



AGENDA ITEM

Public Utilities Commission

City and County of San Francisco



DEPARTMENT Water Enterprise AGENDA NO. 16
MEETING DATE May 28, 2019

Approve Water Supply Assessment: Regular Calendar
Project Manager: Paula Kehoe

Approve Revised Water Supply Assessment for the 598 Brannan Street Project

Summary of Proposed Commission Action:	Approve the Revised Water Supply Assessment for the proposed 598 Brannan Street Project, pursuant to the State of California Water Code (Water Code) Section 10910 <i>et seq.</i> , California Environmental Quality Act (CEQA) Section 21151.9, and CEQA Guidelines Section 15155.
Background:	<p>California's Water Supply Assessment law (State of California Water Code (Water Code) Sections 10910-10915) provides a nexus between the regional land use planning process and the environmental review process. The law also reflects the growing awareness of the need to incorporate water supply and demand analysis at the earliest possible stage in the land use planning process. The core of this law is the requirement for a public water system to prepare a water supply assessment Water Supply Assessment (WSA) of whether available water supplies are sufficient to serve the demand generated by projects of a specified size ("water demand projects"), as well as the reasonably foreseeable cumulative demand in the region over the next 20 years under a range of hydrologic conditions.</p> <p>The San Francisco Planning Department, which carries out the City's lead agency responsibilities under CEQA, is filing a Community Plan Evaluation (CPE) for the proposed 598 Brannan Street Project, which would develop a mix of residential, office, production, distribution and repair (PDR), institutional (child care), and commercial uses across four new buildings on an approximately 4.5-acre site located at 598 Brannan and 639, 645, and 649-651 Bryant streets, within the Central South of Market planning area of San Francisco.</p> <p>The Planning Department identified the 598 Brannan Street Project as a water demand project, qualifying for the preparation of a WSA, because it is a mixed-use development that would include more than 250,000 square feet of commercial office space.</p>

APPROVAL: _____

COMMISSION
SECRETARY

Donna Hood

	<p>The content of a WSA is specified by the Water Code and includes identification of any existing water supply entitlements or contracts, and detailed information about groundwater supplies. It assesses the adequacy of water supplies to serve the proposed project and cumulative demand.</p> <p>The WSA must be completed by the public water supplier that would serve the proposed project and be approved by its governing body at a public meeting. Approval of a WSA is not approval of the development project for which the WSA is prepared. A WSA is an informational document required to be prepared for use in the City's environmental review of a proposed project under CEQA.</p> <p>On October 23, 2018 by Resolution No. 18-0173, this Commission approved a WSA for this project. Staff has prepared the attached Revised WSA to account for potential changes to water supply availability relatd to the December 12, 2018 Bay-Delta Plan Amendment. If adopted by the Commission, the Revised WSA would supersede the previous WSA prepared for the proposed project.</p> <p>The Revised WSA analyzes the sufficiency of long-term water supplies to serve the proposed project and cumulative development over a 20-year projection. Following the Commission's adoption of the original WSA for this project, the State Water Resources Control Board on December 12, 2018 adopted amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan Amendment). If the Bay-Delta Plan Amendment were to be implemented, it would result in significant water supply shortages during single dry and multiple dry years, greater than those projected in the 2015 Urban Water Management Plan (UWMP). Numerous lawsuits have been filed challenging the Bay-Delta Plan Amendment, and SFPUC is a party to one of those pending lawsuits. The SFPUC, in partnership with other key stakeholders, is currently negotiating with the State a voluntary agreement that could ultimately be adopted as an alternative or substitute for the Bay-Delta Plan Amendment. On March 1, 2019, in accordance with the State Water Resources Control Board's instruction, SFPUC submitted to the State a proposed voluntary agreement ("March 1st Proposed Voluntary Agreement"). For these and other reasons described more fully in the attached WSA, whether the Bay-Delta Plan Amendment or the March 1st Proposed Voluntary Agreement will be implemented in the future is currently uncertain. Thus, the Revised WSA analyzes three scenarios:</p> <ol style="list-style-type: none">1. <u>Scenario 1</u>: No implementation of the Bay-Delta Plan Amendment or the March 1st Proposed Voluntary Agreement2. <u>Scenario 2</u>: Implementation of the March 1st Proposed Voluntary Agreement3. <u>Scenario 3</u>: Implementation of the Bay-Delta Plan Amendment
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	<p>The Revised WSA also describes water supply projects and other water efficiency and innovation opportunities that the SFPUC is exploring.</p> <p>The Revised WSA concludes that:</p> <ul style="list-style-type: none"> • During normal years, the SFPUC's total projected water supplies will meet the projected demands of its retail customers, including those of the proposed project, existing customers, and foreseeable future development under Scenarios 1, 2, and 3. • During single dry years and multiple dry years under <u>Scenario 1</u>, the SFPUC could meet the projected demands of its retail customers, including those of the proposed project, existing customers, and foreseeable future development without the need for rationing beyond the SFPUC's Level of Service (LOS) goal of maximum 20% system-wide rationing. • During single dry years and multiple dry years under <u>Scenario 2</u>, the SFPUC would face a shortfall in single dry and multiple dry years requiring rationing, but to a lesser degree and in closer alignment to the LOS goal of no more than 20% system-wide rationing compared to that which would occur under Scenario 3. • During single dry years and multiple dry years under <u>Scenario 3</u>, the SFPUC could not reliably meet the projected demands of its retail customers, including the proposed project, existing customers, and foreseeable future development, without rationing at a level greater than that required to achieve the LOS goal of a maximum 20% system-wide rationing beyond 2020. The SFPUC estimates it would impose up to 50% rationing across the retail service area, up to 30% rationing for mixed-used office customers such as the proposed project, and potentially less rationing specifically for the proposed project.
Result of Inaction:	A delay in approving this agenda item will result in the inability of the San Francisco Planning Department to complete the environmental review for the proposed 598 Brannan Street Project.
Description of Action:	Approve the Revised WSA for the proposed 598 Brannan Street Project, pursuant to the State of California Water Code Section 10910.
Environmental Review:	Approval of the Revised WSA is not considered approval of a project as defined by Section 15378 in the CEQA Guidelines. The WSA is required by and prepared according to the CEQA Guidelines and is an informational document only. Approval of the Revised WSA does not constitute the Commission's approval of the proposed 598 Brannan Street Project.

Agreement: Approve Revised Water Supply Assessment for the 598 Brannan Street Project
Commission Meeting Date: May 28, 2019

Recommendation:	SFPUC staff recommends that the Commission adopt the resolution.
Attachment:	1. Revised Water Supply Assessment for the 598 Brannan Street Project

PUBLIC UTILITIES COMMISSION

City and County of San Francisco

RESOLUTION NO. _____

WHEREAS, Under the California Environmental Quality Act (CEQA) and State of California Water Code (Section 10910(g)(1)), the San Francisco Public Utilities Commission (SFPUC) is required to prepare and approve a Water Supply Assessment (WSA) for the cumulative water demands presented by the proposed 598 Brannan Street Project, which would develop a mix of residential, office, production, distribution and repair (PDR), institutional (child care), and commercial uses across four new buildings on an approximately 4.5-acre site located at 598 Brannan and 639, 645, and 649-651 Bryant streets, within the Central South of Market planning area of San Francisco; and

WHEREAS, The 598 Brannan Street Project is required to comply with the City's Non-potable Water Ordinance, Article 12C of the San Francisco Health Code, and as a result, the Project will offset its potable water use through the use of alternate water sources; and

WHEREAS, A WSA is an informational document that assesses the adequacy of water supplies to serve a proposed project and is required to be prepared as part of the CEQA environmental review process; and

WHEREAS, Approval of a WSA as an informational document is not considered an approval action as defined by CEQA; and

WHEREAS, A WSA must be approved at a public meeting by the governing body of the public water supplier that would serve the proposed project; and

WHEREAS, On October 23, 2018 by Resolution No. 18-0173, this Commission approved a WSA for the 598 Brannan Street Project, which concluded that the SFPUC has adequate water supplies to meet the proposed project's water demands through 2040; and

WHEREAS, On December 12, 2018, the State Water Resources Control Board adopted an amendment to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (i.e., Bay-Delta Plan Amendment), which, if implemented in the future, would affect the Regional Water System supply and the SFPUC's ability to meet the projected demands of existing and future retail customers, including the proposed project; and

WHEREAS, Multiple lawsuits are pending challenging the Bay-Delta Plan Amendment, and the City is a party to one of those suits; and

WHEREAS, In accordance with the State Water Resources Control Board's instruction, on March 1, 2019, the SFPUC, in partnership with other key stakeholders, submitted a proposed "voluntary agreement" (March 1st Proposed Voluntary Agreement) for the State's consideration as a substitute or replacement of the Bay-Delta Plan Amendment; and

WHEREAS, On March 26, 2019 by Resolution No. 19-0057, this Commission endorsed the SFPUC's continued participation in the voluntary agreement negotiation process and stated

its intent that the terms of any final voluntary agreement would allow SFPUC to maintain its level of service (LOS) goal of no more than 20% system-wide rationing; and

WHEREAS, Because implementation of the Bay-Delta Plan Amendment or an alternative Voluntary Agreement is uncertain at this time, the SFPUC staff prepared the attached Revised WSA for the proposed 598 Brannan Street Project, analyzing water supply and demand under three scenarios: (1) No implementation of the Bay-Delta Plan Amendment or the March 1st Proposed Voluntary Agreement (“Scenario 1”), (2) Implementation of the March 1st Proposed Voluntary Agreement (“Scenario 2”), and (3) Implementation of the Bay-Delta Plan Amendment (“Scenario 3”); and

WHEREAS, The Revised WSA concludes that the SFPUC’s total projected water supplies through 2040 will (1) meet the demands of the proposed project in normal years under all three scenarios, (2) meet the demands of the proposed project in dry years without rationing beyond the SFPUC’s LOS goal of maximum 20% system-wide rationing under Scenario 1, (3) meet the demands of the proposed project in dry years but require rationing closer to the LOS goal under Scenario 2, and (4) not reliably meet the demands of the proposed project without rationing at a level greater than that required to achieve the LOS goal under Scenario 3; now, therefore, be it

RESOLVED, This Commission approves the attached Revised Water Supply Assessment for the proposed 598 Brannan Street Project pursuant to the State of California Water Code Section 10910(g).

I hereby certify that the foregoing resolution was adopted by the Public Utilities Commission at its meeting of May 28, 2019.

Secretary, Public Utilities Commission



May 17, 2019

TO: Commissioner Ann Moller Caen, President
Commissioner Francesca Vietor, Vice President
Commissioner Anson Moran
Commissioner Sophie Maxwell
Commissioner Tim Paulson

THROUGH: Harlan L. Kelly, Jr., General Manager

FROM: Steven R. Ritchie, Assistant General Manager, Water

RE: Revised Water Supply Assessment for the 598 Brannan Street Project

1.0 Summary

1.1 Introduction

Under the Water Supply Assessment law (Sections 10910 through 10915 of the California Water Code), urban water suppliers like the San Francisco Public Utilities Commission (SFPUC) must furnish a Water Supply Assessment (WSA) to the city or county that has jurisdiction to approve the environmental documentation for certain qualifying projects (as defined in Water Code Section 10912 (a)) subject to the California Environmental Quality Act (CEQA). The WSA process typically relies on information contained in a water supplier's Urban Water Management Plan (UWMP), and involves answering specific questions related to the estimated water demand of the proposed project. This memo serves as the WSA for the proposed 598 Brannan Street Project ("proposed project"), for use in the support of a Community Plan Evaluation to be filed by the San Francisco Planning Department (case no. 2012.0640E, San Francisco Planning Department).

This WSA is a revision to and supersedes the WSA that was previously prepared for the same proposed project dated October 11, 2018 and approved on October 23, 2018 (Resolution No. 18-0173). While the project description and estimated demands for the proposed project have not changed, this revised WSA accounts for recent changes to water supply availability under implementation of the Bay-Delta Plan Amendment, described in Section 1.1.2.

1.1.1 2015 Urban Water Management Plan

The SFPUC's most current UWMP is the UWMP update for 2015, which the Commission adopted in June 2016 (Resolution No. 16-0118). The water demand projections in the UWMP incorporated 2012 Land Use Allocation (LUA 2012) housing and employment growth projections from the San Francisco Planning Department. The water demand projections are presented in five-year increments through 2040, meeting Water Code requirements. Growth associated with the proposed project was encompassed within the LUA 2012, and water demand associated with the proposed project was encompassed within the 2015 UWMP water demand projections.

London N. Breed
Mayor

Ann Moller Caen
President

Francesca Vietor
Vice President

Anson Moran
Commissioner

Sophie Maxwell
Commissioner

Tim Paulson
Commissioner

Harlan L. Kelly, Jr.
General Manager



The WSA for a qualifying project within the SFPUC's retail service area¹ may use information from the UWMP. Therefore, ***the 2015 UWMP is incorporated via references throughout this WSA shown in bold, italicized text.*** The UWMP may be accessed at www.sfwater.org/uwmp.

1.1.2 2018 Bay-Delta Plan Amendment

In December 2018, the State Water Resources Control Board (SWRCB) adopted amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan Amendment) to establish water quality objectives to maintain the health of the Bay-Delta ecosystem. The SWRCB is required by law to regularly review this plan. The adopted Bay-Delta Plan Amendment was developed with the stated goal of increasing salmonid populations in three San Joaquin River tributaries (the Stanislaus, Merced, and Tuolumne Rivers) and the Bay-Delta. The Bay-Delta Plan Amendment requires the release of 40% of the “unimpaired flow”² on the three tributaries from February through June in every year type, whether wet, normal, dry, or critically dry.

If the Bay-Delta Plan Amendment is implemented, the SFPUC will be able to meet the projected water demands presented in the 2015 UWMP in normal years but would experience supply shortages in single dry years or multiple dry years. The 2015 UWMP already assumes limited rationing may be needed in multiple dry years to address an anticipated supply shortage by 2040, but implementation of the Bay-Delta Plan Amendment will require rationing in all single dry years and multiple dry years and to a greater degree to address supply shortages not accounted for in the 2015 UWMP.

The SWRCB has stated that it intends to implement the Bay-Delta Plan Amendment on the Tuolumne River by the year 2022, assuming all required approvals are obtained by that time. But implementation of the Plan Amendment is uncertain for several reasons. First, under the Clean Water Act, the United States Environmental Protection Agency (U.S. EPA) must approve the water quality standards identified in the Plan Amendment within 90 days from the date the approval request is received. It is uncertain whether the U.S. EPA will approve or disapprove the water quality standards. Furthermore, the determination could result in litigation.

Second, since adoption of the Bay-Delta Plan Amendment, over a dozen lawsuits have been filed in both state and federal court, challenging the SWRCB's adoption of the Bay-Delta Plan Amendment, including a legal challenge filed by the federal government, at the request of the U.S. Department of Interior, Bureau of Reclamation. That litigation is in the early stage and there have been no dispositive court rulings as of this date.

Third, the Bay-Delta Plan Amendment is not self-implementing and does not allocate responsibility for meeting its new flow requirements to the SFPUC or any other water rights holders. Rather, the Plan Amendment merely provides a regulatory framework for flow allocation, which must be accomplished by other regulatory and/or adjudicatory proceedings, such as a comprehensive water rights adjudication or, in the case of the Tuolumne River, the 401 certification process in the Federal Energy Regulatory Commission's relicensing proceeding for Don Pedro Dam. The license amendment process is currently expected to be completed in the 2022-23 timeframe. This process and the other regulatory and/or adjudicatory proceedings would likely face legal challenges and have lengthy timelines, and quite possibly could result in a different assignment of flow responsibility (and therefore a different water supply impact on the SFPUC).

¹ SFPUC's “retail service area” refers to water customers inside the City and County of San Francisco, as well as select areas outside of the City.

² Unimpaired flow represents the water production of a river basin, unaltered by upstream diversions, storage, or by export or import of water to or from other watersheds. Bay-Delta Plan Amendment, Introduction, p.1-8.

Fourth, in recognition of the obstacles to implementation of the Bay-Delta Plan Amendment, SWRCB Resolution No. 2018-0059 adopting the Bay-Delta Plan Amendment directed staff to help complete a “Delta watershed-wide agreement, including potential flow measures for the Tuolumne River” by March 1, 2019, and to incorporate such agreements as an “alternative” for a future amendment to the Bay-Delta Plan to be presented to the SWRCB “as early as possible after December 1, 2019.” In accordance with the SWRCB’s instruction, on March 1, 2019, SFPUC, in partnership with other key stakeholders, submitted a proposed project description for the Tuolumne River that could be the basis for a voluntary substitute agreement with the SWRCB (“March 1st Proposed Voluntary Agreement”). On March 26, 2019, the Commission adopted Resolution No. 19-0057 to support SFPUC’s participation in the Voluntary Agreement negotiation process. To date, those negotiations are ongoing under the California Natural Resources Agency and the leadership of the Newsom administration.³ The negotiations for a voluntary agreement have made significant progress since an initial framework was presented to the SWRCB on December 12, 2018. The package submitted on March 1, 2019 is the product of renewed discussions since Governor Newsom took office. While significant work remains, the package represents an important step forward in bringing together diverse California water interests.

For all these reasons, whether and when the Bay-Delta Plan Amendment will be implemented, and how those amendments if implemented will affect the SFPUC’s water supply is currently uncertain and possibly speculative. Given this uncertainty, this WSA analyzes water supply and demand through 2040 under three scenarios: (1) No implementation of the Bay-Delta Plan Amendment or the March 1st Proposed Voluntary Agreement (“Scenario 1”), (2) Implementation of the March 1st Proposed Voluntary Agreement (“Scenario 2”), and (3) Implementation of the Bay-Delta Plan Amendment (“Scenario 3”).

1.1.3 Basis for Requiring a WSA for the Proposed Project

Except for the WSA approved on October 23, 2018 (Resolution No. 18-0173), which is superseded by this revised WSA, the proposed project has not been the subject of a previous WSA, nor has it been part of a larger project for which a WSA was completed. However, water supply for the Central SoMa Plan, of which the proposed project is part, was analyzed in the Environmental Impact Report for the Central SoMa Plan. The water supply analysis determined that development under the area plan would not require expansion of the city’s water supply system and would not adversely affect the city’s water supply. This determination was based on the water supply and demand projections contained in the 2010 UWMP and a 2013 Water Availability Study prepared by the SFPUC to update demand projections for San Francisco. The information and projections in these documents have since been superseded by those in the 2015 UWMP. Further, on December 11, 2018, by Resolution No. 18-0212, the SFPUC amended its 2009 Water Supply Agreement between the SFPUC and its Wholesale Customers. These amendments, which are unrelated to the Bay-Delta Plan Amendment, included a revision to the “Tier 1” Allocation in the Water Supply Allocation Plan (WSAP) between the SFPUC’s Retail and Wholesale Customers to require a minimum 5% reduction by San Francisco Retail Customers for any level of required reduction in system-wide water use during shortages. This memo modifies projections of available water supply contained in the 2015 UWMP to incorporate the effect of this amendment. Thus, this WSA for the proposed project is based on the latest available information and projections.

The proposed project qualifies for preparation of a WSA under Water Code Section 10912(a) because it is a mixed-use development that includes more than 250,000 square feet of commercial office space. The proposed project is characterized further in Section 1.2.

³ California Natural Resources Agency. “Voluntary Agreements to Improve Habitat and Flow in the Delta and its Watersheds.” <http://resources.ca.gov/voluntary-agreements/>. Accessed April 8, 2019.

1.1.4 Conclusion of this WSA

This WSA concludes that under Scenarios 1, 2, and 3, the SFPUC's total projected water supplies would meet the demands of the proposed project and cumulative retail water demands through 2040 in normal years. Based on historic records of hydrology and reservoir inflow from 1920 to 2017, current delivery and flow obligations, and fully-implemented infrastructure under the 2018 Phased Water System Improvement Program (WSIP) Variant, normal or wet years occurred 85 out of 97 years. This translates into roughly 9 normal or wet years out of every 10 years. Conversely, system-wide rationing is required roughly 1 out of every 10 years. This frequency is expected to increase as climate change intensifies.

Scenario 1 - No Implementation of the Bay-Delta Plan Amendment or the

Voluntary Agreement: Under Scenario 1, SFPUC's total projected water supplies would meet the projected demands of the retail service area in normal years. During dry years, there would be a shortfall of 3.6-6.1 million gallons per day (mgd), or 5-7%. The SFPUC could manage this relatively small shortfall by prohibiting certain discretionary outdoor water uses and/or calling for voluntary rationing among all retail customers pursuant to its Retail Water Shortage Allocation Plan (***Appendix L of the UWMP***).

Scenario 2 - Implementation of the Voluntary Agreement: The March 1st Proposed Voluntary Agreement has yet to be accepted by SWRCB as an alternative to the Bay-Delta Plan Amendment and thus the shortages that would occur with its implementation are not known with certainty. An analysis of water supply impacts comparable to the one provided in this WSA for Scenarios 1 and 3 is not available for Scenario 2. However, the flow releases under the Voluntary Agreement, unlike the Bay-Delta Plan Amendment, are not based on an unimpaired flow approach but on a combination of flow and non-flow measures that are designed to benefit fisheries at a lower water cost, particularly during multiple dry years when less flow is required, preserving more of the SFPUC's stored water supply from the Tuolumne River. The resulting RWS supply shortfalls during dry years under the Voluntary Agreement would be less than those under the Bay-Delta Plan Amendment, and therefore would require rationing of a lesser degree and closer in alignment to the SFPUC's adopted level of service (LOS) goal for the RWS of rationing of no more than 20% system-wide during dry years than that which would occur under Scenario 3. Indeed, in Resolution No. 19-0057, the Commission stated its intention that any final voluntary agreement "would allow the SFPUC to maintain the (1) Water Supply Level of Service Goal and Objectives and (2) Sustainability Level of Service Goal and Objectives adopted in Commission Resolution No. 08-0200." Under Scenario 2, if SFPUC's March 1st Proposed Voluntary Agreement were accepted by the SWRCB as an alternative to the Bay-Delta Plan Amendment, SFPUC would still face a shortfall in single dry and multiple dry years, thus requiring rationing across the retail service area, but of a much smaller magnitude. Rationing under Scenario 2, with implementation of the Voluntary Agreement, would be to a lesser degree than that under Scenario 3, with implementation of the Bay-Delta Plan Amendment.

Scenario 3 - Implementation of the Bay-Delta Plan Amendment: Under Scenario 3, during single dry and multiple dry years starting as soon as the year 2022, the estimated year of implementation of the Bay-Delta Plan Amendment, the SFPUC's total projected water supplies cannot meet the demands of the retail service area, including those of the proposed project, without gradually increasing higher levels of water rationing of up to 50% through 2040 across the retail service area. For the proposed project specifically, the SFPUC may impose a lower level of rationing that takes into account the installation of water-efficient plumbing fixtures and non-potable water systems associated with new construction.

The relatively small volume of water demand generated by the proposed project itself would not exacerbate the projected shortfalls resulting from implementation of the Bay-Delta Plan Amendment. Regardless of whether the proposed project is constructed, with implementation of the Bay-Delta Plan Amendment, the SFPUC's existing and

planned water supplies will not meet the water demands of its retail service area in dry years without greater rationing than previously projected in the 2015 UWMP.

Refer to Section 4.0, Conclusion, for a tabulated comparison of projected retail water supplies and demands under Scenarios 1 and 3, the resulting shortfalls, and the implications of rationing to the proposed project.

1.2 Proposed Project Description

Tishman Speyer proposes to develop a mix of residential, office, production, distribution and repair (PDR), institutional (child care), and commercial uses on an approximately 4.5-acre site located at 598 Brannan and 639, 645, and 649-651 Bryant streets, within the Central South of Market planning area of San Francisco. The proposed project would include the demolition and removal of four existing 1- and 2-story commercial, industrial, and warehouse buildings totaling approximately 70,400 square feet and associated surface parking lots and construction of four 7- to 13-story buildings totaling approximately 1,064,050 gross square feet (gsf) in size, not including approximately 137,200 gsf of sub-grade parking, loading, and mechanical areas. Three of the proposed buildings would include a total of approximately 922,290 gsf of office space, which includes approximately 39,000 gsf of cafeteria space, 5,300 gsf of institutional (child care) use, and approximately 74,400 gsf of ground-floor PDR/commercial space, and the fourth building would include a total of approximately 72 residential units (62,060 gsf). Parking would be provided within two single-level below-grade parking garages with a total of approximately 308 vehicle parking spaces serving the office and PDR/commercial uses; no off-street parking would be provided to serve the residential use. Approximately 19,420 gsf of privately owned public open space would be provided throughout the site and an approximately 38,000-sf public park is proposed at the center of the site.

Construction is anticipated to be completed by 2025. For additional details on the proposed project, including building-specific uses, phasing, and potential water reuse schemes, see Attachment B.

2.0 Water Supply

This section reviews San Francisco's existing and planned water supplies.

2.1 Regional Water System

See **Section 3.1 of the UWMP** for descriptions of the RWS and **Section 6.1 of the UWMP** for water rights held by City and County of San Francisco and the SFPUC Water System Improvement Program (WSIP).

2.2 Existing Retail Supplies

Retail water supplies from the RWS are described in **Section 6.1 of the UWMP**.

Local groundwater supplies, including the Westside Groundwater Basin, are described in **Section 6.2.1 of the UWMP**.

Local recycled water supplies, including the Harding Park Recycled Water Project and Pacifica Recycled Water Project, are described in **Section 6.2.1 of the UWMP**.

2.3 Planned Retail Water Supply Sources

The San Francisco Groundwater Supply Project is described in **Section 6.2.2 of the UWMP**. Since adoption of the UWMP, four wells have been completed and the start-up phase of the project has begun. Starting in April 2017, small amounts of groundwater have been blended with RWS supplies for drinking water. Two remaining wells are under construction as part of the next phase of the project.

The proposed Westside and Eastside Recycled Water Projects, as well as non-potable water supplies associated with onsite water systems implemented in compliance with San Francisco's Non-potable Water Ordinance (Health Code Chapter 12C), are also described in **Section 6.2.2 of the UWMP**.

2.4 Summary of Current and Future Retail Water Supplies

A breakdown of water supply sources for meeting SFPUC retail water demand through 2040 in normal years is provided in **Section 6.2.5 of the UWMP**. For dry years, see the next section.

Based on historic records of hydrology and reservoir inflow from 1920 to 2017, current delivery and flow obligations, and fully-implemented infrastructure under the 2018 Phased Water System Improvement Program (WSIP) Variant, normal or wet years occurred 85 out of 97 years. This translates into roughly 9 normal or wet years out of every 10 years. Conversely, system-wide rationing is required roughly 1 out of every 10 years. This frequency is expected to increase as climate change intensifies.

2.5 Dry-Year Water Supplies

A description of dry-year supplies developed under WSIP is provided in **Section 7.2 of the UWMP**. Other water supply reliability projects and efforts that are currently underway or completed are described in **Section 7.4 of the UWMP**. Since adoption of the UWMP, the following milestones have occurred:

- Calaveras Dam Replacement Project – Construction of the new dam was completed in September 2018, while the remainder of the overall project will be completed in spring 2019.
- Regional Groundwater Storage and Recovery Project – Construction of this project is still underway. Phase 1 of the project, consisting of installation of 13 production wells, will be completed in 2019. Since May/June 2016, the project has been in a storage phase through periodic deliveries of RWS surface water in lieu of groundwater pumping by Daly City, San Bruno, and the California Water Service Company.

2.6 Additional Water Supplies

In light of the adoption of the Bay-Delta Plan Amendment and the resulting potential limitations to RWS supply during dry years, the SFPUC is increasing and accelerating its efforts to acquire additional water supplies and explore other projects that would increase overall water supply resilience. Developing these additional supplies would reduce water supply shortfalls and reduce rationing associated with such shortfalls. In addition to the Daly City Recycled Water Expansion project⁴, which was a potential project identified in the 2015 UWMP and had committed funding at that time, the SFPUC has taken action to fund the study of potential additional water supply projects. Capital projects under consideration to develop additional water supplies include surface water storage expansion, recycled water expansion, water transfers, desalination, and potable reuse. The SFPUC is also considering developing related policies and ordinances, such as funding for innovative water supply and efficiency technologies and requiring potable water offsets for new developments. A more detailed list and descriptions of these efforts are provided below.

The capital projects that are under consideration would be costly and are still in the early feasibility or conceptual planning stages. Because these water supply projects would take 10 to 30 or more years to implement, and because required environmental permitting negotiations may reduce the amount of water that can be developed, the yield from these projects are not currently incorporated into SFPUC's supply

⁴ While this potential project was identified in the 2015 UWMP, it has since been approved by Daly City following environmental review and has a higher likelihood of being implemented.

projections. Capital projects would be funded through rates from both Wholesale and Retail Customers based on mutual agreement, as the additional supplies would benefit all customers of the RWS, unless otherwise noted. State and federal grants and other financing opportunities would also be pursued for eligible projects, to the extent feasible, to offset costs borne by ratepayers.

1. Daly City Recycled Water Expansion (Regional, Normal- and Dry-Year Supply, 3 mgd)

Project Description: The SFPUC and North San Mateo County Sanitation District (NSMCSD, or Daly City) have been exploring ways to increase the recycled water treatment capacity in Daly City to serve additional customers and decrease irrigation water withdrawals from the Westside Groundwater Basin, both in San Francisco and further south of Daly City. The majority of the irrigation demand met by groundwater withdrawals, approximately 2 mgd, serves cemeteries in Colma. An initial feasibility study completed in 2010 identified the capital requirements that would be needed to produce additional capacity at the existing treatment plant location. The study demonstrated that a new tertiary treatment facility would be required onsite to produce additional capacity of up to 3.4 mgd. Currently, flows that exceed the capacity of the existing treatment plant are discharged into the Pacific Ocean. With this project, some of that discharge may be treated and used for irrigation. New facilities would include a treatment facility, pump station, distribution pipelines, and storage.

Estimated Costs and Financing: The capital cost is estimated to be \$85 million, which is budgeted for in the SFPUC's 10-year capital planning horizon. The annual operations and maintenance (O&M) cost is estimated to be \$3 million. This project may present regional benefits that would result in cost-sharing with Wholesale Customers because the replacement of groundwater used for irrigation with recycled water will result in a greater volume of groundwater storage that can be used in dry years as part of the SFPUC's existing Groundwater Storage and Recovery project, approved by the SFPUC in 2014 in Resolution no. 14-0127.

Permits and Approvals: Daly City adopted a Final Initial Study/Mitigated Negative Declaration (IS/MND) and Mitigation Monitoring and Reporting Program (MMRP) for the proposed project in September 2017. The SFPUC has not yet approved its participation in the project. Other permits and/or approvals that may be needed for this project include: BART, CAL/OSHA, San Francisco Bay RWQCB, and encroachment permits from Caltrans, Daly City, South San Francisco, SFPUC, San Mateo County, and Colma to construct distribution and storage facilities. Institutional agreements between the project partners for project construction and operation, as well as with the customers whose supplies will change from groundwater to recycled water, will also need to be developed.

Estimated Acquisition: Construction may occur as soon as 2023 with operation beginning in 2027.

2. Alameda County Water District Transfer Partnership (Regional, Normal- and Dry-Year Supply, 5 mgd)

Project Description: Water would be acquired from Contra Costa Water District (CCWD) for delivery to Alameda County Water District (ACWD) through the South Bay Aqueduct utilizing a planned expansion of the Los Vaqueros Reservoir.

Estimated Costs and Financing: The capital cost is estimated to be \$50-150 million, with an annual O&M cost of \$2.5 million.

Permits and Approvals: Planning and environmental review of the Los Vaqueros Reservoir Expansion is underway by CCWD, and has several objectives beyond water deliveries to the SFPUC. CCWD has identified over 15 permits, approvals

and consultations that will be necessary such as Dredge and Fill, National Pollutant Discharge Elimination System (NPDES), Streambed Alteration, and Encroachment permits. These permits and approvals will be obtained by CCWD and/or its contractor. To enable a water supply transfer between ACWD and the SFPUC, water right modifications may be necessary and if additional infrastructure is needed, additional permits will be required. As this project is in the conceptual stage, permitting details have not yet been identified.

Estimated Acquisition: Construction may occur as soon as 2028 with operation beginning in 2032.

3. Brackish Water Desalination in Contra Costa County (Regional, Normal- and Dry-Year Supply, 9+ mgd)

Project Description: The Bay Area Brackish Water Treatment (Regional Desalination) Project is a partnership between CCWD, East Bay Municipal Utility District (EBMUD), SFPUC, Santa Clara Valley Water District (SCVWD) and Zone 7 to turn brackish water into a reliable, drought-proof drinking water supply, delivering a total of up to 10-20 mgd in drought and non-drought years (i.e., dry and normal years), throughout the region. A new brackish water treatment plant would be constructed in East Contra Costa and tie into the existing CCWD system for delivery through Los Vaqueros Reservoir and the South Bay Aqueduct, or delivery via a connection with EBMUD.

The SFPUC would rely on existing infrastructure and institutional agreements to receive water transfers from partner agencies. For planning and cost estimation purposes, it was assumed that the SFPUC's share of the regional water supply would be 9 mgd in all year types; however, if additional capacity is available, the SFPUC may secure additional water supply, based on negotiations with partner agencies.

Estimated Costs and Financing: The capital cost is estimated to be \$200-800 million, with an annual O&M cost of \$12-20 million.

Permits and Approvals: To proceed, this concept would require extensive institutional agreements, permitting, and environmental review. Construction of a new desalination plant will require construction and operating permits such as NPDES, Dredge and Fill, consultations with federal and state agencies, and others. In addition, water rights will need to be secured and/or modified. In California, permitting and regulatory approvals of desalination projects has typically taken 10-18 years. In addition, institutional agreements among partner agencies will be needed.

Estimated Acquisition: Construction may occur as soon as 2032 and be phased so that 5-9 mgd would be available to the region by 2035 and a total of 5-11 mgd would be available after 2040.

4. ACWD-USD Purified Water Partnership (Regional, Normal- and Dry-Year Supply, 5 mgd)

Project Description: This may be an indirect or direct potable reuse project that would inject highly-treated water from Union Sanitary District (USD) for groundwater recharge, then recover the water through the ACWD Brackish Groundwater Desalination Plant. How the water is transferred to the SFPUC remains to be determined.

Estimated Costs and Financing: The capital cost is estimated to be \$200-400 million, with an annual O&M cost of \$2.5 million.

Permits and Approvals: An initial assessment will be underway in 2019, which will identify potential project scenarios. Permitting and approvals for a project will depend on its design and nature, which have not yet been identified.

Estimated Acquisition: Construction may occur as soon as 2038 with operation beginning in 2045.

5. Crystal Springs Purified Water (Regional, Normal- and Dry-Year Supply, 6+ mgd)

Project Description: This is an indirect potable reuse project that would blend wastewater from Silicon Valley Clean Water and possibly San Mateo into Crystal Springs Reservoir and treat the blended water at Harry Tracy Water Treatment Plant for potable reuse.

Estimated Costs and Financing: The capital cost is estimated to be \$400-700 million, with an annual O&M cost of \$18-25 million.

Permits and Approvals: Construction and operating permits would be required for this project. They would likely include NPDES, Encroachment, consultations with state and federal agencies, and others. Surface water augmentation is regulated by the SWRCB, and consultations and public hearings would be required.

Estimated Acquisition: Construction may occur as soon as 2034 and be phased so that 3-5 mgd would be available to the region by 2035 and a total of 3-7 mgd would be available after 2040.

6. Eastside Purified Water (Retail, Normal- and Dry-Year Supply, 5 mgd)

Project Description: A purified water plant would be constructed at the Southeast Treatment Plant to blend wastewater with Regional Water System supplies for potable use.

Estimated Costs and Financing: The capital cost is estimated to be \$220-400 million, with an annual O&M cost of \$5-10 million.

Permits and Approvals: There is currently no regulatory framework in place to enable direct potable reuse. In California, no regulations are anticipated before 2025, but it is anticipated that extensive consultation will be required with the SWRCB. In addition, construction and operating permits and approvals will be required, as identified.

Estimated Acquisition: Construction may occur as soon as 2025 with operation beginning in 2030.

7. San Francisco Eastside Satellite Recycled Water Facility (Retail, Normal- and Dry-Year Supply, < 1 mgd)

Project Description: A centralized recycled water treatment facility would be constructed on the eastern side of San Francisco, along with pipelines and a storage reservoir, to meet demands not addressed by the Non-potable Water Ordinance and Auxiliary Water Supply System (AWSS).

Estimated Costs and Financing: The capital cost is estimated to be \$200 million, with an annual O&M cost of \$2.5 million.

Permits and Approvals: In addition to construction-related permits and approvals, this project would require a permit from the Regional Water Quality Control Board under its General Order for water reuse. Discharges from the recycled water

treatment plant to the San Francisco Bay would also require NPDES permitting by the Regional Water Quality Control Board.

Estimated Acquisition: Construction may occur as soon as 2032 with operation beginning in 2037.

8. Additional Storage Capacity in Los Vaqueros Reservoir from Expansion (Regional)

Project Description: Expansion of storage capacity in Los Vaqueros is to allow the ACWD Transfer Partnership and Brackish Water Desalination in Contra Costa County to be optimized.

Estimated Costs and Financing: The capital cost is estimated to be \$20-50 million. SFPUC's portion of the project yield and cost share are not yet known. The annual O&M cost is yet to be estimated.

Permits and Approvals: Planning and review of the Los Vaqueros Reservoir Expansion is underway by CCWD, and has several objectives beyond water deliveries to the SFPUC. CCWD has identified over 15 permits, approvals and consultations that will be necessary such as Dredge and Fill, NPDES, Streambed Alteration, and Encroachment permits. These permits and approvals will be obtained by CCWD and/or its contractor. To enable a water supply transfer between ACWD and the SFPUC, water rights modifications may be necessary and if additional infrastructure is needed, additional permits will be required. As this project is in the conceptual stage, permitting details have not yet been identified.

Estimated Acquisition: Construction may occur as soon as 2021 with operation beginning in 2027.

9. Calaveras Reservoir Expansion (Regional)

Project Description: Calaveras Reservoir would be expanded to create 289,000 AF additional capacity to store excess Regional Water System supplies or other source water in wet and normal years. In addition to reservoir enlargement, the project would involve infrastructure to pump water to the reservoir, such as pump stations and transmission facilities.

Estimated Costs and Financing: The costs of this project is yet to be determined.

Permits and Approvals: Similar to Los Vaqueros Reservoir Expansion, this project would require numerous permits, approvals and consultations, such as Dredge and Fill, NPDES, Streambed Alteration, Encroachment, possible water right modifications, etc. These permits and approvals will be obtained by SFPUC and/or its contractor. As this project is in the conceptual stage, permitting details have not yet been identified.

Estimated Acquisition: Construction may occur as soon as the early 2040s with operation beginning around 2050.

Even if all the capital projects above are implemented, the total amount of water and storage yielded would not be enough to make up for the dry year shortfall that may result from implementation of the Bay-Delta Plan Amendment as adopted, and would occur years after such shortfalls begin. Thus, the SFPUC continues to proactively explore opportunities for reuse and innovation, such as the following policies and ordinances:

- **Evaluation of Recycled Water Throughout Service Area** (Regional and Retail)

Wastewater treatment plants throughout the SFPUC service area would be surveyed to identify potential non-potable, indirect potable, and direct potable projects.

- **Innovative Technology Project Funding** (Retail)

SFPUC would award grants for innovative demonstration projects that would increase water efficiency and availability (e.g., fog catchers, heat exchangers in non-potable water systems, rainwater for potable use, breweries treating process water for reuse).

- **New Development Potable Offset Ordinance** (Retail)

The Board of Supervisors could adopt an ordinance requiring certain large development projects, to offset the water demand impacts above historical water consumption averages for the corresponding parcel(s). Developments could be required to achieve a certain offset of potable demands.

3.0 Water Demand

This section reviews the climatic and demographic factors that may affect San Francisco's water use, projected retail water demands, and the demand associated with the proposed project.

3.1 Climate

San Francisco has a Mediterranean climate. Summers are cool and winters are mild with infrequent rainfall. Temperatures in the San Francisco area average 57 degrees Fahrenheit annually, ranging from the mid-40s in winter to the upper 60s in late summer. Strong onshore flow of wind in summer keeps the air cool, generating fog through September. The warmest temperatures generally occur in September and October. Rainfall in the San Francisco area averages about 22 inches per year and is generally confined to the "wet" season from late October to early May. Except for occasional light drizzles from thick marine stratus clouds, summers are nearly completely dry. A summary of the temperature and rainfall data for the City of San Francisco is included in Table 1 on the next page.

3.2 Proposed Project Water Demand

The project sponsor's consultants provided a memo describing the methods and assumptions used to estimate the water demand of the proposed project, along with the resulting demand (Attachment B).

Because the proposed project must comply with San Francisco's Non-potable Water Ordinance (Article 12C of the San Francisco Health Code), estimates for both potable and non-potable demands were submitted as part of the WSA request. The Non-potable Water Ordinance requires new commercial, mixed-use, and multi-family residential development projects with 250,000 square feet or more of gross floor area to install and operate an onsite non-potable water system. Such projects must meet their toilet and urinal flushing and irrigation demands through the collection, treatment, and use of available graywater, rainwater, and foundation drainage. While not required, projects may use treated blackwater or stormwater if desired. Furthermore, projects may choose to apply non-potable water to other non-potable water uses, such as cooling tower blowdown and industrial processes, but are not required to do so under the ordinance. As indicated in the water demand memo provided on behalf of the project sponsor in Attachment B, the proposed project would meet the minimum requirements of the Non-potable Water Ordinance by using graywater and rainwater to meet toilet and urinal flushing and irrigation.

Table 1: San Francisco Climate Summary

Month	Average Maximum Temperature (°F)	Average Minimum Temperature (°F)	Average Monthly Rainfall (inches)
January	58.0	45.7	4.36
February	60.3	47.3	4.41
March	61.4	48.1	2.98
April	62.3	49.1	1.38
May	63.2	50.9	0.68
June	64.8	52.7	0.18
July	65.6	54.3	0.02
August	66.6	55.3	0.06
September	68.1	55.0	0.19
October	67.8	53.3	1.04
November	61.2	48.1	2.85
December	58.3	45.9	4.33
Annual Average	63.3	50.6	22.45
Source: Western Regional Climate Center (www.wrcc.dri.edu), 1981-2010 data from two San Francisco monitoring stations (Mission Dolores/SF#047772 and Richmond/SF#047767).			

Both potable and non-potable demands for the proposed project were estimated using the SFPUC's Non-potable Water Calculator and supplemented with additional calculations for cooling tower demands. The SFPUC reviewed the memo to ensure that the methodology is appropriate for the types of proposed water uses, the assumptions are valid and thoroughly documented along with verifiable data sources, and a professional standard of care was used. The SFPUC concluded that the demand estimates provided on behalf of the project sponsor are reasonable. Water demand associated with the proposed project over the 20-year planning horizon is shown in the following Table 2.

The non-potable demand estimates in Table 2 are based on building uses anticipated at the time the WSA was requested, i.e., during the planning and environmental review stage of the proposed project. It is understood that these estimates will likely change as the proposed project's design progresses, and information submitted for the WSA request is not part of the proposed project's compliance with the Non-potable Water Ordinance. City review and approval of a proposed onsite water system must be performed separately through the Non-potable Water Program. However, the intent of providing a breakdown of potable and non-potable demand estimates in this WSA is to demonstrate that the proposed project will incorporate water reuse per City requirements and the proposed project's sustainability goals, if any. As noted earlier, the total demand of the proposed project, regardless of non-potable use, is already encompassed in the 2015 UWMP water demand projections. Furthermore, total demand represents the most conservative estimate and accounts for back-up potable supplies that must be provided by the SFPUC in the event that non-potable supplies serving the proposed project are unavailable.

Table 2: Water Demand Based on Project Phasing

Demand of Proposed Project (mgd)	2020	2025	2030	2035	2040
Potable Demand	--	0.021	0.021	0.021	0.021
Non-potable Demand	--	0.006	0.006	0.006	0.006
Total Demand	--	0.027	0.027	0.027	0.027
Potential Potable Water Savings as Percentage of Total Demand	--	23.6%	23.6%	23.6%	23.6%
<u>Notes:</u> The project would be constructed over a 5-year period between 2020 and 2025.					

The San Francisco Planning Department has determined that the proposed project is encompassed within the projections presented in LUA 2012 as indicated in the letter from the Planning Department to the SFPUC (Attachment A). Therefore, the demand of the proposed project is also encompassed within the San Francisco retail water demands that are presented in **Section 4.1 of the UWMP**, which considers retail water demand based on the LUA 2012 projections. The following Table 3 shows the demand of the proposed project relative to total retail demand.

Table 3: Proposed Project Demand Relative to Total Retail Demand

	2020	2025	2030	2035	2040
Total Retail Demand (mgd) ¹	72.1	79.0	82.3	85.9	89.9
Potable Demand of Proposed Project (mgd)	--	0.021	0.021	0.021	0.021
Potable Demand of Proposed Project as Percentage of Total Retail Demand	--	0.03%	0.03%	0.02%	0.02%
Total Demand of Proposed Project (mgd)	--	0.027	0.027	0.027	0.027
Total Demand of Proposed Project as Percentage of Total Retail Demand ³	--	0.03%	0.03%	0.03%	0.03%
<u>Notes:</u> 1. Retail water demands per Table 4-1 of the UWMP , except for the 2020 demand projection, which was re-projected to take into account the lower demands being experienced due to the recent drought and the lag in occupancy of built units. 2. The proposed project is accounted for in the LUA 2012 projections, and subsequently, total demands associated with the proposed project are accounted for in the 2015 UWMP retail water demand projections.					

4.0 Conclusion

4.1 Comparison of Projected Supply and Demand

4.1.1 Scenario 1: No Implementation of the Bay-Delta Plan Amendment or the Voluntary Agreement

Table 4 below is adapted from **Section 7.5 of the UWMP** (Table 7-4) and compares the SFPUC's retail water supplies and demands through 2040 during normal year, single dry-, and multiple dry-year periods under Scenario 1.

Local supplies (i.e., supplies not from the RWS) correspond to those in **Table 6-7 of the UWMP**. Procedures for determining RWS supply availability per the SFPUC's WSAP, applicable to all three scenarios, are described in **Section 8.3 of the UWMP**.

The projections shown in Table 4 differ from those in the 2015 UWMP due to two reasons. First, the 2009 Water Supply Agreement between SFPUC and its Wholesale Customers was recently amended and approved by the Commission on December 11, 2018 by Resolution No. 18-0212. Table 4 incorporates the minimum level of 5% rationing during supply shortages as required by the amendment, and therefore, the resulting shortfalls are greater than those previously projected in the 2015 UWMP.

Second, the projections in Table 4 differ from those in the 2015 UWMP because Table 4 reflects SFPUC's full 8.5-year design drought sequence instead of the minimum 3-year sequence required to be provided in the 2015 UWMP. Under legislation adopted in 2018 (S.B. 606) future UWMPs will be required to project water supply availability during a minimum of 5 years of continuous drought (Water Code section 10631(b)(1)).

As explained previously in Section 3.2, water demands associated with the proposed project are already captured in the retail demand projections presented in the UWMP. The proposed project is expected to represent up to 0.03% of the total retail water demand. Total retail demands correspond to those in **Table 4-1 of the UWMP**, and reflect both passive and active conservation, as well as water loss.

As shown in Table 4, under Scenario 1 without implementation of the Bay-Delta Plan Amendment, existing and planned supplies would meet all projected RWS demands in all years except for an approximately 3.6-6.1 mgd, or 5-7%, shortfall during dry years through the year 2040. This relatively small shortfall is primarily due to implementation of the amended 2009 Water Supply Agreement. To manage a small shortfall such as this, the SFPUC may prohibit certain discretionary outdoor water uses and/or call for voluntary rationing by its retail customers pursuant to its Retail Water Shortage Allocation Plan (**Appendix L of the UWMP**). The required level of rationing is well below the SFPUC's RWS LOS goal of limiting rationing to no more than 20% on a system-wide basis (i.e., an average throughout the RWS).

**Table 4: Projected Supply and Demand Comparison Under Scenario 1
(No Implementation of the Bay-Delta Plan Amendment or the Voluntary Agreement) (mgd)**

		Normal Year	Single Dry Year ¹	Multiple Dry Years							
				Year 1 ¹	Year 2 ²	Year 3 ²	Year 4 ²	Year 5 ²	Year 6 ²	Year 7 ³	Year 8 ³
2020	Total Retail Demand ⁴	72.1	72.1	72.1	72.1	72.1	72.1	72.1	72.1	72.1	72.1
	Total Retail Supply ⁵	72.1	68.5	68.5	68.5	68.5	68.5	68.5	68.5	68.5	68.5
	Shortfall	0.0	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
	Shortfall as % of Demand	0.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
2025	Total Retail Demand ⁴	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0
	Total Retail Supply ⁵	79.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
	Shortfall	0.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
	Shortfall as % of Demand	0.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
2030	Total Retail Demand ⁴	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3
	Total Retail Supply ⁵	82.3	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2
	Shortfall	0.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
	Shortfall as % of Demand	0.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
2035	Total Retail Demand ⁴	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9
	Total Retail Supply ⁵	85.9	81.6	81.6	81.6	81.6	81.6	81.6	81.6	79.5	79.5
	Shortfall	0.0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	6.4	6.4
	Shortfall as % of Demand	0.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	7.4%	7.4%
2040	Total Retail Demand ⁴	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9
	Total Retail Supply ⁵	89.9	85.4	85.4	84.4	84.4	84.4	84.4	84.4	83.8	83.8
	Shortfall	0.0	4.5	4.5	5.5	5.5	5.5	5.5	5.5	6.1	6.1
	Shortfall as % of Demand	0.0%	5.0%	5.0%	6.2%	6.2%	6.2%	6.2%	6.2%	6.8%	6.8%

Notes:

1. During a single dry year and multiple dry year 1 (year 2 of SFPUC's design drought sequence), the retail allocation under the WSA is 36.0% of available RWS supply, or 85.9 mgd. However, due to the Phased WSIP Variant, only 81 mgd of RWS supply can be delivered. RWS supply is capped at this amount.
2. During multiple dry years 2-6 (years 3-7 of SFPUC's design drought sequence), the retail allocation under the WSA is 37.5% of available RWS supply, or 79.5 mgd.
3. During multiple dry years 7 and 8 (years 8 and 8.5 of SFPUC's design drought sequence), the retail allocation under the WSA is 37.5% of available RWS supply, or 74.5 mgd.
4. Total retail demands correspond to those in **Table 4-1 of the UWMP**, except for the 2020 demand projection, which was re-projected to take into account the lower demands being experienced due to the recent drought and the lag in occupancy of built units.
5. Local supplies (i.e., supplies not from the RWS, including groundwater, recycled water, and non-potable water) correspond to those in **Table 6-7 of the UWMP**, with an additional 5% reduction in retail water use (incorporated as a reduction in total retail supply) per the amended Water Supply Agreement. Local supplies are assumed to be used before RWS supplies to meet retail demand.

4.1.2 Scenario 2: Implementation of the Voluntary Agreement

As stated earlier, the March 1st Proposed Voluntary Agreement has yet to be accepted by SWRCB as an alternative to the Bay-Delta Plan Amendment and thus the shortages that would occur with its implementation are not known with certainty. However, given that the objectives of the Voluntary Agreement are to provide fishery improvements while protecting water supply through flow and non-flow measures, the RWS supply shortfalls under the Voluntary Agreement would be less than those under the Bay-Delta Plan Amendment, and therefore would require rationing of a lesser degree than that which would occur under Scenario 3. The degree of rationing would also more closely align with the SFPUC's RWS LOS goal of limiting rationing to no more than 20% on a system-wide basis in drought years. This goal was adopted in 2008 by the Commission (Resolution No. 08-0200).

4.1.3 Scenario 3: Implementation of the Bay-Delta Plan Amendment

Table 5 below provides projected supplies and demands under Scenario 3. The RWS is projected to experience significant shortfalls in single dry and multiple dry years starting as soon as 2022 and through 2040, regardless of whether the proposed project is constructed. These significant shortfalls are a result of implementation of the Bay-Delta Plan Amendment and not attributed to the incremental retail demand associated with the proposed project. Shortfalls would range from about 12 to 45 mgd, corresponding to rationing in the retail service area ranging 16-50%, over the next 20 years.

If additional water supplies were not acquired before the Bay-Delta Plan Amendment were implemented, the SFPUC would impose customer rationing to help balance water supply deficits during dry years.

Given the severity of the reduction in RWS supply with implementation of the Bay-Delta Plan Amendment, existing and planned dry-year supplies would not be enough to meet projected retail demands without rationing above the SFPUC's RWS LOS goal of limiting rationing to 20% on a system-wide basis for all dry years starting as soon as 2022. Although the WSAP does not address implications to retail supply during system-wide shortages above 20%, the WSAP indicates that if system-wide shortage greater than 20% were to occur, RWS supply would be allocated between retail and Wholesale Customers per the rules corresponding to a 16-20% system-wide reduction, subject to consultation and negotiation between the SFPUC and its Wholesale Customers to modify the allocation rules. The allocation rules corresponding to the 16-20% system-wide reduction are reflected in Table 5 above for Scenario 3. These allocation rules result in shortfalls of 16-50% across the retail service area as a whole under Scenario 3.

**Table 5: Projected Supply and Demand Comparison Under Scenario 3
(Implementation of the Bay-Delta Plan Amendment) (mgd)**

		Normal Year	Single Dry Year ¹	Multiple Dry Years							
				Year 1 ¹	Year 2 ²	Year 3 ²	Year 4 ²	Year 5 ²	Year 6 ²	Year 7 ³	Year 8 ³
2020	Total Retail Demand ⁴	72.1	72.1	72.1	72.1	72.1	72.1	72.1	72.1	72.1	72.1
	Total Retail Supply ⁵	72.1	68.5	68.5	68.5	68.5	68.5	68.5	68.5	68.5	68.5
	Shortfall	0.0	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
	Shortfall as % of Demand	0.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
2025	Total Retail Demand ⁴	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0	79.0
	Total Retail Supply ⁵	79.0	66.7	66.7	52.8	52.8	52.8	52.8	52.8	42.9	42.9
	Shortfall	0.0	12.3	12.3	26.2	26.2	26.2	26.2	26.2	36.1	36.1
	Shortfall as % of Demand	0.0%	15.6%	15.6%	33.2%	33.2%	33.2%	33.2%	33.2%	45.7%	45.7%
2030	Total Retail Demand ⁴	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3
	Total Retail Supply ⁵	82.3	68.7	68.7	54.8	54.8	54.8	54.8	54.8	44.9	44.9
	Shortfall	0.0	13.6	13.6	27.5	27.5	27.5	27.5	27.5	37.4	37.4
	Shortfall as % of Demand	0.0%	16.5%	16.5%	33.4%	33.4%	33.4%	33.4%	33.4%	45.4%	45.4%
2035	Total Retail Demand ⁴	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9	85.9
	Total Retail Supply ⁵	85.9	68.8	68.8	54.9	54.9	54.9	54.9	54.9	45.0	45.0
	Shortfall	0.0	17.1	17.1	31.0	31.0	31.0	31.0	31.0	40.9	40.9
	Shortfall as % of Demand	0.0%	19.9%	19.9%	36.1%	36.1%	36.1%	36.1%	36.1%	47.6%	47.6%
2040	Total Retail Demand ⁴	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9
	Total Retail Supply ⁵	89.9	68.9	68.9	55.0	55.0	55.0	55.0	55.0	45.1	45.1
	Shortfall	0.0	21.0	21.0	34.9	34.9	34.9	34.9	34.9	44.8	44.8
	Shortfall as % of Demand	0.0%	23.4%	23.4%	38.8%	38.8%	38.8%	38.8%	38.8%	49.8%	49.8%

Notes:

1. During a single dry year and multiple dry year 1 (year 2 of SFPUC's design drought sequence), the retail allocation under the WSA is 37.5% of available RWS supply, or 59.6 mgd.
2. During multiple dry years 2-6 (years 3-7 of SFPUC's design drought sequence), the retail allocation under the WSA is 37.5% of available RWS supply, or 45.7 mgd.
3. During multiple dry years 7 and 8 (years 8 and 8.5 of SFPUC's design drought sequence), the retail allocation under the WSA is 37.5% of available RWS supply, or 35.8 mgd.
4. Total retail demands correspond to those in **Table 4-1 of the UWMP**, except for the 2020 demand projection, which was re-projected to take into account the lower demands being experienced due to the recent drought and the lag in occupancy of built units.
5. Local supplies (i.e., supplies not from the RWS, including groundwater, recycled water, and non-potable water) correspond to those in **Table 6-7 of the UWMP**. Local supplies are assumed to be used before RWS supplies to meet retail demand.

4.2 Rationing Implications to the Proposed Project

While the levels of rationing described above apply to the retail service area as a whole (i.e., 5-7% under Scenario 1, 16-50% under Scenario 3), the SFPUC may allocate different levels of rationing to individual retail customers based on customer type (e.g., dedicated irrigation, single family residential, multi-family residential, commercial, etc.) to achieve the required level of retail system-wide rationing. Allocation methods and processes that have been considered in the past and may be used in future droughts are described in the SFPUC's current Retail Water Shortage Allocation Plan (**Appendix L of the UWMP**). However, additional allocation methods that reflect existing drought-related rules and regulations adopted by the Commission during the recent drought (2015-2016 Drought Program adopted by Resolution 15-0119) are more pertinent to current and foreseeable development and water use in San Francisco and may be included in the SFPUC's update to its Retail Water Shortage Allocation Plan. The updated Retail Water Shortage Allocation Plan will be brought forward to the Commission along with the 2020 Urban Water Management Plan for consideration and adoption through a public hearing process in 2021. It is anticipated that the updated Retail Water Shortage Allocation Plan would include a tiered allocation approach that imposes lower levels of rationing on customers who use less water than similar customers in the same customer class, and would require higher levels of rationing by customers who use more water. This approach aligns with the SWRCB's statewide emergency conservation mandate imposed during the recent drought, in which urban water suppliers who used less water were subject to lower reductions than those who used more water. Imposing lower rationing requirements on customers who already conserve more water is also consistent with the implementation of prior rationing programs based on past water use, in which more efficient customers were allocated more water through an appeal process administered by the General Manager. Staff expects that under a future Retail Water Shortage Allocation Plan adopted by the Commission, the allocation method or combination of methods that would be applied during water shortages caused by drought would similarly be subject to the discretion of the General Manager.

The SFPUC anticipates that, as a worst-case scenario under Scenario 3, a mixed-use office customer such as the proposed project could be subject to up to 30% rationing during a severe drought.⁵ In accordance with the Retail Water Shortage Allocation Plan, the level of rationing that would be imposed on the proposed project would be determined at the time of a drought or other water shortage and cannot be established with certainty prior to the shortage event. However, newly-constructed buildings, such as the proposed project, have water-efficient fixtures and non-potable water systems that comply with the latest regulations. Thus, if these buildings can demonstrate below-average water use, they would likely be subject to a lower level of rationing than other retail customers that meet or exceed the average water use for the same customer class.

⁵ This worst-case rationing level for San Francisco multi-family residential was estimated for the purpose of preparing comments on behalf of the City and County of San Francisco on the SWRCB's Draft Substitute Environmental Document in Support of Potential Changes to the Bay-Delta Plan, dated March 16, 2017. See comment letter Attachment 1, Appendix 3, Page 5, Table 3. The comment letter and attachments are available on the SWRCB website: https://www.waterboards.ca.gov/public_notices/comments/2016_baydelta_plan_amendment/doc/s/dennis_herrera.pdf. The rationing estimates prepared for the comment letter apply to the first 6 years of the SFPUC's 8.5-year design drought as they reflect the 1987-92 drought. For the last 2.5 years of the design drought, a corresponding worst-case rationing level for San Francisco commercial and industrial (e.g., office) customers was not estimated. While the level of rationing imposed on the retail system will be higher for the outer years of the design drought compared to the first 6 years, it is reasonable to assume that commercial and industrial customers with onsite water systems per the Non-potable Water Ordinance would not have to conserve more than 30% due to the efficiency of water use in these developments compared to other commercial and industrial customers without onsite water systems.

4.3 Findings

Regarding the availability of water supplies to serve the proposed project beginning in 2025, the SFPUC finds, based on the entire record before it, as follows:

- During normal years, the SFPUC's total projected water supplies will meet the projected demands of its retail customers, including those of the proposed project, existing customers, and foreseeable future development under Scenario 1, Scenario 2, and Scenario 3.
- During single dry years and multiple dry years under Scenario 1—No implementation of the Bay-Delta Plan Amendment or the March 1st Proposed Voluntary Agreement—the SFPUC can meet the projected demands of its retail customers, including those of the proposed project, existing customers, and foreseeable future development without the need for rationing beyond the LOS goal of 20% system-wide rationing. Based on past hydrology, statistically speaking dry years occur roughly once out of every 10 years.
- During single dry years and multiple dry years under Scenario 2—Implementation of the March 1st Proposed Voluntary Agreement—the SFPUC would still face a shortfall in single dry and multiple dry years, thus requiring rationing, but to a lesser degree and in closer alignment to the LOS goal of no more than 20% system-wide rationing compared to that which would occur under Scenario 3.
- During single dry years and multiple dry years under Scenario 3—Implementation of the Bay-Delta Plan Amendment—the SFPUC cannot reliably meet the projected demands of its retail customers, including the proposed project, existing customers, and foreseeable future development, without rationing at a level greater than that required to achieve the LOS goal of a maximum of 20% system-wide average rationing starting as soon as 2022. The SFPUC estimates it would impose up to 50% rationing across the retail service area, up to 30% rationing for mixed-use office customers such as the proposed project, and potentially less rationing specifically for the proposed project.

Approval of this WSA by the Commission is not equivalent to approval of the development project for which the WSA is prepared. A WSA is an informational document required to be prepared for use in the City's environmental review of a project under CEQA. It assesses the adequacy of water supplies to serve the proposed project and cumulative demand.

Furthermore, this WSA is not a "will serve" letter and does not verify the adequacy of existing distribution system capacity to serve the proposed project. A "will serve" letter and/or hydraulic analysis must be requested separately from the SFPUC City Distribution Division to verify hydraulic capacity.

While this WSA contains information provided by or on behalf of the project sponsor regarding the proposed project's plans for onsite water reuse and demand estimates using the SFPUC's Non-potable Water Calculator, any information submitted to the SFPUC for preparation of this WSA does not fulfill the requirements of the Non-potable Water Ordinance. City review and approval of a proposed onsite water system must be performed separately through the Non-potable Water Program.

If there are any questions or concerns, please contact Steve Ritchie at (415) 934-5736 or SRitchie@sfwater.org.

Attachments: Attachment A, Communications from San Francisco Planning
Department
Attachment B, 598 Brannan Street Project Demand Memo

Attachment A –

Communications from San Francisco Planning Department



SAN FRANCISCO PLANNING DEPARTMENT

MEMO

DATE: June 13, 2013

TO: SF Planning EP Planners & SFPUC Planners

FROM: Scott T. Edmondson, AICP; Aksel Olsen

RE: Project Types Represented in the Land Use Allocation

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This Memorandum explains the Planning Department's Land Use Allocation (LUA) and the types of projects included in the LUA. The 2012 LUA is the most recent update and uses the Association of Bay Area Governments' (ABAG) May 2012 Jobs-Housing Connection Scenario. As this memorandum explains, the Planning Department expects that the LUA will encompass the vast majority of development proposals that project sponsors will present to the Planning Department. This memorandum also identifies possible unusual circumstances under which EP Planners and the SF PUC Planners may want to consult further with the Planning Department's Information and Analysis Group to determine whether a project is encompassed within the LUA.

ABAG's Projections of San Francisco's Economic Growth and the LUA

The LUA takes ABAG's 30-year projections of citywide household and job growth and allocates them to smaller geographic units, in this case, the traffic analysis zones of the SF Transportation Authority's Countywide Transportation Model. Thus, the LUA does not project growth but simply allocates ABAG's growth projections to subarea locations within the city. The current 2012 LUA uses ABAG's Jobs-Housing Connection Scenario projections for San Francisco and covers the period from 2010 to 2040; these projections were released in May 2012 and are represented in five-year increments.

ABAG derives its demographic and economic growth projections from assumptions about long-term demographic and economic growth.¹ ABAG maintains its own set of regional models and develops each forecast with its in-house experts and private economic consultants.² The forecasting is informed by the best information and assumptions available through federal and State agencies, such as the State Department of Finance, and private sources. However, ABAG develops its forecast based on local knowledge from over 50 years of forecasting and develops the forecast to reflect local conditions in contrast to more general forecasting assumptions of State or federal sources. ABAG's estimate of total citywide growth for the 30-year period is expected to best represent actual growth at the end of the 30-year period. However, projected growth for any portion of the projection period, such as growth in a one-year or a five-year period, would be expected to vary from actual growth in such periods. Within the 30-year growth projection period, higher than average growth periods could be followed by lower than average growth periods such that growth over the period would ultimately equal the projected 30-year

total. All projection methodologies make assumptions based on the best available information at the time. To minimize the effects of imprecision intrinsic to any projections methodology when used in for planning decisions, ABAG follows professional best practices and updates its projections every two years. Accordingly, the Planning Department updates its LUA every two years. The planning practice of frequently updating projections and plans allows the incorporation of new information over time to provide for the most up-to-date projections.

The SFPUC updates its Urban Water Management Plan (UWMP) every five years. The UWMP typically relies on LUA projections or similar information. But, because the LUA is updated every two years, the SFPUC may want to review the LUA issued within SFPUC's 5-year UWMP cycle; and if it varies in a significant way from the SFPUC's projections used in its UWMP, discuss with Planning whether it should make any changes in its own water supply needs assessment during an UWMP cycle.

Types of Projects Included in the LUA

The LUA translates ABAG's projected household and job growth into total expected development in San Francisco over a 30-year period. The LUA translates ABAG's household growth into residential housing units and ABAG's job growth into commercial space.³ Thus, the LUA projections of housing units and commercial space include all project types expected from San Francisco growth, such as housing, office, retail, production-distribution-repair (PDR), visitor, and cultural-institutional-educational (CIE). The LUA does not exclude any project type or potential growth. As such, the LUA and the ABAG economic projections upon which it is based contain the best estimates available of reasonably foreseeable growth and development in San Francisco over a 30-year period.

Unusual Circumstances

The LUA can be considered to include all reasonably expected growth and development and it is frequently updated to correct for expected variations. Nevertheless, there are possible unusual circumstances under which the EP Planners or SFPUC Planners may want to request further Planning Department consultation with the Information and Analysis Group to determine if a particular project falls within the LUA. ABAG's projections and the Department's LUA take into account urban economic trends and based on that information capture all reasonably foreseeable growth in San Francisco. Limited capital and aggregate demand of any urban economy constrains growth. However, occasionally the reality or perception may arise that a project lies outside the normal growth constraints of the San Francisco economy for some reason, and therefore lies outside ABAG's projection's and the Department's current spatial allocation in its LUA.

One can envision the rare case of a project arising outside the City's economy (demand and capital) from an organization not located in San Francisco using nonprofit foundation funds or private donations to construct a large institutional project in San Francisco, such as a major hospital, a university, or an office complex. These projects would represent spending and demand beyond that normally active in the San Francisco economy, and therefore represent net additions to projected growth beyond that captured by ABAG's projections and reflected in the Department's LUA. Indicative characteristics of such projects

would include those with non-local sponsors, of large size, and for an institutional land use. Alternatively, very large project proposals from local project sponsors active in the SF economy involving a large site, land assembly, a planned unit development (PUDs), master plans, or area plan and rezoning proposals may warrant individual assessment for a range of reasons even though they are likely captured in ABAG's projections and the LUA. Such projects would be similar to recent projects such as Hunters Point/Candlestick, Park Merced, Treasure Island, Pier 70 Master Plan, Eastern Neighborhoods, or the Transit Center District Plan.

The bi-annual update of ABAG's projections and the LUA would be able to capture development associated with such projects. However, should such a project be proposed between updates, the EP Planners and SFPUC could treat its appearance as sufficient cause to request the Planning Department's assistance in determining whether to consider the project outside the latest LUA projections.

¹ Please see ABAG's summary of its research and forecasting on its website: <http://www.abag.ca.gov/planning/research/index.html>

² ABAG describes its current Jobs-Housing Scenario policy-based forecast here: http://onebayarea.org/pdf/IHCS/May_2012_Jobs_Housing_Connection_Strategy_Appendices_Low_Res.pdf.

³ The LUA citywide totals only differ slightly, up to within one percent of ABAG totals (+/-). The difference is produced by LUA's complex method of translating ABAG projections into development (residential units and commercial space) and allocating total citywide growth to subarea locations. The minor difference between the LUA and ABAG citywide totals is real in absolute terms, but not in the sense that they are different projections. The one percent difference does not constitute a difference of projections. ABAG and MTC consider variation of one percent in citywide totals, plus or minus, as sufficiently representing ABAG's projections for consistency with the MTC regional projections and modeling purposes (congestion management, etc.). Even if a few versions of the LUA must be done to make minor subarea spatial allocation corrections, as long as the LUA's citywide totals are within one percent of ABAG's projections, and ABAG's projections have not changed, the LUA citywide totals have not effectively changed either. Any of those LUA versions' citywide totals fully represent the same unchanged ABAG projection totals.

Attachment B –

598 Brannan Street Project Demand Memo



SAN FRANCISCO PLANNING DEPARTMENT

MEMO

DATE: February 26, 2019
TO: Fan Lau, SFPUC
FROM: Chris Thomas, Environmental Planning
CC: Rick Cooper, Environmental Planning
RE: 598 Brannan Street Project Revised Water Supply Assessment Request (Planning Department Case No. 2012.0640E)

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On October 23, 2018 the San Francisco Public Utilities Commission (SFPUC) approved a Water Supply Assessment (WSA) for the proposed 598 Brannan Street project (Resolution 18-173). After this approval, on December 12, 2018, the State Water Resources Control Board (SWRCB) adopted an amendment to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan), which establishes water quality objectives to maintain the health of certain rivers and the Bay-Delta ecosystem. Specific requirements for unimpaired flow on the Tuolumne River under the Bay-Delta Plan Amendment, as currently adopted, would have a significant impact to the regional water system supply delivered by the SFPUC.

The purpose of this memorandum is to request that the SFPUC prepare a revised WSA for the proposed 598 Brannan Street mixed use office/residential project, in recognition of the Bay-Delta Plan Amendment and in compliance with CEQA Guidelines Section 15155 and Sections 10910 through 10915 of the California Water Code. Neither the project description or water demand calculations for the 598 Brannan Street project have changed from the project considered by the WSA approved on October 23, 2018. Thus, the same information provided by the project sponsor, intended to meet the requirements outlined in the SFPUC guidance memo dated September 6, 2016, is provided with this request.

The proposed project and project site continue to be as follows:

The project site of four lots in the South of Market totals about 4.5 acres in area, containing four one to two-story buildings for various light industrial and storage uses that comprise a total of about 70,400 square feet. As indicated in the attached development summary spreadsheet, the project sponsor, Brannan & Bryant Street, LLC (Tishman Speyer), proposes to construct four new buildings; buildings 1, 2 and 3 would contain a total of approximately 883,291 square feet of office space, 31,881 square feet of retail/PDR non-food service space, 47,821 square feet of Retail/PDR food service space, and 39,000 square feet of restaurant space. Building 4 would contain 72 residential units (62,062 square feet of residential space), 2,583 square feet of Retail/PDR non-food service space and 2,932 square feet of Retail/PDR food service space. In addition, two below grade parking and loading areas totaling about 106,650 square feet are proposed. Approximately 55,514 square feet of landscaped (turf grass, green roof and other landscaping) areas would also be provided.

The project is proposed to be constructed over a five-year period between 2020 and 2025. A summary of the project description, proposed average daily water demands, and supporting

February 26, 2019

598 Brannan Street Project Revised Water Supply Assessment Request

Page 2

tables prepared by the project sponsor's consultant (based on the SFPUC Non-Potable Water Calculator Version 7), are attached. Non-Potable Water Calculator spreadsheets for the proposed project are also attached.

Should you have questions or need additional information from the Planning Department or the project sponsor, please contact me at 415-575-9036 or christopher.thomas@sfgov.org.

DATE: September 18, 2018
TO: Chris Thomas, Environmental Planner
 415-575-9036; christopher.thomas@sfgov.org
FROM: Judith Malamut, LSA
 Steve Minden, Design & Construction Tishman Speyer
 (213) 458-1272 sminden@tishmanspeyer.com
SUBJECT: Water Supply Assessment for 598 Brannan Street Project

General Information

Environmental Planning case number	2012.0640E
estimated construction date	Q4 2019
Environmental Planning case manager	Chris Thomas
project address and block/lot	598 Brannan Street 3777/45, 50, 51, and 52
current land use	See table below
project site size in square feet and acres	196,020 square feet
days of operation per year for the project	365

Current Land Use

Assessor's Block-Lot	Street Address	Building	Year Built	Existing (gsf)	Use	Building Tenant	Employees
3777-45	598 Brannan Street	2-story industrial	1952	38,200	Dog daycare	K9 Playtime, Inc.	10
					Surface parking lot (272 spaces)	Tower Parking	3
3777-50	649-651 Bryant Street	2-story industrial	1954	10,000	Warehouse and offices	SFPUC	50
3777-51	645 Bryant Street	1-story industrial	1954	16,000	Body shop/auto repair	Eur-Asia Motors	15
3777-52	639 Bryant Street	1-story industrial	1990	6,200	Utility yard	SFPUC	NA ^a
Total				70,400			78

Project Description

The proposed 598 Brannan Street Project (proposed project) would result in the development of a mix of residential, office, production, distribution and repair (PDR), institutional (child care), and commercial uses on an approximately 4.5-acre site (Assessor's Block 3777, Lots 45, 50, 51, and 52) located at 598 Brannan and 639, 645, and 649-651 Bryant streets, within the Central South of Market (SoMa) planning area of San Francisco. The project would include the demolition and removal of four existing one- and two-story commercial, industrial, and warehouse buildings totaling

^a Employment for the 639 Bryant Street site is the same as the 649-651 Bryant Street site.

approximately 70,400 square feet and associated surface parking lots and construction of four 7- to 13-story buildings totaling approximately 1,064,050 gross square feet (gsf) in size, excluding approximately 137,200 gsf of sub-grade parking, loading, and mechanical areas. Three of the buildings would include a total of approximately 922,290^b gsf of office space, which includes approximately 39,000 gsf of cafeteria space (estimated size only, actual size may vary depending on tenants), approximately 5,300 gsf of institutional (child care) use, and approximately 74,400 gsf of ground-floor PDR/commercial space, and the fourth building would include a total of approximately 72 residential units (62,060 gsf). Please note that in the SFPUC calculator (attached), the project indicates 83,889 square feet of retail/PDR food service and future cafeteria as well as 23,998 square feet of non-food service retail/PDR for buildings 1, 2, and 3 (Phases 1 and 2). For building 4, the residential building (Phase 3), the SFPUC calculator has been filled out to assume 2,932 square feet of food service retail/PDR and 2,583 square feet of non-food service retail/PDR use. Parking would be provided within two, single-level below-grade parking garages with a total of approximately 308 vehicle parking spaces serving the office and PDR/commercial uses; no off-street parking would be provided to serve the residential use. Approximately 19,420 gsf of privately owned public open space would be provided throughout the site and an approximately 38,000-square-foot public park is proposed at the center of the site.

Water Demand Based on Project Phasing

	2015	2020	2025	2030	2035	2040
Phase 1 (Buildings 1 & 2) Potable			0.0065	0.0065	0.0065	0.0065
Phase 1 (Buildings 1 & 2) Non-Potable			0.0091	0.0091	0.0091	0.0091
Phase 2 (Building 3) Potable			0.0021	0.0021	0.0021	0.0021
Phase 2 (Building 3) Non-Potable			0.0032	0.0032	0.0032	0.0032
Phase 3 (Building 4) Potable			0.0056	0.0056	0.0056	0.0056
Phase 3 (Building 4) Non-Potable			0.0009	0.0009	0.0009	0.0009
Total Potable			0.0141	0.0141	0.0141	0.0141
Total Non-Potable			0.0133	0.0133	0.0133	0.0133
Total			0.0274	0.0274	0.0274	0.0274

Notes:

- 1.) If the proposed project would be phased over time, the project proponent shall also provide water demand estimates that reflect project phasing over the next 20 years in 5-year increments.
- 2.) The project will be phased as described above. All phases are expected to be completed between 2021 and 2025. The exact timing of the phases will depend on timing of entitlements and market considerations.
- 3.) All data shown in the table are in units of million gallons per day (MGD)

^b The 922,290 gsf of office space in project description includes the 39,000 gsf of cafeteria space. For the purposes of the water calculator the office space has been estimated to be 883,291 and the cafeteria space is 39,000.

Water Demand by Project Phase and Use

Phase	Indoor Water Demand (1) (2)			Outdoor Water Demand (1)(3)	Total Demand	
	Commercial	Multi Family Residential	HVAC/ Cooling (1)	Irrigation (1)	Average mg/day	Average mg/year
Phase 1 (Buildings 1 & 2) Potable	2.3623	-	-	-	0.0065	2.3623
Phase 1 (Buildings 1 & 2) Non-Potable	1.7347	-	1.4620	0.1354	0.0091	3.3321
Phase 2 (Building 3) Potable	0.7488	-	-	-	0.0021	0.7488
Phase 2 (Building 3) Non-Potable	0.5332	-	0.4747	0.1676	0.0032	1.1755
Phase 3 (Building 4) Potable	0.0878	1.9496	-	-	0.0056	2.0374
Phase 3 (Building 4) Non-Potable	0.0188	0.3212	-	-	0.0009	0.3400
Total Potable	3.1989	1.9496	-	-	0.0141	5.1485
Total Non-Potable	2.2868	0.3212	1.9367	0.3030	0.0133	4.8476
Total	5.4668	1.9496	1.9367	0.3030	0.0274	9.9961

(1) Daily average i.e. millions of gallons per year/365 days per year. Demand estimates are independent of the building scale or district scale systems and are the estimates are the same regardless of which system is selected.

(2) See SFPUC Calculator Tab 2.

(3) See SFPUC Calculator Tab 4.

(4) The calculation of monthly water use for cooling towers is based on calculated values for cooling tower evaporation, cycles of concentration and drift. These calculations are based on load profiles of the project and the associated weather data. The calculated cooling tower make up water loads are based on the factors listed in the table.

OVERALL SITE WATER MANAGEMENT APPROACH

The project must comply with the Stormwater Management Requirements (SMR) regulated by the San Francisco Public Utilities Commission (SFPUC), which requires new and redevelopment projects to manage stormwater runoff using green infrastructure (GI) where feasible. GI is a stormwater management strategy that takes advantage of sustainable processes, such as infiltration and rainwater harvesting, to manage stormwater runoff at its source.

As the project site is within the Combined Sewer System (CSS) area with an existing imperviousness of greater than 50%, the SMR requires a stormwater management plan that reduces the stormwater runoff rate and volume by 25% relative to pre-development conditions for the 2-year, 24-hour design storm. Additionally, the SMR requires

project applicants to assess the feasibility of meeting this requirement using rainwater harvesting before looking to other stormwater management/GI approaches such as bioretention planters, permeable pavement, or green roofs.

For projects in the CSS with challenging site constraints, the SFPUC has developed a Modified Compliance Program that allows qualifying projects to decrease the volume reduction percentage requirement in combination with an equivalent increase in the peak flow percentage reduction. However, as per the SFPUC Modified Compliance Application, this project is not eligible as it is within the recycled water use area and will generate a non-potable demand (including irrigation, toilet/urinal flushing, and cooling) greater than 2,500 gpd/acre.

Given the project site's unfavorable soil conditions, the most feasible GI technologies are: rainwater harvesting, green roofs, and flow-through bioretention planters. Due to the relatively high imperviousness assumed for the proposed project, the reduced performance of lined flow-through bioretention planters, and the SFPUC's technology priorities, rainwater harvesting is the best approach for achieving compliance efficiently. The inclusion of additional GI elements (such as green roofs and/or under drained pervious hardscape that does not accept runoff from adjacent impervious surfaces) will decrease the total rainwater cistern volume required by reducing the amount of stormwater runoff produced.

The project also meets the criteria to comply with the City's Non-potable Ordinance (NPO), which requires that new developments with greater than 250,000 square feet of gross floor area implement an onsite water reuse system to meet non-potable demands. Additionally, the project is subject to the Recycled Water Ordinance (RWO), which requires qualifying projects (e.g., have a gross square footage of 40,000 sf or more) located in the designated recycled water use areas to provide building dual-plumbing for the following uses: irrigation, flushing toilets and urinals, and cooling.

The NPO requires that qualifying projects capture rainwater (defined as runoff from building roofs and other above-ground surfaces, distinct from stormwater which in this context refers to runoff from at- or below-grade surfaces), graywater (wastewater from showers, bathroom sinks, and laundry), and foundation drainage (nuisance subsurface water collected to maintain a buildings structural integrity or to dewater below grade floors that would typically be discharged into the CSS) and use these alternate water sources to meet the following non-potable demands: toilet/urinal flushing and irrigation. To the maximum extent practicable, the project must either meet 100% of these required non-potable demands or utilize 100% of the available rainwater, graywater, and foundation drainage. Other non-potable demands, such as cooling tower makeup water or clothes washers, are not required but may be met by the water reuse system at the project's discretion.

As this project is subject to the requirements of the SMR, NPO, and RWO, there is a clear synergy in pursuing a compliance strategy involving a non-potable water reuse system that prioritizes the collection and use of rainwater to meet the SMR and incorporates available graywater to meet the NPO. Efficiencies may be achieved with a district-scale reuse system configuration that combines all building sources at a single centralized storage and treatment location as opposed to separate and independent storage and treatment equipment associated with each building. The characteristics of these two approaches (building-scale and district-scale) are discussed in more detail below.

A water balance analysis of the potential alternative sources and projected non-potable demands was based on:

- Building gross square footage (GSF) provided by MMA
- Occupancy load factors per the SFPUC Non-potable Water Calculator and confirmed with MMA
- Building cooling tower makeup water demand and fixture flowrates provided by PAE
- Pervious and irrigated open space areas provided by TLS
- Building terrace and roof planter areas provided by MMA

It was decided that foundation drainage is likely an infeasible source to account for due to minimal anticipated supply, and probable contamination issues even if present. Collecting graywater from residential laundry was determined to be a viable source at this stage of the project and is included as a component of the Building 4 supply. Additionally, though not an end use demand required to be met by the NPO, the building cooling tower make up water demand was included as a component of the systems in both alternatives. This additional demand on the reuse system provides dual performance benefits, both improving the ability to meet the SMR requirements with a reduced cistern size (with greater demands on the system, more of the supply in storage is used each day and the system can regenerate volume available to manage future storms more quickly) and increasing the annual volume of potable water offset.

WATER REUSE SYSTEM ALTERNATIVES

Alternative 1 – Building-Scale would implement water reuse systems separately at each building. These individual systems would each collect rainwater and graywater from the associated building for storage, treatment, and use within the same building. It is anticipated that the equipment for these systems will be in building basement locations (or in the case of Building 4 that does not have a basement, within a first-floor room) that are accessible for regular operations and maintenance. This alternative would require a total of 64,000 gallons of rainwater storage, divided between the different buildings, to meet the stormwater management requirements. This alternative is projected to offset an annual volume of potable water equal to 59% of the non-potable demands that are required by the NPO. Although this scenario would not be able to meet 100% of the project's required non-potable demands with non-potable water, it still complies with the NPO since it is maximizing the available sources (graywater and rainwater). System infrastructure (including tanks, treatment systems, and collection and distribution elements) is described in more detail in the Plumbing drawings and narrative.

Alternative 2 – District-Scale would implement a single integrated water reuse system for the entire project. The rainwater and graywater supply from all four buildings would be collected and piped to the centralized system, located in the basement of Building 1 & 2 and sized to manage the flow from all buildings at full buildout. The rainwater and graywater would be stored and treated separately before combining in a treated water holding tank for non-potable water distribution throughout the project, supplying new demands (such as Buildings 3 and 4) as they are constructed. This alternative would require 60,000 gallons of rainwater storage to meet the stormwater management requirements and is projected to offset an annual volume of potable water equal to 95% of the non-potable demands that are required by the NPO. System infrastructure (including tanks, treatment systems, and collection and distribution elements) is described in more detail in the Plumbing drawings and narrative.

ONSITE DRAINAGE

Both water reuse system alternatives have been designed to meet the SFPUC Stormwater Management Requirements via rainwater harvesting, so additional retention and/or detention of stormwater runoff with green infrastructure facilities such as bioretention planters and permeable pavement will not be required. However, the drainage design will strive to further reduce the amount of stormwater entering the combined sewer system by implementing the following strategies:

- Reduce the amount of impervious surface wherever practical. Increases in pervious areas may allow for a decrease in the calculated rainwater cistern volumes, or show that the project is going beyond the minimum stormwater management requirements.
- Use permeable pavement systems in pedestrian-traffic areas and where there is no run-on from adjacent paved surfaces. By only infiltrating the rainfall that falls directly on the permeable pavement surface, the system will function like a landscape area. Depending on the infiltrative properties of the soil, underdrains may be required to ensure water within the aggregate layer adequately drains. SFPUC may require that the project's environmental consultant provide a letter verifying that the water infiltrating through the permeable pavement will not pose a threat to the groundwater table given that the project is in a Maher Area.
- Sheet flow paved surfaces onto adjacent landscape to encourage infiltration, filtration, and attenuation of the runoff prior to it being directed into drain inlets. Draining hardscape surfaces onto landscape surfaces has the additional benefit of decreasing the number of drainage inlets, trench drains, etc. within the pedestrian areas.

The site drainage infrastructure will consist of drain inlets, area drains, trench drains, cleanouts, and HDPE storm drain piping. Drain grates within accessible routes of travel will need to be ADA compliant. Drains within landscape areas will have atrium grates where blockage caused by landscape debris is a concern. The storm drain pipe network will be sized to carry the 10-year storm flow at a minimum to the CSS within adjacent streets and alleys. Sand traps meeting city standards will be provided at each connection point. At this stage, it is assumed that the site storm drain system will join with the building sewer lines immediately upstream (and within the property boundary) of the new connections.

Attachments: SFPUC District Scale Non-Potable Water Calculator v.7 for 598 Brannan Street Project
Overall Site Water Management Strategy Plan

END

NON-POTABLE WATER CALCULATOR

Project Summary Sheet

Project Contact: Steve Minden
(213) 458-1272
SMinden@TishmanSpeyer.com

Estimated Site/Building Permit Issuance Date: 7/1/2018



Total Gross Square Footage: 1,064,055

1. Demands and Supplies Summary

Demands Met by Non-Potable Supply for Project (gpy):	2,356,650	Does Not Meet Grant Criteria of 3 MG/Y
Demands Met by Non-Potable Supply for Project *:	24%	Achieving estimated offset may require storage to store excess monthly supplies;
Project Total Annual Water Demand (gpy) *:	9,996,072	
If Grant Offset Criteria Met, Occurs in Year:	Criteria Not Met	
Potable Make-Up Water Allocation (gpy):	609,662	Potable supplies are allocated to this project to meet remaining demands. Projects are allocated an additional 10% in potable supplies as a buffer.
Avg. Daily Wet Weather Potable Allocation (gpd):	-941	Projects are allocated these potable supplies during wet weather months (October - March)
Avg. Daily Dry Weather Potable Allocation (gpd):	4,233	Projects are allocated these potable supplies during dry weather months (April - September)

*Note: Estimates based on Tab 6 - Building Potential Summary total water demand values. Manually entered non-potable demands that exceed auto-calculated non-potable demands from Tab 6 may result in Total Annual Water demands greater than the value used in this analysis

2. Building Information Summary

	Main Project Site 1	Site 2	Site 3
Project / Building Name:	598 Brannan Street Project	Phase 2	Phase 3
Project Address:	598 Brannan St, San Francisco, CA	Blgd 3	Blgd 4
Assessor's Block & Lot No. / APN:	3777/45, 50, 51, and 52		
Year Online:	2021	2021	2021
Building Type:	MIPS	MIPS	Resident
Total Building Size (gross square footage or GSF):	763,974	232,504	67,577
Total Lot Size (ft²):	112,900	70,000	13,120
Number of Residential Units:	0	0	72
Impervious Surface Above Grade (ft²):	58,011	29,778	11,190
Impervious Surface Below Grade (ft²):	15,476	24,121	1,930
Landscaped Area (ft²):	39,413	16,101	0
Site Location (Zone):	Eastern SF	Eastern SF	Eastern SF

3. Summary of Nonpotable Demands and Supplies for the Project

Non-Potable Water Supply Estimates

On-site Alternate Water Source Supplies	Annual Supply (gpy)	Annual Supply (gpy)	Annual Supply (gpy)	Total (gpy)
Rainwater:	546,447	238,280	114,097	898,824
Stormwater:	0	0	0	0
Graywater:	214,719	65,487	1,177,620	1,457,826
Blackwater:	0	0	0	0
Foundation Drainage:	0	0	0	0
Cooling & Other Supplies	0	0	0	0
TOTAL:	761,166	303,767	1,291,716	2,356,650

Non-Potable Applications Estimates

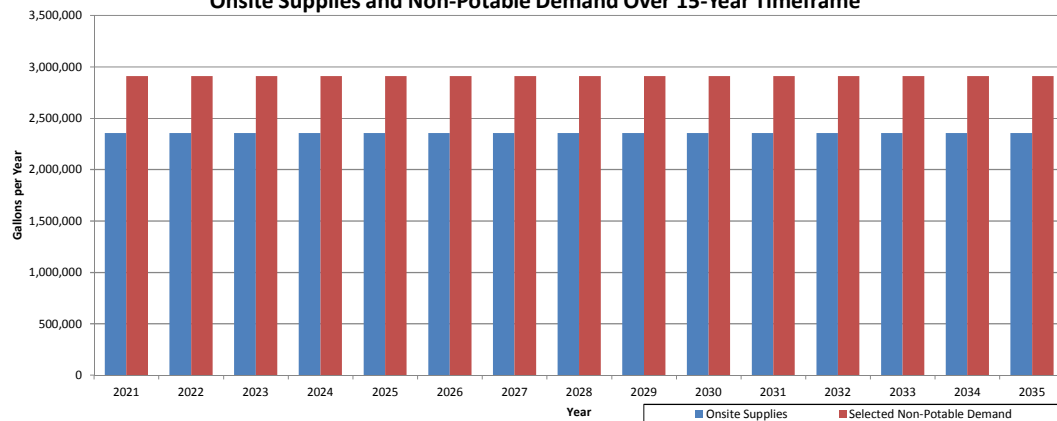
Project Specific Non-Potable Application Demands	Annual Demand (gpy)	Annual Demand (gpy)	Annual Demand (gpy)	Total (gpy)
Toilets/Urinals:	1,734,732	533,191	339,992	2,607,916
Irrigation:	135,382	167,590	0	302,972
Toilets/Urinals + Irrigation:	1,870,115	700,781	339,992	2,910,888
Cooling Tower:	0	0	0	0
Commercial Laundry & Other	0	0	0	0
TOTAL:	1,870,115	700,781	339,992	2,910,888

4. Project Phasing

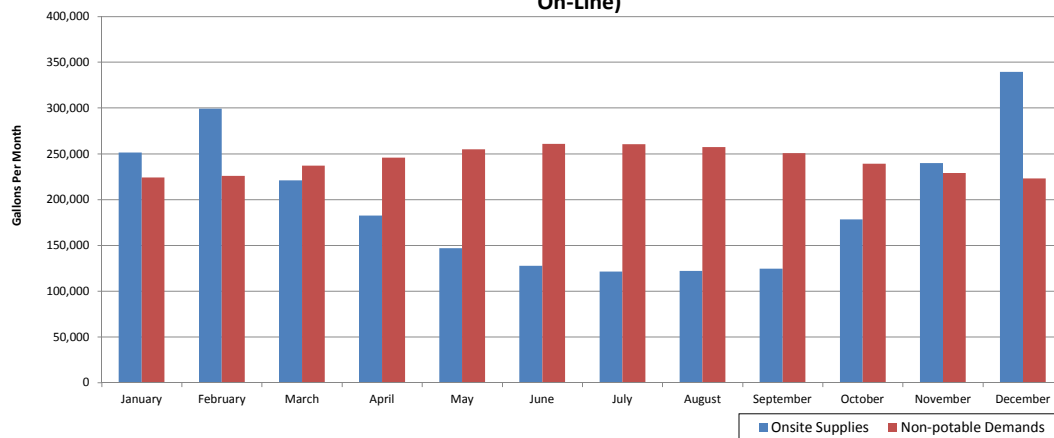
	SITE 1: Phase 1 -- Bldg 1 & 2		SITE 2: Phase 2 -- Bldg 3		SITE 3: Phase 3 -- Bldg 4		
15-Year Timeframe	NP Offset Supplies (gpy)	Selected NP Demand (gpy)	NP Offset Supplies (gpy)	Selected NP Demand (gpy)	NP Offset Supplies (gpy)	Selected NP Demand (gpy)	Re-Used Non-Potable Supplies (gpy)
2021	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2022	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2023	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2024	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2025	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2026	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2027	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2028	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2029	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2030	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2031	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2032	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2033	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2034	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650
2035	761,166	1,870,115	303,767	700,781	1,291,716	339,992	2,356,650

This offset analysis assumes the full year of supplies is available to offset non-potable demands. Some scenarios may require storage to store excess supplies from one month in order to use those supplies in another month with unmet demands.

Onsite Supplies and Non-Potable Demand Over 15-Year Timeframe



Monthly Summary of Selected Onsite Supply vs. Selected Non-Potable Demand (All Sites On-Line)



		Phase 1 (Bldg 1 & 2)	Phase 2 (Bldg 3)	Phase 3 (Res Bldg)	Total
SITE COVERAGE					
Total "Lot" Size	SF	112,900	70,000	13,120	196,020
Roof (Conventional)	SF	58,011	29,778	11,190	98,979
Pavement (Conventional)	SF	15,476	24,121	1,930	41,527
Gravel on Soils	SF	0	0	0	0
Permeable Pavement	SF	0	0	0	0
Turfgrass	SF	0	6,073	0	6,073
Landscaped Area	SF	4,583	9,164	0	13,747
Green Roof	SF	34,830	864	0	35,694
Bioretention	SF	0	0	0	0
BUILDING PROGRAMMING					
Residential Units		0	0	72	72
Residential	GSF	0	0	62,062	62,062
Office	GSF	680,187	203,104	0	883,291
Retail/PDR non-food service	GSF	20,260	3,738	2,583	26,581
Retail/PDR food service	GSF	33,527	11,362	2,932	47,821
Future planned cafeteria	GSF	30,000	9,000	0	39,000
Institutional (Child Care)	GSF	0	5,300	0	5,300
Total Gross Area	GSF	763,974	232,504	67,577	1,064,055
Estimated Completion Date		6/1/2021	10/1/2021	10/1/2020	10/1/2021
Surface Type		Phase 1 (Bldg 1 & 2)	Phase 2 (Bldg 3)	Phase 3 (Res Bldg)	Total
Pavement (Conventional)	SF	15,476	24,121	1,930	41,527
Roof (Conventional)	SF	58,011	29,778	11,190	98,979
Gravel on Soils	SF	0	0	0	0
Impervious Area Subtotal		73,487	53,899	13,120	140,506
Grass/Lawn on Grade	SF	0	6,073	0	6,073
Landscaping on Grade (Low Density)	SF	4,583	9,164	0	13,747
Landscaping on Grade (High Density)	SF	0	0	0	0
Tree Well (ROW Only)	SF	0	0	0	0
Traditional Planter on Structure	SF	0	0	0	0
Pervious Area Subtotal		4,583	15,237	0	19,820
Bioretention	SF	0	0	0	0
Vegetated Roof	SF	34,830	864	0	35,694
Permeable Pavement	SF	0	0	0	0
BMP Area Subtotal		34,830	864	0	35,694
Total Project Site Areas	SF	112,900	70,000	13,120	196,020

Occupancy per SFPUC NPW Calculator

Building	GSF ²	MFR Units	Commercial Occupancy ¹ (GSF/occupant)		Residential Occupancy ¹ (occupants/unit)	No. of Full-Time Equivalents (FTE)	No. of Transient FTEs	No. of Residential Occupants
			FTE	Transient FTE				
Phase 1 (Bldg 1 & 2)	763,974	0				2,904	825	0
Office	680,187	-	250	0	-	2,721	0	-
Retail/PDR non-food service	20,260	-	550	130	-	37	156	-
Retail/PDR food service ³	33,527		435	95	-	77	353	-
Future Planned Cafeteria ³	30,000	-	435	95	-	69	316	-
Residential	0	0	-	-	2.01	-	-	0
Phase 2 (Bldg 3)	232,504	0				866	244	0
Office	203,104	-	250	0	-	812	0	-
Retail/PDR non-food service	3,738	-	550	130	-	7	29	-
Retail/PDR food service ³	11,362		435	95	-	26	120	-
Institutional (Child Care)	5,300							
Future Planned Cafeteria ³	9,000	-	435	95	-	21	95	-
Residential	0	0	-	-	2.01	-	-	0
Phase 3 (Bldg 4)	67,577	72				12	51	145
Office	0	-	250	0	-	0	0	-
Retail/PDR non-food service	2,583	-	550	130	-	5	20	-
Retail/PDR food service ³	2,932		435	95	-	7	31	-
Future Planned Cafeteria ³	0	-	435	95	-	0	0	-
Residential	62,062	72	-	-	2.01	-	-	145

Notes:

1. All commercial and residential occupancy load factors used as per SFPUC Nonpotable Water Calculator default values. Source: LEED Reference for Building Operations and Maintenance, Version 4. Updated October 1, 2014. Appendix 2-Table 1. Default Occupancy Numbers.
2. Gross Area (GSF) numbers provided by TS on 6/25/18 and updated 9/4/18
3. Estimated size only, actual size may vary depending on tenants

BUILDING COOLING TOWER WATER USE

Provided by PAE on 6/20/2018

MONTHLY COOLING TOWER MAKEUP WATER DEMAND (gallons / month)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Building 1	18,952	23,925	32,498	37,209	52,169	71,662	103,878	98,170	64,873	46,355	27,424	22,303	599,417
Building 2	27,272	34,428	46,766	53,544	75,073	103,123	149,482	141,269	93,353	66,706	39,464	32,094	862,576
Building 1 + 2	46,224	58,353	79,264	90,753	127,243	174,785	253,360	239,439	158,226	113,061	66,889	54,397	1,461,993
Building 3	15,008	18,946	25,735	29,465	41,312	56,748	82,259	77,739	51,372	36,708	21,717	17,661	474,670
Building 4	0	0	0	0	0	0	0	0	0	0	0	0	0

DAILY DEMAND PER MONTH (ASSUMES ONLY WEEKDAYS) (gallons / day)

Building 1 + 2	2,088	2,918	3,580	4,235	5,746	8,157	11,442	10,813	7,384	5,106	3,121	2,457
Building 3	678	947	1,162	1,375	1,866	2,648	3,715	3,511	2,397	1,658	1,013	798