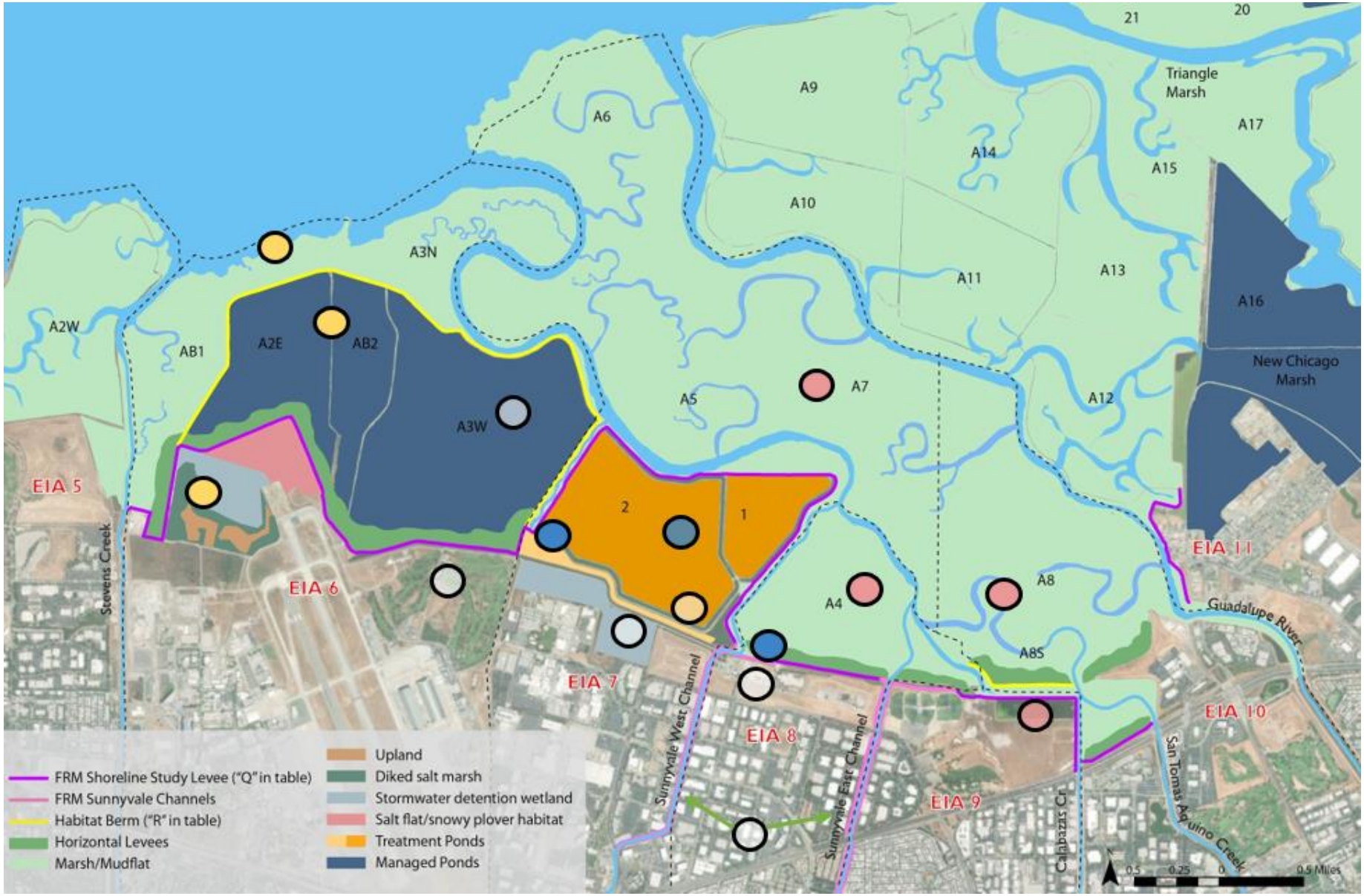
Planning to improve the existing levee network is already underway. Valley Water is collaborating with the USACE on the Shoreline Project to improve the levee system along the Bay (see ***Figure 32***). The engineering criteria being considered for this project include the levees' geotechnical stability, the 1% annual chance flood event, and sea level rise. The East Channel and West Channel Improvement Project, another Valley Water Project, will increase channel capacity and reduce flood hazards from these channels. These levees are being designed to meet FEMA accreditation requirements even with the addition of several feet of sea level rise.

Just northward of the Plan Area, former salt production ponds are now in owned by the U.S. Fish & Wildlife Service (USFWS) and Valley Water (see ***Figure 33***). The USFWS and Valley Water intend to restore tidal wetlands habitat in the salt ponds. This restoration will leverage the substantial suspended sediment in this portion of the Bay, which can support high rates of sediment accretion to naturally restore and sustain marshes in the salt ponds. This natural accretion could be supplemented with beneficial reuse of dredged sediment and upland sediment from construction projects. Restored marshes in the salt ponds could provide flood benefits in the form of wave attenuation and levee scour protection, and water quality polishing opportunities for wastewater treatment plant effluent. The ponds immediately north of the landfill are slated for use in the City's wastewater treatment process, but may be available for restoration in the long term.

Within the Plan Area, some open space could be used to enhance flood management. For instance, the managed wetlands in the northwest portion of the Plan Area could be used for expanded stormwater detention. In addition, the East and West Channels could be enlarged with bank setbacks that both increase wetland extent and flood conveyance capacity.

In 2020, the City plans to change its floodplain management code to enhance the flood resilience of buildings themselves. The code will be modified to add an additional foot of freeboard to the required lowest floor elevation.

Figure 32. Flood Management Strategy to Adapt to Sea Level Rise



Source: ESA (2019)

Figure 33. Flood Management Strategy to Adapt to Sea Level Rise

Source: ESA (2020)

Planning Uncertainty

Although planning for flood management to adapt to sea level rise is underway, this planning involves several sources of uncertainty. Multiple local, State, and Federal agencies are involved, as landowners and regulators, and the perspectives and management objectives of each agency will need to be considered. While the existing levees provide a starting footprint for flood management infrastructure, improving this infrastructure will increase the land needed for right-of-way and also impact habitat and recreation via height increases. Defining the exact scope and magnitude of flood management improvements will depend, in part, on the risk tolerance of the City, its residents, and its businesses. This risk tolerance has not yet been defined, nor has the benefits of flood management for flood hazard reduction and ecosystem services been quantified.

Developed areas immediately east and west of the Plan Area are also exposed to flood hazards from the Bay. Since there is no topographic relief separating these areas from the Plan Area, flooding in these areas threaten Moffett Park as well. Since building flood barriers along all but the north Plan Area boundary would be very difficult, the Plan Area's protection from flooding also relies on the flood management actions of its neighbors. These neighboring areas are also part of Valley Water and USACE's Shoreline Project, albeit in different planning zones, which includes the Federal government's ownership of Moffett Airfield.

Funding to implement all of the proposed adaptations for flood management has not yet been identified. Public support for this type of multi-objective flood management infrastructure has been encouraging, with the County's passage of Measure B (Safe, Clean Water and Natural Flood Protection Program) that is helping to fund the East Channel and West Channel Improvement Project and Bay Area-wide Measure AA (San Francisco Bay Clean Water, Pollution Prevention and Habitat Restoration Program) to support integrated habitat and flood improvements. State legislation (e.g. SB-30, Insurance: climate change) and bonds (e.g. propose ballot measure on California Bonds for Climate Impact Mitigation Initiative) may also provide funding opportunities. However, funding for flood management needs to compete with other regional planning priorities (e.g. transit) and natural hazards growing with climate change (e.g. wildfire).

Infrastructure

Water Supply System

The existing domestic water distribution system, as taken from the 2013 Moffett Park Specific Plan, is shown below in ***Figure 34.*** The majority of the public system has pipe diameters of 12 inches with the exception of the cul-de-sacs and the line running to the Water Pollution Control Plan (WPCP). The potable (domestic) water system is shown in blue, with recycled water system shown in purple.

Sanitary Sewer System

Per the 2013 Moffett Park Specific Plan, the Plan Area is located at the northerly end of the City's drainage system near the WPCP and is served by the interceptor sewers from three of the five primary sewer drainage areas. The total carrying capacities of the three primary interceptor sewers serving Moffett Park are:

- Borregas Sewer: 17.0 million gallons per day (mgd)
- Lockheed Martin Corporation Sewer: 4.9 mgd
- Lawrence Sewer: 22.0 mgd

Existing flow data generated within Moffett Park indicates an existing flow rate of 2.3 million gallons per day (mgd). During peak daytime periods, about 4.2 mgd of sewage can be pumped from the Lawrence Sewer to the Borregas Sewer.

Sewer lines in Moffett Park range from 8 to 48 inches in diameter. Residual capacity in the sewers are not known. The existing sewer system is shown below in ***Figure 35.***

Figure 34. Water Distribution System

Source: BKF (2020)

Figure 35. Sewer System

Source: BKF (2020)

Storm Drainage

Santa Clara Valley is essentially an active flood plain that has been severely altered by human activity. It is still subject to periodic flooding from excessive rain. Flooding could also occur in the event of tidal flooding, dam failure, tsunamis, or a combination of these events. The Plan Area is served by two separately owned and operated drainage systems: the City of Sunnyvale and the Lockheed Martin Corporation (LMC). Additionally, Valley Water maintains the channels of Calabazas Creek, Stevens Creek, East, West and El Camino Flood Control Channels. These channels coupled with LMC and the City's storm drains take the majority of surface runoff to the Bay.

The Plan Area can be divided into the following five drainage basin:

1. **LMC Basin:** consists of the area generally west of Mathilda Avenue to the Moffett Field Golf Course boundary. The LMC basin drains into four LMC detention ponds where it is pumped into the West Side Channel.
2. **Bordeaux Basin:** starts at the east side of Mathilda Avenue and extends approximately 300 feet east of the West Side Channel. The principal drain for this basin parallels the West Side Channel south of Java Drive to Carl Road and then to Pump Station No. 1.
3. **Borregas Basin:** a storm drain in Borregas Avenue conveys drainage from the area east of the West Side Channel to west side of Geneva Drive. The Borregas line flows north and combines with the Bordeaux drain at Carl Road and then flows east in an open channel to Pump Station No. 1.
4. **Crossman Basin:** extends from approximately Geneva Drive east to the Valley Water Flood Control Channel. A drain in Crossman and an open channel parallel to the Valley Water Channel flow north across Caribbean Drive and then west into Pump Station No. 1.
5. **Moffett Park Drive Basin:** consists of the area between the east side of the Valley Water Channel and Caribbean Drive. This basin is drained through a pipeline in Caribbean Drive that discharges into the Valley Water Channel.

Pump Station No. 1 receives the drainage of Bordeaux, Borregas and Crossman Basins. The pump lifts storm flows above the levee system and discharges to a slough that flows into the San Francisco Bay. Pump Station No. 1 is equipped with two discharge pipes, 27-inch and 36-inch diameter in size. The discharge pipes are not equipped with flap gates or other devices to prevent backflows. (See ***Figure 36***)

The Moffett Federal Airfield occupies 1,108 acres of land west of LMC, outside of the Plan Area boundary. An undetermined portion of the storm drainage from this site is pumped into Moffett Channel that runs along the northern boundary of the LMC and discharges into the eastern LMC pond.

Figure 36. Stormwater System

Source: BKF (2020)

Natural Gas and Electricity

Natural gas and electric power are supplied to the Moffett Park Specific Plan Area through Silicon Valley Clean Energy through Pacific Gas and Electric Company (PG&E) under a franchise agreement with the City of Sunnyvale. Existing gas and electric facilities are capable of providing services to all areas in the City of Sunnyvale, including Moffett Park. Future additions to the existing gas and electric power system can be designed and installed within twelve months of receipt of individual project development plans.

Recycled Water System

The City of Sunnyvale has implemented a city-wide reclaimed water project in several phases. The recycled water system originates in the Moffett Park Specific Plan Area and has its most extensive presence in Moffett Park. It meets non-restrictive irrigation use criteria and is suitable for uses such as salt-tolerant agricultural and landscape irrigation, and toilet and urinal flushing. The recycled water system is recognized as a valuable City asset. In the future, the recycled water system is envisioned as a strategic component of implementing sustainable design techniques on a project level.

Phase I, now complete, is a 24-inch pipeline that carries treated effluent from the Water Pollution Control Plant (WPCP) to serve LMC, Moffett Field Golf Course, and the Sunnyvale Golf Course. Phase IIa, b, also complete, consists of a series of pipelines to serve other parks and industrial areas in the northern part of the city, mainly the Moffett Park area. The existing recycled water system is shown below in ***Figure 37***.

Figure 37. Recycled Water System

Source: BKF (2020)

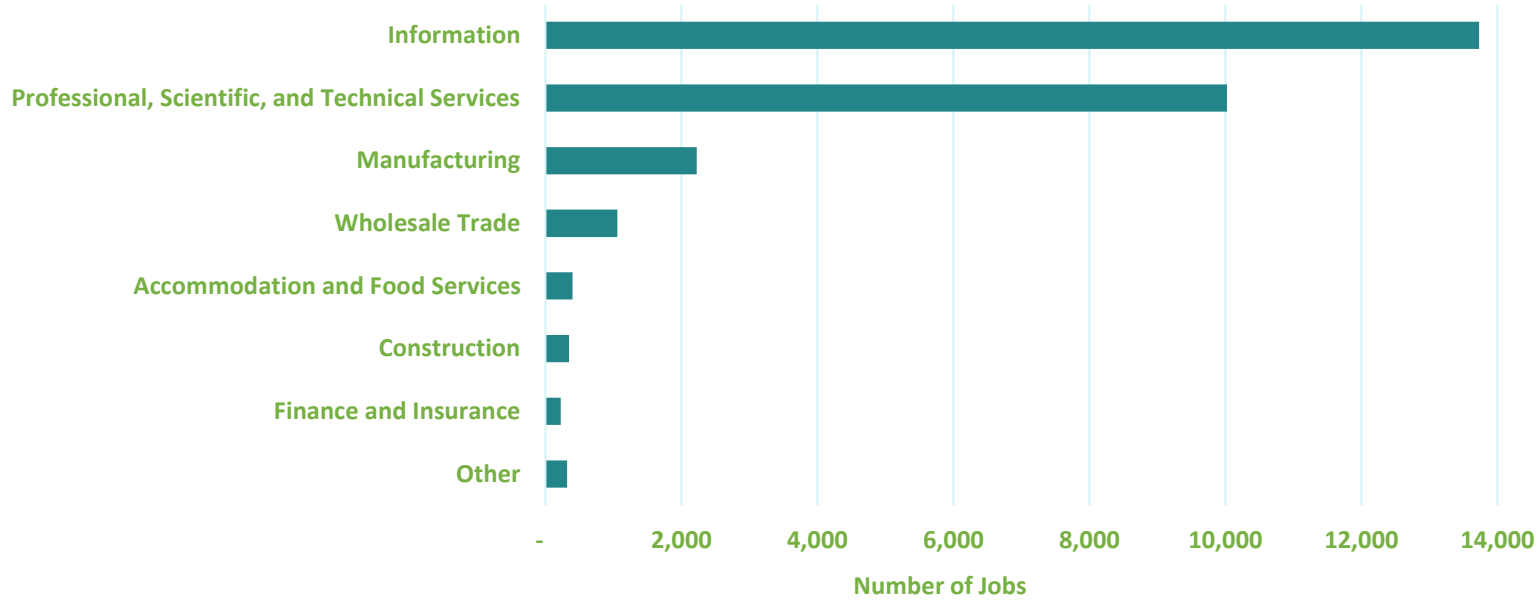
Economic and Market Analysis

Economic Diversity and Business Mix

Jobs in the Moffett Park Specific Plan Area are heavily concentrated in industries that reflect the area's location within the innovation-focused Silicon Valley economy. As shown in ***Figure 38***, nearly 83% of jobs are at businesses engaged in the tech-oriented "Information" (Google, Amazon) and "Professional, Scientific, and Technical Services" (Juniper Networks, NetApp, Lockheed Martin) sectors.

The Plan Area also includes a diverse variety of jobs in its stock of manufacturing, light industrial, and "flex" buildings. For example, approximately 8% of the Plan Area's jobs are companies in the manufacturing industry. Manufacturing companies in Silicon Valley are typically engaged in high-tech advanced manufacturing and research and development (R&D) activities, yet compete for a limited stock of industrial and flex spaces that can host their operations and infrastructure.

Figure 38. *Moffett Park Plan Area Employment by Industry (2019)*



Source: City of Sunnyvale (2019); Strategic Economics (2019)

Figure 39 shows that the Plan Area also includes a large share of small businesses. Despite the presence of many large technology firms throughout the Plan Area, 74% of all businesses are considered small businesses (defined as fewer than 50 employees). These smaller businesses typically operate out of relatively small buildings, or multi-tenant buildings.

Figure 39. Moffett Park Share of Large and Small Businesses (2019)

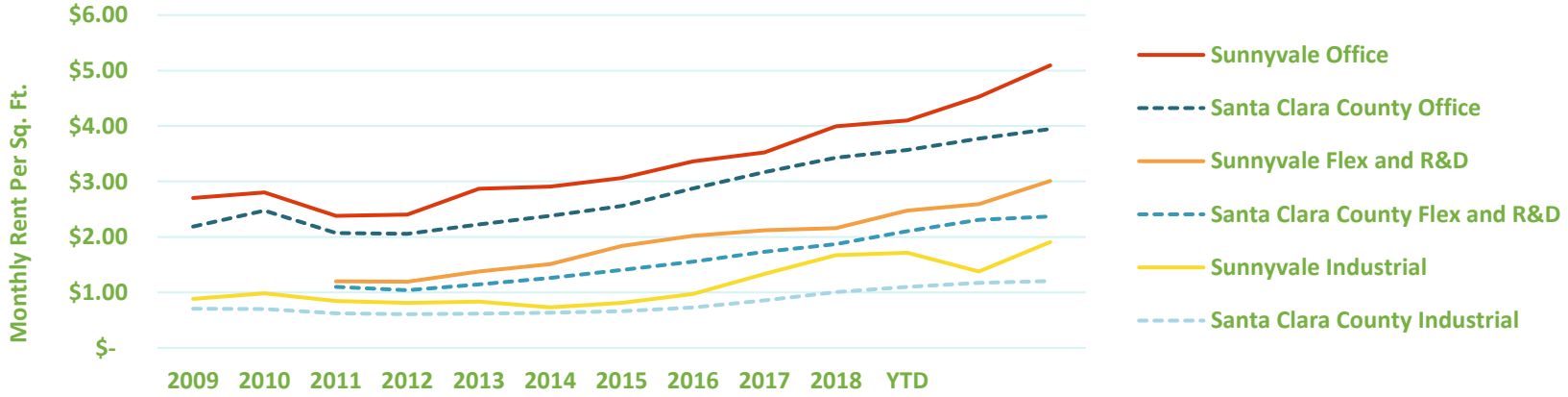
Number of Employees	Number of Establishments	Share
50 or greater	44	26%
Less than 50	128	74%
Total	**172**	

Source: City of Sunnyvale (2019); Strategic Economics (2019)

Office/R&D and Industrial Market Conditions

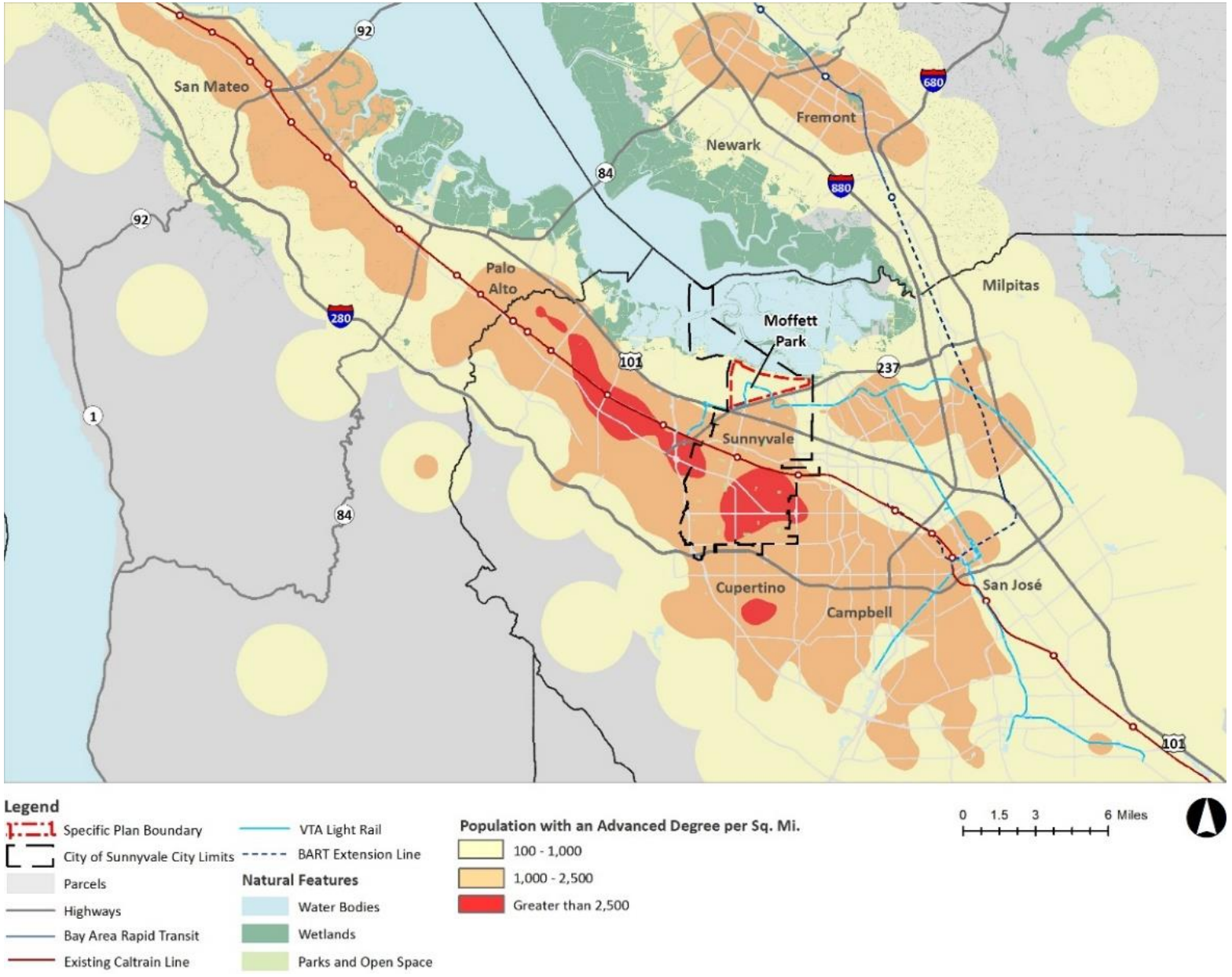
Strong demand exists for office and R&D space throughout Sunnyvale and Santa Clara County, as indicated by high overall rents and increasing asking rents over time (see *Figure 40*). This demand for office and R&D space is largely driven by the concentrated presence of high-tech companies and the proximity and access to a highly-educated workforce (see *Figure 41*). Furthermore, Moffett Park is positioned to attract office and R&D development interest based on the Plan Area's existing employment concentration, access to workers via SR 237 and transit, and the area's proximity to San Jose International Airport.

Figure 40. Average Rents by Product Type, Sunnyvale and Santa Clara County (2009-2018)



Source: Costar (2019); Strategic Economics (2019)

Figure 41. Density of Population with an Advanced Degree (2017)

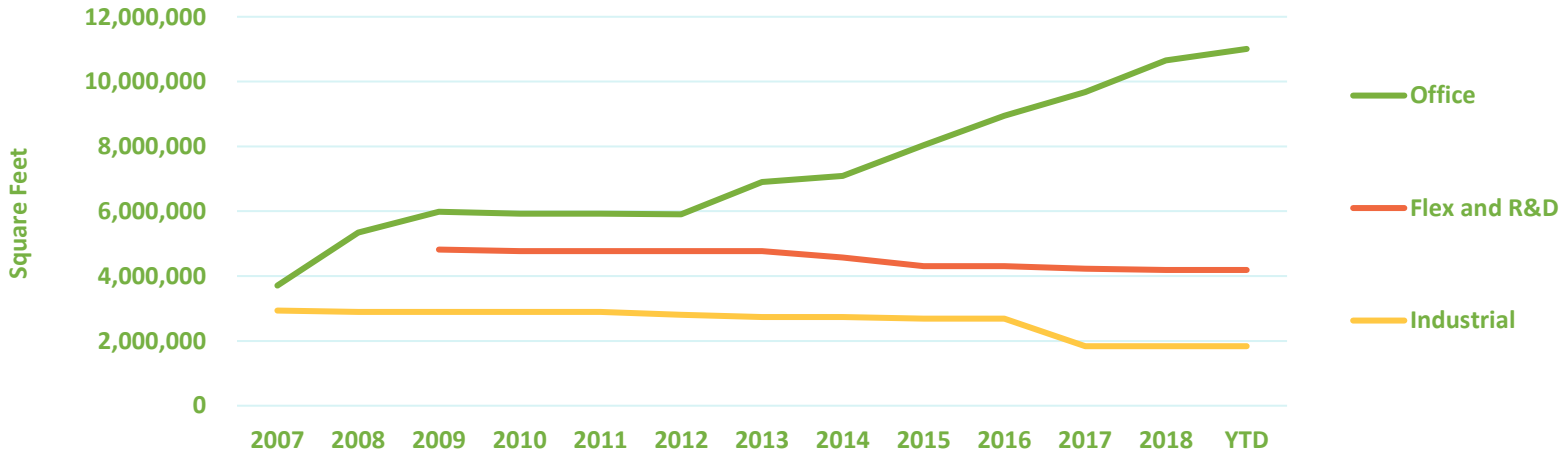


While the Plan Area is likely to attract significant development interest in office and R&D space in the coming years, this investment is contingent on the ongoing interests and efforts of major landowners and companies, the need for additional infrastructure to support higher-intensity development, and sustained economic growth at the regional scale.

Demand is also strong for light industrial and flex space in both Moffett Park as well as Silicon Valley. The inventory of these properties however is declining due to redevelopment or conversion of these spaces into office uses: total industrial square footage alone is down 25% since 2009, with R&D falling 16% (see ***Figure 42***). This downward trend however has been complemented by sustained growth in total office space within Moffett Park, as many industrial sites are being repurposed and leased as office space.

Companies requiring industrial or flex space generally do not pay the same high rents that office space attracts, making such uses less attractive to both developers and property owners. Developers are unlikely to construct significant light industrial or flex spaces in the Plan Area moving forward, but Moffett Park could potentially incorporate policies seeking to preserve existing building uses. Retention of non-office spaces would help maintain the diversity of Moffett Park's businesses and types of business activities.

Figure 42. *Moffett Park Building Inventory by Product Type (2007-2018)*



Source: Costar (2019); Strategic Economics (2019)

Housing Market and Affordability

Substantial demand for housing exists in Silicon Valley, and rapidly increasing rents and housing prices have created a need for affordable housing. However, the cost to construct new housing – including factors such as materials, labor, fees, and land – has risen dramatically in recent years. As a result, housing projects in Silicon Valley are increasingly difficult for developers to deliver despite high rents and sales prices.

Regardless of these challenges, the Plan Area is likely to be a highly desirable location for future housing development due largely to the area's convenient access to jobs. Moffett Park is located near a freeway, several major roadways, and features several light rail stations that provide varied access to the Plan Area for workers, visitors, and future residents alike.

Affordable Housing Needs

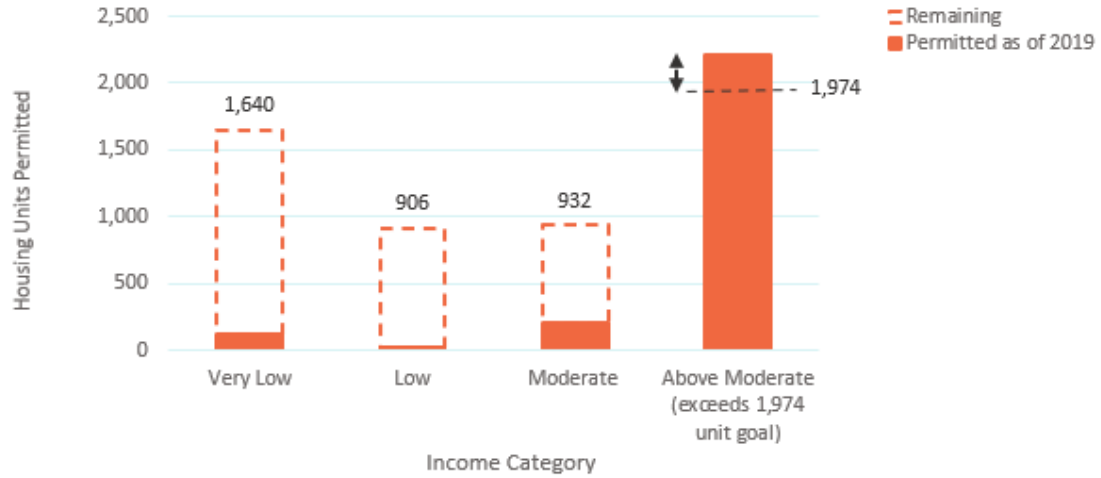
As with all California cities, Sunnyvale is legally required to implement policies and programs to expand housing supply meeting the City's "fair share" of existing and future housing needs for all income groups. As shown in ***Figure 43***, the number of housing units permitted for construction by Sunnyvale during the 2015-2023 period has met over 80% of the City's Regional Housing Needs Allocation (RHNA) for households earning relatively high "above moderate" incomes. However, City policies and programs have not resulted in substantial construction of new housing units in the lower income categories. These income-restricted housing units are challenging to deliver since additional funding (from a variety of public and private sources) is required to cover the gap between development costs and the rents or sales prices paid by residents.

As an area positioned to undergo substantial growth backed by large property owners, the Plan Area creates an opportunity to add additional income-restricted housing units in Sunnyvale. Additionally, housing legislation recently passed by the State may help to create new opportunities to support affordable housing.

Key Concept:

The Plan Area creates an opportunity to add additional income-restricted housing units in Sunnyvale, and constructing units affordable to very low- and low-income households could help the City meet its RHNA targets.

Figure 43. *Sunnyvale Regional Housing Needs Allocation Progress Report (2019)*



** Based on 2015-2023 RHNA Targets*
Source: City of Sunnyvale (2020); Strategic Economics (2020)

Retail Market Conditions

Demand for retail space within Moffett Park is currently highly limited since the Plan Area consists solely of commercial and industrial space rather than housing. The Plan Area's large worker population does generate limited daytime demand for retail, primarily focused on dining and some limited services and shopping needs. However, even this demand is further constrained by the existence of on-site amenities provided by major employers for their workers, including cafeterias, cafes, and fitness facilities.

Demand for retail space would increase if additional office and a substantial number of housing units are added to the Plan Area. This additional demand would grow gradually as housing and office space increase over time, creating the need to identify and preserve sites for eventual construction of retail space. Businesses in new retail space will likely largely consist of day-to-day neighborhood amenities and services such as restaurants, coffee shops, gyms, and food stores since large-scale "destination" retail needs are already served by stores in nearby areas such as Downtown Sunnyvale.

Key Concept:

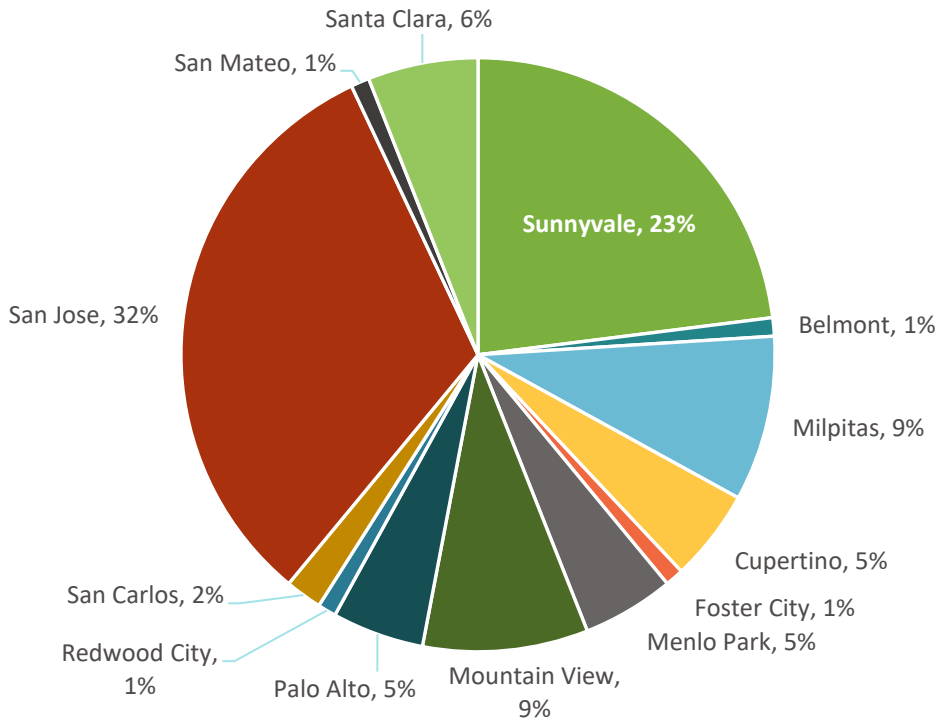
Current demand for retail space in Moffett Park is limited, but the addition of office and a substantial number of housing units in the Plan Area would increase the demand for neighborhood-serving retail and services.

Hotel Market Conditions

Strong demand for lodging exists in the Moffett Park Specific Plan Area and the surrounding region, with hotel occupancy rates at a high 80% - a figure well above the San Francisco-San Mateo area. Hotel demand in Silicon Valley and Moffett Park is primarily generated by business travel. However, a reliance on business travelers also results in limited weekend demand at area hotels.

Future hotel development activity may be constrained by already-planned increases to the hotel supply. As of March 2019, there were 80 proposed hotels and five expansions in the Silicon Valley area cities shown in ***Figure 44***, totaling about 12,000 rooms and representing a 39% increase in Silicon Valley's hotel supply. Nearly a quarter of these 12,000 new rooms were in hotels proposed for development in Sunnyvale. Within the Plan Area itself there are 350 rooms under construction at two new hotel projects, and an additional 185 rooms are likely to be added through renovation and reconstruction at the existing Sheraton.

Figure 44. *Hotel Development Pipeline in the Greater Silicon Valley Area (by share of rooms) (March 2019)*



Source: STR Global, HVS (2018); Hotel Online (2019); Strategic Economics (2019)

Infrastructure, Funding, and Fiscal Considerations

As described throughout this document, Moffett Park's current infrastructure is designed to accommodate the Plan Area's existing, relatively low-density mix of office and industrial uses. Potential introduction of additional commercial space or housing will create needs for new infrastructure and public amenities or facilities that require land and funding for construction.

Development activity in Moffett Park could potentially generate new revenues from fees or a local "district-based" funding mechanism in which property owners contribute toward capital costs for new infrastructure. These fees and charges will, however, increase costs of development and potentially slow the pace of investment and change.

Additional funding for Sunnyvale's ongoing operations and maintenance needs – such as park, police, fire, and public works services – would also be generated by increased property and sales/use taxes associated with higher-density development. However, new development in Moffett Park would also increase Sunnyvale's service costs. Additional challenges may include coordination with owners of privately maintained infrastructure in Moffett Park, and the costs of addressing hazards such as sea level rise.

Key Concept:

The potential addition of commercial space and/or housing in Moffett Park will create needs for new infrastructure and public amenities or facilities that require land and funding for construction, as well as increased service costs.

3. Precedent Studies

As the City of Sunnyvale begins to envision a new landscape for Moffett Park, a study of nearby regionally specific plans and precedent urban environments offers a fresh perspective on land use opportunities, open space considerations, and possibilities for balancing commercial facilities with residential spaces and other community needs.

These precedents lend both a quantitative as well as a qualitative perspective for the future development of Moffett Park's urban and environmental landscape. While it's important to consider matters of building square footage, transportation networks, and dwelling units, it's equally vital to factor qualitative experiences such as community character, pedestrian experience, access to transit and recreational spaces. Each precedent offers a different combination of urban design, placemaking, and land use strategies to study and analyze.

Precedent Sites Overview

	Acreage (gross)	Residents	Dwelling Units	DU/acre (net)	Office	Office sf/acre (net)	Industrial	Retail	Institutional	Open Space
Moffett Park	1,156 a	0	0	0	4.8 million sf	-	11.2 million sf	-	-	-
Mission Bay	303 a	10,900	6,514 du	124 du/a	4.4 million sf	140,000 sf/a	4.9 million sf	420,000 sf	70 a	49 a
Warm Springs	879 a	10,500	4,000 du	42 du/a	2.6 million sf	87,000 sf/a	10.3 million sf	175,000 sf	8 a	4 a
North Bayshore	649 a	18,000	9,850 du	119 du/a	4.8 million sf	86,000 sf/a	5 million sf	192,000 sf	-	42 a
San Jose	792 a	23,161	7,641 du	36 du/a	7.3 million sf	76,000 sf/a	460,000 sf	6.6 million sf	105 a	58 a
Portland	1,087 a	23,062	16,221 du	210 du/a	33 million sf	366,000 sf/a	1.2 million sf	17.8 million sf	52 a	52 a
San Diego	1,510 a	26,941	22,181 du	22 du/a	7.7 million sf	165,000 sf/a	4 million sf	52 million sf	190 a	66 a

Mission Bay, San Francisco (Plan adopted 1998)

Currently under construction, Mission Bay is a comparatively compact neighborhood that for decades remained largely unoccupied industrial land and surface parking. The Plan Area features an incredible range of land uses and community resources

Anchored by large institutions such as UCSF Medical Campus, the district also contains a significant variety of recreational and green spaces that cater to new residents in recently-completed residential complexes. Construction of several million new square feet of leasable office space is ongoing, while regional attractions like Chase Center Arena have already begun drawing in people from across the Bay Area.

Figure 45. *Mission Bay Land Use and Plan Area*

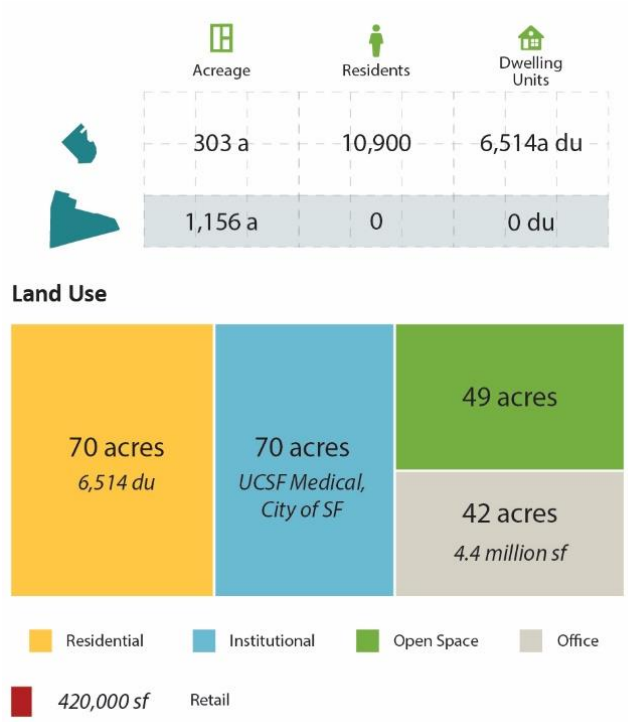


Figure 46. Mission Bay Block Structure

Sample Block 1:

215 ft x 400 ft block

8-story mixed use + 5-story residential

- 15,000 sf commercial space
- 315 dwelling units

Retail Density: 7,614 sf/a

Residential Density: 160 du/a

Sample Block 2:

200 f x 400 ft block

2, 16-story residential towers over 6-story podium

- 263 dwelling units

Residential Density: 143 du/a

Figure 47. *Mission Bay Experience*

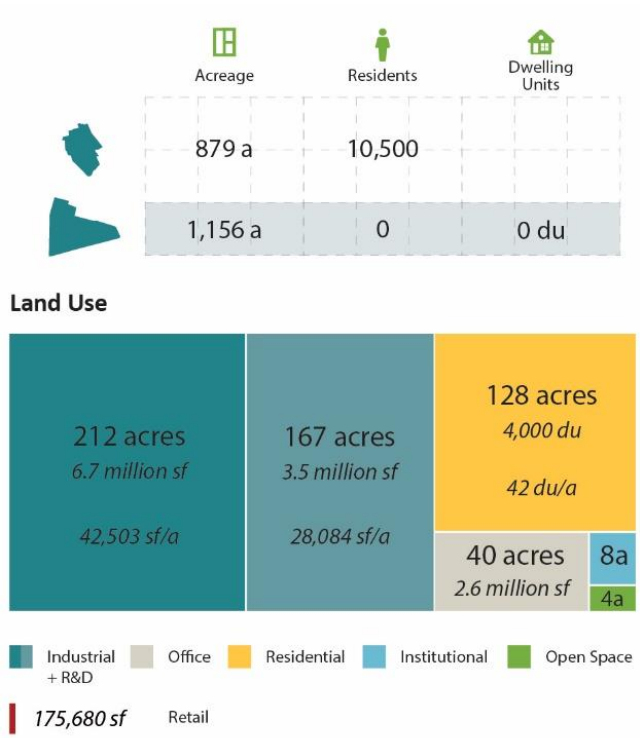
Source: Google, City and County of San Francisco Office of Community Investment and Infrastructure (SF OCII) (2019)

Warm Springs, Fremont (Plan adopted 2017)

The Warm Springs/South Fremont Community Plan was completed in 2014, providing a direction to convert a largely industrial area into a new community featuring significant research and development facilities, office spaces, and housing options closely accessible to BART.

While new housing projects are already being completed that offer residents nearby access to transit, the City of Fremont also anticipates rapid construction of office facilities and research space that will cater to a host of technology, scientific, and innovation businesses. These residential and commercial projects, however, are also included with plans for open spaces, community resources including a new school, and improved pedestrian and bicycle infrastructure.

Figure 48. *Warm Springs Land Use and Plan Area*



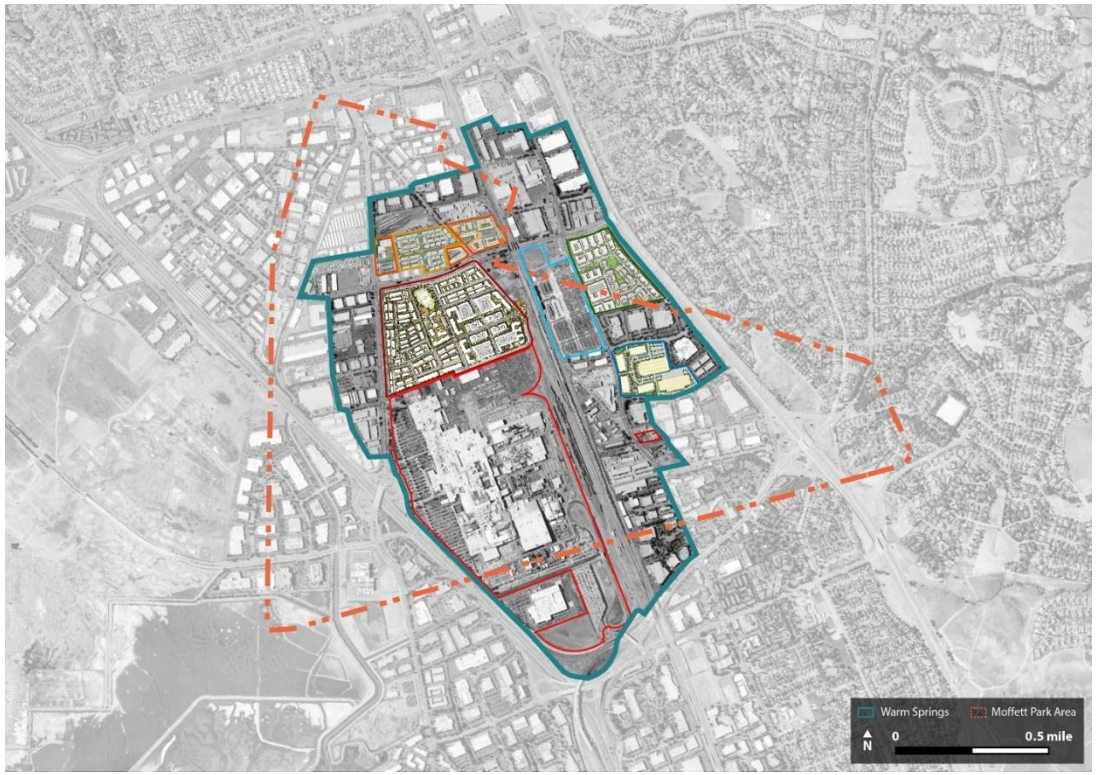


Figure 49. *Warm Springs Experience*

Source: Warm Springs Community Plan (2014); Warm Springs Technology Center Master Plan (2017); Warm Springs TOD Village (2015)

North Bayshore, Mountain View (Plan adopted 2017)

The North Bayshore Plan Area contains many of the same characteristics as Moffett Park: several large corporate campuses adjacent to residential areas, a regional highway serving as a buffer area, and close proximity to several ecologically sensitive habitats. The City of Mountain View recently completed an extensive study that anticipates significant growth across this planned area, and constitutes a unique parallel case study with Moffett Park's development.

In additional to careful consideration of physical development standards, the Precise Plan also provides detailed requirements and incentives to meet affordable housing goals, sustainability requirements, and address traffic congestion in addition to demands for office and space.

Figure 50. North Bayshore Land Use and Plan Area

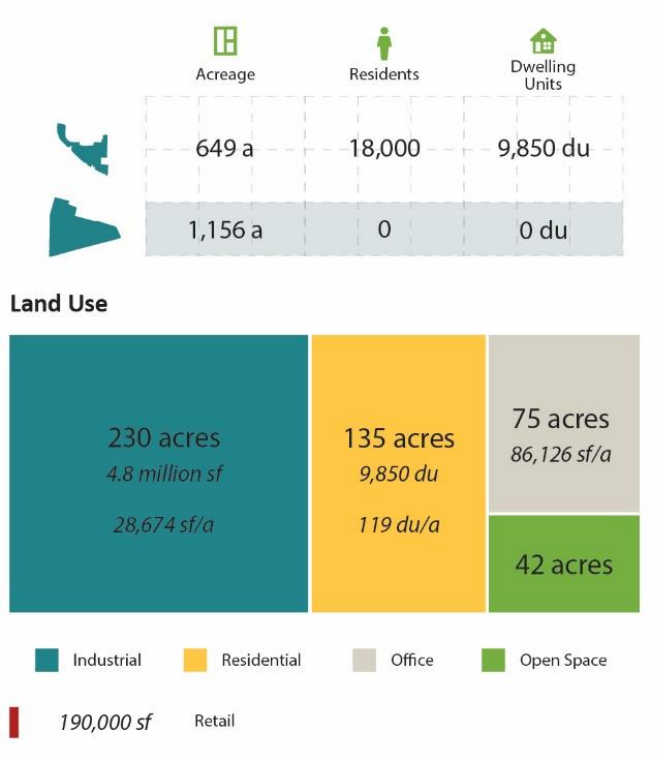


Figure 51. North Bayshore Experience

Source: North Bayshore Framework Plan and Bonus FAR Requalification Request (2018); North Bayshore Precise Plan (2017)

San Jose, California

Located just 15 miles from Moffett Park, the downtown San Jose area offers a diverse mix of urban uses within a rapidly growing downtown area. Especially over the last several years, the area has seen a heavy volume of new construction of both residential and commercial buildings, yet has managed to maintain a clear distinction between a denser downtown core and quieter residential neighborhoods. Residents will find a variety of housing options ranging from low-density single-family homes to new medium- and high-rise apartment buildings.

Downtown San Jose also features a number of institutional spaces that make it a regional draw and national nexus, with a public university, several museums, and convention space.

Figure 52. *San Jose Land Use and Plan Area*

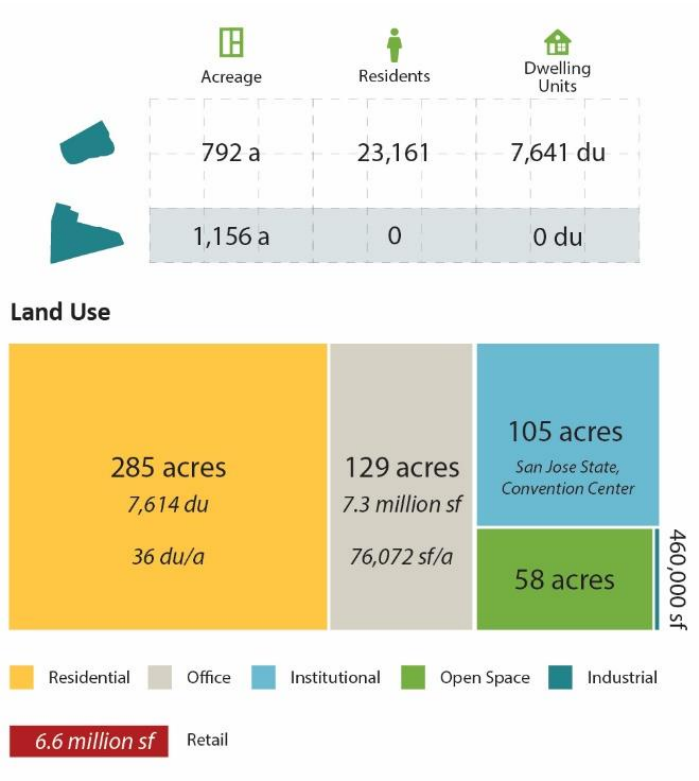


Figure 53. San Jose Block Structure

Sample Block 1:

275 ft x 575 ft block
14-story tower + 6-story mixed-use
- 416,043 sf commercial space
- 96 underground parking spaces

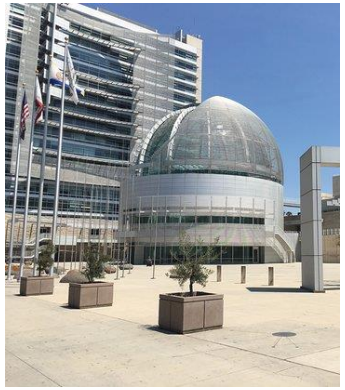
Retail Density:
115,567 sf/a

Sample Block 2:

275f x 575 ft block
19, 1-2 story residential buidlings
- 158 residents, 49 dwelling units

Residential Density:
14 du/a

Figure 54. *San Jose Experience*



Source: Google, Kier + Wright, SPUR, TripAdvisor (2019)

Portland, Oregon

With a nearly identical land area as Moffett Park, the downtown area of Portland, Oregon is immediately recognizable by its network of square blocks that host incredibly higher densities in both residential as well as commercial spaces than might be expected. Each block measures 200 feet on each side, and caters to a broad spectrum of building types ranging from high-rise office buildings to open parks and plazas that serve as centralized recreational space.

The consistency of the block structure allows for an integrated look and feel for both pedestrians, vehicles, and public transit services across the entire district, as Portland has also been careful in incorporating elements of urban design, landscape features, and greenery to complement the variation in building form.

Figure 55. Portland Land Use and Plan Area

Figure 56. Portland Block Structure

Sample Block 1:

200 ft x 200 ft block
6-story mixed-use buildings
- 88 dwelling units
- 3,000 sf retail space

Retail Density: 2,754 sf/a

Residential Density: 96du/a

Sample Block 2:

200 ft x 200 ft block
19-story tower + 5-story mixed-use
- 133 dwelling units
- 20,000 sf commercial space

Retail Density: 18,200 sf/a

Residential Density: 145 du/a

Figure 57. Portland Experience

Source: Google, Kearny Plaza Apartments, Flickr, Portland Condos LLC (2019)

San Diego, California

San Diego's downtown area features a similar stretch of waterfront area to Moffett Park that contains a variety of public spaces, such as parks, retail centers, and civic spaces. While Moffett Park does not feature the same harbor or marina infrastructure, San Diego provides a host of opportunities for people to access the waterfront area and positions the bay side as an attraction.

Further inland is a mixture of high-rise residential and office buildings that share similar heights, creating a skyline that is not exclusively dominated by commercial spaces. A light rail line also runs along the promenade that connects the downtown to broader regional infrastructure and surrounding neighborhoods, similar to the Moffett Park's VTA line.

Figure 58. *San Diego Land Use and Plan Area*

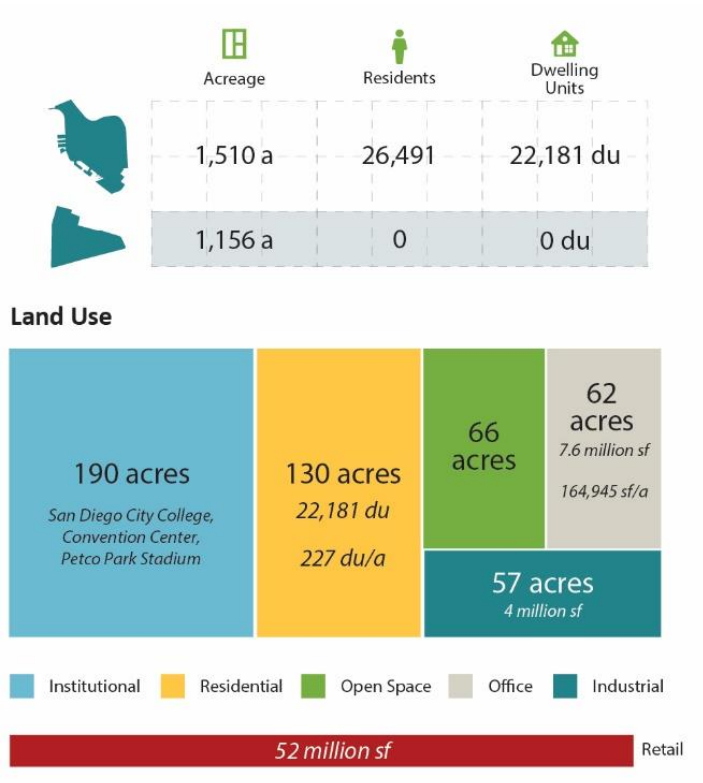


Figure 59. San Diego Block Structure

Sample Block 1:

235 ft x 350 ft block
6 story mixed-use buildings
- 340 residences, 230 dwelling units
- 44,260 sf retail space

Retail Density:
23,542 sf/a

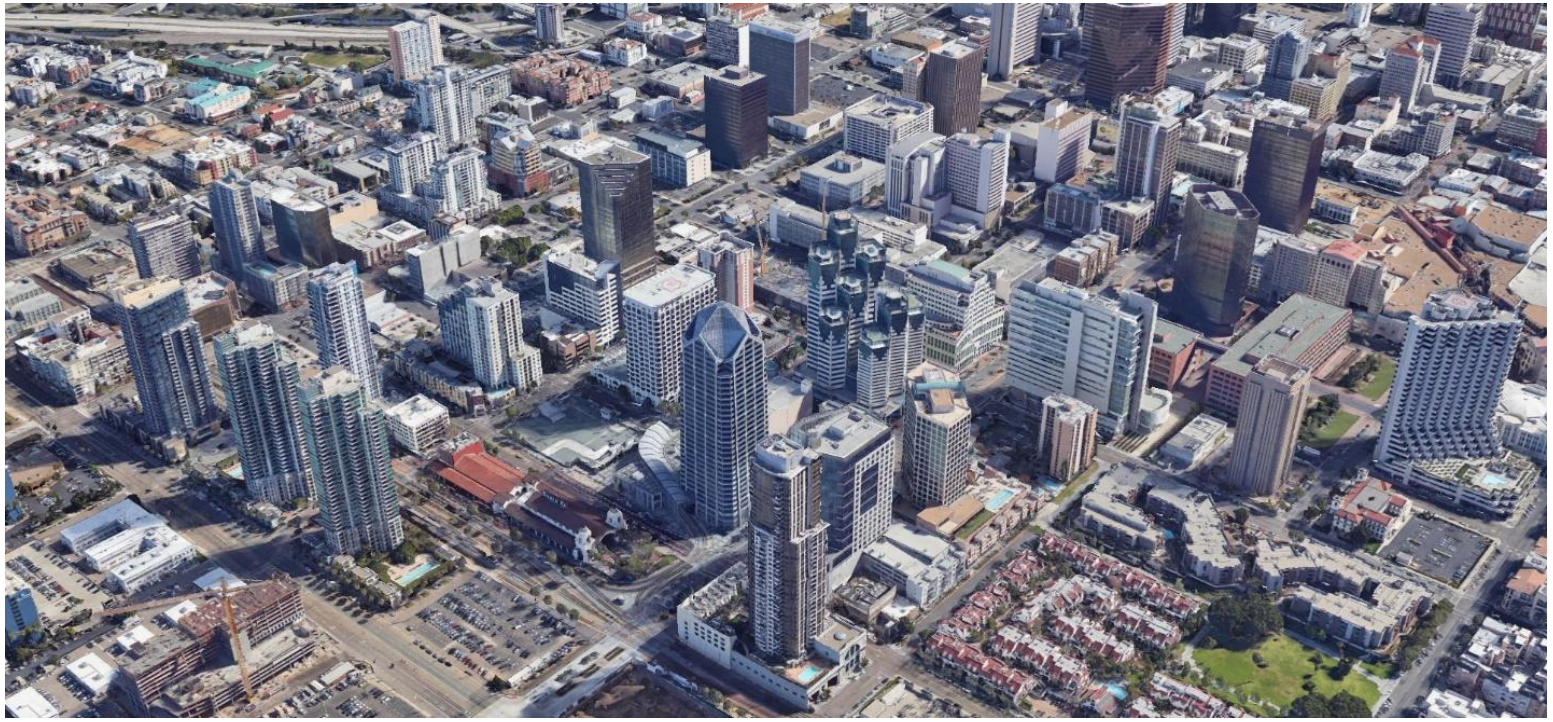
Residential Density:
122 du/a

Sample Block 2:

235 ft x 350 ft block
30-story tower + 7-story institutional + 21-story hotel
- 264 hotel rooms
- 250,000 sf commercial space

Retail Density:
138,000 sf/a

Figure 60. San Diego Experience



Source: Google, San Diego Tribune, AFAR (2019)