

26. BAYSIDE STEM ACADEMY

San Mateo - Foster City School District

VULNERABILITY SUMMARY

The Bayside Science, Technology, Engineering, and Mathematics (STEM) Academy (Academy) is **moderately vulnerable** to impacts of sea level rise. The Academy has a performance theater and soccer fields on the property that are used by numerous public and non-profit organizations. The asset is highly sensitive to inundation, as flooded buildings could force closure and evacuation. Exposure to coastal flooding is low due to the benefits provided by the Foster City Levee and Lagoon Pumping System; however, the Academy has already experienced groundwater seepage, making exposure overall moderate. Adaptive capacity is high, as students could be distributed to other schools in the district.

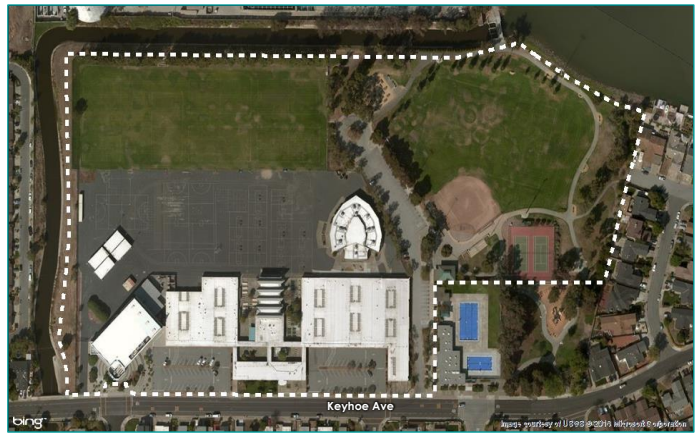
SENSITIVITY High	EXPOSURE Moderate	ADAPTIVE CAPACITY High	CONSEQUENCES High
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ASSET CHARACTERISTICS

2025 Kehoe Avenue | San Mateo

Asset Description and Function:

The Academy is a public middle school serving the City of San Mateo within the Foster City and San Mateo School District. The school has an administrative building, a gym, 30 classrooms, five portable classrooms, a library, and a theater. The performance theater is also used by the greater community, and San Mateo Parks and Recreation uses the school yard field during soccer season (non-school hours). Like all other schools in the district, the Academy may be used as an emergency shelter if needed, though it has not been identified by the City of San Mateo or by the American Red Cross as a primary shelter site.



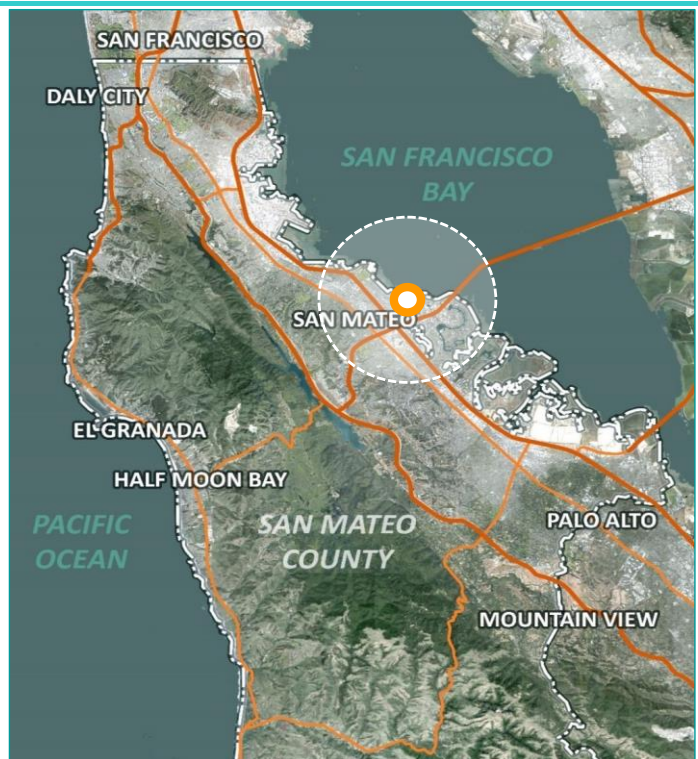
Asset Type	School
Asset Risk Class	3
Size	12 acres
Year of Construction	1959
Elevation	5 feet (one building below grade)
Level of Use	680 students 180 days/year
Annual O&M Cost	Unknown
Special Flood Hazard Area	Asset is not in SFHA
Physical Condition	Good
Landowner	San Mateo - Foster City School District

Underground Facilities

The orchestra pit (performance theater) is below grade.

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.



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ASSET SENSITIVITY

The Academy's primary function is very sensitive to inundation, but the school's other functions are moderately sensitive. Specifically, the Academy is only moderately sensitive to a power loss, but could be very sensitive to inundation, depending on the extent and duration of the flood. While the school's transformer (power system) is at grade, the school can operate without power and has done so previously. However, if water inundated the classroom and other buildings that normally contain students, the Academy would likely close and students would need to be evacuated.

If the Academy were closed, it could no longer provide the emergency shelter service. The Academy and its buildings on site are fairly insensitive to groundwater table increase and saltwater intrusion. The theater was closed for repairs to fix a seepage problem, but the theater was able to reopen; the extent of groundwater seepage has not yet caused a disruption to any other services the Academy provides. Because there are no other below-grade essential facilities on the property, it is unlikely that future groundwater seepage driven by sea level rise would noticeably affect levels of service of buildings at the school.

Entrance to Bayside STEM Academy.

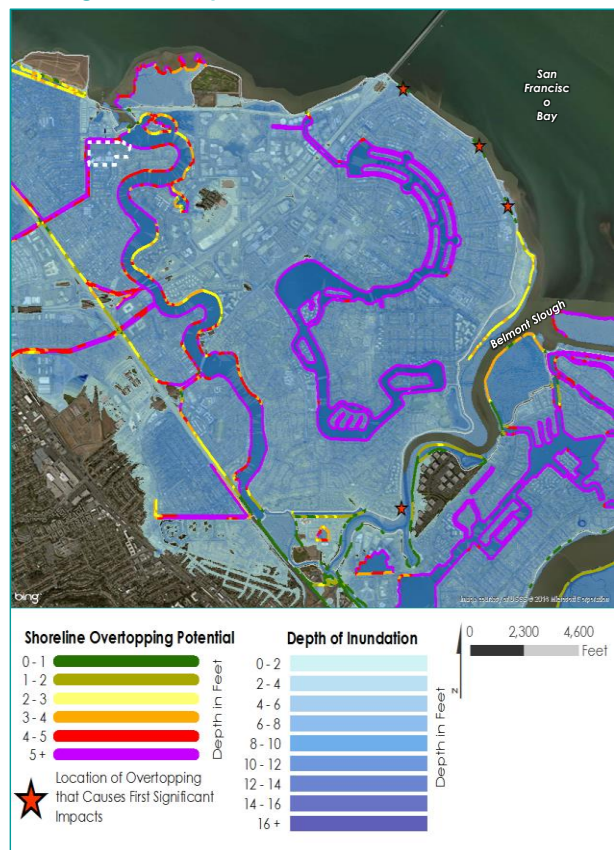


SHORELINE VULNERABILITY

Shoreline Overtopping Analysis

The Academy is in white-dashed lines. When water surface elevations reach between 48 and 52 inches above MHHW (6-10 inches above the 1% flood level), water from San Francisco Bay (in the northeast) and Belmont Slough (in the southeast) overtops the Foster City levee system, causing widespread inundation, and creating a potential flow path to the asset, if no action is taken. These areas are indicated by red stars on the map to the right. However, there is a proposal to raise the height of the levee system, reducing the exposure to flooding. Because the Academy is protected by levees, it will experience no coastal flooding until the levee system that protects it is overtopped or fails, at which point the asset could experience significant damage. The nearest overtopped section of the Foster City levee is roughly 1.8 miles northeast of the school.

First Significant Impacts: 52 inches above MHHW.



Cross-Cutting Vulnerabilities

The exposure of the Academy depends almost wholly on the Foster City levee system (see AVP #24), the lagoon pump system at the Foster City Corporation Yard (see AVP #25), and the City of San Mateo levee and pump system. If any of those assets were compromised, exposure of the school is almost certain.

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SEA LEVEL RISE EXPOSURE ANALYSIS

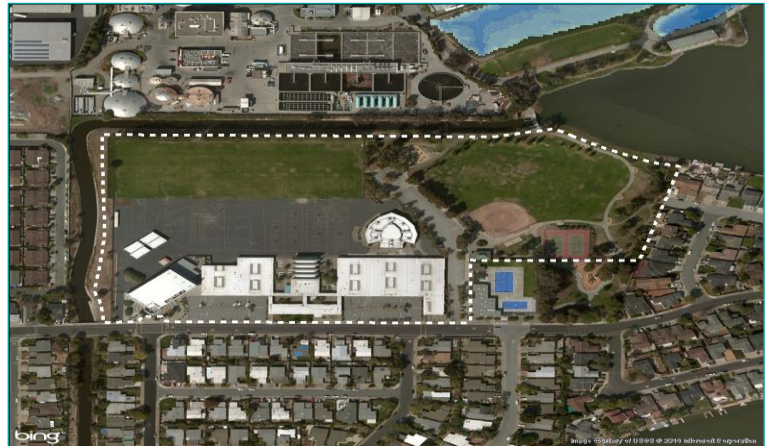
Exposure Discussion

Exposure of the asset is moderate. The Academy has never experienced flooding from San Francisco Bay or the adjacent Leslie Creek Canal, and this is largely due to combined flood protection benefits offered by the Foster City levee system and the Foster City lagoon pump system at the Foster City Corporation Yard. Because the asset was built on Bay mud, the groundwater table is high; however, and groundwater seepage and saltwater intrusion are already apparent on the southeastern corner of the property in the theater adjacent to Crestview and Kehoe Avenues. Part of the theater is built below grade and possibly below sea level.

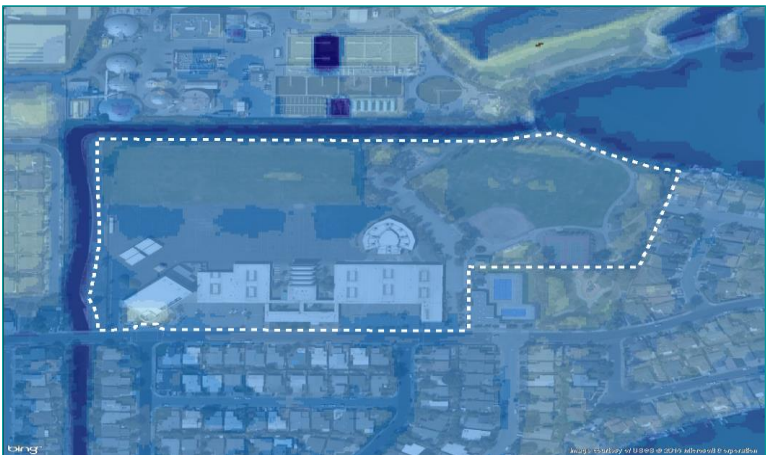
When sea level rises between 0 and 12 inches above MHHW, the Academy property will be below sea level. With sea level rise, saltwater intrusion and groundwater seepage are likely to increase as the groundwater table rises, and likely to pose challenges to interior drainage during storms.

Because the asset is protected by a levee, flooding will not be incremental as the sea level rises. On the contrary, the Academy will experience no flooding until the levee overtops (between 48-52 inches). At that point, assuming no action (such as Foster City Lagoon pumping) the entire school and property including sports fields, parts of the theater, classrooms, and gym could be inundated up to 6 or 13 feet deep, depending on the sea level rise scenario.

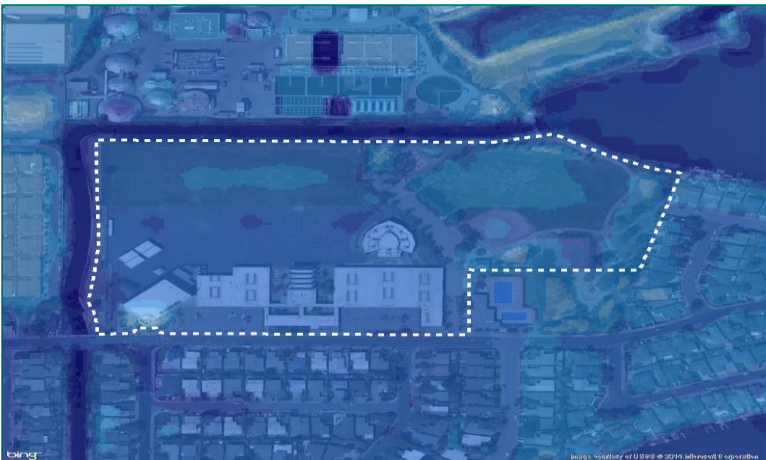
Baseline Scenario: School is not flooded.



Mid-Level Scenario: School is under 2-10 feet of water.



High-End Scenario: School is under 6-13 feet of water.



Exposure Analysis Results

Potential Inundation Depth (feet)		
Scenario	Minimum	Maximum
First Significant Impacts (52")	0	8
Baseline 1% Flood	0	0
Mid-Level 1% + 3.3 ft.	2	10

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ADAPTIVE CAPACITY, CONSEQUENCES, AND POTENTIAL ADAPTATION

Adaptive Capacity

While the Academy may be vulnerable to flooding, the educational service it provides has a high adaptive capacity, albeit with a decreased level of service. If flooded for any length of time, the Academy has an evacuation and emergency plan (such as additional food and supplies) in place to mitigate damage and injuries during the event. Additionally, the Academy district could redistribute its students to other schools within the district in order to ensure the educational function is maintained. However, many schools in the district are already at capacity and level of service could decline with more students. In the event of a catastrophic disaster, the school could be used as an emergency shelter. Given its location, if the school were to flood, many adjacent assets in the area could be flooded as well. It is likely that the recreational uses of the school (soccer) could be relocated to other soccer fields, even if one season were lost. The performance theater function may be able to transfer to San Mateo High School's theater.

Consequences

Groundwater and saltwater seepage to date has forced the repair of the theater including carpet replacement. The particular issue was mitigated, but future groundwater seepage could damage the foundation or below-grade components of the theater and cause repeated damages that needed repair. Inundation of the school due to a flood event would cause direct damages to the school and buildings on site, and would force immediate closure of the buildings for an extended period of time. If the school were closed short-term, students may simply stay home; if the school were closed in the long term, students would likely be relocated to other schools. The Academy also serves many low income families who may face additional hardship posed by temporary or extended flood related to sea level rise that forces students to stay home for extended periods of time or to relocate to other schools.

Additional Important Information

Despite evacuation and emergency preparedness, it may also be possible that the adjacent San Mateo Waste Water Treatment Plant is flooded during the same event, which could expose people to hazardous waste. Young people are more vulnerable than others in their ability to respond to and recover from disasters. Special care and concern must be taken in management and adaptation decisions.

Asset-Specific Adaptation

Potential sea level rise adaptation measures for the Academy include raising the Foster City and City of San Mateo levee systems. Other adaptation measures on site include floodproofing or elevating facilities and access roads to ensure that essential school facilities are at least safe and at best usable to provide minimal disruption when the area is inundated. On-site green infrastructure improvements could also help minimize initial impacts by helping retain water rather than let it run off.

Vulnerable Schools

This is the only Asset Vulnerability Profile on vulnerable schools in the County. The vulnerability assessment analysis shows that there are 45 vulnerable schools in the project area, including those in Belmont, Burlingame, East Palo Alto, Foster City, Menlo Park, Pacifica, Redwood City, San Bruno, and San Mateo.

Orchestra pit is below grade, experienced saltwater intrusion.

