



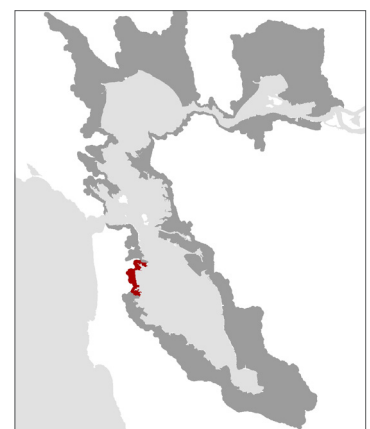
Bayview-Hunter's Point is on the right, with the demolished Candlestick Park baseball stadium on the left and the abandoned Hunter's Point Naval Base on the right. Photo by Wayne Hsieh is licensed under CC BY-NC 2.0.

## Local Assessments Section L: **YOSEMITE-VISITACION** *Operational Landscape Unit*

### JURISDICTIONS WITHIN THIS SECTION

*San Francisco County*  
*San Mateo County*

*San Francisco*  
*Daly City*  
*South San Francisco*  
*Brisbane*



# HOW TO USE THE LOCAL ASSESSMENTS



## WHO IS THIS FOR?

Anyone interested in understanding their local shared vulnerabilities to flooding and sea level rise.

### Local jurisdictions

- Cities
- Counties
- Special Districts
- Utilities Providers

### Stakeholder Groups

- Non-profits/NGOs
- For-profits/Private
- Associations
- Interested Parties

### General Public

- Residents

### State/Regional

- Caltrans
- MTC/ABAG

## HOW IS IT ORGANIZED?



Local assessments are organized by four regional systems assessed: Transportation, Vulnerable Communities, Priority Development Areas (PDAs), and Priority Conservation Areas (PCAs).

Each part of the local assessment provides varying levels of details at three scales: 1) Operational Landscape Unit (OLU), 2) Individual Descriptions, and 3) Shared Stories of Vulnerabilities in Focus Areas/Areas of Impact. This assessment can be reviewed in whole, or individual parts can be reviewed separately depending on interest and level of detail desired.



## WHAT'S IN THIS ASSESSMENT?

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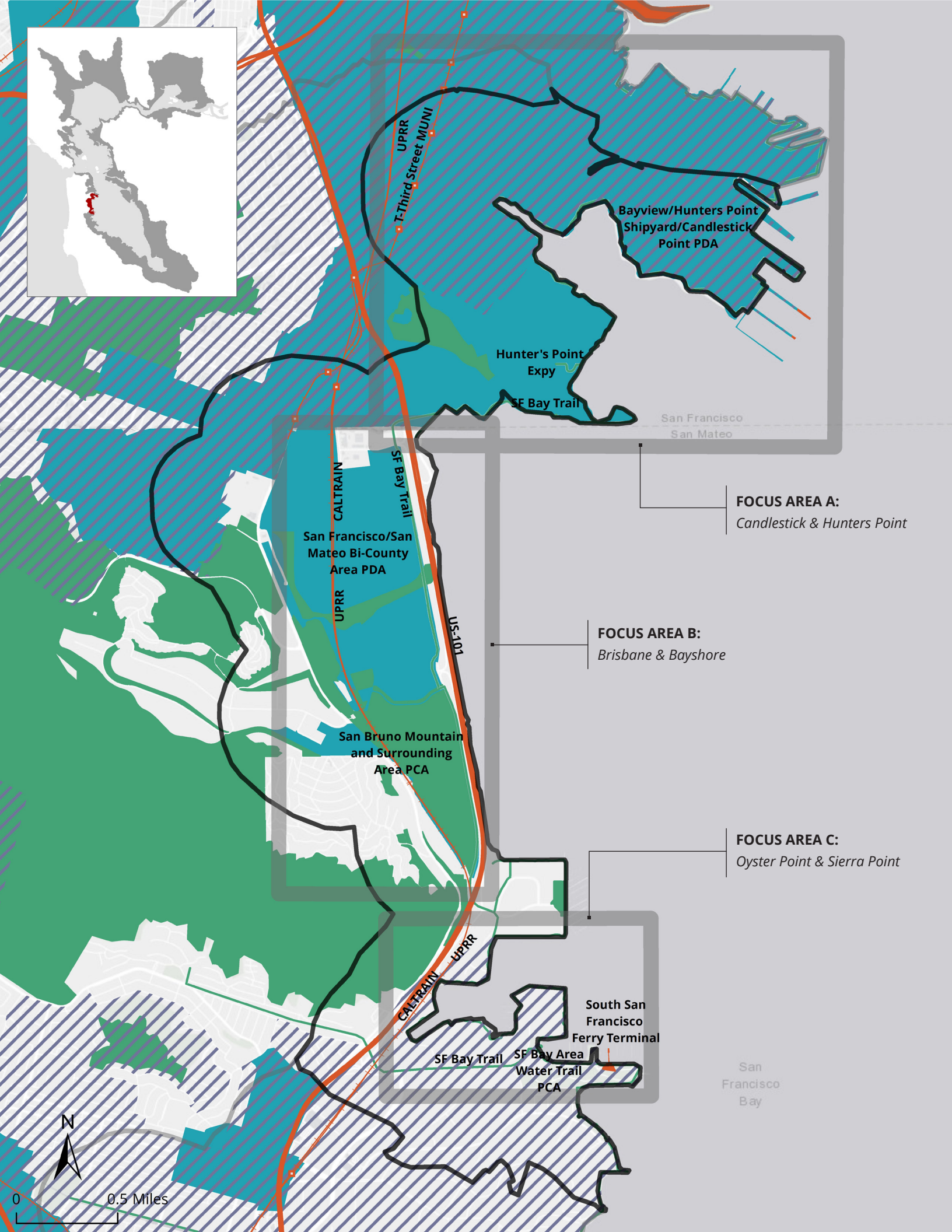
## Where are we in the region?

The Yosemite-Visitation OLU stretches from San Francisco's Bayview District in the North, along Bayshore and Brisbane, down to South San Francisco. The northern part is characterized by dense urban areas, whereas the middle section, adjacent to San Bruno Mountain, is largely a transportation and industrial use corridor. Both areas contain a high number of contaminated sites due to historic use by the Navy. The southern section of the OLU is characterized by marinas and business parks/areas. The shoreline type is mainly comprised of fortified shoreline protection structures in the north and south, while the middle section of the OLU is defended by the natural shoreline and the US-101.



Approximate area of the Yosemite-Visitation OLU. Map data © 2019 by Google. Data CSUMB SFML, CA OPC.





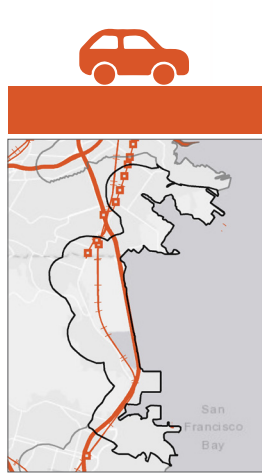


# What regional systems are here?

Operational Landscape Unit (OLU) boundaries were used to organize and help identify regionally significant assets that were co-located together (Methodology can be found in Section 3.0 Local Assessments).

The map on page L-4 shows the entire OLU, including all the regional systems present. Colors are used throughout this document to help navigate across these four regional systems. Individual assets that were assessed as part of this local vulnerability assessment are listed in the bullets below and can also be found on the labels on the map (Figure 1I).

## ◀ Figure 1I. MAP OF REGIONAL SYSTEMS AND LIST OF INDIVIDUAL ASSETS ASSESSED WITHIN BELOW:



### TRANSPORTATION

- US-101
- South San Francisco Ferry Terminal
- Caltrain
- UPRR
- Local Roads



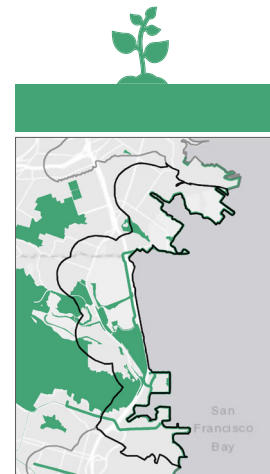
### VULNERABLE COMMUNITIES

- Bayview/Hunters Point Community



### PRIORITY DEVELOPMENT AREAS (PDAs)

- Bayview/ Hunters Point Shipyard/ Candlestick Point PDA
- San Francisco/ San Mateo Bi-County Area PDA



### PRIORITY CONSERVATION AREAS (PCAs)

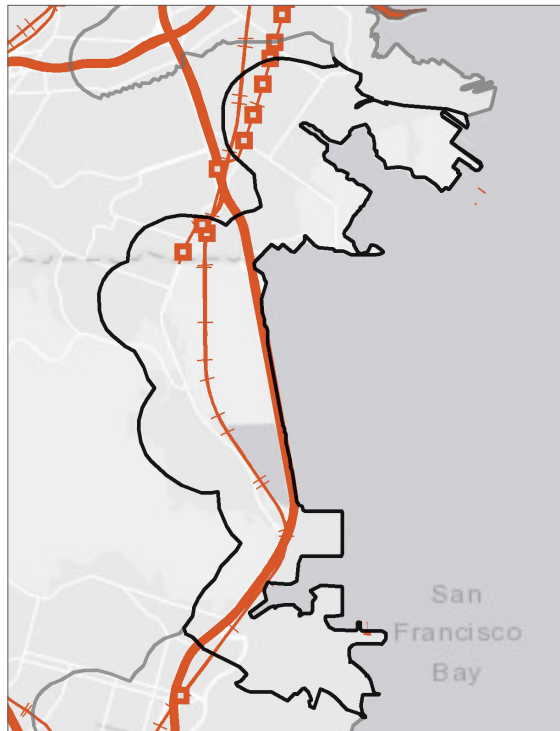
- San Francisco Bay Trail PCA
- San Bruno Mountain and Surrounding Area PCA
- San Francisco Bay Area Water Trail PCA
- Bayview Hill Natural Area PCA





# What was assessed?

## TRANSPORTATION



US-101. Map data © 2019 by Google.

**US-101** • US-101 is the primary north-south transportation artery through the San Francisco Peninsula and provides access to the East Bay via SR-92 and SR-84. It provides important commuter transportation service for local, regional, and inter-regional automobile and truck traffic, averaging 243,000 vehicles<sup>1</sup> and 10,584 trucks<sup>2</sup> per day. It is also a designated emergency route for the Bay Area.<sup>3</sup> Within this OLU, US-101 is an 8-lane transportation artery and runs the entirety of the OLU between Oyster Point in the south and Bayview Hunters Point in the north. Direct flooding of the northern sections occurs adjacent to the Baylands Soil Processing plant at 84" TWL. Flooding along this area becomes much more extensive at 96" TWL, impacting a large undeveloped area outside Bayshore and the US-101 near Bayshore and Brisbane.

**South San Francisco Ferry Terminal (SSFT)** • Operated by San Mateo County Harbor District, SSFT was one of the last terminals retrofitted to seismic safety standards in 2009. Despite being the smallest ridership in the ferry system (136,000 riders annually<sup>4</sup>), it is the only Ferry Terminal in San Mateo County. SSFT serves Genentech and 41% of riders access the terminal via bicycle or on foot.<sup>5</sup> The terminal includes service to and from Alameda (40% of riders<sup>6</sup>), Jack London Square in Oakland, and the San Francisco Ferry Building. The terminal access and parking are impacted starting at 24" TWL.



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**Caltrain** • Caltrain is the only commuter rail service that operates between San Francisco and San Jose. The Peninsula Corridor Joint Powers Board (JPB) owns most of the stations, rolling stock, and right of way. UPRR retains some track rights to freight rail on the tracks between Tamien and 4th and King stations with almost daily use. Caltrain currently has over 62,000 boardings per weekday<sup>7</sup> and trains in the peak periods are often at or exceeding capacity. Future improvements to the Peninsula Corridor include a plan to electrify the line from San Francisco to Tamien. The Bayshore Station in this OLU is not impacted, however, Caltrain tracks near Oyster Point are impacted at 77" TWL with additional stretches along Burlingame Lagoon impacted at 84" TWL, and extensive flooding on tracks in OLU at 96" TWL. While not in this OLU, impacts at the 4<sup>th</sup> and King Caltrain station at 52" TWL (northern terminus) and in OLU segments south of here (Belmont Redwood OLU) will impact operation of Caltrain in this OLU.

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**Union Pacific Railroad** • The UPRR is an important heavy freight rail supporting the reliable movement of goods to markets across the Bay Area. The rail connects many Bay Area ports and connects to areas outside the region. UPRR retains track rights to freight on Caltrain owned right of way. Within this OLU, the UPRR siding rail adjacent to Oyster Point is exposed at 77" TWL. Additionally, Caltrain owned right of way is exposed near Brisbane Lagoon at 84" TWL and Bayshore at 96" TWL.

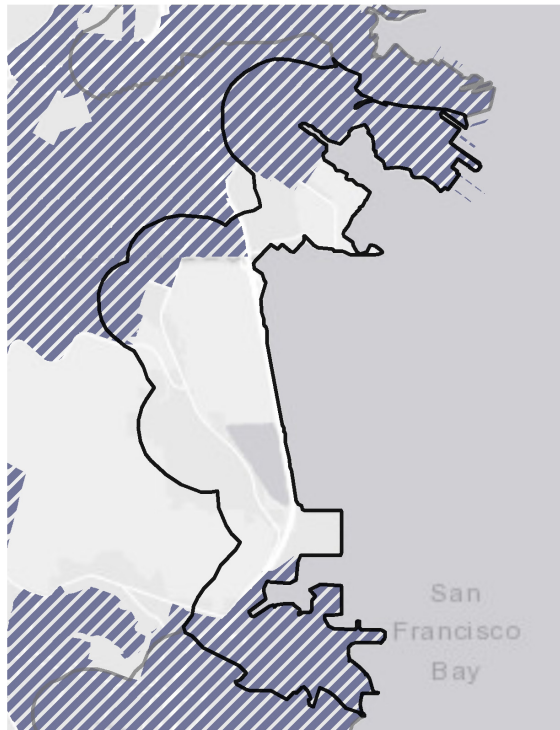
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**Local Roads** • Sierra Point Parkway runs directly parallel to the US-101 and the Bay Trail between Brisbane and Sierra Point. For cars and trucks the US-101 remains protected at all water levels, but flooding would prevent any bike riders and pedestrians from using local roads to reach Sierra Point and Oyster Point, including the marinas and the ferry terminal. The Sierra Point Parkway and parallel Bay Trail section flood completely at 84" TWL. The Hunters Point Expressway serves as a major connecting road to the US-101 for the Bayview Hunters Point community. If flooded there are lower capacity roads that can be used, however traffic congestion in this large metropolitan area can be expected. The Expressway completely floods as early as 36" TWL.





## VULNERABLE COMMUNITIES



Bayview-Hunters Point. Map data © 2019 by Google.

**Bayview-Hunters Point** • For the purposes of this report, 9 block groups were assigned to a functional community called “Bayview-Hunters Point.” The block groups that were assessed can be referenced in the appendix. This is a placeholder designation for a set of block groups that have a moderate, high, or highest social vulnerability ranking within the Bayview Hunters Point area. We have provided some history and context for these areas, primarily gathered via desktop research, and in some cases stakeholder and community vetting. This should be considered a starting point. Before this is used for any planning purposes, this data should be ground-truthed and vetted with the communities considered. Similarly, block groups or communities with a similar vulnerability rank could and likely will have very different needs, considerations, and capacities that are critical to bring into the planning process.

**Bayview South/Hunters Point** • Bayview/Hunters Point is ethnically diverse with large Black, Asian, and Latino populations,<sup>8</sup> and a strong African American cultural legacy. The neighborhood has been subjected to significant historical and environmental injustices, and has high social vulnerability, with high poverty, crime, unemployment, and hospitalization rates relative to San Francisco.<sup>9</sup> Most of the area is included within MTC’s Communities of Concern.<sup>10</sup> The neighborhood has a strong cultural and economic life, including high rates of women- and minority-owned businesses,<sup>11</sup> a burgeoning local food and beverage industry, and a multitude of worship centers and community benefit organizations.

## SOCIAL VULNERABILITY RANK:

- ☐ Low
- ☐ Moderate
- ☒ **High**
- ☒ **Highest \***

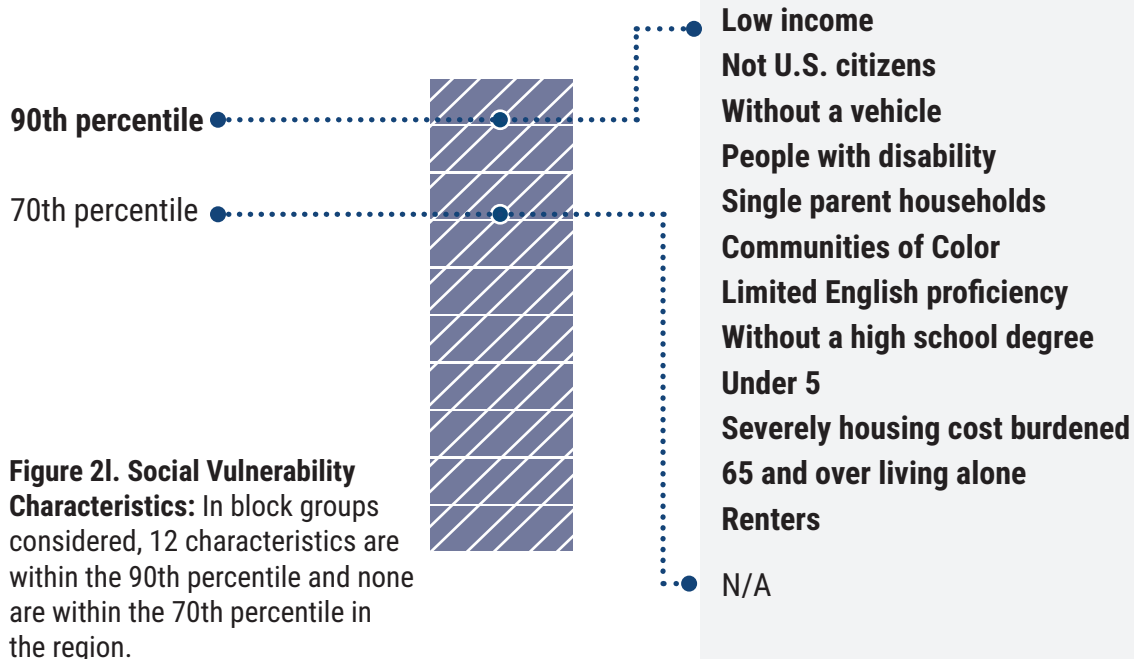
## GENTRIFICATION AND DISPLACEMENT RISK:

- ☐ Ongoing Exclusion
- ☐ Low Income - Not Losing Low Income Households
- ☒ **At Risk of Gentrification and/or Displacement \***
- ☒ **Ongoing Gentrification and/or Displacement**

\*In block groups considered, this ranking occurred most frequently.

Data Source: ART Bay Area Regional Community Vulnerability Indicators, BCDC (2018).

## SOCIAL VULNERABILITY PERCENTILES IN BAYVIEW-HUNTERS POINT





Hunters Point has serious environmental challenges, with the former Naval shipyard's surrounding census tracts identified by CalEnviroscreen as being in the top 10 percent in California for pollution burden from cleanups, groundwater threat, hazardous waste, solid waste, and impaired water.<sup>12</sup> The Hunters Point Naval Shipyard has been identified as a federal superfund site.

**Bayview North/Islais Creek** • Bayview Islais Creek is ethnically diverse with large Black, Asian, and Latino populations,<sup>13</sup> and has a strong African American cultural legacy. The neighborhood has been subjected to significant historical and environmental injustices, and has high social vulnerability, with high poverty, crime, unemployment, and hospitalization rates relative to San Francisco.<sup>14</sup> Most of the area is included within MTC's Communities of Concern.<sup>15</sup> The neighborhood has a strong economic and cultural life, with high rates of women- and minority-owned businesses, numerous community benefit organizations, worship centers, and arts and culture organizations, such as the Bayview Opera House.

The Islais Creek watershed has environmental challenges due to the long-standing presence of industrial uses and freight transportation. The neighborhood contains areas identified by CalEnviroscreen as being in the top 10 percent in California for pollution burden from hazardous waste, solid waste, and impaired water.<sup>16</sup>

**Hunters Point Shipyard**- After the Navy closed the Hunters Point Shipyard, the site received a Superfund designation from the U.S. EPA in 1989. This site includes radioactive contamination and other hazardous wastes, which were introduced as a result of cleaning ships that carried nuclear weapons used in World War II. Hunters Point Shipyard was slated for cleanup by Tetra Tech; however, the federal government has since sued Tetra Tech over alleged fraud in falsifying the remediation results. In addition to the Shipyard, Greenaction and the Bayview-Hunters Point community are fighting several planned mixed-use development projects which they contend will have significant unavoidable air quality impacts during construction and ongoing operations.

Greenaction and the Bayview-Hunters Point community are fighting several planned mixed-use development projects which they contend will have significant unavoidable air quality impacts during construction and ongoing operations. Residents also fear that the development will gentrify and potentially displace their community. University of California at Berkeley's Displacement Project classifies this community as having *Ongoing Gentrification and/or Displacement*, as well as areas identified as *At Risk of Gentrification and/or Displacement*, including the census tract where the India Basin mixed-use development is slated.<sup>17</sup>

Nine block groups are characterized as high or highest social vulnerability. Twelve social vulnerability characteristics are exhibited in at least one block group in the 90th percentile, with no characteristics in the 70th percentile in the region (Figure 2I).

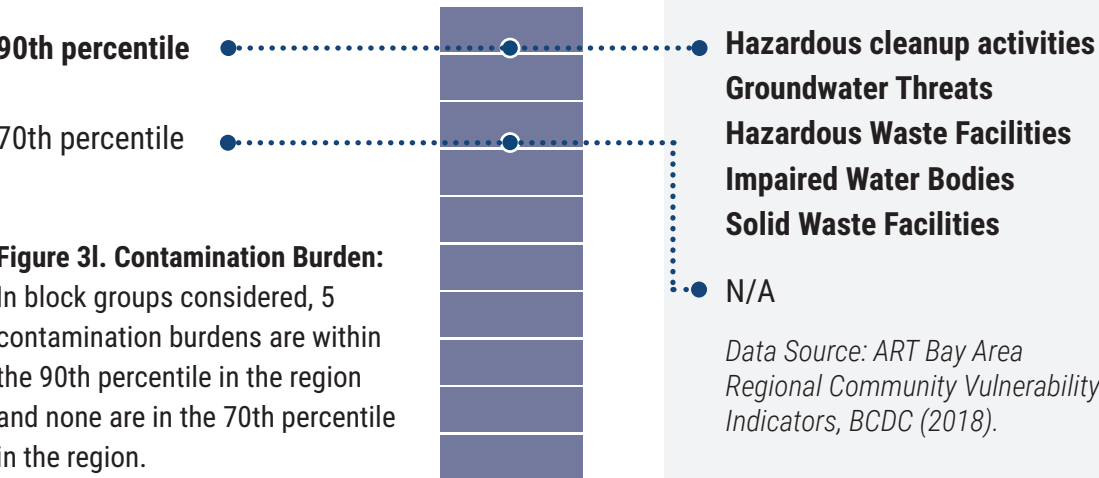
Residential areas may first exposed at 52" TWL, though contaminated sites are exposed at earlier water levels.

In this section, social vulnerability was used as the starting place for analysis. Contamination burden was assessed only for the block groups included in the functional community groupings. This means that there could be block groups that score in the moderate, high, or highest for contamination burden that were not ALSO in the designated functional community grouping that were not considered. In short, we only look at areas that have contamination burden if they are also ranked as socially vulnerable.

Five contamination burdens are exhibited in at least one block group at the 90th percentile in the region (Figure 3I).

BCDC staff were able to attend a toxic tour of this community conducted by community members and staff from Greenaction for Health and Environmental Justice in October 2018 where they were able to see first-hand the environmental injustices that Bayview-Hunters Point faces. The Bayview-Hunters Point community also has a long history of community activism and environmental justice. After a long fight, the PG&E Hunters Point Power Plant was closed in 2006 and demolished in 2008 after decades of causing adverse health impacts

CONTAMINATION BURDEN  
PERCENTILES IN BAYVIEW-  
HUNTERS POINT





from pollution to Bayview-Hunters Point residents. This community sits adjacent to the intersection of two major freeways, U.S. Highway 101 and I-280, resulting in significant emissions.






This community is also home to the Southeast Sewage Treatment Plant, treating nearly 80% of San Francisco and all of Brisbane's sewage. Neighbors often suffer from eye and throat irritation and are forced to deal with strong odors from the plant. Bay Area Concrete Recycling creates significant pollution from operations and from major diesel truck traffic to and from the plant. Additionally, illegal dumping is prevalent in this area.

Critical services and facilities that provide education, community cohesion, and emergency services will also be impacted by flooding. First exposure of assessed critical facilities begins at 66" TWL (Table 1I).

Total water levels (TWLs) are used to represent various combinations of temporary and/or permanent flooding that may occur with future sea level rise. Values in the table reflect potential risks to critical facilities in the absence of adaptation planning.

*\*Note: This community spans the border between the Yosemite-Visitation OLU and Mission-Islands OLU. The community descriptions are the same in both Local Assessments, even though block groups cross OLU boundaries. The Focus Area in this Local Assessment will discuss impacts where flooding occurs from overtopping in this OLU. Please see the Mission-Islands OLU for details on flooding and overtopping that occur from the Mission-Islands OLU.*

## EXPOSURE OF CRITICAL SERVICES AND FACILITIES IN BAYVIEW-HUNTERS POINT

Critical Facilities/Services Impacted		12"	24"	36"	48"	52"	66"	77"	84"	96"	108"
Police and Fire Stations	San Mateo County Sheriff Dept.										
	North County Fire Station 81										
	Brisbane Fire Dept.										
Schools	Positive Directions Equal Change (Jennings St, San Francisco)										
	Bret Harte Elementary School (Gilman Ave, San Francisco)										

**Table 1I. Critical Services and Facilities:** First exposure of critical services and facilities. Blue bars represent when asset is first exposed to flooding.

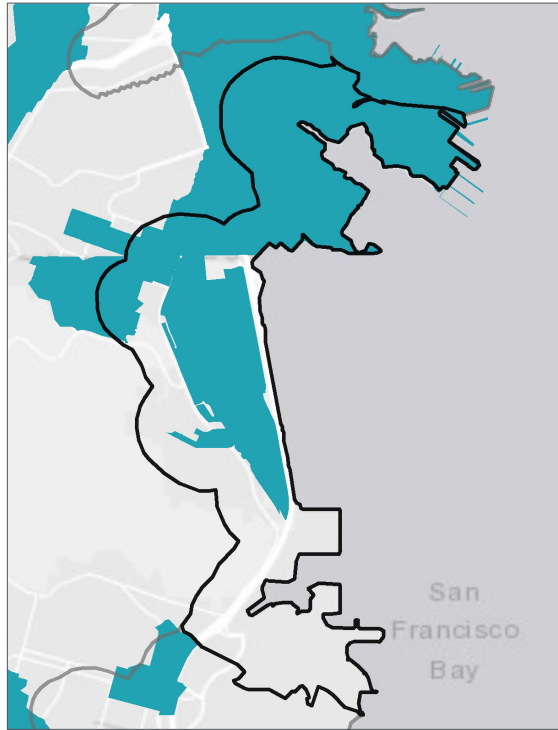


Third Street in Bayview. Photo by Marcin Wichary is licensed under CC BY 2.0.





## PRIORITY DEVELOPMENT AREAS (PDAS)



Map data © 2020 by Google.

**San Francisco/San Mateo Bi-County Area PDA** • The San Francisco-San Mateo Bi-County area PDA is located in both San Francisco and Brisbane, just south of the Bayview/Hunters Point Shipyard/Candlestick Point PDA. This PDA is unique in that it crosses two counties, has two different managers from different cities and two entirely different planning documents, while still being considered a single PDA. The San Francisco portion extends to approximately McLaren Park to the west and the bay shoreline to the east, and the San Francisco border to the south, covering part of the Visitacion Valley neighborhood. It contains both Caltrain and BART stations. The Brisbane portion is bordered by Bayshore Boulevard to the west and the bay shoreline/US-101 to the east. It encompasses Visitacion Point and the Brisbane Lagoon. The Bayshore PDA sits just to the south and west of the PDA.

The San Francisco portion is designated a Transit Neighborhood, envisioned as a mixed-use residential area, with some commercial and open space to bring neighborhood components together and includes an environmental remediation component.<sup>18</sup> The Brisbane side is designated a Suburban Center. The City of Brisbane has been engaged in a planning process to develop the Brisbane Baylands, a 660-acre parcel of land in Brisbane, a former municipal landfill and former rail yard in the northeastern corner of the city.<sup>19</sup> The southernmost edge of the PDA is the Brisbane Lagoon, which overlaps with the San Bruno Mountain PCA.

Flooding in this PDA does not begin west of US-101 until 84" TWL, but by 96" TWL flooding extends inland past Bayshore Boulevard.

*Note: Statistics include both the Brisbane and San Francisco portions of the PDA.*

No critical facilities are exposed in this PDA.

## CURRENT AND FUTURE HOUSING AND JOBS IN THE SF/SAN MATEO BI-COUNTY AREA PDA



### Residential Housing Units

Existing in 2010:	2,477
Projections for 2040:	10,311
Percent Growth:	316%



### Job Spaces

Existing in 2010:	2,600
Projections for 2040:	16,684
Percent Growth:	542%

*Data Source: Plan Bay Area 2040, MTC/ABAG (2017).*



**Bayview / Hunters Point Shipyard / Candlestick Point PDA** • The Bayview/Hunters Point Shipyard/Candlestick Point PDA (Bayview PDA) is a large, 2,800-acre Urban Neighborhood in the southeastern corner of San Francisco that covers Bayview-Hunters Point, Candlestick Point, and the Hunters Point Shipyard. It spans from approximately Cesar Chavez in the north to Bayview Park in the south, and 101 in the west to the bay shoreline to the east. It is bordered by the Eastern Neighborhoods PDA to the north, Port of San Francisco PDA to the northeast, and San Francisco/San Mateo Bi-County Area to the south.

The area currently includes housing, commercial and industrial uses served by several transit agencies (Muni, Caltrain and SamTrans) that provide connections throughout the city and the region. When complete, the Bayview PDA will have new housing and public improvements including lighting, landscaping and rehabilitation of existing single-family homes. The existing commercial Third Street corridor will have additional commercial and other infill development. Industrial uses will continue around I-280 and within the South Basin area. The more comprehensive change will occur at Hunters Point Shipyard, with new housing, especially affordable housing, and job creation. Candlestick Point, with a diverse mix of industrial, residential and other uses, can also accommodate new green technology uses. The new housing will be complemented by new community facilities, a teen center, commercial space and parks.<sup>20</sup>

Flooding at Candlestick Point and the Hunters Point Shipyard begins by 36" TWL, with significant flooding extending into the Bayview neighborhoods by 66" TWL (Table 4m). Critical services and facilities may be impacted by flooding starting at 52" TWL.

Total water levels (TWLs) are used to represent various combinations of temporary and/or permanent flooding that may occur with future sea level rise. Values in the table reflect potential risks to critical facilities in the absence of adaptation planning.

*Note: This PDA spans the border between this OLU and the East Bay Crescent OLU. This PDA will be described in both OLU sections.*

## CURRENT AND FUTURE HOUSING AND JOBS IN THE BAYVIEW / HUNTERS POINT SHIPYARD / CANDLESTICK POINT PDA



### Residential Housing Units

Existing in 2010:	11,450
Projections for 2040:	37,145
Percent Growth:	224%



### Job Spaces

Existing in 2010:	29,292
Projections for 2040:	56,477
Percent Growth:	93%

Data Source: Plan Bay Area 2040, MTC/ABAG (2017).

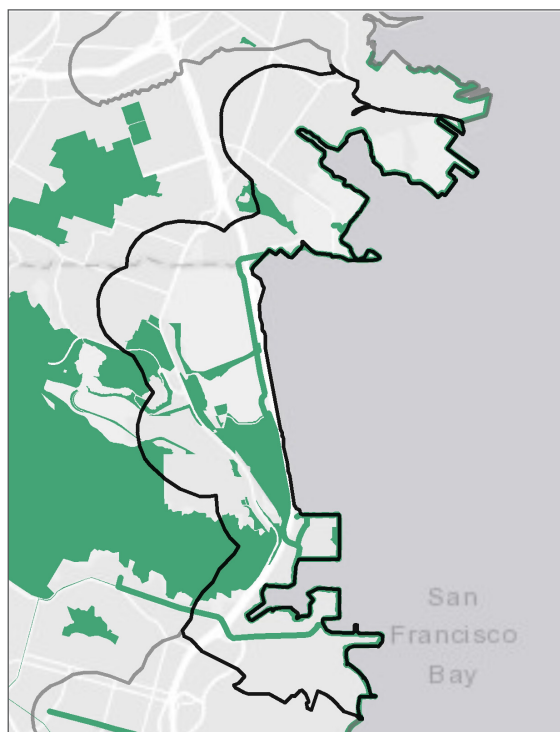
## EXPOSURE OF CRITICAL FACILITIES IN THE BAYVIEW / HUNTERS POINT SHIPYARD / CANDLESTICK POINT PDA

Critical Facilities/Services Impacted		12"	24"	36"	48"	52"	66"	77"	84"	96"	108"
Police and Fire Stations	San Francisco Fire Department Station 25										
	San Francisco Fire Department Station 9										
	San Francisco Fire Department Station 70										
Utilities	Hunter Point Substation										
	Southeast Wastewater Treatment Plant/ CCSF										
	Bayshore Substation										

**Table 2I. Critical Services and Facilities:** First exposure of critical services and facilities. Blue bars represent when asset is first exposed to flooding.



## PRIORITY CONSERVATION AREAS (PCAS)



Map data © 2019 by Google

### San Francisco Bay Water Trail PCA

• The San Francisco Bay Area Water Trail is network of boat launching and landing sites, or “trailheads,” around the San Francisco Bay and its major tributaries, including the San Joaquin River, Napa River, and Petaluma River.<sup>21</sup> Within this OLU, there are three Water Trail Designated Trailheads at Candlestick Point State Recreation Area, Oyster Point Marina and Colma Creek/Genentech. The beaches of the Oyster Point Marina and Colma Creek/Genentech sites are first exposed at 12” TWL, whereas the Candlestick Point State Recreation Area site does not get directly exposed until 66” TWL.

### PCA DESIGNATION:

- ☐ Natural Landscapes
- ☐ Agricultural Lands
- ☐ Urban Greening
- ☒ **Regional Recreation**

### FUNCTIONS/BENEFITS:

- **Recreation**
- **Economic Development**
- **Wildlife Habitat**

*Data Source: MTC/ABAG Priority Conservation Areas Program (2017).*





Windsurfer at Candlestick Point. Photo by ejbSF is licensed under CC BY-NC-ND 2.0

## San Francisco Bay Trail PCA •

The San Francisco Bay Trail is a 500-mile regional trail that, upon completion, will circumnavigate the bay. The trail connects people and communities to each other, to parks and open space, to home, work and recreation, and to countless areas of cultural and historic interest. It provides opportunities for health and fitness, increase transportation options, opportunities to observe, learn about, and care for the environment, and provides economic benefits to the region through increased tourism.<sup>22</sup> Within this OLU, the Bay Trail runs along the entire shoreline. In the south it follows the edges of Sierra Point and Oyster Point. The middle section does not currently exist, but a proposal exists to have it run parallel with US-101 near Brisbane and Bayshore. In the north, it currently runs along the shoreline of Bayview Hunters Point. The trail is first exposed at 12" TWL, with significant flooding impacts at 36" TWL.

### PCA DESIGNATION:

- ☒ **Natural Landscapes**
- ☐ Agricultural Lands
- ☐ Urban Greening
- ☐ Regional Recreation

### FUNCTIONS/BENEFITS:

- **Recreation**
- **Community Health**
- **Transportation**
- **Economic Development**
- **Environmental Stewardship**

*Data Source: MTC/ABAG Priority Conservation Areas Program (2017).*



## San Bruno Mountain & Surrounding Areas PCA

• This PCA includes San Bruno Mountain State & County Park and adjacent undeveloped parcels, Sign Hill Park, Orange Park, Centennial Way, Oyster Point Marina, San Francisco Bay Trail, and connecting bike trails/routes. The entire PCA is mostly safe from inundation, with an exception of 84" TWL and 96" TWL in currently undeveloped sections North of Brisbane and East of Bayshore. Sources of late flooding originate from Brisbane Lagoon and the channel just North of the Kinder Morgan Terminal.

There are many ecosystem services of the PCA including providing habitat, recreation, stormwater services of runoff retention, groundwater recharge, and flood water retention, and carbon storage (Figure 4l).

## PCA DESIGNATION:

- ☒ Natural Landscapes
- ☒ Agricultural Lands
- ☒ Urban Greening
- ☒ Regional Recreation

## FUNCTIONS/BENEFITS:

- Recreation
- Wildlife Habitat
- Endangered Species Habitat
- Open Space

*Data Source: MTC/ABAG Priority Conservation Areas Program (2017).*





US-101 and San Bruno Mountain from Candlestick Point. Photo by Marcin Wichary is licensed under CC BY 2.0.

## ECOSYSTEM SERVICES OF SAN BRUNO MOUNTAIN & SURROUNDING AREAS PCA



### Habitats

Depressional Wetlands	62 acres
Bird Hot Spots	186 acres
Lagoon	123 acres
Grasslands	1,425 acres



### Stormwater

Annual Runoff Retention	1.9 billion gallons
Groundwater Recharge	96.7 million gallons
Flood Water Retention	107 million gallons



### Recreation

Approximate Visitation Rates	72 photo user days (PUD)
------------------------------	--------------------------



### Carbon Storage

Acres x % weighted soil organic matter within 108" TWL	13
--	----

**Figure 4I. Ecosystem Services of the PCA.** Statistics on habitats, recreation, carbon storage and stormwater retention in PCAs. Data by the ART Bay Area Natural Capital Project (2019).





**Bayview Hill Natural Area PCA** • This PCA is a hill between US-101 and Candlestick Point. There are adjacent undeveloped parcels, as well as residential homes.

This PCA experiences flooding impacts to roads on the south side of the PCA, impacting access to the park at 108" TWL.

There are many ecosystem services of the PCA including providing habitat, recreation, stormwater services of runoff retention, groundwater recharge, and flood water retention, and carbon storage (Figure 5l).

## PCA DESIGNATION:

- ☒ **Natural Landscapes**
- ☐ Agricultural Lands
- ☒ **Urban Greening**
- ☒ **Regional Recreation**

## FUNCTIONS/BENEFITS:

- **Recreation**
- **Open Space**
- **Economic Development**
- **Community Health**

*Data Source: MTC/ABAG Priority Conservation Areas Program (2017).*



Bayview Hill Natural Area PCA is seen in the background, along with Sierra and Candlestick Point. Photo by Doc Searls is licensed under CC BY 2.0.

### ECOSYSTEM SERVICES OF BAYVIEW HILL NATURAL AREA PCA



#### Habitats

N/A



#### Stormwater

Annual Runoff Retention	25.4 million gallons
Groundwater Recharge	1.7 million gallons
Flood Water Retention	1.6 million gallons



#### Recreation

Approximate Visitation Rates	4 photo user days (PUD)
------------------------------	-------------------------



#### Carbon Storage

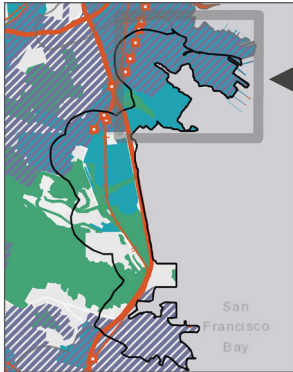
Acres x % weighted soil organic matter	N/A
--	-----

**Figure 5l. Ecosystem Services of the PCA.** Statistics on habitats, recreation, carbon storage and stormwater retention in PCAs. *Data by the ART Bay Area Natural Capital Project (2019).*

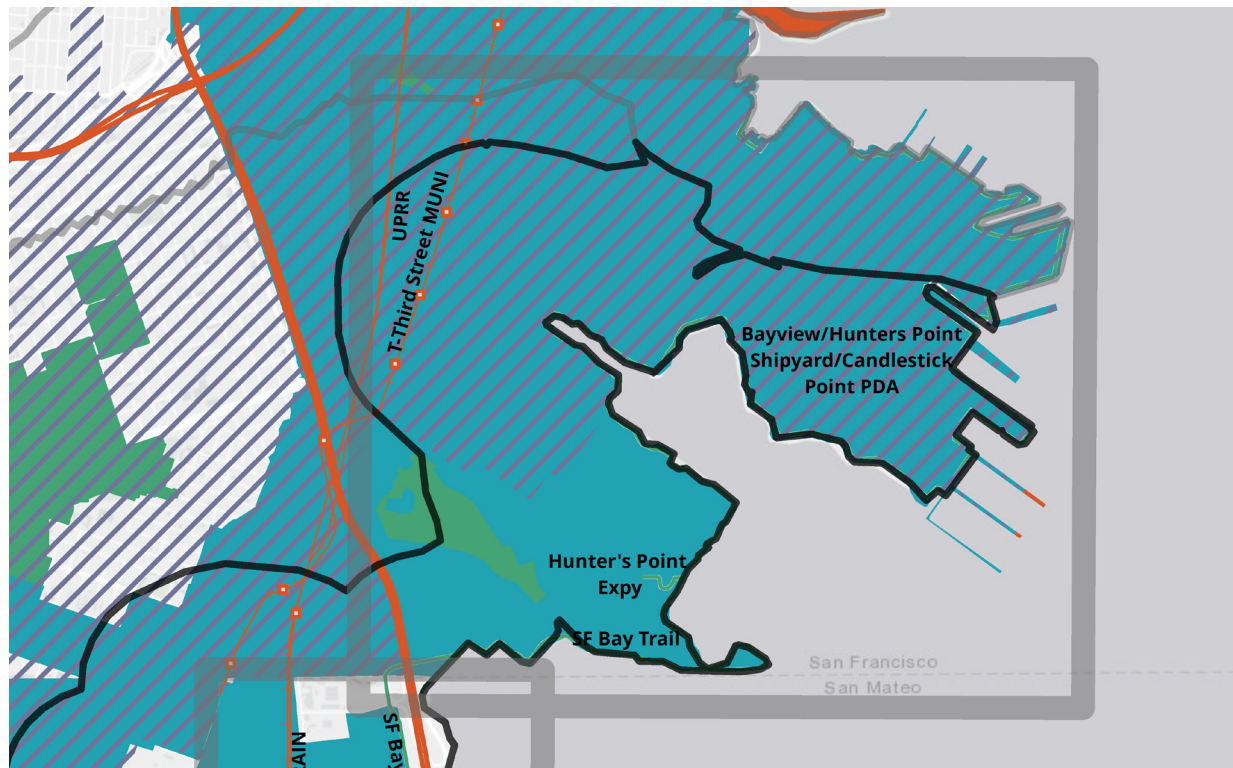


# Focus Area A: *Candlestick & Hunters Point*

## Location

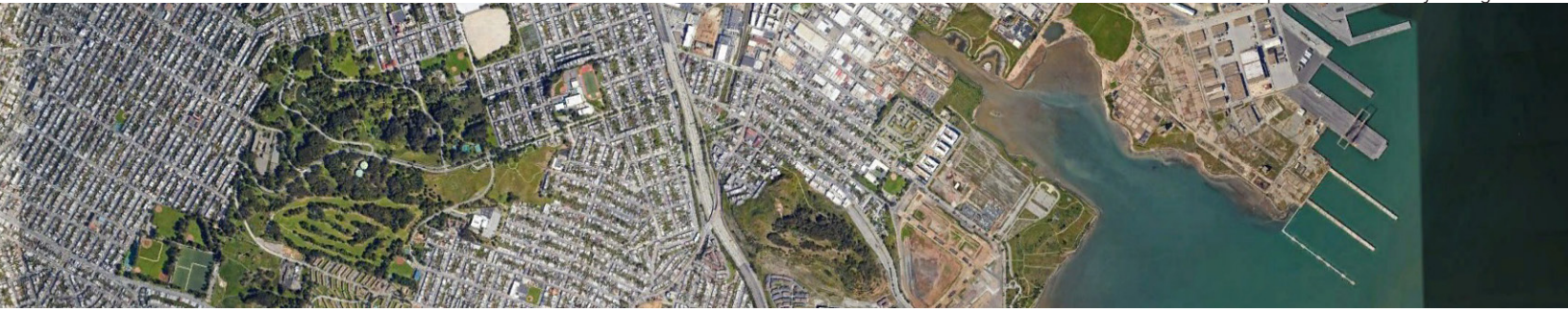


This Focus Area contains the densely developed urban areas of the Bayview-Hunters Point and Candlestick neighborhoods, extending west towards approximately US-101 and north to India Basin. Up until 1974 the area was a shipyard used by the Navy to clean ships used in nuclear testing, after which it was designated as a superfund site due to residual radiation (Figure 6I).



**Figure 6I. Top: Identification of where Focus Area is within OLU. Bottom: Map of Focus Area containing regional systems.** Individual assets assessed in this Focus Area are labeled on the map and listed on the following page.





## Why shared stories of vulnerability?

This Focus Area was selected because it contains a variety of regional systems, including railroad, Muni, the Hunters Point Expressway, Bayview/Hunters Point Shipyard/Candlestick Point PDA, the Bayview/Hunters Point vulnerable community, as well as the Bay Trail and Water Trail. Due to overlap and dependencies among these regional systems in this area, the vulnerabilities of these systems to flooding and sea level rise are discussed together in shared stories of the shoreline, overtopping, and exposure to flooding as water levels rise. The goal of communicating shared vulnerabilities and consequences is to encourage multi-benefit solutions through collaborations and coordination.

### Figure 6I. MAP OF REGIONAL SYSTEMS AND LIST OF INDIVIDUAL ASSETS ASSESSED WITHIN THIS FOCUS AREA LISTED BELOW:



# *Shoreline today and into the future*

## SHORELINE TYPE STORY

### *What is the shoreline made up of now?*

As a former Naval base, the shoreline is comprised of fortified shoreline protection structures and a beach in the Southern section of Hunters Point.





## SHORELINE DEVELOPMENT STORY

*How will the shoreline change in the future?*

The Bayview Hunters Point Redevelopment Plan adopted in 2000 is slated to increase supply of affordable housing, economic development and community enhancements.

Photo by Wayne Hsieh is licensed under CC BY-NC 2.0.





# Current and future flooding risk

## OVERTOPPING STORY

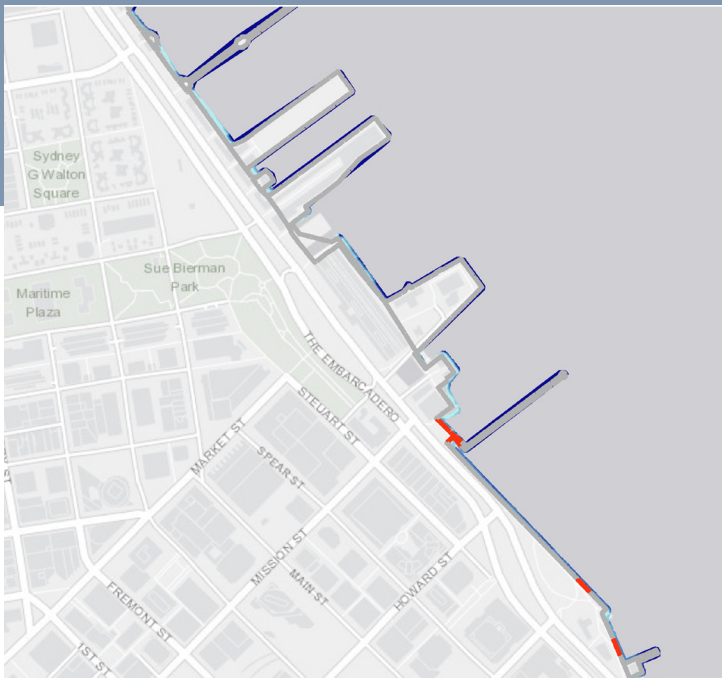
### *Where is water coming over the shoreline?*

Overtopping begins at 36" TWL within the beach section between Candlestick and Hunters Point as well as at fortified shoreline sections at Candlestick Point State Recreation Area at the Southern extent of the Hunters Point Expressway and the Hunters Point Shipyard along J Street and Mahan Street. Overtopping worsens steadily until a significant jump at 66" TWL (Figure 7I).

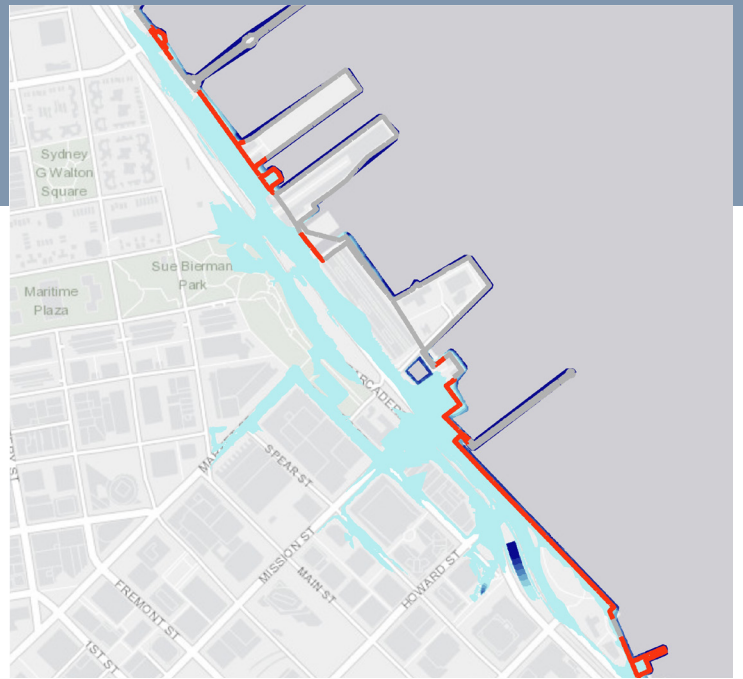
## FLOODING EXPOSURE STORY

### *Where does flooding occur?*

At 36" TWL flooding reaches the inland areas on Hunters Point around Hunters Point Shipyard. Areas in Candlestick, including the Hunters Point Expressway also become flooded. The Muni stations Williams, Carrol, and Gilman are exposed to the 100-year San Francisco precipitation event. While the platforms themselves are islands above grade, the access roads as well as the tracks themselves are at risk of flooding. At 66" TWL the majority of Hunters Point and significant residential areas near Ingalls Street and North Shore, Yosemite Slough, just between Hunters Point and Candlestick Point become heavily inundated (Figure 8I).



24" TWL



52" TWL

## OVERTOPPING AND FLOODING ▲

**Figure 71. Two total water levels selected that demonstrate first overtopping and/or significant flooding thresholds.** Visit the Bay Shoreline Flood Explorer ([explorer.adaptingtorisingtides.org](http://explorer.adaptingtorisingtides.org)) to see more TWLs.

- No overtopping
- Overtopping
- Shallower depth of flooding
- Deeper depth of flooding

## FIRST FLOODING OF REGIONAL SYSTEMS ASSESSED

Regional Systems Impacted	12"	24"	36"	48"	52"	66"	77"	84"	96"	108"
San Francisco Bay Trail										
Bayview/Hunters Point/Candlestick Point										
Bayview/Hunters Point/Candlestick Point										
San Francisco Water Trail										
Hunters Point Expressway										
Bayview Hill Natural Area PCA										M

**Figure 81. First exposure of regional systems.** Individual assets within the four regional systems in this area are shown and colored bars represent when each asset is first exposed to flooding impacts. 'M' represents areas impacted by flooding of access roads.

# Shared vulnerabilities to flooding

## SHARED VULNERABILITY STORIES

Vulnerability assessments were conducted on individual assets and then shared vulnerabilities were identified for regional systems within each focus area. The vulnerability statements below reflect shared stories of vulnerability. Our goal is to emphasize the interconnections among and across local systems, and encourage shared multi-benefits adaptation solutions.

### 1. Bayview Hunters Point Vulnerable Community



Bayview and Hunters Point provide housing and services to local communities and is vulnerable to sea level rise along the shoreline and near Ingalls St and North Shore, Yosemite Slough, just between Hunters Point and Candlestick Point. Residents in these neighborhoods are in the 90th percentile for most of the social vulnerability characteristics, which severely reduces their ability to prepare for, respond to and recover from flood events.

### 2. Contamination



A large number of contaminated sites from previous U.S. Navy uses pose a risk to public and environmental health if infiltrated with saltwater, potentially leeching the contaminants and washing them into urban areas and the Bay.

### 3. Regional Transportation at Hunters Point Expressway



The Hunters Point Expressway provides people and goods movement and is vulnerable to sea level rise along the shoreline near Candlestick Point Recreation Area. The Expressway serves as a major connecting road to the US-101 for the Bayview Hunters Point community. If flooded there are lower capacity roads that can be used as alternatives, however this would increase traffic congestion in this densely population urban area.





Former Hunter's Point Naval Shipyard: Aerial View (2006). Photo by Todd Lappin is licensed under CC BY-NC 2.0.

# Shared consequences to flooding

## SHARED CONSEQUENCE STORIES

This section translates shared vulnerability statements into stories of shared consequences. The ART program considers consequences through frames of sustainability: Society and Equity, the Economy and the Environment.



**Society and Equity** • The flooding of the contaminated sites, potentially resulting in contaminant mobilization, on this former Naval base poses a serious public health risk to the local communities. This issue is exacerbated by the high social vulnerability in this area, leading to a reduced ability to prepare and respond to potential health risks. Flooding of the Hunters Point Expressway and Bay Trail prevents the use of these transportation assets for commuting, goods transportation and recreation. Lack of proper sea level rise considerations in area plans poses a risk to local communities and the Bay Area as a whole.

Flooding poses additional risks to the vulnerable community located in this area with residents being in the 90th percentile for severe housing cost burden. Residents may not be able to prepare for or respond to flooding leading to high financial and displacement risk. In case of displacement due to flooding, the high number of low-income residents may not have access to equivalent or affordable replacement housing near the jobs, schools, services, and facilities they rely on.

The lack of privately-owned vehicles increases the dependency on public transportation in this area for everyday use such as commuting and in emergency situations for evacuation.

The high rate of residents with a disability increases the consequences of flooding as these people may face communication or mobility difficulties in responding to and preparing for flooding. Additionally, people exhibiting these characteristics face difficulties during an evacuation, as they depend on others for mobility, care and consideration, and in finding suitable shelter-in-place facilities, as they require special care or equipment.

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**Economy** • Inadequate flood preparation and coordination due to complex governance structures could cause unexpected costs to the local and regional economy when flooding occurs. In cases of severe flooding an abandonment of developed areas or costly flood protection projects could strain the local and regional economy.



Flooding of the low-income communities in this area may cause prolonged economic disruption due to lack of private and public funds to repair damages or find housing after a flood event.

---

**Environment** • The presence and type of the very high number of contaminated sites on this former Naval base pose a serious environmental health risk to the local communities, local wildlife and the aquatic Bay ecosystem if mobilized by flooding.



The erosion and interruption of the Bay Trail would lead to a reduction in the access to the Bay, wetlands and the appreciation of regional wildlife.



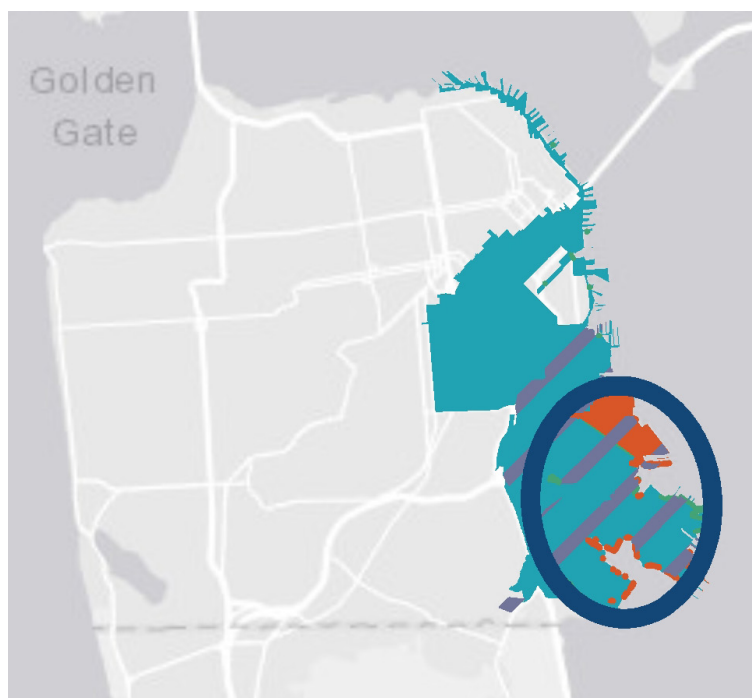
# Advancing adaptation solutions

## FITTING INTO REGIONAL STORY

### *How are local areas contributing to Regional Hot Spots?*

The regional scale analysis of ART Bay Area identified clusters of highest consequences around the region, called “Regional Hot Spots.” These areas include places that contain the top five highest consequences in the region for 1) any transportation asset and 2) either a PDA or PCA, and 3) the presence of a vulnerable community block group at any given water level.

### Regional Hot Spot at 48” TWL



- Regional Hot Spot
- Transportation Infrastructure
- Vulnerable Community
- PDA
- PCA

**Figure 9I. Bayview/Hunters Point Hot Spot:** From 36” TWL to 66” TWL, this focus area contains clusters of assets that have among the highest consequences of flooding in the region.

Datasets were identified for each regional system to provide a measure of consequence to quantify impacts in the event of flooding. A full list of consequences used for each regional system can be found in Chapter 2.1 Regional Hot Spots.

The Candlestick & Hunters Point Focus Area is a Regional Hot Spot, meaning it contains a cluster of assets that have among the highest consequences of flooding in the region.

It becomes a Regional Hot Spot starting at 36” TWL, and continues to higher total water levels (Figure 9I).

Chapter 4 Regional Adaptation provides adaptation responses for regional issues.



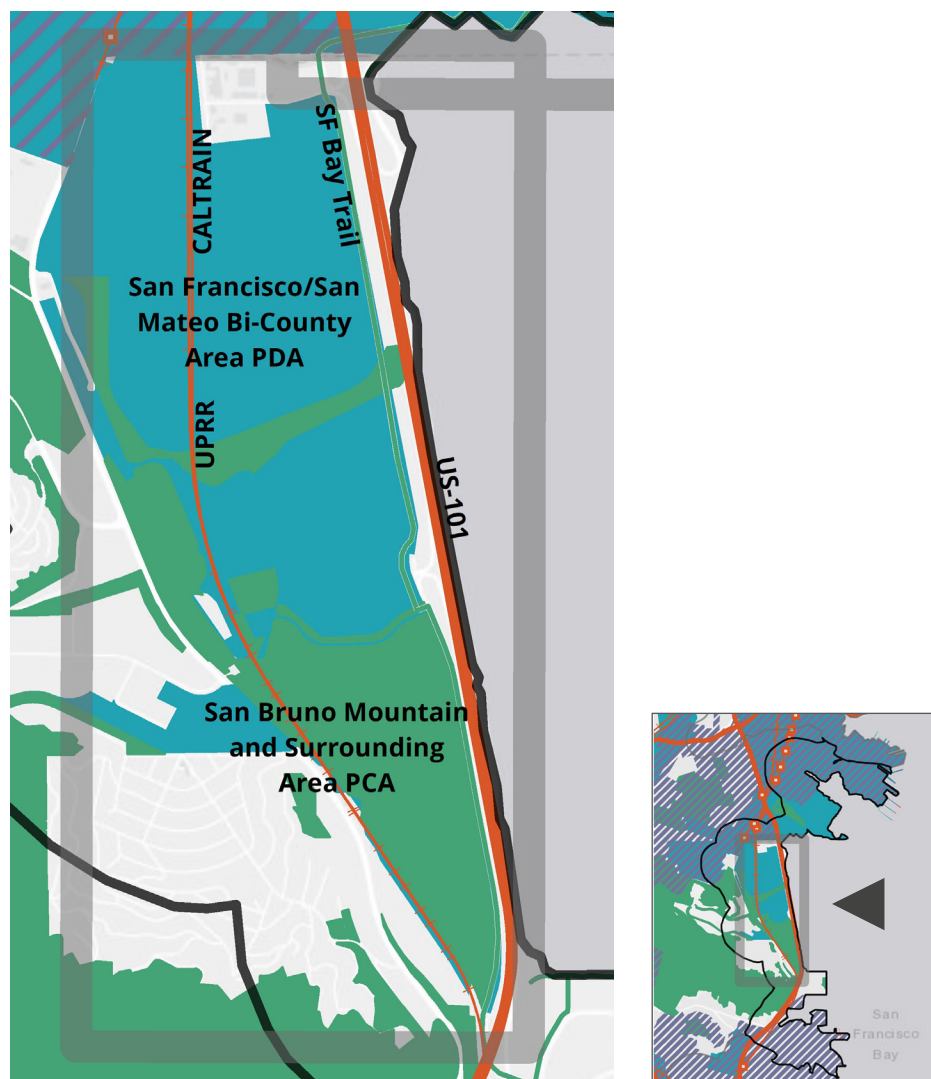
Hunters Point. Photo by Marcin Wichary is licensed under CC BY 2.0.



## Focus Area B: *Brisbane & Bayshore*

### *Location*

This Focus Area runs between the shoreline and the cities of Brisbane and Bayshore. This Focus Area encompasses the largest undeveloped parcel in the Peninsula and is a former landfill.



**Figure 10I. Right: Identification of where Focus Area is within OLU. Left: Map of Focus Area containing regional systems.** Individual assets assessed in this Focus Area are labeled on the map and listed on the following page.



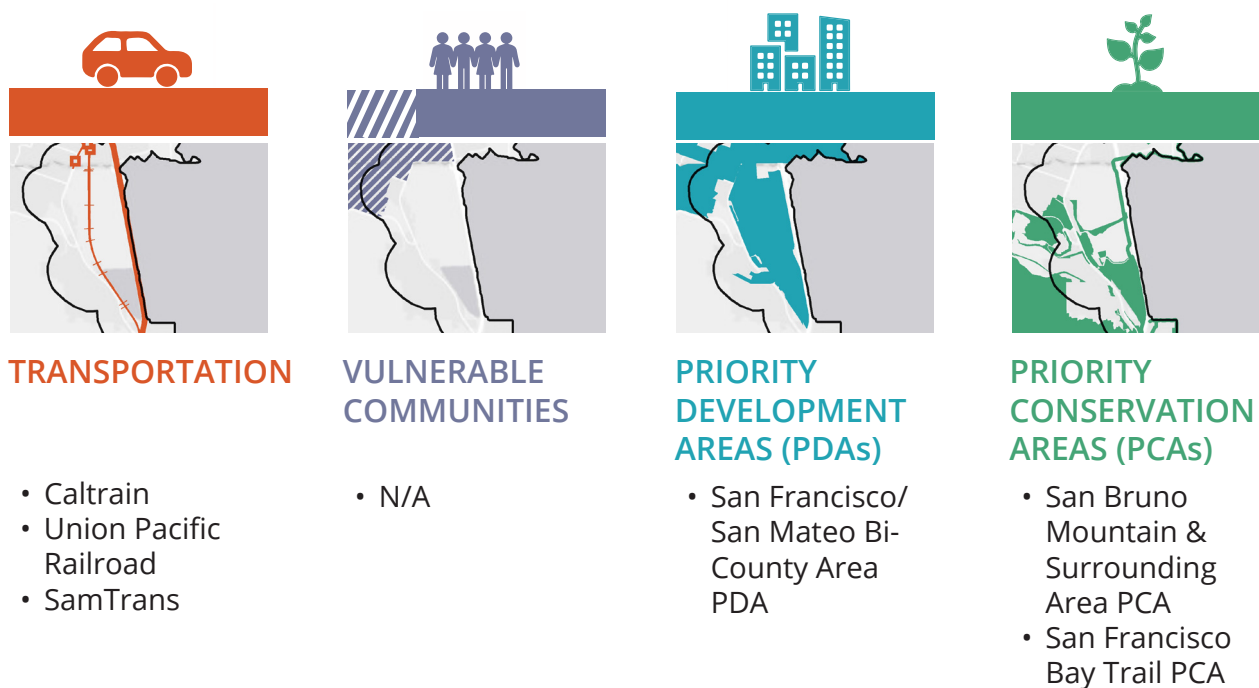


Map data ©2019 by Google.

## Why shared stories of vulnerability?

This Focus Area was selected because it contains a variety of regional systems, including railroad, SamTrans, the San Francisco/San Mateo Bi-County PDA, as well as the San Bruno Mountain PCA and Bay Trail. Due to overlap and dependencies among these regional systems in this area, the vulnerabilities of these systems to flooding and sea level rise are discussed together in shared stories of the shoreline, overtopping, and exposure to flooding as water levels rise. The goal of communicating shared vulnerabilities and consequences is to encourage multi-benefit solutions through collaborations and coordination.

### Figure 10I. MAP OF REGIONAL SYSTEMS AND LIST OF INDIVIDUAL ASSETS ASSESSED WITHIN THIS FOCUS AREA LISTED BELOW:



# Shoreline today and into the future

## SHORELINE TYPE STORY

### *What is the shoreline made up of now?*

The US-101 is located along the entire length of this Focus Area's shoreline. Together with beach sections, the US-101 is the first line of shoreline defense against flooding.

## SHORELINE DEVELOPMENT STORY

### *How will the shoreline change in the future?*

Brisbane voters approved Measure JJ, on November 6<sup>th</sup>, 2018 which amended Brisbane's General Plan to allow 1,800-2,200 residential units and 7.5 million square feet of commercial development on the Baylands General Plan subarea. There are also plans for a new US-101 interchange for the Brisbane Baylands and Candlestick Point developments, which would include potential changes to the road structure that is functioning as a shoreline protection structure.





US-101 from Candlestick Point. Photo by Marcin Wichary is licensed under CC BY 2.0.



# Current and future flooding risk

## OVERTOPPING STORY

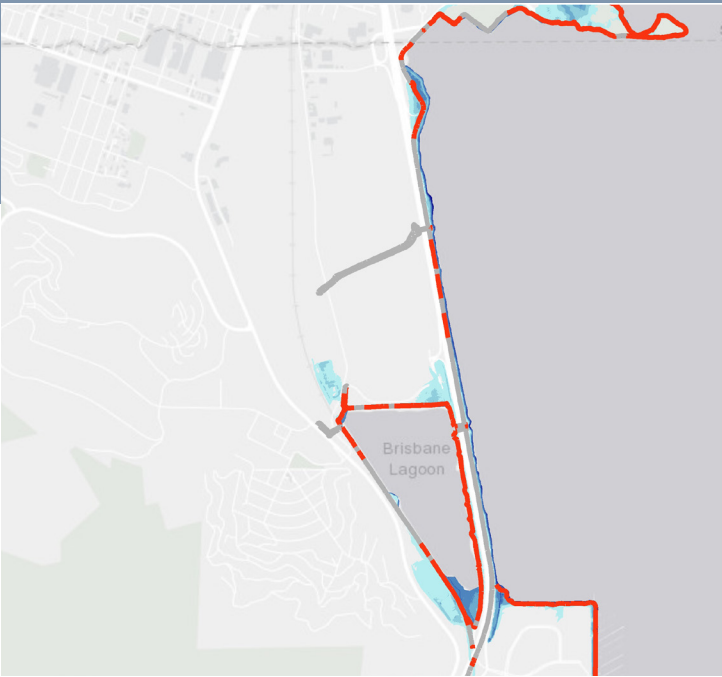
### *Where is water coming over the shoreline?*

Overtopping at 84" TWL occurs along the entire north, east and south side of the Brisbane Lagoon (Figure 11I). At 96" TWL the channel running through Baylands Soil Processing and just north of the Kinder Morgan Brisbane Terminal overtops, causing the sudden exposure of the large, currently undeveloped area directly east of Bayshore as well as the US-101.

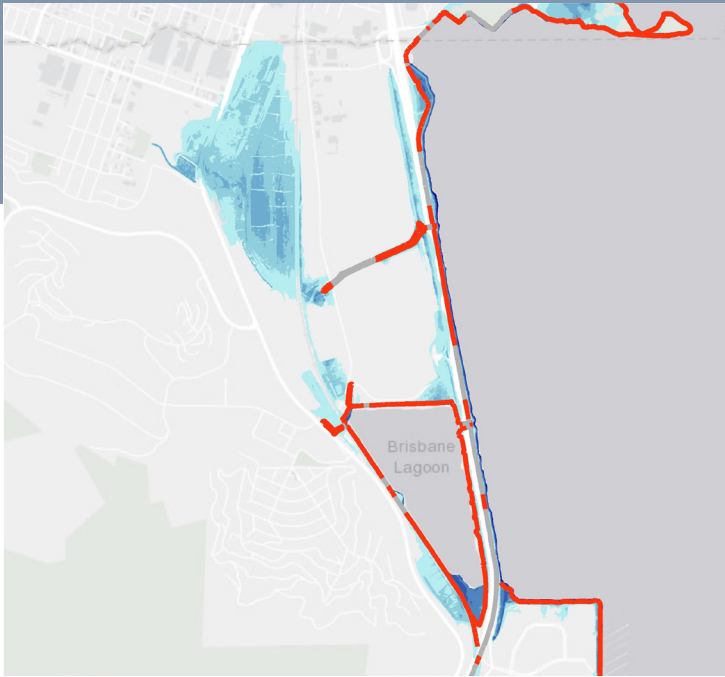
## FLOODING EXPOSURE STORY

### *Where does flooding occur?*

The first tidal exposure at 84" TWL just north of the Brisbane Lagoon affects the local roads and the US-101 access ramp as well as SamTrans bus lines 292 and 397 (Figure 12I). It is also important to mention that the city of Brisbane lies within the FEMA 100-year flood zone and has historically been affected by riverine flooding, most recently in 2011. Sea level rise could worsen this issue by moving the head of tides further inland and increasing the risk of riverine flooding. The mostly undeveloped areas of the Brisbane Baylands towards the shoreline, covered by the San Francisco/San Mateo Bi-County Area PDA and partially by the San Bruno Mountain PCA, is further affected by tidal flooding at 96" TWL, at which point water enters from the Brisbane Lagoon as well as the channel running through Baylands Soil Processing, flooding the large undeveloped area near Bayshore as well as a section of the US-101.



84" TWL



96" TWL

### OVERTOPPING AND FLOODING ▲

**Figure 11I. Two total water levels selected that demonstrate first overtopping and/or significant flooding thresholds.** Visit the Bay Shoreline Flood Explorer ([explorer.adaptingtorisingtides.org](http://explorer.adaptingtorisingtides.org)) to see more TWLs.

- No overtopping
- Overtopping
- Shallower depth of flooding
- Deeper depth of flooding

### FIRST FLOODING OF REGIONAL SYSTEMS ASSESSED

Regional Systems Impacted	12"	24"	36"	48"	52"	66"	77"	84"	96"	108"
Rail (Kinder Morgan Gas Terminal)								Car		
Sierra Point Parkway								Car		
SF/San Mateo Bi-County Area PDA									Building	
US-101									Car	

**Figure 12I. First exposure of regional systems.** Individual assets within the four regional systems in this area are shown and colored bars represent when each asset is first exposed to flooding impacts.

# Shared vulnerabilities to flooding

## SHARED VULNERABILITY STORIES

Vulnerability assessments were conducted on individual assets and then shared vulnerabilities were identified for regional systems within each focus area. The vulnerability statements below reflect shared stories of vulnerability. Our goal is to emphasize the interconnections among and across local systems, and encourage shared multi-benefits adaptation solutions.

---

### 1. Regional Transportation: Railroad & San Francisco/San Mateo Bi-County Area PDA



The San Francisco/San Mateo Bi-County Area PDA aims to provide public transportation, jobs and housing and is vulnerable to sea level rise along the railroad tracks near Bayshore. This would have severe effects on the currently planned residential and commercial areas as well as the existing movement of goods and people by UPRR and Caltrain along this corridor. An interruption of the railroad here would have effects on the neighboring cities and likely the Bay Area as a whole.

---

### 2. Contamination



A large number of contaminated sites from previous industrial uses pose a risk to public and environmental health if infiltrated with saltwater, potentially leeching the contaminants and washing them into urban areas and the Bay.

---

### 3. Coordination/Governance



The northern area at the border between San Mateo and San Francisco County, including multiple cities, UPRR and Caltrain for the railroad, Caltrans for US-101 and a major residential and commercial development plan, will require extensive coordination among the different entities to ensure long-term resilience to future flooding.



# Shared consequences to flooding

## SHARED CONSEQUENCE STORIES

This section translates shared vulnerability statements into stories of shared consequences. The ART program considers consequences through frames of sustainability: Society and Equity, the Economy and the Environment.



**Society and Equity** • Potential inability to develop area due to contamination and flood risk could have negative effects on local communities and the region as a whole, by preventing an increase in the number of available housing units and job opportunities.

Flooding of local roads, such as the Sierra Point Parkway, Lagoon Way and Tunnel Ave limit mobility of Brisbane residents and commuters traveling to Sierra Point and Oyster Point.



**Economy** • The flooding of the proposed development areas may cause an unexpected increase in adaptation and recovery costs, if the development is permitted and carried out. The complex ownership and permit structure could lead to inefficient use of funds or a delay and failure in planning and implementing projects or cause unintended consequences for other jurisdictions and entities. Flooding of the railroad tracks would delay or interrupt passenger and goods movement through the region causing economic losses.



**Environment** • Flooding of contaminated sites in the Baylands poses a threat to the local population and wildlife in the Bay, if they are not cleaned-up, protected or contained prior to flooding. Flooding of transportation infrastructure could lead to an increase in local pollution, traffic congestion and greenhouse gas emissions, since commuters must take detours or are not able to take public transit. Erosion and interruption of the Bay Trail would lead to a reduction in the access to the Bay, wetlands and the appreciation of regional wildlife.

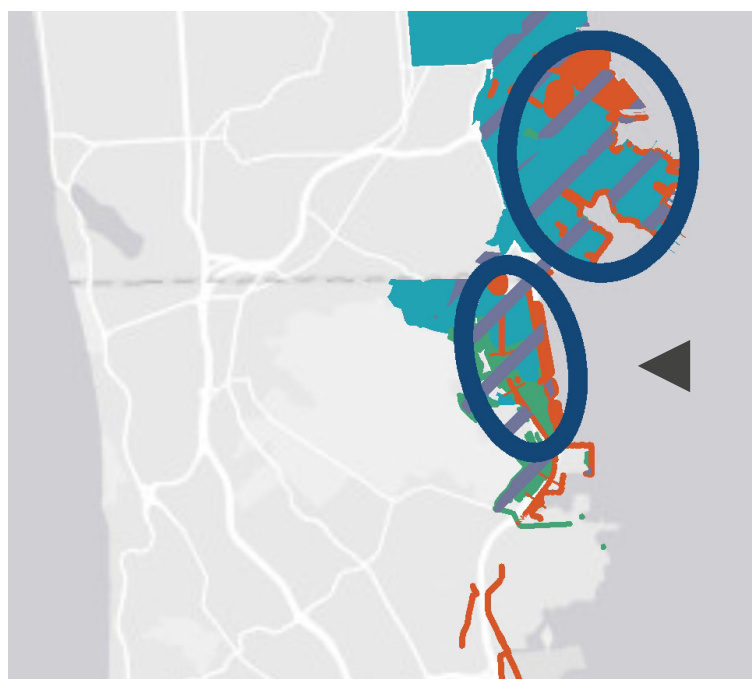
# Advancing adaptation solutions

## FITTING INTO REGIONAL STORY

### *How are local areas contributing to Regional Hot Spots?*

The regional scale analysis of ART Bay Area identified clusters of highest consequences around the region, called “Regional Hot Spots.” These areas include places that contain the top five highest consequences in the region for 1) any transportation asset and 2) either a PDA or PCA, and 3) the presence of a vulnerable community block group at any given water level.

### Regional Hot Spot at 96” TWL



- Regional Hot Spot
- Transportation Infrastructure
- Vulnerable Community
- PDA
- PCA

**Figure 13I. Brisbane Hot Spot:** From 96” TWL to 108” TWL, this Focus Area contains clusters of assets that have among the highest consequences of flooding in the region.

Datasets were identified for each regional system to provide a measure of consequence to quantify impacts in the event of flooding. A full list of consequences used for each regional system can be found in Chapter 2.1 Regional Hot Spots.

The Brisbane and Bayshore Focus Area is a Regional Hot Spot, meaning it contains a cluster of assets that have among the highest consequences of flooding in the region.

Brisbane Baylands becomes a Regional Hot Spot starting at 96” TWL, driven by exposure of the Caltrain rail line alongside US-101 and the San Francisco/San Mateo Bi-County Area PDA.

Chapter 4 Regional Adaptation provides adaptation responses for regional issues.



From left to right: Hunters Point, US-101, and Brisbane. . Photo by Aaron\_Smart is licensed under CC BY-NC 2.0.

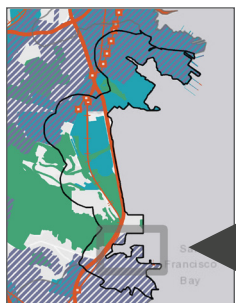


Looking west, with US-101 in the middle of the photo and Brisbane on the right of the ridge line. Photo by Joe Wolf is licensed under CC BY-NC 2.0.



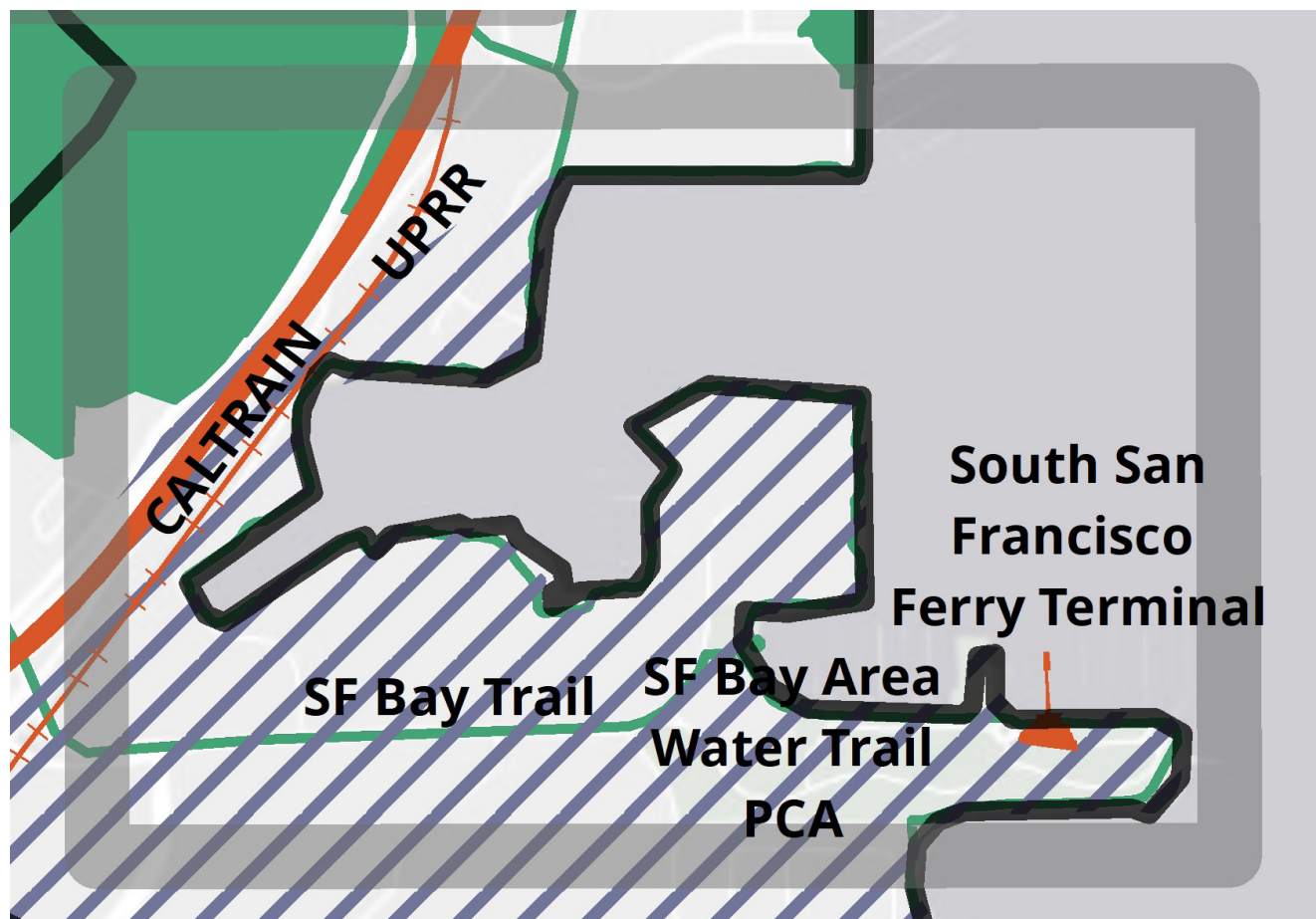


## Focus Area C: *Oyster Point & Sierra Point*



### **Location**

The Focus Area includes Oyster Point and Sierra Point, just southeast of Brisbane. Property on Sierra Point was the site of a municipal landfill until the 1960's (Figure 14l).



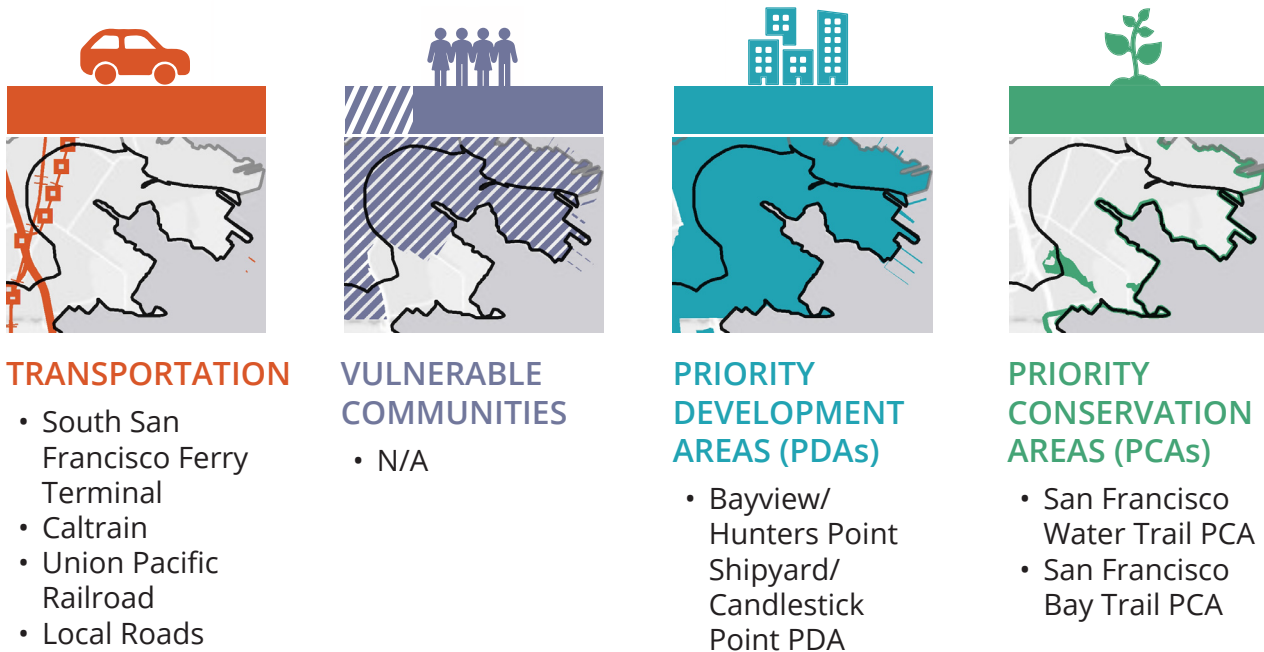
**Figure 14l. Top: Identification of where Focus Area is within OLU. Bottom: Map of Focus Area containing regional systems.** Individual assets assessed in this Focus Area are labeled on the map and listed on the following page.



## Why shared stories of vulnerability?

This Focus Area was selected because it contains a variety of regional systems, including a railroad, ferry terminal, and the Bay Trail and Water Trail. Due to overlap and dependencies among these regional systems in this area, the vulnerabilities of these systems to flooding and sea level rise are discussed together in shared stories of the shoreline, overtopping, and exposure to flooding as water levels rise. The goal of communicating shared vulnerabilities and consequences is to encourage multi-benefit solutions through collaborations and coordination.

### Figure 14l. MAP OF REGIONAL SYSTEMS AND LIST OF INDIVIDUAL ASSETS ASSESSED WITHIN THIS FOCUS AREA LISTED BELOW:



# *Shoreline today and into the future*

## SHORELINE TYPE STORY

*What is the shoreline made up of now?*

The shoreline here is hardened and made up predominantly of riprap-based sea walls.





## SHORELINE DEVELOPMENT STORY

### *How will the shoreline change in the future?*

Sierra Point is a master planned, partially developed office park/hotel complex with marina encompassing approximately 90 acres in Brisbane. Approved shoreline biotech projects by HCP Inc, and Phase 3 will add approximately 1 million square feet of new development to Sierra Point. The Oyster Point Project, which aims to redevelop the waterfront of Oyster Point, has been frequently changing hands. At the time of writing it has been most recently been acquired by Kilroy Realty in 2018. The owner plans to build 11 office and laboratory buildings for the growing biotech industry. Both projects are located at the waterfront and would most likely lead to a further hardening of the shoreline in order to protect the new development.

Sierra and Candlestick Point. Photo by Doc Searls is licensed under CC BY 2.0.



# Current and future flooding risk

## OVERTOPPING STORY

### *Where is water coming over the shoreline?*

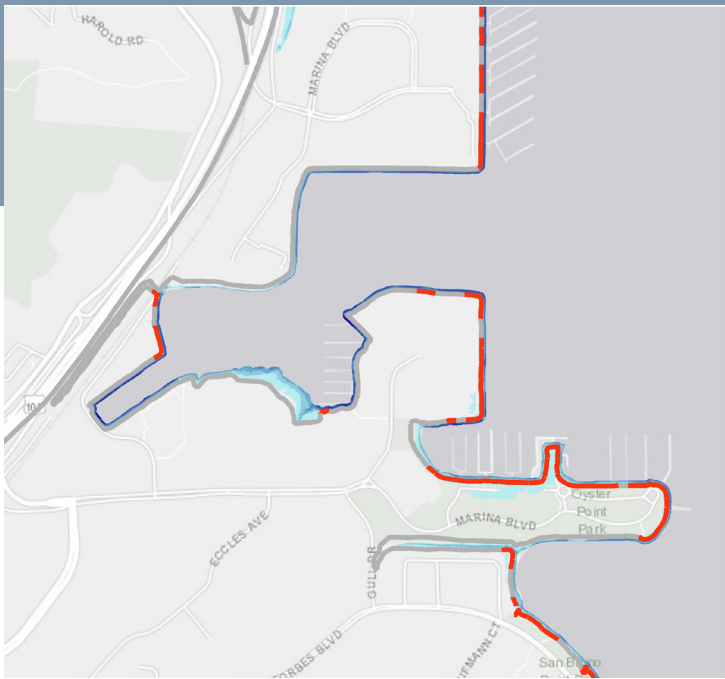
Main areas of overtopping (Figure 15l) on Oyster Point occur around the Oyster Point Park, allowing water to flood the parking lots at 24" TWL and above. At 36" TWL, the entire harbor front at Sierra Point becomes overtopped. The flooded area increases linearly with increasing TWL.

## FLOODING EXPOSURE STORY

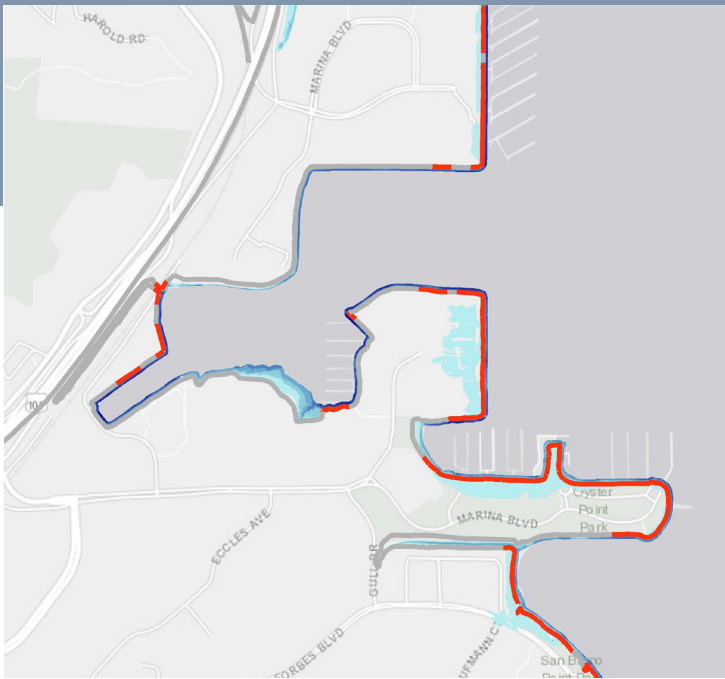
### *Where does flooding occur?*

Early exposure between 12" and 24" TWL (Table 16l) starts affecting assets around the Oyster Point and Sierra Point marinas. The Bay Trail, which acts as one of the main access roads for the Ferry Terminal as well as the Water Trail launch site at Oyster Point, becomes inundated as early as 12" TWL. The Ferry Terminal's main parking lot and terminal access becomes flooded at 24" TWL. Despite having the lowest overall ridership numbers within the Bay Area's ferry network, the terminal functions as a transportation hub for the OLU's industrial and commercial zone in Oyster Point and Sierra Point, which includes companies such as Genentech. 41% of its ridership access the terminal by bike or on foot via the Bay Trail.

Other assets remain safe from flooding until 77" TWL, when low lying segments of the railroad West of Oyster Point become inundated.



24" TWL



36" TWL

OVERTOPPING AND FLOODING ▲

**Figure 15I. Two total water levels selected that demonstrate first overtopping and/or significant flooding thresholds.** Visit the Bay Shoreline Flood Explorer ([explorer.adaptingtorisingtides.org](http://explorer.adaptingtorisingtides.org)) to see more TWLs.

- No overtopping
- Overtopping
- Shallower depth of flooding
- Deeper depth of flooding

FIRST FLOODING OF REGIONAL SYSTEMS ASSESSED

Regional Systems Impacted	12"	24"	36"	48"	52"	66"	77"	84"	96"	108"
San Francisco Bay Trail PCA										
San Francisco Water Trail PCA										
Ferry Terminal										
San Bruno Mountain PCA										
Caltrain										

**Figure 16I First exposure of regional systems.** Individual assets within the four regional systems in this area are shown and colored bars represent when each asset is first exposed to flooding impacts.



# Shared vulnerabilities to flooding

## SHARED VULNERABILITY STORIES

Vulnerability assessments were conducted on individual assets and then shared vulnerabilities were identified for regional systems within each focus area. The vulnerability statements below reflect shared stories of vulnerability. Our goal is to emphasize the interconnections among and across local systems, and encourage shared multi-benefits adaptation solutions.



### 1. Contamination

A large number of capped contaminated sites from previous landfill uses pose a risk to public and environmental health if infiltrated with saltwater, potentially leeching the contaminants and washing them into urban areas and the Bay.



### 2. Regional Transportation: Railroad

The function of the railroad system to provide goods and people movement along the Peninsula by UPRR and Caltrain is vulnerable to sea level rise impacts directly West of Sierra Point. Flooding of this section of tracks prevents the safe passing of trains which would affect large areas of the Bay as there are no alternative railroad tracks connecting San Francisco with the Peninsula and South Bay.



### 3. Regional Transportation: Ferry

The ferry terminal's function to provide commuter and recreational movement to the South Bay is vulnerable to sea level rise along the parking lot and the Bay Trail section serving it. The ferry terminal's parking lot and Bay Trail provide access to regional commuters working in the commercial zone of Oyster and Sierra Point. If severely flooded it may lead to the closure of the ferry terminal.



### 4. Developed Areas: Oyster Point

Businesses on Oyster Point near the waterfront and Oyster Point Park provide regional job centers and are vulnerable to sea level rise along the shoreline. Flooding could cause these businesses to temporarily close or even move out of the area. This would impact the economy in the area and have repercussions on the many commuting employees and business partners in other areas of the Bay. Information about combined riverine-tidal flooding may serve to complicate the City's planning efforts to address sea level rise along Islais Creek.

## SHARED CONSEQUENCE STORIES

This section translates shared vulnerability statements into stories of shared consequences. The ART program considers consequences through frames of sustainability: Society and Equity, the Economy and the Environment.



**Society and Equity** • The impairment or closure of the ferry terminal due to flooding of the parking lot or access via Bay Trail would have consequences for regional commuters working in the industrial/commercial zone of Oyster and Sierra Point, including large employers as Genentech. It would also affect the vulnerable community in Bayview Hunters Point in the Northern section, who receive discounted passes.

Disruption of the Caltrain service could cause additional congestion during sports events and inhibit people from attending those events.



**Economy** • Disruption of the ferry terminal and local marinas would adversely affect local businesses and communities by hindering commuter travel. The exposure of the railroad tracks West of Sierra Point would prevent the transportation of passengers and goods, leading to delays and economic losses. Complex ownership and rights structures for both the ferry and railroad services could lead to leading to higher coordination costs or delays in flood adaptation with potential consequences for the regional economy.



**Environment** • The leaching of contamination due to water infiltration poses a potential health risk to the public and wildlife in this Focus Area and in the Bay.

Erosion and consequent interruption of the Bay Trail along Oyster Point and Sierra Point could lead to a reduction in the use by pedestrians and bikers increasing the use of fossil-fuel powered methods of transportation. It would also lead to a reduction in the access to the Bay, wetlands and the appreciation of regional wildlife.

# Endnotes

- 1 Caltrans, “2016 Vehicle Volumes (AADT).”
- 2 Caltrans, “2016 Truck Volumes (AADTT).”
- 3 “Lifeline Routes.”
- 4 “San Francisco Bay Ferry - Wikipedia,” accessed September 3, 2019, [https://en.wikipedia.org/wiki/San\\_Francisco\\_Bay\\_Ferry](https://en.wikipedia.org/wiki/San_Francisco_Bay_Ferry).
- 5 WETA, “WETA 2017 On -Board Passenger Survey Summary Report,” 2017, <https://weta.sanfrancisco-bayferry.com/sites/default/files/weta/publications/2017PassengerSurveyRept.pdf>.
- 6 WETA.
- 7 Caltrans, “Annual Passenger Counts.”
- 8 “American Community Survey.”
- 9 “American Community Survey.”
- 10 “MTC Communities of Concern in 2018 (ACS 2012 - 2016).”
- 11 “San Francisco Indicator Project: Bayview/Hunter’s Point Neighborhood Indicator Profiles.”
- 12 California Office of Environmental Health Hazard Assessment, “CalEnviroScreen 3.0.”
- 13 “American Community Survey.”
- 14 “American Community Survey.”
- 15 “MTC Communities of Concern in 2018 (ACS 2012 - 2016).”
- 16 California Office of Environmental Health Hazard Assessment, “CalEnviroScreen 3.0.”
- 17 “Urban Displacement Project.”
- 18 “Visitation Valley/Schlage Lock Plan | SF Planning,” accessed November 22, 2019, <https://sfplanning.org/visitation-valleyschlage-lock-plan>.
- 19 “Brisbane Baylands – Sustainable Living in the Peninsula,” accessed August 22, 2019, <https://brisbane-baylands.com/>.
- 20 “Bayview Hunters Point | Office of Community Investment and Infrastructure.”
- 21 “San Francisco Bay Area Water Trail.”
- 22 “San Francisco Bay Trail – A 500-Mile Trail Around the Bay.”