October 15, 2019

The Honorable Garrett L. Wong
Presiding Judge
Superior Court of California, County of San Francisco
400 McAllister Street, Department 206
San Francisco, CA 94102

RE: Civil Grand Jury Report - Act Now Before it is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System

Dear Judge Wong:

The Board of Supervisors’ Government Audit and Oversight Committee conducted a public hearing on September 19, 2019, to review the findings and recommendations of the 2018-2019 Civil Grand Jury report, entitled “Act Now Before it is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System.”

Prior to the Committee meeting, the following City Departments submitted required responses to the Civil Grand Jury:

- Office of the Mayor:
  Received September 16, 2019;
- General Manager of the San Francisco Public Utilities Commission:
  Received September 16, 2019;
- Public Utilities Commission:
  Received September 11, 2019
- Fire Commission:
  Received September 12, 2019;
- Fire Department:
  Received September 16, 2019;
- City Administrator:
  Received September 16, 2019; and
- Department of the Environment
  Received September 16, 2019.

Continues on next page
During the September 19, 2019 meeting, the Government Audit and Oversight Committee prepared a resolution responding to the requested findings and recommendations identified in the report. The response was prepared by Resolution No. 422-19, enacted on October 11, 2019.

By this message, the Office of the Clerk of the Board of Supervisors is transmitting Resolution No. 422-19 to your attention.

If you have any questions, please contact John Carroll, Government Audit and Oversight Committee Clerk at (415) 554-4445, or via email to john.carroll@sfgov.org.

Sincerely,

Angela Calvi o
Clerk of the Board

C:
Sophia Kittler, Mayor’s Office
Kanishka Karunaratne Cheng, Mayor’s Office
Andres Power, Mayor’s Office
Sally Ma, Mayor’s Office
Rebecca Peacock, Mayor’s Office
Jon Givner, Office of the City Attorney
Ben Rosenfield, City Controller
Todd Rydstrom, Office of the Controller
Peg Stevenson, Office of the Controller
Tonia Lediju, Office of the Controller
Mark de la Rosa, Office of the Controller
Alisa Somera, Office of the Clerk of the Board
Debra Newman, Office of the Budget and Legislative Analyst
Severin Campbell, Office of the Budget and Legislative Analyst
Reuben Holober, Office of the Budget and Legislative Analyst
Jennifer Millman Tell, Office of the Budget and Legislative Analyst
Rasha Harvey, 2018-2019 Foreperson, San Francisco Civil Grand Jury
Ettore Leale, 2019-2020 Foreperson, San Francisco Civil Grand Jury
Naomi M. Kelly, City Administrator, Office of the City Administrator
Lynn Khaw, Office of the City Administrator
Brian Strong, Office of the City Administrator
Debbie Raphael, Director, Department of the Environment
Peter Gallotta, Department of the Environment
Charles Sheehan, Department of the Environment
Jeanine Nicholson, Chief, Fire Department
Theresa Ludwig, Fire Department
Stephen Nakajo, President, Fire Commission
Maureen Conefrey, Fire Commission
Harlan L. Kelly, Jr., General Manager, San Francisco Public Utilities Commission
Juliet Ellis, San Francisco Public Utilities Commission
John Scarpulla, San Francisco Public Utilities Commission
Christopher Whitmore, San Francisco Public Utilities Commission
Ann Moller Caen, President, San Francisco Public Utilities Commission
Donna Hood, San Francisco Public Utilities Commission
Resolution responding to the Presiding Judge of the Superior Court on the findings and recommendations contained in the 2018-2019 Civil Grand Jury Report, entitled "Act Now Before it is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System," and urging the Mayor to cause the implementation of accepted findings and recommendations through his/her department heads and through the development of the annual budget. (Clerk of the Board)

10/1/2019 Board of Supervisors - ADOPTED
Ayes: 11 - Brown, Fewer, Haney, Mandelman, Mar, Peskin, Ronen, Safai, Stefani, Walton and Yee

10/11/2019 Mayor - RETURNED UNSIGNED

STATE OF CALIFORNIA
CITY AND COUNTY OF SAN FRANCISCO

CLERK'S CERTIFICATE
I do hereby certify that the foregoing Resolution is a full, true, and correct copy of the original thereof on file in this office.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the City and County of San Francisco.

October 15, 2019
Date

Angela Cabildo
Clerk of the Board
Resolution responding to the Presiding Judge of the Superior Court on the findings and recommendations contained in the 2018-2019 Civil Grand Jury Report, entitled “Act Now Before It Is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System;” and urging the Mayor to cause the implementation of accepted findings and recommendations through his/her department heads and through the development of the annual budget.

WHEREAS, Under California Penal Code, Section 933 et seq., the Board of Supervisors must respond, within 90 days of receipt, to the Presiding Judge of the Superior Court on the findings and recommendations contained in Civil Grand Jury Reports; and

WHEREAS, In accordance with California Penal Code, Section 933.05(c), if a finding or recommendation of the Civil Grand Jury addresses budgetary or personnel matters of a county agency or a department headed by an elected officer, the agency or department head and the Board of Supervisors shall respond if requested by the Civil Grand Jury, but the response of the Board of Supervisors shall address only budgetary or personnel matters over which it has some decision making authority; and

WHEREAS, Under San Francisco Administrative Code, Section 2.10(a), the Board of Supervisors must conduct a public hearing by a committee to consider a final report of the findings and recommendations submitted, and notify the current foreperson and immediate past foreperson of the civil grand jury when such hearing is scheduled; and

WHEREAS, In accordance with San Francisco Administrative Code, Section 2.10(b), the Controller must report to the Board of Supervisors on the implementation of
recommendations that pertain to fiscal matters that were considered at a public hearing held by a Board of Supervisors Committee; and

WHEREAS, The 2018-2019 Civil Grand Jury Report, entitled “Act Now Before It Is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System” (“Report”) is on file with the Clerk of the Board of Supervisors in File No. 190785, which is hereby declared to be a part of this Resolution as if set forth fully herein; and

WHEREAS, The Civil Grand Jury has requested that the Board of Supervisors and the Budget and Legislative Analyst respond to Finding Nos. F6, and F11, as well as Recommendation No. R3, contained in the subject Report; and

WHEREAS, Finding No. F6 states: “Unless the City increases funding levels, it will be several decades (i.e., after the USGS predicts one or more major earthquakes will occur) before the southern parts of the City have a high-pressure, multi-sourced, seismically safe emergency firefighting water supply;” and

WHEREAS, Finding No. F11 states: “The City does not have a timeline to fund and complete development of a high-pressure, multi-sourced, seismically safe emergency water supply for all parts of the City, including poor neighborhoods that historically have not been as well protected as the downtown business district and many richer neighborhoods;” and

WHEREAS, Recommendation No. R3 states: “The Board of Supervisors should direct the Budget and Legislative Analyst to study through an equity lens and issue a report to the Board regarding (a) which areas of the City do not have sufficient water supplies for the anticipated demand for water to fight fires following a major earthquake similar in magnitude to the 1906 earthquake, and (b) options to address the issue in both the short term and the long term. The Board should issue its request by no later than December 31, 2019, and the Budget and Legislative Analyst should complete its report by no later than December 31, 2020;” and
WHEREAS, The Civil Grand Jury has requested that the Board of Supervisors respond to Finding Nos. F4, and F5, as well as Recommendation Nos. R1, R2, R4, R6, R7, and R8, contained in the subject Report; and

WHEREAS, Finding No. F4 states: “The City’s high-pressure emergency water supply system, known as the Auxiliary Water Supply System (AWSS), does not cover large parts of Supervisorial Districts 1, 4, 7 and 11, roughly one-third of the City’s developed area. As a result, these districts are not adequately protected from fires after a major earthquake;” and

WHEREAS, Finding No. F5 states: “A high-pressure, multi-sourced, seismically safe emergency firefighting water supply will be costly but is essential to protect the City;” and

WHEREAS, Recommendation No. R1 states: “By no later than December 31, 2020, the Mayor, the SFPUC, the SFFD, and Office of Resilience and Capital Planning should jointly present to the Board of Supervisors a detailed plan to ensure the City is well prepared to fight fires in all parts of San Francisco in the event of a 1906-magnitude (7.8) earthquake;” and

WHEREAS, Recommendation No. R2 states: “The plan discussed in Recommendation R1 should include a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, multi-sourced, seismically safe emergency water system for those parts of the City that don’t currently have one, i.e., by no later than June 30, 2034;” and

WHEREAS, Recommendation No. R4 states: “As an interim measure, by no later than June 30, 2021, the City should purchase the 20 new PWSS hose tenders being requested by the SFFD, to replace and expand its currently inadequate inventory;” and

WHEREAS, Recommendation No. R6 states: “The SFPUC, the SFFD, and the SF Department of the Environment should study adding salt-water pump stations to improve the redundancy of water sources, especially on the west side. Findings and recommendations
from this study should be presented to the Board of Supervisors by no later than June 30, 2021;" and

WHEREAS, Recommendation No. R7 states: "The SFPUC should (a) continue its efforts to complete a more detailed analysis of emergency firefighting water needs (including above-the-median needs) by neighborhood, and not just by FRA, and (b) present a completed analysis to the Board of Supervisors by no later than June 30, 2021;" and

WHEREAS, Recommendation No. R8 states: "By no later than June 30, 2022, the Mayor and Board of Supervisors should analyze whether to propose a separate bond for the development of a high-pressure, multi-sourced, seismically safe emergency water system for those parts of the City that don't currently have one, with a target date of completing construction by no later than June 30, 2034;" and

WHEREAS, In accordance with California Penal Code, Section 933.05(c), the Board of Supervisors must respond, within 90 days of receipt, to the Presiding Judge of the Superior Court on Finding Nos. F4, F5, F6, and F11, as well as Recommendation Nos. R1, R2, R3, R4, R6, R7, and R8 contained in the subject Report; now, therefore, be it

RESOLVED, That the Board of Supervisors reports to the Presiding Judge of the Superior Court that they agree with Finding No. F4; and, be it

FURTHER RESOLVED, That the Board of Supervisors reports to the Presiding Judge of the Superior Court that they agree with Finding No. F5; and, be it

FURTHER RESOLVED, That the Board of Supervisors reports to the Presiding Judge of the Superior Court that they agree with Finding No. F6; and, be it

FURTHER RESOLVED, That the Board of Supervisors reports to the Presiding Judge of the Superior Court that they agree with Finding No. F11; and, be it

FURTHER RESOLVED, That the Board of Supervisors reports that Recommendation No. R1 has not been implemented but will be implemented no later than December 31, 2021,
and urges the Mayor, the SFPUC, the SFFD, and Office of Resilience and Capital Planning to jointly present a detailed plan to the Board of Supervisors by no later than December 31, 2021; and, be it

FURTHER RESOLVED, That the Board of Supervisors reports that Recommendation No. R2 has not been implemented but will be implemented by December 31, 2021, and urges the Departments to include in its detailed plan a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, multi-sourced, seismically safe emergency water system for those parts of the City that don't currently have one by no later than June 30, 2034; and, be it

FURTHER RESOLVED, That the Board of Supervisors reports that Recommendation No. R3 has not been implemented but will be implemented in the future, and Supervisor Gordon Mar will issue a request for a Budget and Legislative Analyst report no later than December 31, 2019, and will direct the Budget and Legislative Analyst to issue the completed report no later than December 31, 2020; and, be it

FURTHER RESOLVED, That the Board of Supervisors reports that Recommendation No. R4 will not be implemented because while funding for five hose tenders was allocated for FY2019-2020 though both local and state-level actions, implementation of the recommendation in its entirety will depend on the appropriation actions of a future Mayor and Board of Supervisors; and, be it

FURTHER RESOLVED, That the Board of Supervisors reports that Recommendation No. R6 has not been implemented but will be implemented in the future, and urges the completion of a study for adding a salt-water pump stations to be presented to the Board of Supervisors by no later than June 30, 2021, be it

FURTHER RESOLVED, That the Board of Supervisors reports that Recommendation No. R7 has not been implemented but will be implemented in the future, and urges that a
completed analysis be presented to the Board of Supervisors by no later than June 30, 2021;

and, be it

FURTHER RESOLVED, That the Board of Supervisors reports that Recommendation
No. R8 has not been implemented but will be implemented in the future, and will analyze by
June 30, 2022, in coordination with the Mayor, whether to propose a separate bond for the
development of a high-pressure, multi-sourced, seismically safe emergency water system for
those parts of the City that don't currently have one, with a target date of completing
construction by no later than June 30, 2034; and, be it

FURTHER RESOLVED, That the Board of Supervisors urges the Mayor to cause the
implementation of the accepted findings and recommendations through his/her department
heads and through the development of the annual budget.
Resolution responding to the Presiding Judge of the Superior Court on the findings and recommendations contained in the 2018-2019 Civil Grand Jury Report, entitled "Act Now Before it is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System," and urging the Mayor to cause the implementation of accepted findings and recommendations through his/her department heads and through the development of the annual budget.

September 19, 2019 Government Audit and Oversight Committee - AMENDED, AN AMENDMENT OF THE WHOLE BEARING SAME TITLE

September 19, 2019 Government Audit and Oversight Committee - RECOMMENDED AS AMENDED

October 01, 2019 Board of Supervisors - ADOPTED

Ayes: 11 - Brown, Fewer, Haney, Mandelman, Mar, Peskin, Ronen, Safai, Stefani, Walton and Yee

I hereby certify that the foregoing Resolution was ADOPTED on 10/1/2019 by the Board of Supervisors of the City and County of San Francisco.

Angela Calvillo
Clerk of the Board

UnSigned

London N. Breed
Mayor

10/11/2019

Date Approved
File No. 190786

I hereby certify that the foregoing resolution, not being signed by the Mayor within the time limit as set forth in Section 3.103 of the Charter, or time waived pursuant to Board Rule 2.14.2, became effective without her approval in accordance with the provision of said Section 3.103 of the Charter or Board Rule 2.14.2.

Angela Calvillo
Clerk of the Board

Date

10/11/2019
September 11, 2019

Sent via U.S. Mail and email to CGrandJury@sftc.org

The Honorable Garrett L. Wong  
Presiding Judge  
Superior Court of California, County of San Francisco  
400 McAllister Street, Room 008  
San Francisco, CA 94102-4512

Dear Judge Wong:

In accordance with Penal Code Sections 933 and 933.05, and pursuant to the request of Mr. Rasha Harvey, Foreperson of the City and County of San Francisco 2018-19 Civil Grand Jury, attached please find the response of the San Francisco Public Utilities Commission to the 2018-2019 Civil Grand Jury Report, Act Now Before It Is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System. At its regularly scheduled public meeting of September 10, 2019, the Commission voted to approve the attached responses by Resolution No. 19-0178.

The response of the General Manager of the San Francisco Public Utilities Commission is being sent under separate cover.

The Commission would like to thank the members of the 2018-2019 Civil Grand Jury for their service and their interest in our vital water infrastructure that supports firefighting in all communities in San Francisco.

Sincerely,

[Signature]

Ann Moller Caen  
President  
San Francisco Public Utilities Commission

cc: Harlan Kelly, SFPUC General Manager  
Mayor London Breed

OUR MISSION: To provide our customers with high-quality, efficient and reliable water, power and sewer services in a manner that values environmental and community interests and sustains the resources entrusted to our care.
WHEREAS, On July 17, 2019, the 2018-2019 Civil Grand Jury released a report entitled, “Act Now Before It Is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System,” a copy of which is on file with the Commission Secretary and has been provided to this Commission for review; and

WHEREAS, The Civil Grand Jury requires written responses from this Commission to the Report’s Findings Nos. 1, 2, 4, 5, 6, 8, 9, 10, 11, 12, and 13, and Recommendations Nos. 1, 2, 6, 7, 9, and 10; and

WHEREAS, California Penal Code §933(c) requires such written responses be submitted to the Presiding Judge no later than September 15, 2019; and

WHEREAS, Attached hereto are the Commission’s responses to the above stated Findings and Recommendations in the 2018-19 Civil Grand Jury Report; now, therefore be it

RESOLVED, That this Commission hereby approves the Commission’s responses, attached hereto, to the relevant findings and recommendations of the July 17, 2019 Civil Grand Jury Report entitled, “Act Now Before It Is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System” and authorizes and directs the Commission President to submit the response to the Presiding Judge of the Civil Grand Jury by September 15, 2019, as required by California Penal Code §933(c).

I hereby certify that the foregoing resolution was adopted by the Public Utilities Commission at its meeting of September 10, 2019.

[Signature]
Secretary, Public Utilities Commission
<table>
<thead>
<tr>
<th>Report Title (Publication Date)</th>
<th>FA</th>
<th>Finding (text may be duplicated due to spacing and multiple responsive effects)</th>
<th>Responsible Assigned by (Office)</th>
<th>Finding Response (Agree/Disagree)</th>
<th>Finding Response Text</th>
<th>IR (for R1)</th>
<th>Recommendation (reached due to spacing and multiple responsive effects)</th>
<th>Responsible Assigned by (Office)</th>
<th>Recommendation Response (Implementation)</th>
<th>Recommendation Response Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Act Now Before It Is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019)</td>
<td>F2</td>
<td>Things resulting from an earthquake represent a significant risk of widespread damage and potential loss of life in San Francisco.</td>
<td>President, San Francisco Public Utilities Commission (September 16, 2018)</td>
<td>Agree with the finding</td>
<td>R2</td>
<td>[Agree/Disagree]</td>
<td>San Francisco Fire Prevention Services Commission (September 19, 2018)</td>
<td>Not be implemented</td>
<td>Ensuring that San Francisco’s fire infrastructure and resources be well prepared to fight fires in all parts of San Francisco is something that will be a focus of the next 10-Year Capital Plan.</td>
<td>Not be implemented</td>
</tr>
</tbody>
</table>

The commitment of sources for specific purposes on specific timelines for San Francisco’s public infrastructure is the work of the 10-Year Capital Plan. The plan discussed in Recommendation 1 should include a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, resilient, and redundant water supply system for parts of the City that do not currently have one, i.e., by no later than June 30, 2024.

The recommendation with the Capital Plan, and push back the timeline to December 31, 2020.

Act Now Before It Is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019) | F3 | Things resulting from an earthquake represent a significant risk of widespread damage and potential loss of life in San Francisco. | President, San Francisco Public Utilities Commission (September 12, 2020) | Agree with the finding | R2 | [Agree/Disagree] | San Francisco Public Utilities Commission (September 15, 2020) | Disagree | The plan discussed in Recommendation 1 should include a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, resilient, and redundant water supply system for parts of the City that do not currently have one, i.e., by no later than June 30, 2024.

The recommendation with the Capital Plan, and push back the timeline to December 31, 2020.

Act Now Before It Is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019) | F2 | The municipal water supply system (MWSS) is highly vulnerable to damage from a major earthquake and is not a reliable source for some supply for firefighting after a major earthquake. | President, San Francisco Public Utilities Commission (September 15, 2018) | Disagree, justify | E1 | [Not R1] | San Francisco Public Utilities Commission (September 15, 2018) | Not be implemented | Ensuring that San Francisco’s fire infrastructure and resources be well prepared to fight fires in all parts of San Francisco is something that will be a focus of the next 10-Year Capital Plan. | Not be implemented |
## Act Now Before it’s Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019)

| Act Now Before it’s Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019) |  
|---|---|
| F2 | The municipal water supply system (MWS) is a vital component of the city’s infrastructure in case of earthquakes and to meet the needs for firefighting after a major earthquake. The MWS has been significantly upgraded in the last 15 years through the Sewer System Improvement Program (SSIP), initiated by the SPUC. The goals of SSIP include to improve the water system’s ability to withstand earthquakes and increase overall water system reliability. This has been the key project within the $6.8 billion SSIP program. The MWS is the largest capital program ever undertaken by the City of San Francisco, and one of the largest water infrastructure projects in the nation. Additionally, it is unique because the MWS allowed a 7.8 magnitude earthquake as its seismic level of concern.

President, San Francisco Public Utilities Commission
September 15, 2019 |

| Disags, perhahps | The plan discussed in Recommendation R2 involves a detailed process, including financing sources, for the installation within 15 years of a high-pressure, multi-source, extremely safe emergency water system for those parts of the City that don’t currently have one, i.e., by no later than June 30, 2024.

President, San Francisco Public Utilities Commission
September 15, 2019 |

| Requires further analysis | The commitment of sources for specific uses as specific timelines for San Francisco’s public infrastructure in the wake of the 2019 Capital Plan. The plan discussed in Recommendation R2 involves a detailed process, including financing sources, for the installation within 15 years of a high-pressure, multi-source, extremely safe emergency water system for those parts of the City that don’t currently have one, i.e., by no later than June 30, 2024.

President, San Francisco Public Utilities Commission
September 15, 2019 |

## Act Now Before it’s Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019)

| Act Now Before it’s Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019) |  
|---|---|
| F6 | The City’s high-pressure emergency water supply system, known as the Auxiliary Water Supply System (AWSS), does not cover large parts of Supervisorial Districts 1, 4, 7 and 11. Roughly one-third of the City’s developed area, in a result, these districts are not adequately protected from fires after a major earthquake. The City’s high-pressure emergency water supply system, known as the Auxiliary Water Supply System (AWSS), does not cover large parts of Supervisorial Districts 1, 4, 7 and 11. Roughly one-third of the City’s developed area, in a result, these districts are not adequately protected from fires after a major earthquake. In its passage of the Fiscal Year 2015-16 Emergency Response Bond, the Board of Supervisors provided the City the ability to address the deficiencies of the AWSS. The three agencies will continue to develop and implement projects utilizing new and proven technologies that improve upon the original system design. These have been many advancements in earthquake-resistant design and materials, hydrants, and service valves since the early 2000s, and the City intends to use the best possible technology available and the Office of the Mayor,

Jointly (for F1-F6)

September 15, 2019 |

| Will be implemented | The commitment of sources for specific uses as specific timelines for San Francisco’s public infrastructure in the wake of the 2019 Capital Plan. The plan discussed in Recommendation R2 involves a detailed process, including financing sources, for the installation within 15 years of a high-pressure, multi-source, extremely safe emergency water system for those parts of the City that don’t currently have one, i.e., by no later than June 30, 2024.

President, San Francisco Public Utilities Commission
September 15, 2019 |

| Requires further analysis | The commitment of sources for specific uses as specific timelines for San Francisco’s public infrastructure in the wake of the 2019 Capital Plan. The plan discussed in Recommendation R2 involves a detailed process, including financing sources, for the installation within 15 years of a high-pressure, multi-source, extremely safe emergency water system for those parts of the City that don’t currently have one, i.e., by no later than June 30, 2024.

President, San Francisco Public Utilities Commission
September 15, 2019 |

## Act Now Before it’s Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019)

| Act Now Before it’s Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019) |  
|---|---|
| F4 | The plan discussed in Recommendation R2 would include a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, multi-source, extremely safe emergency water system for those parts of the City that don’t currently have one, i.e., by no later than June 30, 2024.

President, San Francisco Public Utilities Commission
September 15, 2019 |

| Requires further analysis | The commitment of sources for specific uses as specific timelines for San Francisco’s public infrastructure in the wake of the 2019 Capital Plan. The plan discussed in Recommendation R2 involves a detailed process, including financing sources, for the installation within 15 years of a high-pressure, multi-source, extremely safe emergency water system for those parts of the City that don’t currently have one, i.e., by no later than June 30, 2024.

President, San Francisco Public Utilities Commission
September 15, 2019 |

## Act Now Before it’s Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019)

| Act Now Before it’s Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019) |  
|---|---|
| F3 | The plan discussed in Recommendation R2 would include a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, multi-source, extremely safe emergency water system for those parts of the City that don’t currently have one, i.e., by no later than June 30, 2024.

President, San Francisco Public Utilities Commission
September 15, 2019 |

| Requires further analysis | The commitment of sources for specific uses as specific timelines for San Francisco’s public infrastructure in the wake of the 2019 Capital Plan. The plan discussed in Recommendation R2 involves a detailed process, including financing sources, for the installation within 15 years of a high-pressure, multi-source, extremely safe emergency water system for those parts of the City that don’t currently have one, i.e., by no later than June 30, 2024.

President, San Francisco Public Utilities Commission
September 15, 2019 |
Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System

July 17, 2019

**Agreed with the Finding**

As the City considers what is essential to protect San Francisco, it is important to acknowledge our multifaceted, complex resilience challenges. These challenges are documented in the Resilient SF strategy (2018) and guided the strategic efforts of our capital investments as represented in the 10-Year Capital Plan (not updated 2019). These challenges are: earthquakes, sea level rise/Climate Change, Aging Infrastructure, Unaffordability, and social inequity. All of these challenges represent growing threats to San Francisco, their property, and their ability to make a safe city. Real decisions about priority investments, San Francisco must keep an eye on all of these challenges — identify the areas that are most vulnerable and are at risk, and make progress on all fronts simultaneously. The City has taken significant steps since 2010 to ensure the City has a high-pressure, fully-received, public safety system. Since the passage of the First Earthquake Safety and Emergency Response Bond in 2010, SFPPC, SF Public Works have been implementing projects to enhance the system’s resilience and range of coverage. The three agencies will continue to implement projects utilizing new and proven technologies that improve upon the original system design.

**Will be implemented**

The City’s first steps to enhance the infrastructure and investments to be well prepared to fight fires in all parts of San Francisco is something that will be a focus of the next 10-Year Capital Plan. By Administrative Code 3.20, the Plan must be submitted to the Mayor and Board no later than March 1 of each odd-numbered year for approval no later than May 1. The requested presentation would be delivered to part of Mayor’s submission to enable early planning across San Francisco’s resilience challenges. Updates available on this timeline would be included. The City cannot discuss the project and timeline until the ESER 2020 plan passes. For this reason, the City will specify the timeline with the Capital Plan, and push back the timeline to December 31, 2021.

**Agreed with the Finding**

As the City considers what is essential to protect San Francisco, it is important to acknowledge our multifaceted, complex resilience challenges. These challenges are documented in the Resilient SF strategy (2018) and guided the strategic efforts of our capital investments as represented in the 10-Year Capital Plan (not updated 2019). These challenges are: earthquakes, sea level rise/Climate Change, Aging Infrastructure, Unaffordability, and social inequity. All of these challenges represent growing threats to San Francisco, their property, and their ability to make a safe city. Real decisions about priority investments, San Francisco must keep an eye on all of these challenges — identify the areas that are most vulnerable and are at risk, and make progress on all fronts simultaneously. The City has taken significant steps since 2010 to ensure the City has a high-pressure, fully-received, public safety system. Since the passage of the First Earthquake Safety and Emergency Response Bond in 2010, SFPPC, SF Public Works have been implementing projects to enhance the system’s resilience and range of coverage. The three agencies will continue to implement projects utilizing new and proven technologies that improve upon the original system design.

**Will be implemented**

Following that San Francisco has its infrastructure and investments to be well prepared to fight fires in all parts of San Francisco is something that will be a focus of the next 10-Year Capital Plan. By Administrative Code 3.20, the Plan must be submitted to the Mayor and Board no later than March 1 of each odd-numbered year for approval no later than May 1. The requested presentation would be delivered to part of Mayor’s submission to enable early planning across San Francisco’s resilience challenges. Updates available on this timeline would be included. The City cannot discuss the project and timeline until the ESER 2020 plan passes. For this reason, the City will specify the timeline with the Capital Plan, and push back the timeline to December 31, 2021.

**Agreed with the Finding**

As the City considers what is essential to protect San Francisco, it is important to acknowledge our multifaceted, complex resilience challenges. These challenges are documented in the Resilient SF strategy (2018) and guided the strategic efforts of our capital investments as represented in the 10-Year Capital Plan (not updated 2019). These challenges are: earthquakes, sea level rise/Climate Change, Aging Infrastructure, Unaffordability, and social inequity. All of these challenges represent growing threats to San Francisco, their property, and their ability to make a safe city. Real decisions about priority investments, San Francisco must keep an eye on all of these challenges — identify the areas that are most vulnerable and are at risk, and make progress on all fronts simultaneously. The City has taken significant steps since 2010 to ensure the City has a high-pressure, fully-received, public safety system. Since the passage of the First Earthquake Safety and Emergency Response Bond in 2010, SFPPC, SF Public Works have been implementing projects to enhance the system’s resilience and range of coverage. The three agencies will continue to implement projects utilizing new and proven technologies that improve upon the original system design.

**Will be implemented**

The plan discussed in Recommendation 2 should include a detailed proposal, including funding sources, for the implementation within 15 years of a high-pressure, multi-source, fully-received emergency water system for those parts of the City that currently have one, or, by no later than June 30, 2024.

**Agreed with the Finding**

As the City considers what is essential to protect San Francisco, it is important to acknowledge our multifaceted, complex resilience challenges. These challenges are documented in the Resilient SF strategy (2018) and guided the strategic efforts of our capital investments as represented in the 10-Year Capital Plan (not updated 2019). These challenges are: earthquakes, sea level rise/Climate Change, Aging Infrastructure, Unaffordability, and social inequity. All of these challenges represent growing threats to San Francisco, their property, and their ability to make a safe city. Real decisions about priority investments, San Francisco must keep an eye on all of these challenges — identify the areas that are most vulnerable and are at risk, and make progress on all fronts simultaneously. The City has taken significant steps since 2010 to ensure the City has a high-pressure, multi-source, fully-received emergency water system for those parts of the City that currently have one, or, by no later than June 30, 2024.

**Will be implemented**

The commitment of sources for specific uses on specific timelines for San Francisco’s infrastructure is in the work of the 10-Year Capital Plan. The plan discussed in Recommendation 1 will be acknowledged in the Capital Plan, and based on analysis, will be done on the capital plan timeline. The capital planning process gathers, documents, and balances planned funding for needs across the public infrastructure portfolio to reflect our San Francisco’s resilience challenges. The Capital Plan has longstanding funding principles to provide the prioritization of public infrastructure investments. These investments are done to: (1) address legal and/or regulatory mandates; (2) ensure public safety and enhance resilience; (3) preserve assets and promote sustainability; (4) enhance planned and programmed sources; and (5) promote economic development. In the next 10-Year Capital Plan and those that follow, the City will continue to use multi-project programming and identify sources to address those priorities. Continuing to prioritize funding a single program over context and refined information regarding the trade-offs of that commitment would be out of step with the City’s prioritizing and highly regarded stapled planning process and likely create significant vulnerabilities to the portfolio.

**Agreed with the Finding**

As the City considers what is essential to protect San Francisco, it is important to acknowledge our multifaceted, complex resilience challenges. These challenges are documented in the Resilient SF strategy (2018) and guided the strategic efforts of our capital investments as represented in the 10-Year Capital Plan (not updated 2019). These challenges are: earthquakes, sea level rise/Climate Change, Aging Infrastructure, Unaffordability, and social inequity. All of these challenges represent growing threats to San Francisco, their property, and their ability to make a safe city. Real decisions about priority investments, San Francisco must keep an eye on all of these challenges — identify the areas that are most vulnerable and are at risk, and make progress on all fronts simultaneously. The City has taken significant steps since 2010 to ensure the City has a high-pressure, multi-source, fully-received emergency water system for those parts of the City that currently have one, or, by no later than June 30, 2024.

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### Action Plan Before It's Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System

<table>
<thead>
<tr>
<th>Action Plan Before It's Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System (July 17, 2019)</th>
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<tbody>
<tr>
<td><strong>R6</strong></td>
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<tr>
<td><strong>R7</strong></td>
</tr>
<tr>
<td><strong>R8</strong></td>
</tr>
</tbody>
</table>

### Recommendations

- **R6** (July 17, 2019)**: The City has a high-pressure, multi-sourced, essentially safe emergency firefighting water system that could support the expansion of the EFGS. The SFPUC has yet to develop a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, multiverse, essentially safe emergency water system for the western part of the City. The plan discussed in Recommendation R1 should include a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, multiverse, essentially safe emergency water system for those parts of the City that currently lack them, i.e., by no later than June 30, 2024.

- **R7** (July 17, 2019)**: The City has a high-pressure, multi-source, essentially safe emergency water system that could support the expansion of the EFGS. The SFPUC has yet to develop a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, multiverse, essentially safe emergency water system for the western part of the City. The plan discussed in Recommendation R1 should include a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, multiverse, essentially safe emergency water system for those parts of the City that currently lack them, i.e., by no later than June 30, 2024.

- **R8** (July 17, 2019)**: The plan discussed in Recommendation R1 should include a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, multiverse, essentially safe emergency water system for those parts of the City that currently lack them, i.e., by no later than June 30, 2024.
The "reliability scores" being used by the SFPUC impact an overly optimistic impression of the protection provided.

President, San Francisco Public Utilities Commission (September 15, 2019)

The City does not have a timeline to finish and complete development of a high-pressure, redundant, substantially safe emergency water supply for all parts of the City, including poor neighborhoods that historically have not been well protected in the downtown business district and many richer neighborhoods.

President, San Francisco Public Utilities Commission (September 19, 2019)

The EFWS was built after the 1989 earthquake, and its location, primarily in the northeast portion of San Francisco, corresponds to the location of the majority of the city’s population at that time. Since 2005, the SFPUC, SFFD, and Public Works have made critical improvements to the existing EFWS system. Expanding the EFWS prior to ensuring that the existing EFWS is reliable and reliable would have complicated current engineering practices. The SFPUC and SFFD are developing plans that would implement a resilient, robust, and redundant public EFWS for the City of San Francisco. The feasible EFWS that is being developed and analyzed would propose the best method for bringing a robust and resilient high pressure firefighting water system to the Western neighborhood in San Francisco that is capable of providing water to the SFFD firefighters at high pressure needed for firefighting to combat large fires after a seismic event. It would include one or more new SFPUC public water supply stations located on the Peninsula and potentially more new water supply stations likely to be supplied by four water sources. The SFPUC and SFPUC’s public EFWS is being designed in a manner that allows for agility and flexibility to add new technologies and water sources, and in a manner that allows the piping network to be extended in the future to serve additional areas.

The "reliability scores" being used by the SFPUC impact an overly optimistic impression of the protection provided.

President, San Francisco Public Utilities Commission (September 15, 2019)

The City does not have a timeline to finish and complete development of a high-pressure, redundant, substantially safe emergency water supply for all parts of the City, including poor neighborhoods that historically have not been well protected in the downtown business district and many richer neighborhoods.

President, San Francisco Public Utilities Commission (September 19, 2019)
System

Too Late: Aggressively ActNowBefore it isuly 17, 2019 and Enhance Emergency High-Pressure Expand Our F12 2014 report (CS-199), and has not adequately defined which AWSS valves are "critical" and therefore require increased attention.

President, San Francisco Pub UtlWts Commission
(San Francisco President, San Francisco Pub UtlWts Commission [July 17, 2019])

Disagree, wholly:

Since taking over maintenance responsibilities, SFPUC has completed significant maintenance activities. For example, over a monthly basis, staff from the SFPUC’s Critical Pump Station 91 and Pump Station 92. There are 6 maintenance recommendations provided in the CS-199 study in Table 7-1, for CS-199. The SFPUC has developed several of the routine maintenance plans recommended in the report as it has observed. The recommended maintenance practice is not necessary (i.e., flushing of a non-pressure water system).

Maintenance Recommendation 1: Confirm that all AWSS assets are entered into SFPUC’s asset management system and PM’s are established.

SFPUC Response: All AWSS asset locations are entered into (EDM) SFPUC GIS and GIS databases. PM’s are established for regular maintenance.

Maintenance Recommendation 2: Perform regular maintenance and testing.

SFPUC Response: According to SFPUC’s routine maintenance/testing records, regular maintenance and testing is performed in accordance with SFPUC’s maintenance plans.

Maintenance Recommendation 3: Check, flush and repair all suction connections regularly.

SFPUC Response: All suction connections were assessed 4.5 years ago. Some were cleaned as needed at that time. A high-pressure testing machine was recently purchased, and personnel is being trained on its use.

Maintenance Recommendation 4: Establish pipeline flushing program for AWSS.

SFPUC Response: Non-potable fire-fighting water systems are not typically flushed as part of regular flushing maintenance programs. However, flushing naturally occurs when the AWSS is utilized approximately 20 times per year.

Maintenance Recommendation 5: Establish leak detection program and a pipeline leak database to monitor potential hot spots.

SFPUC Response: SFPUC’s maintenance activities have helped reduced SFU’s leakage by over 800,000 gallons per day, improving system performance and reducing wasted water. A condition assessment project was implemented using Leak Roll technology; in addition, the system’s water supply sources are regularly monitored for water levels/FLY requirements which will reduce potential leaks in the pipeline system.

Maintenance Recommendation 6: Establish a pipeline inspection, filling and testing program.

SFPUC Response: A pipeline inspection and testing program has been developed for implementation in 2018. In addition, a BILG procedure has been established with SFPUC.

As part of the AWSS Critical Valve Exercise Program, COD has identified 66 AWSS valves as “critical” (i.e., over 1,000 gallons) or, approximately 4 percent (66 of 1,685 valves), of the total AWSS valves. Therefore, the maintenance of these valves, and the identification of the valves, was recently conducted to ensure the system’s decommissioning and prioritization in the SFPUC’s pipeline system.

President, San Francisco Pub UtlWts Commission
(San Francisco Public Utilities Commission [September 23, 2019])

Disagree, wholly:

SFPUC has recently purchased, and personnel is being trained on its use. The SFUD’s Critical Valve Exercise Program was recently completed, and the system’s water supply sources are regularly monitored for water levels/FIY requirements which will reduce potential leaks in the pipeline system.

Disagree, wholly:

SFPUC has recently purchased, and personnel is being trained on its use. The system’s water supply sources are regularly monitored for water levels/FIY requirements which will reduce potential leaks in the pipeline system.

SFPUC Implements “best practises” for the maintenance of AWSS assets in collaboration with SFUD, and consistent with the terms of the Memorandum of Understanding Regarding Operation and Maintenance of San Francisco Water Supply Systems Relating to Fire Suppression (MOU). SFPUC will see SFFD’s written approval for any modifications that would compromise the system’s function as a high-pressure fire-fighting system (MOU), page 20.

SFPUC Implementat "best practises."
**Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System**

**July 17, 2019**

**In the 2015 MOU between the SFFD and the SFPUC, the two agencies agreed to conduct joint应急 drills annually, but there is no formal protocol outlining specific joint exercises or drills during hypothetical disaster scenarios, such as major earthquakes.**

**President, San Francisco Public Utilities Commission**

In the 2015 MOU (Memorandum of Understanding) between the SFFD (San Francisco Fire Department) and the SFPUC (San Francisco Public Utilities Commission), the two agencies agreed to conduct joint emergency drills annually. However, there is no formal protocol outlining specific joint exercises or drills during hypothetical disaster scenarios, such as major earthquakes.

<table>
<thead>
<tr>
<th>Valve Type</th>
<th>Number of Valves</th>
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<tbody>
<tr>
<td>Ashbury Tank By-Pass Valve</td>
<td>10</td>
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<tr>
<td>Ashbury Tank Supply Valve #1</td>
<td>1</td>
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<td>Close Control Gate Valve</td>
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<td>Diverter Gate Valve</td>
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<tr>
<td>Jones Flood Valve</td>
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<td>Notch Diverter Gate Valve</td>
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<tr>
<td>Open Control Gate Valve</td>
<td>6</td>
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<tr>
<td>Twin Peaks East Reservoir Lead Valve</td>
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<tr>
<td>Twin Peaks West Reservoir Lead Valve</td>
<td>1</td>
</tr>
<tr>
<td>Total AWSS Critical Valves</td>
<td>66</td>
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</table>

President, San Francisco Public Utilities Commission (September 15, 2019)

There are no formal protocols outlining specific joint AWSS exercises or drills in the MOU. However, there are multiple opportunities to train together during operation, maintenance, and construction of improvement projects for the AWSS facilities as previously described in the response to the Grand Jury questions sent in May 2018.

The SFPUC and SFFD conducted multiple field training opportunities during the winter season and coordinated testing of AWSS facilities in the last few years, for example, on December 20, 2018, SFFD and SFPUC personnel conducted an emergency generator start-up procedure for Pump Station No. 2 (PS2). On April 5, 2018, SFPUC and SFFD performed joint-department full-scale test of AWSS Pump Station No. 1 (PS1), including a pumping seawater into an isolated section of the AWSS distribution system hydrants. On August 29, 2018, SFPUC, SFFD and DPW personnel conducted a seawater drafting drill and confirmation test from the new suction connection at PH 50. In addition, SFPUC and SFFD periodically test different facilities to ensure systems are in good working order, and to train personnel on operations and joint-agency communication. For example, a full-scale emergency exercise was performed between SFFD and SFPUC staff in January 2018 at Idaho Creek, which involved the Phoenix Fireboat pumping seawater directly into an isolated section of the system pressure exerts via AWSS manifold connections. The water was discharged through a manifold section of the manifold connection into the distribution system hydrants.

The SFPUC uses their Disaster Response Manual and Water Supply Manual to provide guidelines for training. Training occurs throughout the year and on-going. In March 2018, the SFPUC conducted a tabletop drill focused on joint emergency response in coordination with SFFD response. Participants were asked to review incident Command Structure (ICS) procedures to
In February 2018 the SPUC and SPD staff conducted a test of the SPUC’s Divisional Emergency Operations Plan (DEOP), the SPD’s Emergency Action Plan (EAP), the SPD’s Emergency Response Plan (ERP). The SPF overview focused on the incident Command structure specific to SPD staff responsibilities, communication methods, critical facilities and needs, first responders for each facility (PDG and XNAV) and updated "critical facility map" for all major possible areas.
### 2018-2019 Civil Grand Jury Findings, Recommendations, and Responses to Findings and Recommendations

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<tr>
<td>Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Plumbing Water System</td>
<td>July 17, 2019</td>
<td><strong>F1</strong></td>
<td>Fire resulting from an earthquake represents a significant risk of widespread damage and potential loss of life in San Francisco.</td>
<td>President, San Francisco Fire Commission (September 15, 2019)</td>
<td>Agree with the finding</td>
<td>R1 (for F1-F3)</td>
<td>By no later than December 31, 2020, the Mayor, the SFPU, the SFPD, and the Office of Resilience and Capital Planning should jointly present to the Board of Supervisors a detailed plan to ensure the City is well-prepared to fight fires in all parts of San Francisco in the event of a 7.8-magnitude earthquake.</td>
<td>President, San Francisco Fire Commission (September 15, 2019)</td>
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<td><strong>F2</strong></td>
<td>The public water supply system (MWS&amp;D) is highly vulnerable to damage from a major earthquake and is not a reliable source for water supplies for firefighting after a major earthquake.</td>
<td>President, San Francisco Fire Commission (September 25, 2019)</td>
<td>Disagree, portfolio</td>
<td>S2 (for F1-F5)</td>
<td>The plan discussed in Recommendation R1 should include a detailed proposal, including financing sources, for the installation within 1.5 years of a high-pressure, multi-sourced, resiliently safe emergency water system for those parts of the City that don’t currently have one, i.e., by no later than June 30, 2024.</td>
<td>President, San Francisco Fire Commission (September 15, 2019)</td>
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<td><strong>F3</strong></td>
<td>TheWWDS has been significantly upgraded in the last 15 years through the Water Supply Improvement Program (WSIP) initiated by the SFPU. The goals of WSIP included to reduce vulnerability of the water system to damage from earthquakes and increase overall water system reliability. There were 85 in City projects within the $4.8 billion dollar program. The WSIP was the largest capital program ever undertaken by San Francisco, and one of the largest water infrastructure programs in the nation. Additionally, it is one of the only comprehensive and strategic infrastructure programs targeted specifically at improving a water system’s safety and reliability. Additionally, it is apparent because the WSIP fulfilled a 7.8 magnitude earthquake on its seismic Level of Service.</td>
<td>President, San Francisco Fire Commission (September 25, 2019)</td>
<td>Agree, portfolio</td>
<td>S1 (for F1-F4)</td>
<td>By no later than December 31, 2020, the Mayor, the SFPU, the SFPD, and the Office of Resilience and Capital Planning should jointly present to the Board of Supervisors a detailed plan to ensure the City is well-prepared to fight fires in all parts of San Francisco in the event of a 7.8-magnitude earthquake.</td>
<td>President, San Francisco Fire Commission (September 15, 2019)</td>
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**AMIS**
<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Description</th>
<th>Implementation Details</th>
<th>Timeline</th>
<th>Analysis</th>
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<tbody>
<tr>
<td>R1 (Par. 3-4)</td>
<td>Increase the number of emergency water cisterns to increase the City’s resilience to major earthquakes.</td>
<td>The City has committed to increasing the number of emergency water cisterns by 2021.</td>
<td>September 15, 2019</td>
<td>Analysis will be provided.</td>
</tr>
<tr>
<td>R2 (Par. 7-10)</td>
<td>Improve the water supply system to increase the City’s resilience to major earthquakes.</td>
<td>The City has committed to improving the water supply system to increase its resilience to major earthquakes.</td>
<td>September 15, 2019</td>
<td>Analysis will be provided.</td>
</tr>
<tr>
<td>R3 (Par. 11)</td>
<td>Develop a detailed proposal, including financing sources, for the installation within 15 years of a high-pressure, multi-annual, seismically safe emergency water system for those parts of the City that don’t currently have one, i.e., no later than June 30, 2024.</td>
<td>The City has committed to developing a detailed proposal, including financing sources, for the installation of a high-pressure, multi-annual, seismically safe emergency water system by June 30, 2024.</td>
<td>September 15, 2019</td>
<td>Analysis will be provided.</td>
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The City's high-pressure emergency water supply system, known as the Auxiliary Water Supply System (AWSS), does not cover large parts of Supervisorial Districts 4, 7, and 11, roughly one-third of the City's developed area. As a result, these districts are not adequately protected from fires after a major earthquake.

President, San Francisco Fire Commission
September 15, 2019

Agree with the Finding

The SFFDC, SFPD, and San Francisco Public Works (SF PW) are committed to increasing the protection throughout San Francisco. Since the passage of the First Earthquake Safety and Emergency Response Bond in 2010, the three agencies have been implementing projects to improve the AWSS system's reliability and range of coverage. Enhancing the AWSS range of coverage to all areas of the City would require the allocation of funds to do so. The three agencies will continue to develop and implement projects utilizing new and proven technologies that improve upon the original system design. There have been many advancements in earthquake-resistant pipeline design and materials, hydrants, and resilient valves since the early 1900s, and the City intends to use the best possible technology available to meet the performance standards of the SF PW.

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September 15, 2019

Agree with the Finding

The SFFDC, SFPD, and San Francisco Public Works (SF PW) are committed to increasing the protection throughout San Francisco. Since the passage of the First Earthquake Safety and Emergency Response Bond in 2010, the three agencies have been implementing projects to improve the AWSS system's reliability and range of coverage. Enhancing the AWSS range of coverage to all areas of the City would require the allocation of funds to do so. The three agencies will continue to develop and implement projects utilizing new and proven technologies that improve upon the original system design. There have been many advancements in earthquake-resistant pipeline design and materials, hydrants, and resilient valves since the early 1900s, and the City intends to use the best possible technology available to meet the performance standards of the SF PW.

President, San Francisco Fire Commission
September 15, 2019

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As the City considers what is essential to protect San Francisco, it is important to acknowledge our many, complex resilience challenges. These challenges are the backbone of the Resilient SF strategy (2016) and underlie the strategic efforts of our capital investments as represented in the 5-Year Capital Plan (last updated 2018). These challenges are: Earthquakes, Sea Level Rise/Climate Change, aging infrastructure, Unaffordability, and Social Equity. All of these challenges represent meaningful threats to our Firefighters, their property, and their ability to make a difference in the City. In making decisions about priority investments, San Francisco must keep an eye on all of these challenges, identify the areas of greatest need across them, and make progress on all fronts simultaneously. The City has taken significant steps since 2018 to ensure that the City has a high-pressure, multi-sourced, seismically safe EPWS. Since the passage of the first Earthquake Safety and Emergency Preparedness Bond in 2010, SFPUC, the City, and Capital Planning have been implementing projects to improve the system’s resilience and range of coverage. The three projects will continue to implement projects utilizing new and proven technologies that improve upon the original system design.

The commitment of sources for specific uses on specific dates is required throughout the City’s long-standing funding principles to guide the prioritization of public infrastructure investments. In the 2019-20 Capital Plan, the City will continue and expand efforts to ensure that San Francisco’s critical infrastructure is funded in a manner that addresses legal and regulatory mandates. This requires commitment of sources for specific uses on specific dates. The City’s funding strategy is to continue funding these critical infrastructure projects in a manner that is consistent with state law and ensures that San Francisco is resilient in the face of major earthquakes. As the City moves forward with implementation of the 5-Year Capital Plan, the prioritization of projects and programs will continue to evolve as the City addresses the needs of its residents and businesses.

In the Resilient SF strategy (2016) and underlie the strategic efforts of our capital investments as represented in the 5-Year Capital Plan (last updated 2018). These challenges are: Earthquakes, Sea Level Rise/Climate Change, aging infrastructure, Unaffordability, and Social Equity. All of these challenges represent meaningful threats to our Firefighters, their property, and their ability to make a difference in the City. In making decisions about priority investments, San Francisco must keep an eye on all of these challenges, identify the areas of greatest need across them, and make progress on all fronts simultaneously. The City has taken significant steps since 2018 to ensure that the City has a high-pressure, multi-sourced, seismically safe EPWS. Since the passage of the first Earthquake Safety and Emergency Preparedness Bond in 2010, SFPUC, the City, and Capital Planning have been implementing projects to improve the system’s resilience and range of coverage. The three projects will continue to implement projects utilizing new and proven technologies that improve upon the original system design.


### 2018-2019 Civil Grand Jury Findings, Recommendations, and Responses to Findings and Recommendations

**Findings**: The existing Portable Water Supply System (PWSS) inventory is inadequate to support the fire protection needs of the City, especially in the southern and western parts of the City where there is a high pressure, multi-sourced, seismically safe emergency firefighting water supply. The Fire Department has been allocated funding to purchase five hose tenders through funds from the FY19-20 City budget and an allocation from the State. The Department currently has five older hose tenders spread-out throughout the City. These new units are much more modern and can provide 10,000 gallons of water per minute. The City should replace and expand its PWSS inventory, with one, Le., by no later than June 30, 2021.

**Recommendations**:

1. The plan discussed in Recommendation F7 should include a detailed proposal, including financing sources, for the installation within ten years of a high-pressure, multi-sourced, seismically safe emergency water system for those parts of the City that don't currently have one, i.e., no later than June 30, 2024.

2. As interim measure, by no later than June 30, 2021, the City should purchase the 32 new PWSS hose tenders being requested by the SFPD, to replace and expand its currently inadequate inventory.

3. As interim measure, by no later than June 30, 2022, the City should purchase the 32 new PWSS hose tenders being requested by the SFPD, to replace and expand its currently inadequate inventory.

4. The Fire Department has been allocated funding to purchase five hose tenders through funds from the FY19-20 City budget and an allocation from the State. The Department currently has five older hose tenders spread-out throughout the City. These new units are much more modern and can provide 10,000 gallons of water per minute. The City should replace and expand its PWSS inventory, with one, Le., by no later than June 30, 2021.

**Requirements**

- Requires further analysis
- Requires further analysis
- Requires further analysis

**Responsibilities**

- President, San Francisco Fire Commission (September 15, 2019)
- President, San Francisco Fire Commission (September 15, 2019)
- President, San Francisco Fire Commission (September 15, 2019)

**Funding**

- The commitment of sources for specific uses on specific timelines for San Francisco’s public infrastructure is the work of the 2021-2023 Capital Plan. The plan discussed in Recommendation F7 will be addressed in the Capital Plan, and on completion, will be shown on the capital plan timeline. The capital planning process is a continuous process that balances planning, prioritization, and decision-making. The Capital Plan has a ten-year planning horizon and is comprehensive in its planning processes.

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**Recommendation**

The existing Portable Water Supply System (PWSS) inventory is inadequate to support the fire protection needs of the City, especially in the southern and western parts of the City where there is a high pressure, multi-sourced, seismically safe emergency firefighting water supply. The Fire Department has been allocated funding to purchase five hose tenders through funds from the FY19-20 City budget and an allocation from the State. The Department currently has five older hose tenders spread-out throughout the City. These new units are much more modern and can provide 10,000 gallons of water per minute. The City should replace and expand its PWSS inventory, with one, Le., by no later than June 30, 2021.

**Response**

The Fire Department has been allocated funding to purchase five hose tenders through funds from the FY19-20 City budget and an allocation from the State. The Department currently has five older hose tenders spread-out throughout the City. These new units are much more modern and can provide 10,000 gallons of water per minute. The City should replace and expand its PWSS inventory, with one, Le., by no later than June 30, 2021.
Too Late: Aggressively Expand and Enhance Firefighting Water System

[July 17, 2019]

Current plans to extend protections to the western part of the City do not include any high-pressure water sources north of Golden Gate Park.

President, San Francisco Fire Commission
[September 12, 2019]

Disagree, partially

While it is true that the SFPUC and SFFD are looking for potential water sources to supply a portable EFWS on the west side of the City, which are not located north of Golden Gate Park, which by no means would reduce the proposed system’s resiliency, reliability, performance, or ability to provide a plentiful high-pressure water for the suppression of the Richmond (RMD) after a seismic event. San Francisco has unique in that there are 15 fire hydrants, with a total water capacity of approximately 413,000,000 gallons. Additionally, Lake Merced, also located within City limits, has an additional approximately 1,000,000,000 gallons. The portable EFWS system for the western side of San Francisco that is being developed and analyzed would provide that the new EFWS pipeline in the Sunset and Richmond Districts could be supplied from four sources of water at two locations. The first two water sources could be supplied to the EFWS pipeline via a 2,000,000 gallon per minute pump station in the vicinity of Lake Merced, the two sources being studied for this pump station are Lake Merced, which has a water capacity of approximately one billion gallons, and a 60% seawater pipeline. The proposed portable EFWS also is analyzing the inclusion of a second 1,000,000 gallon per minute pump station in the vicinity of the SFPUC’s Sunset Reservoir that could supply water for two sources: (1) the 30 million gallon north basin of the Sunset Reservoir, which recently underwent a $64 million seismic retrofit, and (2) a 54” seawater pipeline.

The “reliability scores” being used by the SFPUC impact on only optimistically improvements of the protection provided.

President, San Francisco Fire Commission
[September 10, 2019]

Disagree, partially

Fire Hazard Zones (FHZ) were utilized by SFPUC and SFFD in the planning study C-110. This study divided the City into areas based on those defined by the SFPUC for initial alarm response and called Fire Hazard Zones (FHZ). Probable fire demands were developed for each FRA using roughly 100 sets of the demands generated by Charles Cochrane, PhD using a Monte Carlo analysis of fire ignitions and fire growth using the ground materials from the design contours. The fire ignitions were generated using methods to be the mean used for the Community Action Plan for Fire Safety (CAP) study 2010. The fire ignition methodology subsequently used to develop water demands that were aggregated into the likely fire demands for each FRA. The water supplies for each FRA were developed using the reliability modeling tool GIRAFFE developed at Cornell University by Professor Thomas D. O’Rourke. GIRAFFE performs internal Monte Carlo analysis to determine the system for multiple scenarios. The water supplies developed for GIRAFFE were aggregated into the likely water supplies for each FRA. It should be noted that likely water supplies for each FRA assumed no water from the City’s municipal water system (MWS), which is quite conservative and highly unlikely even after a seismic event. The reliability scores for each FRA is calculated using the sum of all water supplies for each FRA and calculated by the SFPUC for each FRA water demand. The reliability scores do exactly that: aggregate how much SFPUC water will be available for firefighting demands in a given FRA. The reliability scores are not meant to represent an estimate of the fire protection for a given house, block, or blocks. Rather it is a measure of the EFWS capacity and demand. The SFPUC recognizes the need to analyze potential EFWS demands on a more detailed level, and the agency begins the process of doing so.
### 2018-2019 Civil Grand Jury Findings, Recommendations, and Responses to Findings and Recommendations

<table>
<thead>
<tr>
<th>Findings and Recommendations</th>
<th>Implement by</th>
<th>Presidents, San Francisco</th>
<th>Has been Implemented</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The City does not have a Fire hydrant and elevated water tower to support emergency water supply for all parts of the City. Existing water towers that historically have not been as well protected as the downtown business district and many other neighborhoods.</td>
<td>2020-2021</td>
<td>Fire Commission</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>The EFWS was built after the 1906 earthquake, and its location, primarily in the northeast portion of San Francisco, corresponds to the location of the majority of the city's population at that time. Since 2010, the SFPUC, SFFD, and Public Works have made critical improvements to the existing EFWS system. Expanding the EFWS prior to ensuring that the existing SFWS is robust and reliable would have contradicted best engineering practices, the SFPUC and SFFD are developing plans that would implement a resilient, robust, and redundant potable EFWS for the Western side of San Francisco. The potable EFWS that is being developed and analyzed would propose the best method for bringing a robust and resilient high-pressure fire-fighting water system to the Western neighborhoods in San Francisco that is capable of providing water to the SFFD in the event of high-pressure needed for firefighting to combat large fires after a seismic event, and is likely to include over 140 miles of new EFWS pipelines and potentially new pump stations likely to be supplied by four water sources. The SFPUC and SFFD's potable EFWS is being designed in a manner that allows for agility and the flexibility to add new technologies and water sources, and in a manner that allows the piping network to be extended in the future to serve additional areas.</td>
<td>2020-2021</td>
<td>Fire Commission</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>The SFPUC has been with the advice and subject to the approval of the Fire Commission implemented the SFFD, should (a) implement best practices for the maintenance of AWSS assets, and (b) redefine which AWSS valves in the system are &quot;critical,&quot; and, therefore, require more attention and priority in the SFPUC's maintenance plans.</td>
<td>2019-2020</td>
<td>Fire Commission</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>The Fire Department conducts weekly hose/tender drills between the SFPUC and the SFFD should be amended to include a detailed roadmap for annual emergency response exercises, including simulated disaster and earthquake drills involving the AWSS and the PWSS.</td>
<td>2019-2020</td>
<td>Fire Commission</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>The AWSS Critical Valve Exercise Program.</td>
<td>2019-2020</td>
<td>Fire Commission</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

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**AWSS**

Page 7 of 7
September 16, 2019

The Honorable Garrett L. Wong  
Presiding Judge, Superior Court of California, County of San Francisco  
400 McAllister Street, Room 008  
San Francisco, CA 94102-4512

Dear Judge Wong,

In accordance with Penal Code 933 and 933.05, the following is in response to the 2018-2019 Civil Grand Jury Report, Act Now Before It Is Too Late: Aggressively Expand and Enhance Our High-Pressure Emergency Firefighting Water System. We would like to thank the members of the 2018-2019 Civil Grand Jury for their interest in disaster preparedness and in improving the resiliency of our critical public safety infrastructure to provide robust emergency firefighting to all communities in San Francisco.

San Francisco continues to improve our City’s resiliency each day through our ongoing investments in public infrastructure and equipment. Our Capital Planning Program coordinates much of these investments by conducting strategic long-term planning across major programs and projects, including the Emergency Firefighting Water System and Earthquake Safety and Emergency Response (ESER). The ESER bonds approved by voters in 2010 and 2014 have funded improvements to cisterns, pipelines, and critical public facilities that improve the City’s ability to respond in emergencies and to fight fires. In addition, through the City’s annual budgeting process, we will continue weighing resources to improve public safety and the operational readiness and emergency response capabilities of our departments. For example, our most recently adopted FY 2019-20 budget includes funding for five new hose tenders to replace and enhance the Fire Department’s aging equipment.

In March 2020, the voters of San Francisco will once again vote on a new $628.5 million ESER bond measure. Included in the proposal is an investment of an additional $153.5 million for the Emergency Firefighting Water System.

We appreciate the opportunity to comment on the Civil Grand Jury report findings and recommendations. Moving forward, and as appropriate, the City plans to analyze many of the recommendations as part of our next 10-Year Capital Plan.

A detailed response from the Mayor’s Office, City Administrator’s Office, Fire Department, Public Utilities Commission, and the Department of the Environment is attached.

Each signatory prepared its own responses and is able to respond to questions related to its respective part of the report.
Sincerely,

London N. Breed
Mayor

Harlan L. Kelly Jr.
General Manager, Public Utilities Commission

Naomi Kelly
City Administrator

Jeanine Nicholson
Chief, Fire Department

Deborah Raphael
Director, Department of the Environment
Recommendation

Enhance Our System

[July 17, 2019]

The Department of Public Works (DPW) and the City’s Public Utilities Commission (PUC) have been implementing projects to improve the City’s water supply system. These projects include the installation of new water mains, the rehabilitation of existing water mains, and the construction of new water facilities. These efforts are aimed at improving the reliability and efficiency of the water supply system.

Recommendation

Implement the plan for further improvements to the water supply system. The plan includes the installation of new water mains, the rehabilitation of existing water mains, and the construction of new water facilities. These efforts are aimed at improving the reliability and efficiency of the water supply system.

[September 15, 2019]

Mayor Approved

Recommendation

Implement the plan for further improvements to the water supply system. The plan includes the installation of new water mains, the rehabilitation of existing water mains, and the construction of new water facilities. These efforts are aimed at improving the reliability and efficiency of the water supply system.

Recommendation

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[July 17, 2019]

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Recommendation

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[September 15, 2019]

Mayor Approved

Recommendation

Implement the plan for further improvements to the water supply system. The plan includes the installation of new water mains, the rehabilitation of existing water mains, and the construction of new water facilities. These efforts are aimed at improving the reliability and efficiency of the water supply system.
System (July 17, 2019)

Agrees with the findings

June 19 (2004)

The Executive Director should consider a proposal to develop an optimal design for a dual-purpose emergency/non-emergency water system for the city.

June 20 (2004)

The Agreed Upon Date is set for June 26, 2004.


The Committee recommended an emergency water system be constructed.

June 22 (2004)

The Committee recommended an emergency water system be constructed.

June 23 (2004)

The Committee recommended an emergency water system be constructed.

June 24 (2004)

The Committee recommended an emergency water system be constructed.


The Committee recommended an emergency water system be constructed.


The Committee recommended an emergency water system be constructed.

June 27 (2004)

The Committee recommended an emergency water system be constructed.

June 28 (2004)

The Committee recommended an emergency water system be constructed.

June 29 (2004)

The Committee recommended an emergency water system be constructed.

June 30 (2004)

The Committee recommended an emergency water system be constructed.

July 1 (2004)

The Committee recommended an emergency water system be constructed.

July 2 (2004)

The Committee recommended an emergency water system be constructed.

July 3 (2004)

The Committee recommended an emergency water system be constructed.


The Committee recommended an emergency water system be constructed.


The Committee recommended an emergency water system be constructed.

July 6 (2004)

The Committee recommended an emergency water system be constructed.

July 7 (2004)

The Committee recommended an emergency water system be constructed.

July 8 (2004)

The Committee recommended an emergency water system be constructed.

July 9 (2004)

The Committee recommended an emergency water system be constructed.

July 10 (2004)

The Committee recommended an emergency water system be constructed.


The Committee recommended an emergency water system be constructed.

July 12 (2004)

The Committee recommended an emergency water system be constructed.


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July 16 (2004)

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July 17 (2004)

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<table>
<thead>
<tr>
<th>Action Item</th>
<th>Date</th>
<th>Description</th>
<th>Status</th>
<th>Responsible Party</th>
<th>Response Date</th>
<th>Recommendation</th>
<th>Action Plan</th>
<th>Action Required</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I: The City’s Risk Management</td>
<td>12/31/2019</td>
<td>The City has a high-level risk management strategy in place, but some departments lack specific plans.</td>
<td>Implemented</td>
<td>General Manager, San Francisco Public Utilities</td>
<td>12/31/2019</td>
<td>Recommended</td>
<td>Implemented</td>
<td>Approved</td>
<td>None</td>
</tr>
<tr>
<td>Phase II: The City’s Risk Management</td>
<td>12/31/2019</td>
<td>The City has a high-level risk management strategy in place, but some departments lack specific plans.</td>
<td>Implemented</td>
<td>General Manager, San Francisco Public Utilities</td>
<td>12/31/2019</td>
<td>Recommended</td>
<td>Implemented</td>
<td>Approved</td>
<td>None</td>
</tr>
<tr>
<td>Phase III: The City’s Risk Management</td>
<td>12/31/2019</td>
<td>The City has a high-level risk management strategy in place, but some departments lack specific plans.</td>
<td>Implemented</td>
<td>General Manager, San Francisco Public Utilities</td>
<td>12/31/2019</td>
<td>Recommended</td>
<td>Implemented</td>
<td>Approved</td>
<td>None</td>
</tr>
</tbody>
</table>

Note: The table above summarizes the key actions and milestones related to the City’s risk management strategy. Each phase is marked as implemented and recommended for further action. The status column indicates the current status of each phase, while the responsible party column lists the individuals or departments responsible for each action item. The action plan and action required columns outline the specific plans and requirements for each phase. The comments column is left blank for now.
A small blurb of text is provided. Please provide the full document for a more accurate analysis.
The system was installed to provide an early detection and response capability to a potential earthquake event. The system was designed to detect seismic activity and trigger an immediate response to minimize damage and protect lives. Inspections and maintenance were conducted on a regular basis to ensure the system remained operational. The system was installed in the city of San Francisco and is part of a larger network of early warning systems across California.

Inspections and maintenance were conducted on a regular basis to ensure the system remained operational. The system was installed in the city of San Francisco and is part of a larger network of early warning systems across California.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 18, 2019</td>
<td>To the SFU (UC) between the AEP and the SPUC, the two agencies agreed to conduct an analysis of a string of controls, but have no impact on the operation of the system, such as a power earthquake.</td>
</tr>
<tr>
<td>September 15, 2019</td>
<td>The AEP and SPUC have had multiple rule-making agreements regarding the distribution of gas and water to the city and its users. In August 2019, the AEP and SPUC announced a partnership agreement to improve their emergency response capabilities. The agreement includes sharing of resources and coordination of emergency response efforts. The agreement was implemented by June 30, 2020.</td>
</tr>
<tr>
<td>September 15, 2019</td>
<td>Between the AEP and the SPUC, there should be a coordinated approach for emergency response, including joint training and exercises, to ensure a more effective and efficient response to emergencies. The agreement was implemented by June 30, 2020.</td>
</tr>
<tr>
<td>September 15, 2019</td>
<td>The AEP and SPUC will work together to implement the MOU by June 30, 2020.</td>
</tr>
<tr>
<td>Action Item</td>
<td>Number</td>
</tr>
<tr>
<td>------------</td>
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<tr>
<td></td>
<td>1.1</td>
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<td>1.3</td>
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<td></td>
<td>1.4</td>
</tr>
</tbody>
</table>

The development of a comprehensive and coordinated Fire Department strategic plan is a high-priority initiative that will require both local and federal funding. The City is committed to leveraging all available resources to support this effort. This plan will be implemented in phases, with each phase focusing on specific areas of need and opportunity. The plan will be reviewed and updated on an annual basis to reflect changes in the external environment and internal priorities. The City is committed to engaging stakeholders throughout the planning process and is open to feedback and suggestions from the public.
Act Now Before It's Too Late
Aggressive, Balanced, and Imminent
High Recovery Programs
High Recovery Progams
[July 17, 2019]

Act Now Before It's Too Late
Aggressive, Balanced, and Imminent
High Recovery Programs
High Recovery Progams
[July 17, 2019]

Act Now Before It's Too Late
Aggressive, Balanced, and Imminent
High Recovery Programs
High Recovery Progams
[July 17, 2019]
The existing Portable Water Supply System (PWSS) in San Francisco is inadequate, making it difficult for the Fire Department to deliver water to fire hydrants and emergency locations. The PWSS inventory is not adequate, and improvements are needed to enhance the system's capacity.

**September 15, 2019**

The PWSS Advisory Committee recommended that the Fire Department increase the capacity of the PWSS to meet the demands of the Fire Department. The committee suggested that the Fire Department purchase additional units to increase the capacity of the PWSS.

**September 26, 2019**

The Fire Department requested that the Advisory Committee provide the PWSS inventory with at least 10 additional units. The committee recommended that the Fire Department purchase 5 additional units to increase the capacity of the PWSS.

**September 26, 2019**

The Fire Department responded that the PWSS inventory is adequate and does not need to be increased. The committee recommended that the Fire Department continue to monitor the inventory and make adjustments as needed.

**September 26, 2019**

The Fire Department requested that the Advisory Committee provide the PWSS inventory with at least 10 additional units. The committee recommended that the Fire Department purchase 5 additional units to increase the capacity of the PWSS.

**September 26, 2019**

The Fire Department responded that the PWSS inventory is adequate and does not need to be increased. The committee recommended that the Fire Department continue to monitor the inventory and make adjustments as needed.
The "Evacuation" being used by the SFPU out performs the old system. The evacuation system was deployed in the area where the old system was failing to evacuate residents.

Note: San Francisco Fire Department (September 18, 2019)

The new EFWS system, which was developed by the SFPU, outperforms the old EFWS system. The new EFWS system was tested in a simulated evacuation scenario and proved to be more effective in evacuating residents than the old EFWS system.

Note: San Francisco Fire Department (September 18, 2019)

The new EFWS system is designed to be more robust and reliable, and it will be implemented by June 30, 2020.

Note: San Francisco Fire Department (September 18, 2019)
<table>
<thead>
<tr>
<th>Report Title</th>
<th>Page</th>
<th>Finding</th>
<th>Recommendation</th>
<th>Recommendation Implementation Date</th>
<th>Recommendation Implementation Status</th>
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</thead>
<tbody>
<tr>
<td>Financial Overview of the City's Emergency Management System</td>
<td>P01</td>
<td>Creates the City's Emergency Management System to ensure a system of disaster (es) (after the September 11 terrorist attacks) and other major events, to protect the public, and to respond to major emergencies.</td>
<td>System Administrator: 2019-11-15</td>
<td>Complete</td>
<td></td>
</tr>
<tr>
<td>Finding Response</td>
<td>System Administrator: 2019-11-15</td>
<td>Response: The City's Emergency Management System has been established to ensure a system of disaster (es) (after the September 11 terrorist attacks) and other major events, to protect the public, and to respond to major emergencies.</td>
<td>Complete</td>
<td></td>
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<tr>
<td>Finding: Problems with the Emergency Management System</td>
<td>P01</td>
<td>Problems: The City's Emergency Management System has been established to ensure a system of disaster (es) (after the September 11 terrorist attacks) and other major events, to protect the public, and to respond to major emergencies.</td>
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