

Piers 94 and 96

Subarea 4-4



Subarea Description



Subarea 4-4: Piers 94 and 96

Piers 94 and 96 (Subarea 4-4) includes Piers 94 and 96, a mostly industrial area located on Bay fill. Both piers have been identified by FEMA as staging areas for goods as well as debris removal in the event of a disaster. Pier 96 is also a designated area for City medical, mobile hospital and building inspection facilities. Key infrastructure include bulk cargo terminals, San Francisco Bay Railroad, Recology Recycling Center (including sustainable crushing and concrete recycling facilities), and long term lay berths used for maritime, industrial, and emergency response services. Piers 94-96 is part of the Port of San Francisco Piers 80-96 Maritime Eco-Industrial Center which is generally bounded by 25th Street on the north, Illinois Street on the west, and Cargo Way on the south sides. The Maritime Eco-Industrial Center co-locates 185-acres of maritime cargo terminals with industrial uses to optimize product exchange, incorporate green design and green technologies on-site, foster resource recovery and reuse, provide job opportunities for local residents, minimize environmental impacts, and protect wildlife habitat. Pier 94-96 is a Port Priority Use area in the region's Seaport Plan.

Pier 94 is a dry-bulk cargo terminal leased by Hanson Aggregates who import dry bulk via large vessels utilizing Pier 94's deep water berth. Collectively, the dry bulk terminals at Piers 92 and 94 handle over 1.6 million metric tons of sand and aggregate material each year. The facility includes storage space for sand and aggregate materials delivered to Pier 94 by ship or mined from the Bay and delivered to Pier 92. Pier 94 connects to the San Francisco Bay Railroad. The railroad is highly vulnerable to flooding since it cannot operate if the tracks are not visible.

The Recology Recycling Center, which has regional significance, is located at Pier 96. The site also includes Recology's sustainable crushing operations, a Concrete recycling facility that reduces the need for construction debris to end up in landfills. Combined, these two Recology facilities account for 70 percent of the City's recycling and landfill diversion. The pier is also connected to the San Francisco Bay Railroad and has a large open paved area currently under negotiations for use as a roll-on/roll-off marine cargo terminal. The site also includes a long-term lay berth used by MARAD, Westar, and Silverado. The seawall on the southern side of Pier 96 has deteriorated and needs repair. The pier is currently subject to flooding during extreme high tides, and the flooding will become more frequent as sea levels rise.

The Pier 94 and 96 maritime, industrial, and emergency response services would be difficult to relocate and replace.

Since 2017, the Port has connected with tens of thousands of community members through the Waterfront Resilience Program. Public feedback collected about Piers 94 and 96 underscores the importance of increasing the availability of affordable housing in the neighborhood and maintaining the waterfront bike trail. Further feedback highlights additional community priorities, including opportunities to restore wetlands and increase connectivity.

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Landmarks, Assets, and Services

Land Use

Industrial area with buildings and aggregate, and construction material operations. The movement of material by rail is critical for both emergency response and building and construction trades within the city.

Community-Identified



- Recology Recycling Center
- Bay Trail / Blue Greenway
- Pier 94 Wetlands
- Bayview Hilltop Park

Maritime



- Hanson Aggregates (marine cargo terminal, large vessel berths, Pier 94)
- Marine Cargo Terminal (and large vessel berths, Pier 96)
- Intermodal Cargo Transfer (also in Subarea 4-3)
- MARAD
- Silverado Harbor Services (Pier 96)

Disaster Response



- FEMA Staging Area (Pier 94)
- Debris Removal Staging Area (planned, Pier 96)
- Medical Examiner Temporary Morgue (Pier 96)
- Department of Public Health Mobile Hospital Trailer (Pier 96)
- Large Vessel Berth (Pier 96)
- Department of Building Inspection (DBI) Trailer (Pier 96)
- San Francisco Bay Railroad
- MARAD

Utilities

Water

- Buried water supply pipes

Wastewater

- Buried wastewater and stormwater sewer pipes

Power

- Buried electric power infrastructure

Communications

- Several telecommunication cell sites (e.g. cells on top of buildings or small cell towers on streetlights) are likely distributed throughout the subarea, but specific locations are unknown

Natural Gas

- Buried natural gas supply line infrastructure



Transportation



- San Francisco Bay Railroad

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Open Space and Ecology



Open Space

- Bay Trail / Blue Greenway

Ecology

- San Francisco Bay
- Bay habitat

Problems, Opportunities, Objectives, Constraints, and Considerations

Problems

- Bay water flooding from rising sea levels could cause extensive damage to public infrastructure and private property, industrial processes and disaster response, and adverse changes to the social and economic character of the subarea.
- The subarea's assets are entirely located on Bay fill making them vulnerable to strong seismic activity.
- Important industrial and disaster response services in this subarea are highly vulnerable to both temporary and permanent flooding. Pier 94 dry bulk terminal and materials storage susceptible to flooding and cargo damage. Pier 96 could be expanded to include dry bulk or neo bulk cargo operations. Flooding or other damages would create a shortfall in regional capacity to handle expected growth in these commodities in the next 30 years.
- Rail is particularly sensitive to flooding because it cannot operate with even minimal flooding since flooding on one section disrupts the entire network. Rail in San Francisco is critical for connecting the city to the region and beyond, especially with respect to the construction industry. For example, rail is critical to the Hanson Aggregates facility on Pier 96, one of the major construction material suppliers for San Francisco.
- As flooding becomes more frequent and widespread, access to the area would become unreliable, increasing maintenance, operations, disruption, and damage costs.

Opportunities

- Enhance and adapt former and current industrial spaces for city and community uses, including potential disaster response abilities.
- Increase public access to the waterfront and improve public views and experience connecting to the Bay.
- Improve natural environment by using nature-based features and improve soil quality where possible.
- Identify other co-benefits such as more jobs, and a wider array of work opportunities, in the subarea.

Objectives

- Reduce the risk to disaster response functionality and public safety (including loss of life) and public health from Bay storms and rising water levels.
- Reduce the risk to critical public infrastructure and private property damage from strong seismic activity and rising bay water levels.
- Retain and protect Pier 92 and Pier 94 marine cargo terminals including materials storage and maneuvering areas, and efficient truck and rail access.
- Maintain and enhance best-environmental practices that have been incorporated in the Eco-Industrial Area (e.g. the capture and recycling of rainwater in concrete production process).
- Retain and improve safe public access that does not conflict with maritime and industrial operations when developing project features
- Remove environmental risks and improve the natural environment (water quality/soil) and ecological value.

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- Maintain efficient and sustainable co-location of bulk cargo operations and concrete manufacturing businesses that reduce truck trips and associated air emissions on bridges, highways, and city streets.
- Support a sustainable economy that benefits residents, workers, and industries.
- Preserve maritime cargo functions and related industrial uses.

Constraints

- Must not increase the unmitigated risk of flooding from any source (bay, creek, or surface waters) outside of the subarea.
- Must protect disaster response functionality of the subarea.
- Must not cause an increase in response time from emergency responders, nor cause an increase in flood risk to critical facilities.
- Must comply with all applicable federal, state, and local laws and policies.
- Must not impact function of cargo terminal operations, including efficient truck and rail access.
- The Bay Area’s Seaport Plan identifies this area as a Port Priority Use.

Considerations:

- **Tenants:** The Port leases land to tenants including private companies, City agencies, and the U.S. military. Coordination with all tenants will be important. While the Port owns these lands, many are operated by tenants that invest private capital for infrastructure improvements to the facilities. Management decisions related to addressing the consequences of flooding and planning for future sea level rise adaptation could complicate lease terms and will require additional coordination with tenants.
- **Environmental challenges:** Hazardous waste, solid waste, and impaired water are environmental concerns.
- **Stakeholder engagement:** Ongoing public outreach by the Port and additional efforts, including that conducted by the Islais Creek Southeast Mobility Adaptation Strategy, have generated many location specific comments from the community. Feedback highlights availability of affordable housing, maintenance of the waterfront bike trail, and restoration of wetlands as community priorities.
- **USACE Environmental Operating Principles:** Incorporate as part of the planning process.
- **Equity:** 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. Most of the area is included within MTC’s communities of concern analysis. It also has 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.
- **Flooding or seismic events:** These events could potentially impact maritime and industrial uses that generate Port revenues used for capital repair and maintenance of Port assets and services, including piers, historic buildings and districts, shoreline flood and seismic risk reduction, open space, public assets, parks, maritime berths and other maritime infrastructure, the Embarcadero Promenade and other utilities and infrastructure.

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Seismic Summary

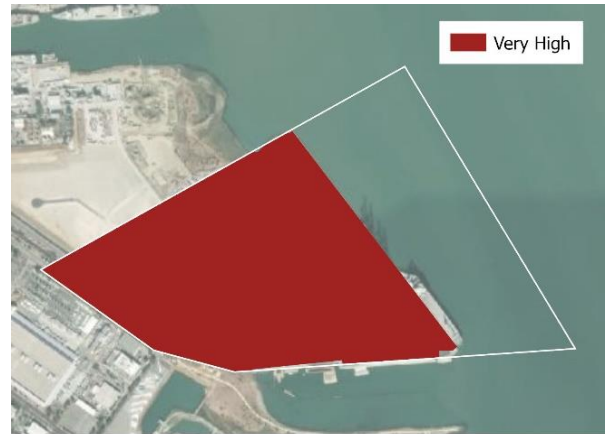
The seismic hazard and vulnerability within Piers 94 and 96 (Subarea 4-4) is currently being evaluated through the Initial Southern Waterfront Seismic Study, therefore comprehensive accounting of liquefaction and lateral spreading hazards cannot currently be provided.

From a regional perspective, USGS provides a high level rating of seismic hazard in Piers 94 and 96 (Subarea 4-4) as an VIII on the Modified Mercalli intensity (MMI) scale. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and finally – total destruction – on a scale of I (not felt) to X (extreme).

An MMI of VIII (severe) could cause slight damage in specially designed structures, considerable damage in ordinary substantial buildings including partial building collapse, and major damage in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, and walls are likely, and heavy furniture may be overturned.

Subarea 4-3 is built almost entirely on bay fill (i.e., artificial fill placed over open bay waters, wetlands, and the former Islais Creek floodplain) and has a Very High susceptibility to liquefaction. The scale considers historical liquefaction occurrences, geotechnical analyses of limited borehole data, and the estimated depth to the shallow groundwater table. The susceptibility ratings are based on existing conditions and do not consider potential increases to the groundwater table that may occur with sea level rise and climate change.

Our understanding of seismic hazard and vulnerability in this subarea will continue to be refined with the completion of the Initial Southern Waterfront Seismic Study and used to develop appropriate risk mitigation measures as part of the Waterfront Resilience Program.



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community