25. FOSTER CITY CORPORATION YARD

Owned by the City of Foster City

VULNERABILITY SUMMARY

Vulnerability of the Foster City Corporation Yard (Yard) is **low**. The critical stormwater and wastewater systems were designed to tolerate flooding, making the Yard's functions relatively insensitive to flooding. Present exposure of the Yard is low, as it is protected from high water on San Francisco Bay by the Foster City levee. Finally, the pumping infrastructure system in the Yard itself was built to minimize the depth and extent of flooding, reducing potential damages to facilities and reducing the likelihood for a loss of service, giving the pump station a moderate adaptive capacity. The scale of consequences should the Yard lose service are very high.

SENSITIVITY	*EXPOSURE*	*ADAPTIVE CAPACITY*	*CONSEQUENCES*
Low	*Low*	*Moderate*	*High*

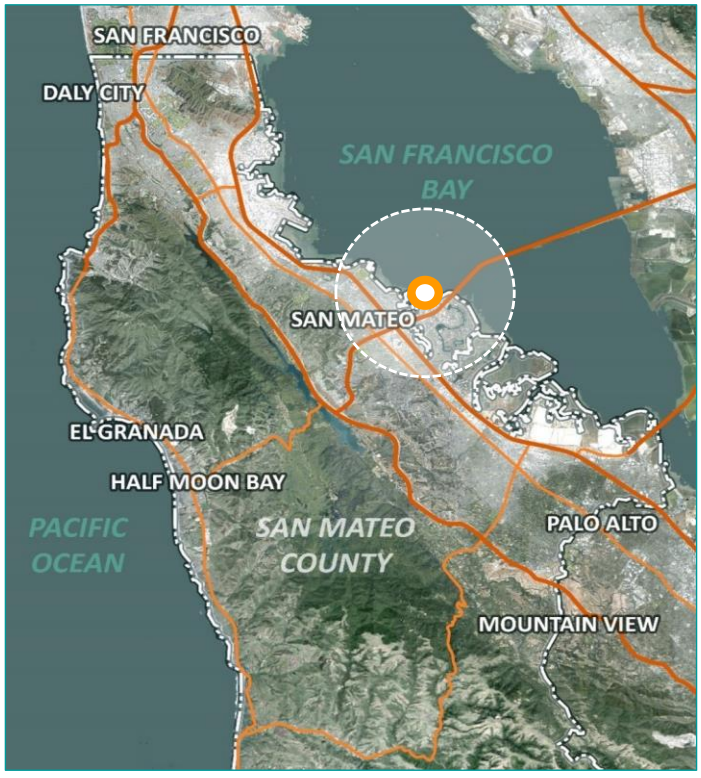
ASSET CHARACTERISTICS

100 Lincoln Centre Dr | Foster City

Asset Description and Function:

The Yard serves around 31,000 people, and it houses all critical infrastructure for Foster City's main utilities, including stormwater and wastewater pumping systems, potable water tanks, and a communication tower that supports emergency broadcasting. The Foster City Lagoon (just south of the corp yard) acts as the storm drain system for the City and controls runoff or storm flows on the interior side of the levee. The lagoon is also a valuable recreational asset for Foster City.

Asset Type	Corporation Yard
Asset Risk Class	4
Size	9.1 acres
Year of Construction	1960s
Elevation	5 feet NAVD
Level of Use	24 hours per day
Annual O&M Cost	$50,000
Special Flood Hazard Area	Asset is not in SFHA
Physical Condition	Good
Landowner	City of Foster City, Estero Municipal Improvement District



Underground Facilities

Utility and electrical lines, sewer and wastewater pipes are underground.

Environmental Considerations

Special status plants, animals, and natural communities may be present in the project area; a more detailed analysis will be needed before implementing adaptation strategies.

FOSTER CITY CORPORATION YARD

ASSET SENSITIVITY

Most services provided by the Yard are not very sensitive to a moderate level of coastal inundation. Most importantly, for stormwater and wastewater, the two 750-horsepower pumps (with a combined capacity of 250,000 gallons per minute) are both elevated and operate on diesel fuel, not electricity, meaning their operation is not sensitive to inundation. A loss of the pumps would require inundation to be so severe that all access to the pumps or fuel is eliminated. While drinking water would be sensitive to saltwater intrusion, the potable water tanks are sealed and the only inlet for salt water would be through vents in the top, making it insensitive to minor inundation.

The communication tower is sensitive to flooding because the lagoon pump house on which the tower sits contains the essential components for the communication tower. If flooded, the loss of those components would likely cause the communication tower to lose service. While it is unlikely the tower itself would be exposed to flood water, long-term exposure could cause corrosion and structural damage to the tower. Lastly, if the Yard and vicinity were flooded, recreational use of the lagoon would be eliminated until floodwater were pumped out, any damage to relevant infrastructure repaired, and until any water quality concerns were addressed.

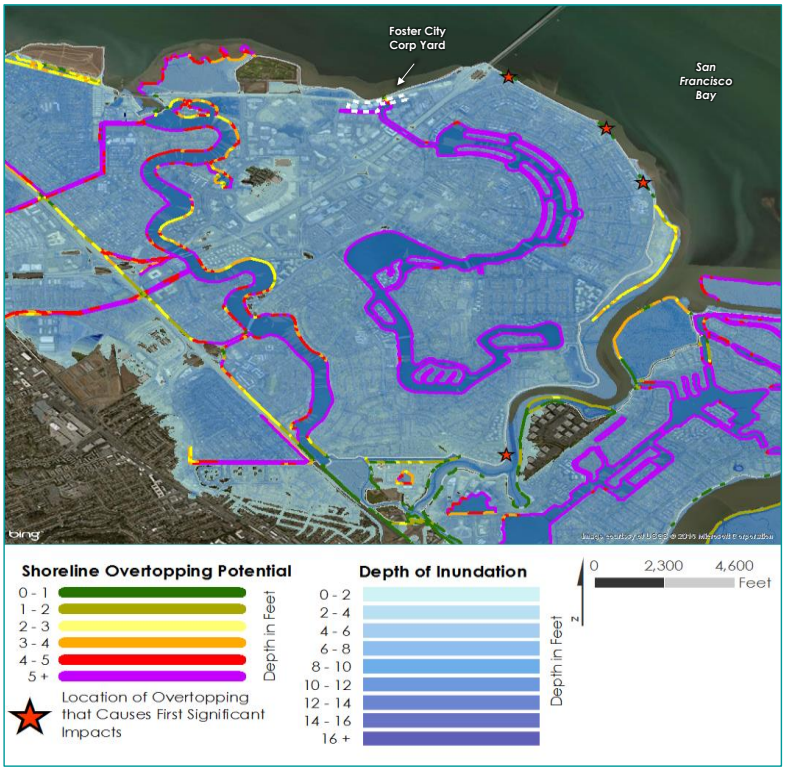
Communication tower with emergency broadcast function.

SHORELINE VULNERABILITY

Shoreline Overtopping Analysis

When water surface elevations reach between 48 and 52 inches above current mean higher high water (MHHW), water from San Francisco Bay (in the northeast) and Belmont Slough (in the southeast) can overtop the Foster City levee (red stars in map), causing widespread inundation and creating a potential flow path to the asset. The nearest overtopped section of the Foster City levee is roughly half a mile from the Yard.

First Significant Impacts: 52 inches above MHHW.



Cross-Cutting Vulnerabilities

The exposure of the Yard depends on the Foster City levee system and the shoreline that connects to the Foster City levee system (including neighboring communities). This means that even as Foster City may improve its levee to adapt to sea level rise, areas protected by the Foster City levee (including the Yard) could be exposed to flooding due to overtopping of other sections of the shoreline that are lower than the Foster City levee.

FOSTER CITY CORPORATION YARD

SEA LEVEL RISE EXPOSURE ANALYSIS

Exposure Discussion

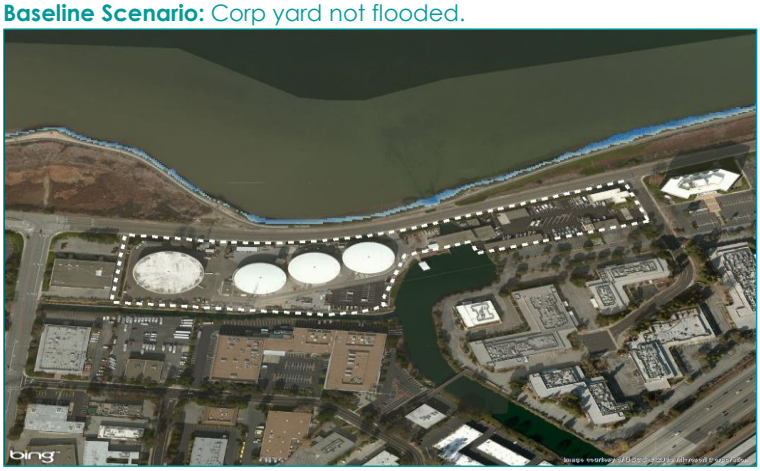
Exposure to coastal inundation is low because this area is protected by the Foster City levee system, and therefore the corp yard and its critical infrastructure systems have not experienced any coastal flooding. Because the Yard and Foster City were built on bay mud, groundwater tables are high and the ground is saturated most of the time, which makes the area vulnerable to any type of flooding. This necessitates the frequent use of the lagoon pump system.

Modeling suggests that the corp yard will be below sea level with between 0 and 12 inches of sea level rise. However, it will not experience coastal flooding until the levee that protects it is overtopped or fails, at which point the asset could experience significant damage (assuming no action), and water levels could flood the Yard up to 16 feet deep, depending on the scenario (see table below).

Many of the Yard's components are elevated, including the pumps, the communications tower, the water tanks, and the diesel tanks (used to operate the pumps), reducing the likelihood of exposure even if flooding occurred on the interior of the levee. The lagoon system would likely fill up as well.

**Note: Maps to the right assume no intervention (i.e., interior pumping and drainage system).*

Baseline Scenario: Corp yard not flooded.

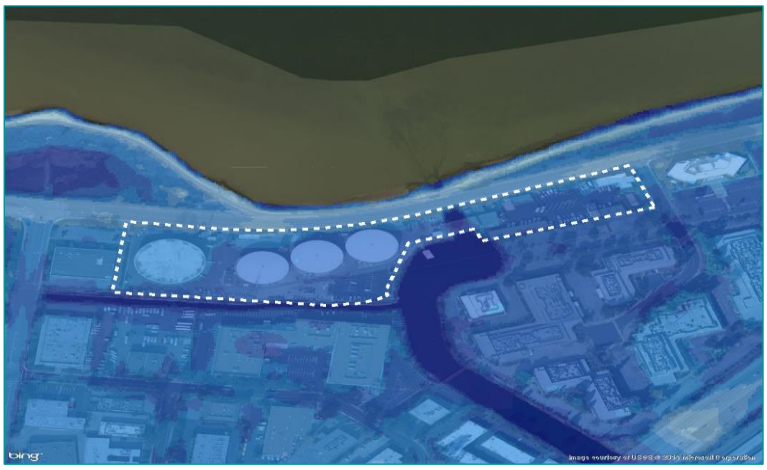


Mid-Level Scenario: Corp yard under 2-13 feet of water.

Exposure Analysis Results

Potential Inundation Depth (feet)		
Scenario	***Minimum***	***Maximum***
First Significant Impacts *(52")*	***0***	***11***
Baseline *1% Flood*	***0***	***0***
Mid-Level *1% + 3.3 feet*	***2***	***13***
High-End *1% + 6.6 feet*	***6***	***16***

High-End Scenario: Corp yard under 6-16 feet of water.



FOSTER CITY CORPORATION YARD

ADAPTIVE CAPACITY, CONSEQUENCES, AND POTENTIAL ADAPTATION

Adaptive Capacity

Adaptive capacity of the Yard is moderate. There are no other locations that can provide the same functions; however, the existing infrastructure systems were designed to tolerate and minimize the extent and depth of flooding on site (and in Foster City) or have backup systems to do this. For example, with advance notice, Foster City will release water from the lagoon to San Francisco Bay in order to create space to accommode flood flows that may come from coastal flooding or a rain event. The pumps, which operate even while inundated, will continue to remove floodwater and have enough backup fuel to function for roughly one month. There are sandbags on site and response plans in place. There are also 18 emergency generators throughout Foster City to support the other key lift stations in maintaining the stormwater and wastewater functions, minimizing damage in Foster City. If the communication tower lost broadcast function, there are a number of other towers in the County that could compensate, rebroadcasting for the Yard tower such that only a small portion of the county would lose its signal altogether.

Consequences

The consequences of near-term and minor flooding are low; however, the impacts caused by a total loss of this asset would be high and could affect the entire area protected by the levee-pump system. The pumps and other buildings on site could incur direct damages, requiring repair or replacement, but the loss of service of critical infrastructure could contribute to greater and more significant impacts. It is possible that an event that causes a loss of this asset would be large enough to affect the region already, making the incremental impacts from the loss of the Yard small in comparison. However, the loss of these critical functions is worth noting, as they will need to be immediately restored following the receding (or pumping) of floodwaters. For example, a loss of potable water supply poses an immediate threat to fire-fighting operations, and lack of clean drinking water could be hazardous to Foster City's residents. A loss of sewer system function could result in sewer overflows, creating a public health hazard and property damage for the residents and businesses in Foster City and San Mateo (City of); this could affect up to 31,000 people. Total damages to the Yard are estimated at roughly $75 million.

Additional Important Information

The Foster City Levee may be raised to adapt to sea level rise, which means that the likelihood with which the Yard could be exposed to coastal flooding would be further reduced.

The pumps in the Yard combined with the levee system also protect communities identified as socially vulnerable (primarily due to their age and status as renters). This means they could face greater challenges, relative to other communities, in responding and adapting to any flooding.

Foster City Lagoon as it enters pump house.

The levee in Foster City protects potable water tanks (white) in the corp yard (left).

Asset-Specific Adaptation

Adaptation needs at the site may be accommodated if the Foster City Levee is raised for sea level rise. However, the pump station could be floodproofed to maintain access (thus ensuring operation) even in a severe flood event, and to preserve the essential components of the communication tower.

Vulnerable Corporation Yards

There is another Asset Vulnerability Profile on vulnerable corporation yards: Belmont Corporation Yard (AVP #29). At the time of this assessment, an exhaustive dataset on corporation yards in San Mateo County is unavailable.