

MEMORANDUM

March 3, 2016

TO: MEMBERS, PORT COMMISSION
Hon. Willie Adams, President
Hon. Kimberly Brandon, Vice President
Hon. Leslie Katz
Hon. Eleni Kounalakis
Hon. Doreen Woo Ho

FROM: Elaine Forbes
Interim Executive Director

SUBJECT: National Flood Insurance Program and draft San Francisco Flood Insurance Rate Maps

DIRECTOR'S RECOMMENDATION: Informational Item – No Action Requested

EXECUTIVE SUMMARY

This memorandum describes the federal National Flood Insurance Program (“National Flood Insurance Program”) and the Federal Emergency Management Agency’s (“FEMA”) current effort to develop a Flood Insurance Rate Map (“FIRM”) of San Francisco. The National Flood Insurance Program was designed by Congress to help local communities and residents and businesses in flood-prone areas understand and manage flood risk in their communities. FEMA develops a preliminary FIRM for a local community to map flood risks. This report describes the potential impacts of the San Francisco FIRM which was published in preliminary form in November of 2015 and enumerates FEMA’s appeal process and describes next steps.

FEMA started its flood hazard mapping exercise for San Francisco in 2007 and has revised its analysis since then based in part on feedback from the City and the Port, as further described in this report.

The City and County of San Francisco adopted a Floodplain Management Ordinance (“Floodplain Management Ordinance,” Ordinance 188-08, Supervisors Elsbernd, Chu) in 2008. At FEMA’s request, the City amended the Floodplain Management Ordinance in 2010 (Ordinance 56-10, Supervisor Elsbernd) to strengthen standards for construction in floodplains. Following adoption of these changes, FEMA approved the

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City's participation in the National Flood Insurance Program. The Floodplain Management Ordinance designates the City Administrator as the City's Floodplain Administrator and recognizes the role of the Port's Chief Harbor Engineer in administering the Port's Building Code which includes standards for construction in floodplains.

In November 2015, FEMA transmitted to the City and County of San Francisco a preliminary FIRM based on the more detailed analysis of San Francisco Bay. This staff report includes a description of the areas of the Port FEMA has proposed to designate as SFHAs, including most Port piers, and the ramifications of these flood hazard designations.

STRATEGIC OBJECTIVE

The Port of San Francisco's 2016-2021 Strategic Plan ("Strategic Plan") includes **Renewal** as one of seven strategies to realize the Port's mission. City and Port participation in the National Flood Insurance Program supports the Port's Strategic Plan Renewal objective:

"Work with City leadership to develop a resilience and adaptation strategy that... protects the port and City from flood risk due to climate change and sea level rise."

PRIOR STAFF REPORTS

Port staff has briefed prior Port Commissions extensively on the National Flood Insurance Program in 2007 and 2008. Reports are available on Port internet site:

Item 7C, May 8, 2007, Informational Presentation regarding the National Flood Insurance Program

<http://www.sfport.com/ftp/meetingarchive/commission/38.106.4.220/ftp/uploadedfiles/Item7cNationalFloodInsuranceProgram.pdf>

Item 9A, October 23, 2007, Informational Presentation regarding the National Flood Insurance Program

<http://www.sfport.com/ftp/meetingarchive/commission/38.106.4.220/ftp/uploadedfiles/meetings/supporting/2007/Item9aInfoPresentationNationalFloodInsuranceProgramandPreliminaryFloodInsuranceRateMapSF.pdf>

Item 7B, June 10, 2008, Informational Presentation regarding the National Flood Insurance Program

<http://www.sfport.com/ftp/meetingarchive/commission/38.106.4.220/ftp/uploadedfiles/meetings/supporting/2008/Item%207b%20National%20Flood%20Insurance%20Program.pdf>

Important aspects of the 2007-08 staff analysis have been updated and incorporated in this report.

NATIONAL FLOOD INSURANCE PROGRAM

The National Flood Insurance Program is a federally managed program created in 1968 to reduce the risk posed by floods throughout the United States. Under the National Flood Insurance Program, the Federal government provides flood insurance to those local jurisdictions that have adopted floodplain management regulations¹. FEMA manages the National Flood Insurance Program.

The National Flood Insurance Program and companion federal law consists of the following major elements:

1. Flood Insurance Rate Maps (“FIRMs”), developed by FEMA, that identify Special Flood Hazard Areas (“SFHAs”) near riverine or coastal areas that have a 1% chance of flooding in a given year (base flood or 100-year flood) and other related data;
2. Federally backed, affordable flood insurance for property owners in communities that have joined the National Flood Insurance Program by applying to FEMA and have adopted a floodplain management ordinance;
3. A mandate that federally backed and federally regulated lenders, including Fannie Mae, Freddie Mac and the Federal Deposit Insurance Corporation (“FDIC”) may only make, purchase, increase or extend loans on an insurable structure in a SFHA if the owner has flood insurance, regardless of whether the local jurisdiction participates in the National Flood Insurance Program;
4. The following incentives to encourage local communities to join the National Flood Insurance Program:
 - Residents and businesses may not purchase federally backed flood insurance if the community does not join the National Flood Insurance Program;
 - Federal agencies may not provide financial assistance for acquisition and construction purposes in SFHAs if a community does not join the National Flood Insurance Program; and
 - FEMA will not provide flood-related disaster assistance in SFHAs to communities and individuals in communities that have not joined the National Flood Insurance Program.

It is important to note that FEMA examines current flood risk, which does not include future flood risk expected due to sea level rise. The Port and City are separately examining the sea level rise implications for the waterfront.

¹ Historically, the federal government has subsidized flood insurance rates for pre-existing buildings in mapped floodplains. In 2012, Congress passed National Flood Insurance Program reforms that phase out some of these subsidies over time and also allow for private insurance alternatives.

San Francisco opted to join the National Flood Insurance Program in 2010. Most communities that are mapped with SFHAs join the National Flood Insurance Program.

Notably, the federal mandate that federally backed and regulated lenders, including FDIC-insured banks, must require flood insurance may have significant impacts to Port development partners and the Port.

As discussed in the flood insurance section of this staff report (below), this requirement may impose significant, new financial obligations on projects that **substantially improve**² Port facilities (including historic rehabilitation of finger piers).

SAN FRANCISCO FLOODPLAIN MANAGEMENT ORDINANCE

Port staff participated in the drafting of the City's Floodplain Management Ordinance in 2008. The purposes of the ordinance are:

1. Protect human life and health;
2. Minimize the need for costly flood control projects;
3. Minimize the need for flood-related rescue and relief efforts;
4. Minimize prolonged business interruptions;
5. Minimize damage to public facilities and utilities in flood hazard areas;
6. Help maintain a stable tax base;
7. Ensure that potential buyers are notified that property is in an area of special flood hazard; and
8. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

Existing structures in SFHAs are grandfathered, meaning that these structures are not required to meet the building code requirements of a local floodplain management ordinance until such time as substantial modifications to an existing structure trigger these requirements.

In 2008, the City prepared a flood risk map depicting shoreline areas the City predicted were flood hazard areas. This map was attached to the Floodplain Management

² Under the National Flood Insurance Program and the City's Floodplain Management Ordinance, "substantial improvement" means physical improvements estimated to cost more than 50% of the market value of an existing facility.

Ordinance³. When FEMA finalizes the San Francisco FIRM, that map, and its associated SFHAs, will replace the City's map. The Floodplain Management Ordinance, together with the San Francisco FIRM, will govern permitting and other requirements for substantial improvements to existing structures and new construction in mapped floodplains.

At the time the City adopted the Floodplain Management Ordinance⁴, there was special concern about the impact of the National Flood Insurance Program on the Port. Together with the Port's Building Code, the Floodplain Management Ordinance:

1. precludes new construction seaward of Mean High Tide; and
2. requires that new construction and substantial improvements – meaning improvements costing more than 50% of the value of a facility – in SFHAs will trigger a requirement to raise the first floor of a facility above the Base Flood Elevation shown on the FIRM for the area.

There are exceptions to these rules for historic structures and maritime facilities. Attachment A to this report includes a short summary of key provisions of the ordinance that are the most significant for the Port. Attachment B to this report includes a useful decision-tree showing how permitting under the Floodplain Management Ordinance and the Port's Building Code will occur.

PRELIMINARY FLOOD INSURANCE RATE MAP (FIRM)

FEMA's 2007 preliminary FIRM was based on rough coastal engineering analysis which did not account for specific various flood protection structures (e.g., breakwaters) within the Port's jurisdiction. The latest draft maps issued by FEMA in November, 2015 address a number of Port and City comments and are based on a detailed coastal engineering analysis which now recognizes the wave protection provided by breakwater structures within the Port's jurisdiction, which resulted in (somewhat) less hazardous flood zones in some areas of the waterfront.

FEMA has indicated that the Port's historic Seawall is not a qualified flood protection structure because its elevation is not high enough relative to the Base Flood Elevation. In the South Beach area (including Piers 30-32), the Base Flood Elevation has increased compared to FEMA's predicted 2007 Base Flood Elevation, due to the longer fetch of the Bay in this area which allows for waves to strengthen⁵.

The Port and City are in general in agreement with FEMA's coastal engineering analysis which predicts total water levels at different locations, including storm surge and wave

³ The City's 2008 flood risk maps predicted flood risk in just a very few, low-lying coastal areas, such as Mission Creek and Islais Creek. The Port's piers were shown as having flood risks in the City's maps.

⁴ The text of the City's Floodplain Management Ordinance is available at:

http://library.amlegal.com/nxt/gateway.dll?f=templates&fn=default.htm&vid=amlegal:sanfrancisco_ca

⁵ "Fetch" means the length of water over which wind blows. Fetch and wind speed determine wave size.

action. As discussed further below, the Port is still analyzing FEMA's conclusion that all of the Port's piers are in high hazard VE or AE Zones, and are therefore subject to current flood risk. Many of the Port's piers have deck elevations higher than predicted Base Flood Elevations, which may support different flood risk designations for some Port piers.

Based on a review of historic data and coastal topography, FEMA has been working with a team of coastal engineers to develop a probabilistic analysis of flood hazards in San Francisco Bay during a flooding event that has a 1-percent chance of occurrence in any given year (also referred to as the Base Flood or 100-year flood) and a flooding event that has a 0.2-percent chance of occurrence in any given year (also referred to as the 500-year flood). This exercise involves projecting total water levels during these storm events for coastal areas, including storm surge and wave elevations.

The preliminary FIRM that FEMA issued in November 2015 is based on this analysis. The FIRM shows Base Flood Elevations and the extent of flood hazards for the 1-percent and 0.2-percent chance flooding events along the shoreline of San Francisco Bay. Copies of the preliminary FIRM are available on FEMA's Map Service Center website at:

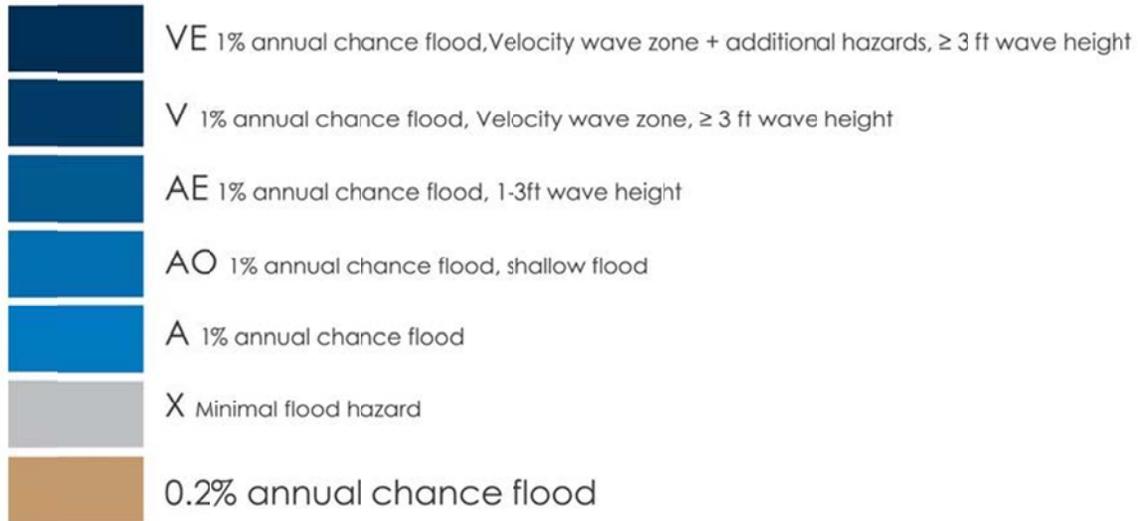
<https://msc.fema.gov/portal/advanceSearch>.

Views of the floodplain boundaries (without zone designations and Base Flood Elevation data) are available on the City Administrator's Floodplain Management Program webpage at:

<http://www.sfgsa.org/san-francisco-floodplain-management-program>

The preliminary FIRM designates Special Flood Hazard Areas (SFHAs). An SFHA is defined as an area subject to flooding during a flood having a 1-percent chance of occurrence in any given year (also referred to as the base flood). The preliminary FIRM shows SFHAs along San Francisco's coastline. SFHAs represent a range of flood hazards:

Sample FEMA Flood Hazard Zones



All of the Port's pile-supported finger piers are mapped in SFHAs, in one of the two following zones:

VE Zone A VE zone is the most hazardous of the SFHAs. A VE zone is an area subject to inundation during the 1-percent annual chance flood where wave heights are **greater** than 3 feet.

Federally backed and regulated lenders must require purchase of flood insurance when providing loans for structures in VE Zones.

A substantial improvement to an existing structure in a VE Zone **that is not eligible for a variance under the Floodplain Management Ordinance** will trigger a requirement that the bottom of the lowest horizontal structural member of the structure and electrical, heating ventilation, plumbing, air conditioning equipment and other service facilities must be elevated with some freeboard above the Base Flood Elevation.

New structures over water, other than functionally-dependent uses that must be close to the water, are prohibited in VE Zones.

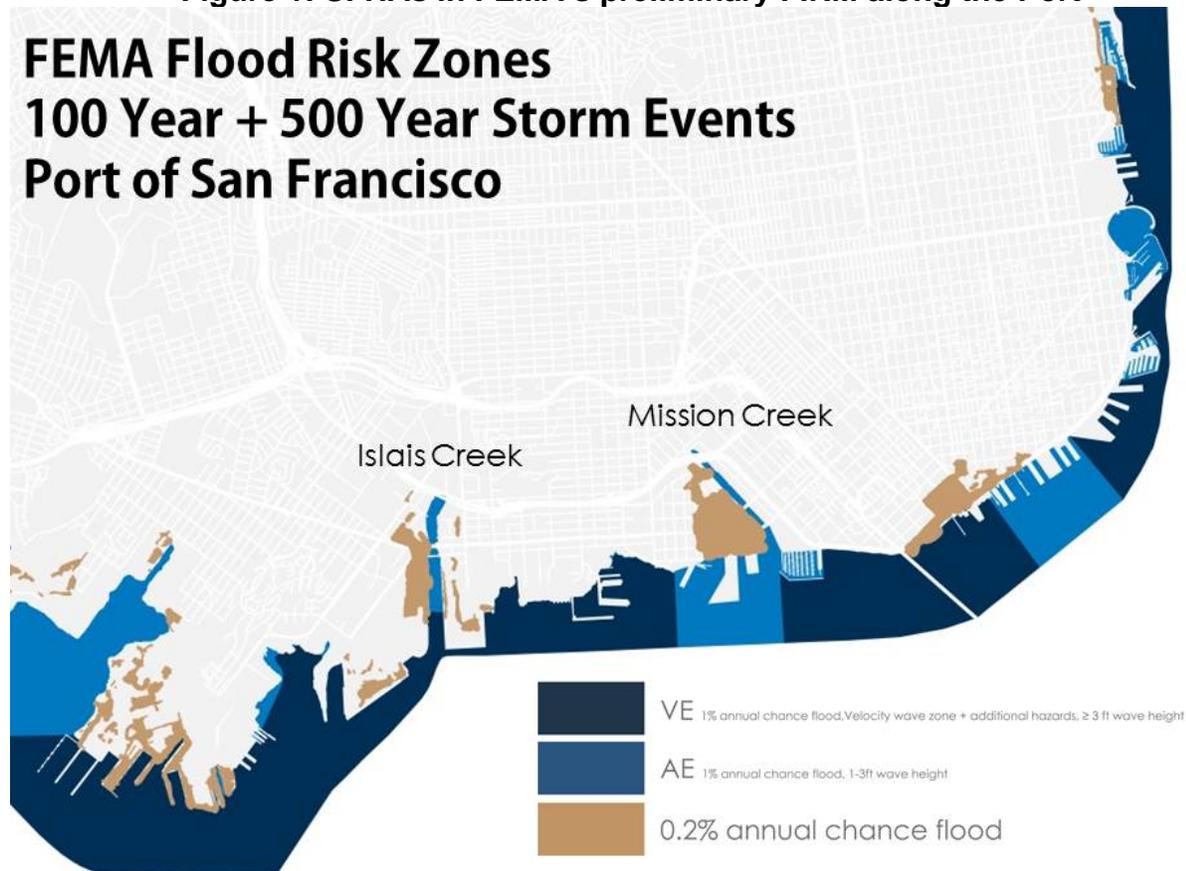
AE Zone An AE zone is the next most hazardous of the SFHAs. An AE zone is an area subject to inundation during the 1-percent annual chance flood where wave heights are **less** than 3 feet. Areas of the Port (like Pier 39, Hyde Street Harbor and South Beach Harbor) that are protected by breakwaters or where wave heights are projected to be less than 3 feet are mapped as AE zones.

Federally backed and regulated lenders must require purchase of flood when providing loans for structures in AE Zones.

New construction or a substantial improvement to a structure **that is not eligible for a variance under the Floodplain Management Ordinance** will trigger a requirement that the structure's lowest floor elevation and electrical, heating ventilation, plumbing, air conditioning equipment and other service facilities must be elevated with some freeboard above the Base Flood Elevation.

Figure 1 below shows the SFHAs depicted in the preliminary FIRM along the Port's waterfront. Attachment C to this staff report includes the preliminary FIRM for Port property.

Figure 1: SFHAs in FEMA's preliminary FIRM along the Port



THE ELEVATION OF PORT PIERS COMPARED TO BASE FLOOD ELEVATIONS

While FEMA's preliminary FIRM does not show this, most of the Ports have pier decks that are higher than the Base Flood Elevations that FEMA's models predict for the 1-percent- annual-chance flood. Most Port piers have approximately 1-2 feet of freeboard above Base Flood Elevations. This means that while there is likely no flood risk to these piers in a 1-percent-annual-chance flood, all the regulatory and insurance requirements

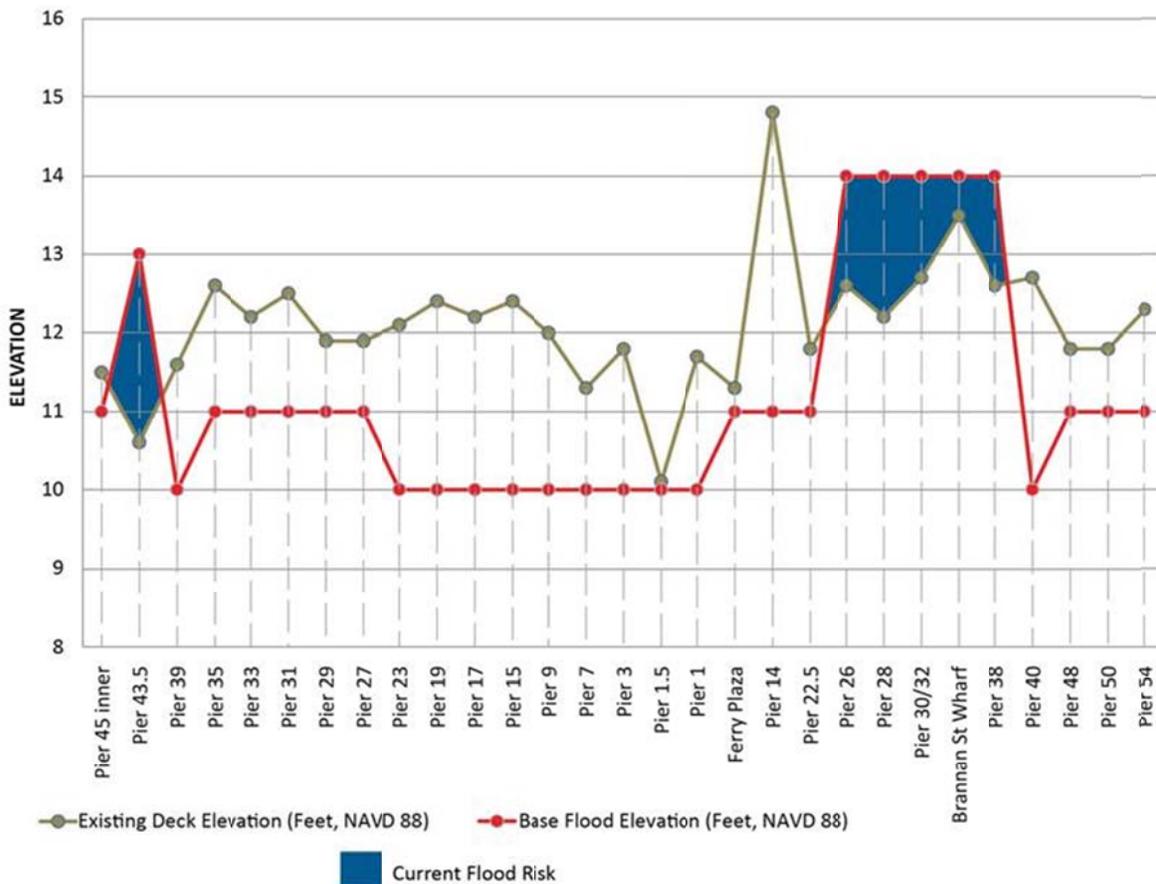
associated with the National Flood Insurance Program and the City’s Floodplain Management Ordinance will apply if the FIRM is finalized with the current, proposed SFHA designations.

Pier 1.5’s deck elevation is at the Base Flood Elevation, as is Ferry Plaza, meaning that there is a potential flood risk at these locations in a 1-percent-annual-chance flood. Some of the Port’s piers – Pier 43.5 Promenade, Pier 22.5, Pier 26, Pier 28, Piers 30-32 and Pier 38 – have pier deck elevations that are lower than FEMA’s predicted Base Flood Elevations, yielding a higher flood risk at these locations. This means that there is a potentially significant, current flood risk at these locations in a 100 Year Storm with storm surge and wave action, according to FEMA’s preliminary FIRM. Base Flood Elevations that FEMA predicts in this area of the waterfront are significantly higher than elsewhere along the Port, due to higher expected total water levels in this area.

Figure 2 below compares existing pier deck elevations with predicted Base Flood Elevations from FEMA’s models for the Port’s piers.

Figure 2:

Comparison of Port Pier Elevation & Base Flood Elevation



SCHEDULE FOR FEMA’S MAPPING EFFORT

Table 2: Current FEMA Mapping Schedule for San Francisco FIRM	
Action	Date
FEMA published preliminary San Francisco FIRM	November 12, 2015
Protest period	In progress
Publication of notice of 90-day appeal period in Federal Register	Expected in March, 2016
Publication of notice of 90-day appeal period in local paper and start of appeal period	Expected in April 1, 2016
End of 90-day appeal period	Expected June 30, 2016
Letter of Final Determination (Base Flood Elevations are final)	Expected December, 2016
FEMA will publish Final San Francisco FIRM (effective date of FIRM)	Expected June, 2017

OPTIONS FOR APPEALING OR CHANGING FEMA MAPS

In 2007 the Port prepared a detailed request to FEMA to revise the preliminary FIRM that FEMA issued that year, based on:

1. the fact that many Port piers were higher than the Base Flood Elevations (and thus warranted a Zone X, or moderate flood risk, designation)
2. FEMA’s decision not to reflect the flood protection of breakwaters in certain areas and the flood protection from the Seawall (because FEMA indicated that they did not have evidence that these structures met published federal flood control standards), and
3. other, technical mapping disagreements.

FEMA never revised the FIRM based on the Port’s request. Instead, FEMA decided to re-analyze San Francisco Bay and its potential flooding impacts, which resulted in the delivery of a new, draft preliminary FIRM delivered to the City in November 2015.

The current FEMA mapping schedule includes an appeal period that is anticipated to start **April 1, 2016** (depending on when FEMA publishes its notice in the Federal Register). This will start a 90 day clock as to the period when the City or private property owners in SFHAs may appeal by preparing technical coastal engineering or structural analysis, or elevation data that disputes FEMA’s analysis. Port staff is preparing analysis of several locations to determine whether data supports an appeal and will return to the Port Commission to explain any planned appeal.

After any appeals are adjudicated and FEMA publishes the final San Francisco FIRM (expected in June 2017), the City or property owners may pursue changes to the FIRM by applying for a Letter of Map Revision.

COMMERCIAL FLOOD INSURANCE REQUIREMENTS

In accordance with federal law, federally backed or regulated lenders must require flood insurance for a loan secured by a structure located in an SFHA.

For the Port, the most likely scenario under which this would occur would be development of a Port finger pier, where the Port's development partner is seeking federally-insured financing to support the project. This would trigger some form of flood insurance for the improved building and its contents.

FEMA's Flood Insurance Manual can be found at the following web site:

<https://www.fema.gov/media-library/assets/documents/110085>

Port staff is working with the City Administrator's Office and the City Risk Manager to examine National Flood Insurance Program insurance options for the Port and its tenants in SFHAs should the Port's tenants desire access to such insurance or be required to purchase insurance. In discussion with Port Real Estate staff, tenants frequently request a waiver from flood insurance requirements due to the lack of availability of insurance. The National Flood Insurance Program and FEMA's San Francisco FIRM, when finalized, will not trigger new flood insurance requirements on their own. A new project or facility improvements requiring federally-backed lending would trigger the insurance requirement.

The Port, City Administrator's Office and the City Risk Manager are also investigating private commercial flood insurance and alternatives to insurance that may satisfy federal requirements.

Port tenants wishing to obtain a quote for flood insurance can locate an insurance agent at the link below:

https://www.floodsmart.gov/floodsmart/pages/choose_your_policy/agent_locator.jsp

OUTREACH TO PORT TENANTS

Via email and Port advisory groups, Port staff is initiating outreach to Port tenants about the FEMA mapping process, including appeal procedures and insurance options. The goal of this outreach is to allow Port tenants to make informed decisions about flood risk, including steps they can take to mitigate this risk, and to notify the Port's long-term tenants operating under ground leases of the opportunity to appeal the preliminary FIRM should they disagree with FEMA's analysis. In consultation with the City Attorney, staff is also revising the FEMA National Flood Insurance Program disclosure language in the Port's boilerplate lease. Staff will be reaching out individually to large tenants with ground leases in SFHA's and prospective development partners to inform them of FEMA's process and next steps for the City.

NEXT STEPS

Port staff proposes the following next steps:

- Brief City policymakers about the implications of FEMA's San Francisco FIRM;
- Conduct analysis of targeted piers to determine if there is a factual basis to appeal the Base Flood Elevations shown on the preliminary FIRM, as applied to finger piers above the Base Flood Elevation;
- Meet with FEMA representatives to discuss potential appeal or Letter of Map Revisions options;
- Continue research with the City Administrator and the Risk Manager regarding federally-backed flood insurance and private flood insurance options, or alternatives that meet federal requirements;
- Conduct tenant outreach; and
- Return to the Port Commission before the close of an appeal period for the San Francisco FIRM to brief the Port Commission regarding recommended next steps.

Prepared by: Brad Benson, Director of Special Projects
Uday Prasad, Assistant Chief Harbor Engineer

for: Eunejune Kim, Chief Harbor Engineer

Attachment A: Floodplain Management Ordinance Provisions Most Relevant to the Port

Attachment B: Floodplain Management Flow Chart

Attachment C: FEMA preliminary San Francisco Flood Insurance Rate Map, Port Jurisdiction

Attachment A

Floodplain Management Ordinance Provisions Most Relevant to the Port	
Permits	No building, structure or land shall be constructed, located, extended, converted, or altered within a floodplain or flood prone area without full compliance with the requirements of this ordinance and other applicable regulations. The City Administrator shall maintain a record of the elevation (in relation to North American Vertical Datum of 1988 or "NAVD88") of the lowest floor ... of all new and substantially improved structures, and the elevation ... to which all structures that were flood proofed in accordance with [the Floodplain Management Ordinance].
Port-Related Findings	Th[e] Board [of Supervisors] urges the Port of San Francisco and FEMA to develop, before publication of final FIRM, long-term floodplain management controls that both address any flooding hazard risks and allow the City to implement the Waterfront Land Use Plan and the Capital Plan, as they may be amended, and achieve the goals of that Plan, including the preservation of historic piers.
Key Definitions	<p>"Functionally dependent use means a use that cannot perform its intended purpose unless it is located or carried out in close proximity to water. <u>The term includes, but is not limited to, docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities.</u>"</p> <p>"Historic structure means any structure that is listed individually on the National Register of Historic Places ("National Register") or is a contributing resource to a National Register district; individually listed on a state or local inventory of historic places; determined to be an historic resource under California Environmental Quality Act review procedures; or located in an historic district that is listed in the National Register of Historic Places.</p> <p>"Substantial improvement means any reconstruction, rehabilitation, addition, or other proposed new development of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the 'start of construction' of the improvement, with certain exceptions.</p>
Administration	[The Port's] Chief Harbor Engineer, is responsible for reviewing all development permit applications for buildings and structures within the Port Commission's jurisdiction to determine whether the permit requirements of this ordinance have been satisfied, whether all other required state and federal permits have been obtained; and whether the site is reasonably safe from flooding. <u>All building standards for construction in Port areas designated ... as flood prone shall be consistent with the requirements of this ordinance and applicable federal and state floodplain management regulations...</u>
Historic and Functionally-Dependent Use Variances	<p>Variances shall be issued for:</p> <p>A. <u>The repair or rehabilitation of, or exterior addition to, historic structures upon a determination that the proposed repair, rehabilitation or addition will not preclude the structure's continued designation as an historic structure.</u></p> <p>B. New construction, substantial improvement, and other proposed new development necessary <u>for the conduct of a functionally dependent use</u>, provided that the structure or building is protected by methods that minimize flood damages, and that issuance of the variance does not result in additional threats to public safety or create a public nuisance."</p>
Hardship Variances	<p>A variance may be granted with a showing of good and sufficient cause that:</p> <p>A. <u>Failure to grant the variance would result in exceptional hardship</u> to the applicant; and</p> <p>B. The granting of a variance will not result in increased flood heights, additional threats to public safety, or extraordinary public expense..."</p>