Appendix 3.15
# Water Supply Assessment

FEBRUARY 2022

# Willow Village Project
# Water Supply Assessment

**PREPARED FOR**

Menlo Park Municipal Water

CITY OF
MENLO PARK

**PREPARED BY**

WEST YOST
Water. Engineered.

# Willow Village Project
# Water Supply Assessment

**Prepared for**

## Menlo Park Municipal Water

**Project No. 648-60-20-08**


| | |
|---|---|
| Project Manager: Elizabeth Drayer, PE | 02-02-22<br>Date |
| QA/QC Review: Polly Boissevain, PE | 02-02-22<br>Date |

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## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AF | Acre-Feet |
| AWSP | Alternative Water Supply Planning Program |
| BAWSCA | Bay Area Water Supply and Conservation Agency |
| CEQA | California Environmental Quality Act |
| City | City of Menlo Park |
| DWR | State of California Department of Water Resources |
| EIR | Environmental Impact Report |
| FERC | Federal Energy Regulatory Commission |
| gpm | Gallons Per Minute |
| ISG | Individual Supply Guarantee |
| MG | Million Gallons |
| MG/yr | Million Gallons Per Year |
| mgd | Million Gallons Per Day |
| MPMW | Menlo Park Municipal Water |
| MWELO | Model Water Efficient Landscape Ordinance |
| Proposed Project | Willow Village Project |
| RWS | San Francisco Public Utilities Commission Regional Water System |
| SB | Senate Bill |
| SFPUC | San Francisco Public Utilities Commission |
| SGMA | Sustainable Groundwater Management Act |
| SWRCB | State Water Resources Control Board |
| UWMP | Urban Water Management Plan |
| WBSD | West Bay Sanitary District |
| WRF | Water Reuse Facility |

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|---|---|
| WSA | Water Supply Assessment |
| WSAP | Water Shortage Allocation Plan |
| WSCP | Water Shortage Contingency Plan |
| WSE Study | Water Supply Evaluation Study |
| WSIP | Water System Improvement Program |

# EXECUTIVE SUMMARY

## Overview

This Water Supply Assessment (WSA) has been prepared for Menlo Park Municipal Water (MPMW) by West Yost in accordance with California Water Code sections 10910 through 10915 in connection with the proposed Willow Village Project (Proposed Project). The Proposed Project is located in the Bayfront Area of the City of Menlo Park (City) within the Lower Zone of MPMW's service area. The Bayfront Area is between Highway 101 and Bayfront Expressway and is generally comprised of office, life sciences, mixed use residential, light industrial, commercial, and commercial business park land uses.

In 2016, the City completed a multi-year planning effort to update the Land Use and Circulation Elements of its General Plan for the 2040 planning horizon. This General Plan Update process was known as ConnectMenlo. ConnectMenlo reaffirmed existing remaining development potential throughout the City and incorporated land use changes in the Bayfront Area, including development potential for up to 4,500 new multi-family residential units, 2.3 million square feet of new non-residential uses, and 400 new hotel rooms.

The Proposed Project is within this development capacity and includes up to 1,730 multi-family residential dwelling units (with the potential for an additional 200 dwelling units under one of the project variants), up to 200,000 square feet of retail and non-office commercial uses, a hotel with up to 193 rooms, up to 1.6 million square feet of office and accessory space, consisting of up to 1.25 million square feet of office space and the balance (i.e., 350,000 square feet if office space is maximized) of accessory space in multiple buildings, and an approximately 3.5-acre public neighborhood park.

The Proposed Project would also alter parcels west of the industrial site, across Willow Road, on both the north and south sides of Hamilton Avenue (Hamilton Avenue Parcels North and South) to support realignment of the Hamilton Avenue right-of-way and provide access to the new elevated park. This would require demolition and reconstruction of a service station (Chevron gas station) at Hamilton Avenue Parcel South and possibly include the addition of up to 6,700 square feet of retail uses at the existing neighborhood shopping center (Belle Haven Retail Center) on Hamilton Avenue Parcel North.

## Projected Water Demands

The projected water demands for buildout of the Proposed Project and the project variants have been calculated based on CALGreen and Model Water Efficient Landscape Ordinance (MWELO) standards. The total projected water demand for the Proposed Project ranges from 150 to 162 million gallons per year (MG/yr), depending on the project variant. Approximately 63 to 64 percent of the total water demand is potable water demand and the remaining 36 to 37 percent is non-potable water demand that will be met with recycled water. The existing potable water demand at the project site is estimated to be approximately 19 MG/yr and is assumed to be entirely replaced by the Proposed Project demand. Therefore, the net increase in potable water demand for the Proposed Project is estimated to range from 75 to 85 MG/yr, depending on the project variant.

ConnectMenlo identifies the maximum development that could occur in the ConnectMenlo study area, including potential bonus-level increased development, and the ConnectMenlo EIR further studied the maximum development potential by more specific land uses. MPMW and the City's Planning Division are actively tracking projects within the ConnectMenlo study area on a cumulative basis to ensure that developed projects remain within the maximum development permitted through ConnectMenlo and that the approved projects would be consistent with the ConnectMenlo EIR. The Proposed Project, if approved, would be within this permitted cumulative development total identified in ConnectMenlo and studied in the EIR. Because the Proposed Project is within the maximum development studied in ConnectMenlo, the water demand for the Proposed Project is included in the ConnectMenlo EIR and MPMW 2020 Urban Water Management Plan (UWMP) water demand assumptions.

The Proposed Project will include the use of recycled water to meet non-potable water demands and will include the installation of water efficient fixtures and implementation of water conservation practices.

## Water Supply Availability and Reliability

As discussed in this WSA, MPMW purchases all of its potable water supplies from the Regional Water System (RWS), which is operated by the San Francisco Public Utilities Commission (SFPUC). MPMW is a Wholesale Customer of the SFPUC. The availability and reliability of MPMW's water supplies as described in this WSA are based primarily on information contained in the MPMW 2020 UWMP and the SFPUC 2020 UWMP. The MPMW 2020 UWMP is incorporated by reference into this WSA.

The reliability of the SFPUC RWS supply is highly dependent on the assumption of whether or not the 2018 Bay-Delta Plan Amendment is implemented. The Bay-Delta Plan Amendment was adopted in December 2018 by the State Water Resources Control Board (SWRCB) to establish water quality objectives to maintain the health of the Bay-Delta ecosystem. 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 percent of the "unimpaired flow" on the three tributaries from February through June in every year type, whether wet, normal, dry, or critically dry. The implementation of the Bay-Delta Plan Amendment significantly impacts the SFPUC RWS supply reliability in dry years; however, the actual implementation of the Bay-Delta Plan Amendment is uncertain.

Because of the uncertainties surrounding the implementation of the Bay-Delta Plan Amendment, this WSA presents findings for two scenarios, one assuming the Bay-Delta Plan Amendment is implemented and one assuming that the Bay-Delta Plan Amendment is not implemented.

Under the scenario where it is assumed the Bay-Delta Plan Amendment is implemented, the total projected water supplies determined to be available for the Proposed Project in normal years will meet the projected water demand associated with the Proposed Project, in addition to MPMW's existing and planned future uses through 2040. However, with the implementation of the Bay-Delta Plan Amendment, significant supply shortfalls are projected in dry years for agencies that receive water supplies from the SFPUC RWS, as well as other agencies whose water supplies would be affected by the Amendment. For MPMW, supply shortfalls are projected in single dry years (ranging from 27 to 32 percent) and in multiple dry years (ranging from 27 to 44 percent) through 2040, with similar supply shortfalls through 2045 based on SFPUC's analysis.

If supply shortfalls do occur, MPMW expects to meet these supply shortfalls through water demand reductions and other shortage response actions by implementation of its Water Shortage Contingency Plan (WSCP). The projected single dry-year shortfalls would require implementation of Stage 3 or 4 of the MPMW WSCP, and the projected multiple dry-year shortfalls would require implementation of Stage 3, 4 or 5 of the MPMW WSCP. The Proposed Project would be subject to the same water conservation and water use restrictions as other water users within the MPMW system.

Under the scenario where it is assumed the Bay-Delta Plan Amendment is not implemented, the total projected water supplies determined to be available for the Proposed Project in normal years, single dry years, and multiple dry years will meet the projected water demand associated with the Proposed Project, in addition to MPMW's existing and planned future uses through 2040. A 16.5 percent supply shortfall is projected during the fourth and fifth consecutive dry years for base year 2045 based on SFPUC's analysis. These projected supply shortfalls are significantly less than the projected supply shortfalls if the Bay-Delta Plan Amendment is implemented. If supply shortfalls do occur, MPMW expects to meet these supply shortfalls through water demand reductions and other shortage response actions by implementation of its WSCP. The projected multiple dry year shortfall in 2045 would require implementation of Stage 2 of the MPMW WSCP. The Proposed Project would be subject to the same water conservation and water use restrictions as other water users within the MPMW system.

As described in this WSA, the SFPUC is implementing an Alternative Water Supply Planning Program to investigate and plan for new water supplies to address future long-term water supply reliability challenges and vulnerabilities on the RWS. Also, MPMW is implementing an Emergency Water Storage/Supply Project to provide a backup water supply to MPMW's Lower Zone, which the project site is located within.

A significant portion of the projected water demand for the Proposed Project (about 37 percent) is non-potable water demand that will be met with recycled water. The Project Applicant has evaluated two alternative scenarios to provide recycled water for the Proposed Project: Scenario 1 involves connecting to a new off-site water reuse facility owned and operated by the West Bay Sanitary District (WBSD) and Scenario 2 involves constructing on-site water reuse facilities to treat wastewater from the site. Under both scenarios, the Proposed Project would be able to achieve an approximate 37 percent reduction in potable water demand by serving nearly all of the non-potable water demands (including cooling, irrigation, and toilet flushing) with recycled water. The Project Applicant is currently pursuing Scenario 1 in coordination with WBSD. WBSD has completed a feasibility study exploring the viability of a Resource Recovery Center at WBSD's former treatment plant behind Bedwell Bayfront Park, which could produce approximately 500,000 gallons per day of recycled water for reuse (the MPMW 2020 UWMP projects an annual recycled water supply of 72 MG/yr from this new facility). The study concluded that the project is feasible. In a public/private partnership with Meta (the Project Applicant), the WBSD Board of Directors spearheaded the effort to install 2,800 feet of purple recycled water pipe parallel with the storm drainpipe Meta was replacing on Chilco Street. This pipe will be used to distribute recycled water in the area. According to WBSD, recycled water will be used for irrigation, industrial purposes, firefighting, public fill stations and toilet flushing in the Bayfront Area. Recycled water is estimated to be available during all hydrologic years at a volume that meets MPMW's projected recycled water demands.

# 1.0 INTRODUCTION

The Willow Village Project (Proposed Project) would comprehensively redevelop an approximately 59-acre project site in the Bayfront Area of the City of Menlo Park (City) in the Menlo Park Municipal Water (MPMW) service area. The site would be redeveloped to remove existing non-residential uses on the site and construct new infrastructure, housing, office uses, commercial uses (including a 193-room hotel), open space, and bicycle and pedestrian paths.

The purpose of this Water Supply Assessment (WSA) is to support the Environmental Impact Report (EIR) for the Proposed Project. The following sections describe the legal requirement for the WSA and the project background.

## 1.1 Legal Requirement for a Water Supply Assessment

California Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 and SB 221 were companion measures which sought to promote more collaborative planning between local water suppliers and cities and counties. Both statutes require detailed information regarding water availability to be provided to the city and county decision-makers prior to approval of specified large development projects. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects and tentative maps, and the demands of proposed projects.

SB 610 amended California Water Code sections 10910 through 10915 (inclusive) to require land use lead agencies to:

- Identify any public water purveyor that may supply water for a proposed development project[1]
- Request a WSA from the identified water purveyor

The purpose of the WSA is to demonstrate the sufficiency of the purveyor's water supplies to satisfy the water demands of the proposed project, while still meeting the water purveyor's existing and planned future uses. Water Code sections 10910 through 10915 delineate the specific information that must be included in the WSA.

SB 221 amended State law (California Government Code section 66473.7) to require that approval by a city or county of certain residential subdivisions[2] requires an affirmative written verification of sufficient water supply. SB 221 was intended as a failsafe mechanism to ensure that collaboration on finding the needed water supplies to serve a new large residential subdivision occurs before construction begins.

[1] The definition of a "project" is provided in Water Code section 10912(a) and is discussed further in Section 3.1 of this WSA.

[2] Per Government Code Section 66473.7(a)(1) subdivision means a proposed residential development of more than 500 dwelling units.

## 1.2 Need for and Purpose of Water Supply Assessment

The purpose of this WSA is to perform the evaluation required by SB 610 (Water Code sections 10910 through 10915) in connection with the Proposed Project, located within MPMW's service area. This WSA also satisfies the SB 221 requirements as the Proposed Project does include a residential subdivision with more than 500 dwelling units.

This WSA does not reserve water, or function as a "will serve" letter or any other form of commitment to supply water (see Water Code section 10914). The provision of water service will continue to be undertaken in a manner consistent with applicable policies and procedures, consistent with existing law.

This WSA for the Proposed Project has been prepared by West Yost, as requested by MPMW, the responsible water purveyor for the Proposed Project.

## 1.3 Water Supply Assessment Preparation, Format, and Organization

The format of this WSA is intended to follow Water Code sections 10910 through 10915 to clearly delineate compliance with the specific requirements for a WSA. This WSA includes the following sections:

Section 1: Introduction
Section 2: Description of the Proposed Project
Section 3: Required Determinations
Section 4: Menlo Park Municipal Water System
Section 5: Menlo Park Municipal Water Demands
Section 6: Menlo Park Municipal Water Supplies
Section 7: Water Supply Reliability
Section 8: Determination of Water Supply Sufficiency Based on the Requirements of SB 610
Section 9: Verification of Water Supply Sufficiency Based on the Requirements on SB 221
Section 10: Water Supply Assessment Approval Process
Section 11: References

Relevant citations of Water Code sections 10910 through 10915 are included throughout this WSA in *italics* to demonstrate compliance with the specific requirements of SB 610.

# 2.0 DESCRIPTION OF THE PROPOSED PROJECT

The following sections describe the Proposed Project, including the Proposed Project's location, proposed land uses, and projected water demand.

## 2.1 Proposed Project Location and Overview

The Proposed Project is located in the Bayfront Area of the City, in MPMW's service area. The Bayfront Area is generally comprised of office, life sciences, mixed use residential, light industrial, commercial, and commercial business park land uses between Highway 101 and the Bayfront Expressway.

The 59-acre Proposed Project main site currently consists of approximately 1 million square feet (sf) of existing non-residential uses to be redeveloped. The Proposed Project main site is bounded by Willow Road to the west, the Joint Powers Board (JPB) rail corridor to the north, the Hetch Hetchy right of way and Mid-Peninsula High School to the south, and an existing life sciences complex to the east. The Proposed Project main site is shown on Figure 2-1.


*Source: Willow Village Master Plan Conditional Development Permit, Existing Condition Aerial Map, prepared by Peninsula Innovation Partners, dated December 2021.*

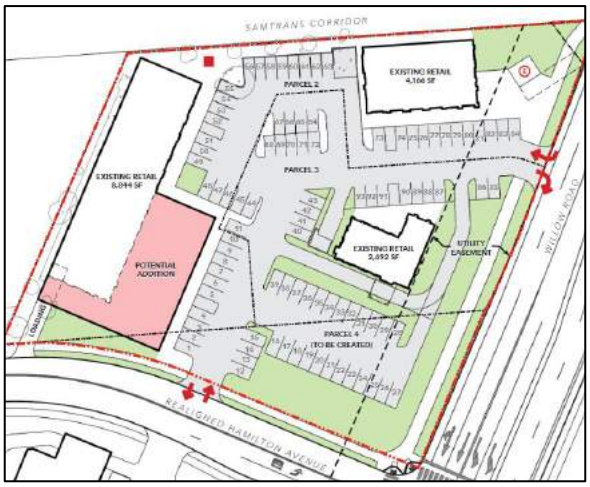
**Figure 2-1. Proposed Project Location**

The Proposed Project includes up to 1,730 multi-family residential dwelling units (with the potential for an additional 200 dwelling units under one of the project variants), up to 200,000 square feet of retail and non-office commercial uses, a hotel with up to 193 rooms, up to 1.6 million square feet of office and accessory space, consisting of up to 1.25 million square feet of office space and the balance (i.e., 350,000 square feet if office space is maximized) of accessory space in multiple buildings, and an approximately 3.5-acre public neighborhood park. The Proposed Project site plan is shown on Figure 2-2.

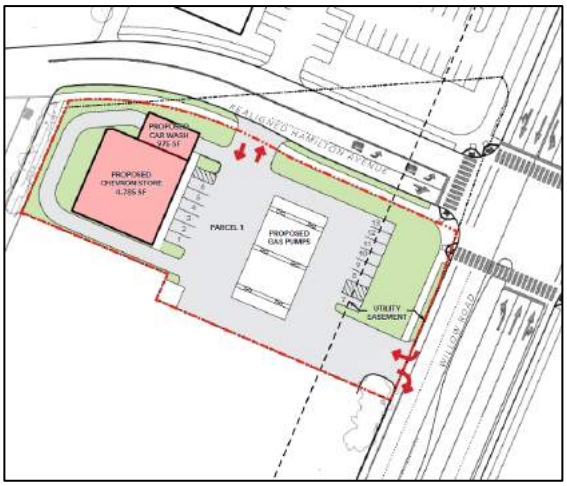

*Source: Willow Village Master Plan Conditional Development Permit, Conceptual Master Plan, prepared by Peninsula Innovation Partners, dated December 2021.*

**Figure 2-2. Proposed Project Site Plan**

The Proposed Project would also alter parcels west of the industrial site, across Willow Road, on both the north and south sides of Hamilton Avenue (Hamilton Avenue Parcels North and South) to support realignment of the Hamilton Avenue right-of-way and provide access to the new elevated park. This would require demolition and reconstruction of a service station (Chevron gas station) at Hamilton Avenue Parcel South and possibly include the addition of up to 6,700 square feet of retail uses at the existing neighborhood shopping center (Belle Haven Retail Center) on Hamilton Avenue Parcel North. Proposed development plans for the Hamilton Avenue Parcels North and South are shown on Figure 2-3.




Hamilton Avenue Parcel North




Hamilton Avenue Parcel South

*Source: Willow Village Master Plan Conditional Development Permit, Conceptual Hamilton Parcels, prepared by Peninsula Innovation Partners, dated December 2021.*

**Figure 2-3. Proposed Development Plan for Hamilton Avenue Parcels North and South**

The City has identified four project variants for the Proposed Project for analysis in the EIR:

- **Variant I: Increased Residential Density.** The Increased Residential Density Variant would increase the number of residential dwelling units by approximately 200 units, to a total of 1,930 residential units. No other changes to the Project development program would occur under this variant.
- **Variant II: No Hamilton Avenue Realignment.** In the event that the Project Applicant does not receive approval from Caltrans or affected property owners for the modifications to Willow Road necessary to realign Hamilton Avenue, the intersection of Willow Road and Hamilton Avenue would remain in the existing location and the circulation network east of Willow Road would be altered. In addition, West Street would be adjusted to terminate into Willow Road. The overall Project development program would remain unchanged; however, under this variant, no changes would occur to the existing land uses on the Hamilton Avenue Parcels North and South.
- **Variant III: No Willow Road Tunnel.** In the event that Caltrans does not approve the proposed Willow Road Tunnel, the Meta trams would utilize the public street network, Bayfront Expressway and Willow Road to access the Campus District. The overall Project development program would remain unchanged.
- **Variant IV: On-site Recycled Water.** In the event that that West Bay Sanitary District (WBSD) does not construct its proposed Bayfront Recycled Water Plant (which would be a source to provide recycled water to the Proposed Project), the On-Site Recycled Water Variant would provide recycled water to the Proposed Project through the on-site treatment of wastewater. Under this variant, the on-site treatment and production of recycled water would capture wastewater supplies, including blackwater (toilet flushing, food preparation drains), from all buildings within the Proposed Project. The overall Project development program would remain unchanged.

## 2.2 Projected Water Demand for the Proposed Project

The Proposed Project site has General Plan Land Use Designations of Office and Mixed-Use Residential. The site is zoned Office-Bonus (O-B) and Residential Mixed Use-Bonus (R-MU-B) under the Menlo Park Zoning Ordinance. As such, its development is required to comply with the City Municipal Code Chapter 16.43 O Office District and Chapter 16.45 R-MU Residential Mixed Use District. Both chapters of the Municipal Code include requirements for green and sustainable building, including the following specific requirements for water use efficiency and recycled water use:

> 16.43.140 (3) and 16.45.140 (3) Water Use Efficiency and Recycled Water.
>
> A. Single pass cooling systems shall be prohibited in all new buildings.
>
> B. All new buildings shall be built and maintained without the use of well water.
>
> C. Applicants for a new building more than one hundred thousand (100,000) square feet of gross floor area shall prepare and submit a proposed water budget and accompanying calculations following the methodology approved by the City. For all new buildings two hundred fifty thousand (250,000) square feet or more in gross floor area, the water budget shall account for the potable water demand reduction resulting from the use of an alternative water source for all City-approved non-potable applications. The water budget and calculations shall be reviewed and approved by the City's Public Works Director prior to certification of occupancy. Twelve (12) months after the date of the certification of occupancy, the building owner shall submit data and information sufficient to allow the City to compare the actual water use to the allocation in the approved water budget. In the event that actual water consumption exceeds the water budget, a water conservation program, as approved by the City's Public Works Director, shall be implemented. Twelve (12) months after City approval of the water conservation program, the building owner shall submit data and information sufficient to allow the City to determine compliance with the conservation program. If water consumption exceeds the budgeted amount, the City's Public Works Director may prohibit the use of water for irrigation or enforce compliance as an infraction pursuant to Chapter 1.12 until compliance with the water budget is achieved.
>
> D. All new buildings shall be dual plumbed for the internal use of recycled water.
>
> E. All new buildings two hundred fifty thousand (250,000) square feet or more in gross floor area shall use an alternate water source for all City-approved non-potable applications. An alternative water source may include, but is not limited to, treated non-potable water such as graywater. An alternate water source assessment shall be submitted that describes the alternative water source and proposed non-potable application. Approval of the alternate water source assessment, the alternative water source and its proposed uses shall be approved by the City's Public Works Director and Community Development Director. If Menlo Park Municipal Water has not designated a recycled water purveyor and/or municipal recycled water source is not available prior to planning project approval, applicants may propose conservation measures to meet the requirements of this section subject to approval of the City Council. The conservation measures shall achieve a reduction in potable water use equivalent to the projected demand of City-approved non-potable applications, but in no case shall the reduction be less than 30 percent (30%) compared to the water budget in subsection (3)(C) of this section. The conservation measures may include on-site measures, off-site measures or a combination thereof.

F. Potable water shall not be used for dust control on construction projects.

G. Potable water shall not be used for decorative features, unless the water recirculates.

As required by the City Municipal Code described above, the Project Applicant prepared a Water Use Budget for the Proposed Project. Also, because the Proposed Project includes more than 250,000 square feet of gross floor area in its proposed new buildings, an Alternative Water Source Assessment is also required and has been prepared. A copy of the Willow Village Project Water Demand, Alternative Water Source Assessment and Water Modeling Memorandum prepared by Freyer & Laureta, Inc., a consulting firm retained by the Project Applicant to prepare the water demand estimates for the Proposed Project, is included in Appendix A of this WSA. The Alternative Water Source Assessment examined two scenarios to supply the Proposed Project with non-potable water:

- Scenario 1: Connect to a new off-site water reuse facility owned and operated by the West Bay Sanitary District (WBSD)
- Scenario 2: Construct on-site water reuse facilities (WRFs) to treat wastewater from the site

Under both scenarios, the Proposed Project would be able to achieve a 36 to 37 percent reduction in potable water demand by serving nearly all of the non-potable water demands (including cooling, irrigation, and toilet flushing) with recycled water.

The Project Applicant is currently pursuing Scenario 1 in coordination with WBSD. WBSD has completed a feasibility study exploring the viability of a Resource Recovery Center at WBSD's former treatment plant behind Bedwell Bayfront Park, which could produce 500,000 gallons per day of recycled water for reuse (the MPMW 2020 UWMP projects an annual recycled water supply of 72 MG/yr from this new facility). The study concluded that the project is feasible. In a public/private partnership with Meta (the Project Applicant), the WBSD Board of Directors spearheaded the effort to install 2,800 feet of purple recycled water pipe parallel with the storm drainpipe Meta was replacing on Chilco Street. This pipe will be used to distribute recycled water in the area. According to WBSD, recycled water will be used for irrigation, industrial purposes, firefighting, public fill stations and toilet flushing in the Bayfront Area.

The Project Applicant estimated water use for the Proposed Project using the following assumptions:

- Water usage for plumbing fixtures (including water closets, urinals, public lavatories, kitchen faucets and showerheads) was estimated using 2019 CALGreen flow rates and LEED frequency of fixture use and duration times
- Water usage factors from literature were used for some retail programs such as grocery and food and beverage
- Water usage for water-based cooling systems for office building and event space was estimated using the variance in the mean monthly temperature for Menlo Park
- Water usage for irrigation was estimated in accordance with Menlo Park Municipal Code Chapter 12.44 Water Efficient Landscape Ordinance
- All non-potable demands were applied a leakage factor of 10 percent to account for losses in fixtures, broken sprinkler head, etc.

A summary of the water demands for the Proposed Project, as well as the four project variants, as estimated by the Project Applicant, is provided in Table 2-1. As shown, the total projected water demand for the Proposed Project ranges from 150 to 162 MG/yr, depending on the project variant. Approximately 63 to 64 percent of the total water demand is potable water demand and the remaining 36 to 37 percent is non-potable water demand that will be met with recycled water. As shown in Table 2-1, the existing potable water demand at the project site is estimated to be approximately 19 MG/yr and is assumed to be entirely replaced by the Proposed Project demand. Therefore, the net increase in potable water demand for the Proposed Project is estimated to range from 75 to 85 MG/yr, depending on the project variant.

**Table 2-1. Projected Water Demand for the Proposed Project**

| Water Use | Projected Annual Water Demand, MG/yr | | | |
|---|---|---|---|---|
| | Proposed Project | Variant I: Increased Residential Density | Variant II: No Hamilton Avenue Realignment | Variant III: No Willow Road Tunnel and Variant IV: On-Site Recycled Water |
| Indoor Potable | 98 | 104 | 94 | 98 |
| Toilet Flushing (non-potable) | 21 | 22 | 21 | 21 |
| Cooling (non-potable) | 9 | 9 | 9 | 9 |
| Irrigation (non-potable) | 27 | 27 | 26 | 27 |
| **Total Projected Water Demand** | **155** | **162** | **150** | **155** |
| Projected Water Demand (potable) | 98 (63%) | 104 (64%) | 94 (63%) | 98 (63%) |
| Projected Water Demand (non-potable) | 57 (37%) | 58 (36%) | 56 (37%) | 57 (37%) |
| Existing Potable Water Use at Proposed Project Site[(a)] | 19 | 19 | 19 | 19 |
| **Net increase in Potable Water Demand[(b)]** | **79** | **85** | **75** | **79** |

Source: Freyer & Laureta, Inc., January 2022.

(a) Existing potable water demand at the project site based on 2015 data (18.2 MG/yr plus 6 percent for unaccounted for water) and is assumed to be replaced by the Proposed Project.

(b) Assumes the existing potable water demand at the project site is replaced by the Proposed Project demand.

As shown in Table 2-1, Variant I: Increased Residential Density has the highest water demand, with a total water demand of 162 MG/yr, a potable water demand of 104 MG/yr and a non-potable water demand of 58 MG/yr. As such, the remainder of this WSA is based on the projected water demand for Variant I, as it represents the highest potential water demands for the Proposed Project, and therefore includes within it the projected water demand associated with development of the Proposed Project or any of the project variants described above.

Additional information on the water demand projections for the Proposed Project and the project variants is provided in Appendix A.

## 2.3 Proposed Project Relationship to ConnectMenlo

In 2016, the City completed a multi-year planning effort to update the Land Use and Circulation Elements of its General Plan for the 2040 planning horizon. This General Plan Update process was known as ConnectMenlo. ConnectMenlo reaffirmed existing remaining development potential within the City and incorporated land use changes in the Bayfront Area, including development potential for up to 4,500 new multi-family residential units, 2.3 million square feet of new non-residential uses, and 400 new hotel rooms.

A program-level EIR was prepared for ConnectMenlo. In conjunction with the ConnectMenlo EIR, a Water Supply Evaluation Study (WSE Study) was prepared to evaluate whether there would be sufficient water supply to meet the current and planned water demands within the service area during normal and dry hydrologic years over a 20-year time horizon. More specifically, the WSE Study includes:

- A summary of the WSA requirements articulated in Water Code §10910-10915 and a description of how they have been addressed in the WSE Study
- A description and analysis of the current and projected future water demands for ConnectMenlo through the year 2040
- A description and analysis of the historical, current, and projected future water demands for the MPMW service area through the year 2040
- A description and analysis of the current and projected future water supplies for the MPMW service area through the year 2040
- A comparison of the water supplies and demands for MPMW's water service area, including the projected water demands associated with ConnectMenlo

The data in the WSE Study were based primarily on the MPMW 2010 UWMP, the draft MPMW 2015 UWMP (which was being developed at the same time as the WSE Study), information from City staff, and specific information from PlaceWorks (preparer of the 2016 ConnectMenlo General Plan Update and program-level EIR). The final adopted MPMW 2015 UWMP and the MPMW 2020 UWMP incorporated the ConnectMenlo projections.

ConnectMenlo identifies the maximum development potential that could occur within the ConnectMenlo study area, including potential bonus-level increased development, and the associated program-level EIR further defines the maximum development that can occur by specific land uses. MPMW and the City's Planning Division are actively tracking projects within the ConnectMenlo study area on a cumulative basis to ensure that developed projects remain within the maximum development permitted by ConnectMenlo and are consistent with the program-level EIR.[3] The Proposed Project, if approved, would be within this permitted cumulative development total for both ConnectMenlo and the associated program-level EIR.

[3] For projects that require a water budget, the City includes Conditions of Approval requiring annual monitoring to document water usage at or below the limits identified in the approved water budget. Exempt projects (below the water budget threshold) are not tracked.

Table 2-2 shows the Proposed Project's impact on the cumulative water demand permitted for the ConnectMenlo study area based on the potable water demand for Variant I, which represents the highest potential water demand for the Proposed Project or any of the project variants discussed above. As such, the projected water demand associated with development of the Proposed Project or any of the project variants described above is included within the demand estimate for Variant I.

**Table 2-2. Proposed Project Impact on ConnectMenlo Study Area Potable Water Demand**

| Demand Source | Annual Water Demand, MG/yr |
|---|---|
| ConnectMenlo Total Potable Water Demand at Buildout[(a)] | 343 |
| Proposed Project Net Potable Water Demand Increase[(b)] | 85 |
| **Remaining Potable Water Demand for Other Projects within ConnectMenlo Study Area[(c)]** | **258** |

(a) Water Supply Evaluation Study for ConnectMenlo – General Plan and M-2 Area Zoning Update (Table 2), prepared by EKI, February 2016. The Water Supply Evaluation Study assumed that total water demand in the ConnectMenlo study area would be met using potable water.

(b) From Table 2-1 above; net increase in Potable Water Demand due to Proposed Project (Variant I).

(c) Other projects in the ConnectMenlo study area currently in the planning stages include 1350 Adams Court with a projected potable water demand of approximately 5 MG/yr and Commonwealth Building 3 with a projected potable water demand of approximately 14 MG/yr. These projects are still in the planning stage, so their projected water demands are subject to change. Recently approved projects subject to water budgets and annual water usage limits include Menlo Portal and Menlo Uptown which are anticipated to use 12.6 and 9.1 MG/yr, respectively.

The remaining potable water demand for other projects within the ConnectMenlo study area shown in Table 2-2 is available to serve both approved, but not yet constructed, and future projects (whether or not they require a WSA).

# 3.0 REQUIRED DETERMINATIONS

The following sections describe the required determinations for a WSA.

## 3.1 Does SB 610 Apply to the Proposed Project?

*10910 (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.*

*10912 (a) "Project" means any of the following:*

*(1) A proposed residential development of more than 500 dwelling units.*

*(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.*

*(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.*

*(4) A proposed hotel or motel, or both, having more than 500 rooms.*

*(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.*

*(6) A mixed-use project that includes one or more of the projects specified in this subdivision.*

*(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.*

As shown in Table 3-1, the Proposed Project does meet the definition of a "Project" as specified in Water Code section 10912(a). The Proposed Project has not been the subject of a previously adopted WSA and has not been included in an adopted WSA for a larger project. Therefore, according to Water Code section 10910(a), a WSA is required for the Proposed Project.

**Table 3-1. Does the Proposed Project Meet the SB 610 Definition of a "Project"?**

| SB 610 Project Definition Components | Proposed Project Quantity | Meets the SB 610 Definition of a "Project"? |
|---|---|---|
| Residential > 500 dwelling units | Up to 1,730 units (or up to 1,930 units under Variant I) | YES |
| Retail > 1,000 employees or > 500,000 sf | 200,000 sf | NO |
| Commercial Office Building > 1,000 employees or > 250,000 sf | 1.6 million sf | YES |
| Hotel/Motel > 500 rooms | 193 rooms | NO |
| Industrial Plant/Park > 1,000 employees or > 40 acres or > 650,000 sf | N/A | NO |
| Mixed Use Project that includes one or more of the above | YES | YES |
| A Project that would demand the amount of water required by a 500-dwelling unit project | YES | YES |
| **SB 610 Required?** | -- | **YES** |

The City has also determined that the Proposed Project is subject to the California Environmental Quality Act (CEQA) and that an EIR is required. Because the Proposed Project's location and development parameters are consistent with ConnectMenlo, the ConnectMenlo Program-level EIR serves as the first tier environmental analysis for the Project. However, an EIR will be prepared for the Proposed Project to address impacts that need further discussion and/or mitigation beyond that provided in the ConnectMenlo EIR, as well as to satisfy the requirements of a settlement agreement between the City of Menlo Park and the City of East Palo Alto. The EIR will utilize the findings of this WSA as appropriate in the EIR for the Proposed Project.

## 3.2 Does SB 221 Apply to the Proposed Project?

In 2001, SB 221 amended State law to require that approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply. Per California Government Code section 66473.7(a)(1), a subdivision means a proposed residential development of more than 500 dwelling units. The Proposed Project, with up to 1,730 new residential dwelling units (with the potential for an additional 200 dwelling units under one of the project variants) in MPMW's water service area, is therefore subject to the requirements of SB 221.

## 3.3 Who is the Identified Public Water System?

> *10910(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined by Section 10912, that may supply water for the project*
>
> *10912 (c) "Public water system" means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections…*

The Proposed Project is located in the City within MPMW's service area. MPMW's service area consists of three zones: the Lower Zone (located north and east of El Camino Real and serves residential, small commercial, and light industrial land uses), the High Pressure Zone (located in northern Menlo Park between Highway 101 and Bayfront Expressway, north of Chilco Street, and serves multi-family residential, commercial and light industrial, and a mobile home park outside the City's northern-most boundary), and the Upper Zone (located in the southwest portion of Menlo Park near Interstate 280 and geographically and hydraulically disconnected from the other pressure zones). The Proposed Project is located in MPMW's Lower Zone. Therefore, MPMW is the identified public water system for the Proposed Project.

## 3.4 Does the Identified Public Water Supplier have an adopted UWMP and does the UWMP include the projected water demand for the Proposed Project?

*10910(c)(1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).*

The City's most recently adopted UWMP is the 2020 UWMP, which was adopted in May 2021. The MPMW 2020 UWMP is incorporated by reference into this WSA.

The MPMW 2020 UWMP incorporated the future population, employment and water demand projections for buildout of the General Plan, including the additional allowable development associated with ConnectMenlo and other major development projects within the MPMW service area.[4] As described in Section 2.3 of this WSA, ConnectMenlo identifies the maximum development potential that could occur within the ConnectMenlo study area, including potential bonus-level increased development, and the associated program level EIR further defines the maximum development that can occur by specific land uses. MPMW and the City's Planning Division are actively tracking projects within the ConnectMenlo study area on a cumulative basis to ensure that developed projects remain within the maximum development permitted in ConnectMenlo and would be consistent with the program-level EIR. The Proposed Project, if approved, would be within this permitted total development potential permitted for both ConnectMenlo and the associated program-level EIR. Therefore, the water demand for the Proposed Project is included in the MPMW 2020 UWMP water demand.

Table 3-2 presents the projected future water demand for buildout of the General Plan, which would include the Proposed Project, in normal years as presented in the MPMW 2020 UWMP. Additional discussion on the MPMW's existing and projected water demands is provided in Section 5 of this WSA.

**Table 3-2. Projected Future Water Demand – Normal Years**

| | Projected Water Demand after Passive and Active Conservation, MG | | | |
|---|---|---|---|---|
| 2020 (Actual), MG | 2025 | 2030 | 2035 | 2040 |
| 1,069 | 1,296 | 1,345 | 1,410 | 1,483 |

*Source: MPMW 2020 UWMP, Table 4-5.*

[4] MPMW 2020 UWMP, Section 3.2 Land Uses within Service Area, page 18.

# 4.0 MENLO PARK MUNICIPAL WATER SYSTEM

The following sections describe the MPMW existing water service area, including existing and projected population.

## 4.1 Water Service Area

MPMW is located within the City, along the San Francisco Peninsula in San Mateo County, between the cities of Palo Alto, East Palo Alto, and Redwood City. MPMW provides water service to approximately half of the City, serving an area of approximately 9 square miles. The remainder of the City is served by California Water Service, O'Connor Tract Co-operative Water Company, and Palo Alto Park Mutual Water Company.

There were 4,296 MPMW service connections as of 2020. Land uses throughout the water service area consist primarily of residential, commercial, and industrial land uses. Customer service connections include residential users, industrial connections, commercial service connections, irrigation accounts, and 'Other' connections (including temporary services and sales, private fire services, and hydrant services).

## 4.2 Population

The MPMW service area is largely built-out, with future growth trends principally due to redevelopment within the Bayfront Area. As shown in Table 4-1, the total population within the MPMW service area is projected to increase to 30,184 people by 2040, a 65 percent increase from the current 2020 population of 18,276 people. The City's Planning Division expects more than 40 percent of the projected population increase to occur within the next five years (2020 through 2025) based on approved and pending projects in the Bayfront Area (driven by the ConnectMenlo General Plan). The MPMW service area includes areas outside of the Bayfront Area; however, given the focus of the ConnectMenlo General Plan Update on land use changes within the Bayfront Area, most population growth through 2040 is expected to occur in that geographic area.[5]

**Table 4-1. MPMW Service Area Existing and Projected Population**

| Year | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|
| Population Served | 18,276 | 23,383 | 25,166 | 27,675 | 30,184 |

*Source: MPMW 2020 UWMP, Table 3-1.*

[5] The City is conducting the required update to its Housing Element that would likely increase population growth outside of the Bayfront Area, some of which may be located within the MPMW's Upper Zone.

# 5.0 MENLO PARK MUNICIPAL WATER DEMANDS

*10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f) and (g).*

The descriptions provided below for the City's water demands are based on the MPMW 2020 UWMP (adopted in May 2021).

## 5.1 Historical and Existing Water Demand

Table 5-1 shows the MPMW water demand (based on water production) for 2010 through 2020. According to MPMW's 2020 UWMP, from 2010 through 2020, the service area population had grown by about 24 percent, while the total volume of water sold increased by just 1.6 percent. The decrease in water demand from 2013 to 2016 can be attributed to mandatory statewide restrictions issued by the State Water Resources Control Board (SWRCB) during the drought and water conservation efforts by the City's residents and businesses. Since 2016, there has been a rebound in demand.

**Table 5-1. Historical Water Demand**

| Year | Potable Water Demand, MG |
|---|---|
| 2010 | 1,052 |
| 2011 | 1,033 |
| 2012 | 1,079 |
| 2013 | 1,189 |
| 2014 | 1,030 |
| 2015 | 883 |
| 2016 | 898 |
| 2017 | 1,003 |
| 2018 | 1,108 |
| 2019 | 1,028 |
| 2020 | 1,069 |

*Source: MPMW 2020 UWMP, Table 4-2.*

## 5.2 Future Water Demand

Table 5-2 shows MPMW's projected normal year water demands through 2040 as included in MPMW's 2020 UWMP. These projections are based on anticipated future water demands corresponding to buildout of the City's current General Plan, including development of ConnectMenlo and other planned projects within MPMW's service area. The projected increase in demand reflects a rebound in water use following the end of the suppressed demands due to the 2015-2016 drought and an accelerated growth in employment due to planned development projects.

| Table 5-2. Projected Future Water Demand – Normal Years | | | | |
|---|---|---|---|---|
| | Projected Water Demand after Passive and Active Conservation, MG | | | |
| 2020 (Actual), MG | 2025 | 2030 | 2035 | 2040 |
| 1,069 | 1,296 | 1,345 | 1,410 | 1,483 |
| *Source: MPMW 2020 UWMP, Table 4-5.* | | | | |

## 5.3 Dry Year Water Demand

As shown in Table 5-1, MPMW's 2015 and 2016 demands were significantly lower than the demand in previous years. This reduction in demands occurred in response to the drought and mandated statewide reductions in urban potable water usage.

Following the drought, MPMW updated the stages of action to be taken in response to water supply shortages. The updated stages of action are reflected in MPMW's Water Shortage Contingency Plan (WSCP) and are included in Chapter 8 of the MPMW 2020 UWMP. MPMW has also implemented a demand management program with mandatory prohibitions that are in force at all times, as described in Chapter 8 of the MPMW 2020 UWMP. The projected future water demand presented in Table 5-2 includes continued implementation of the existing demand management program and is based on future normal hydrologic years.

Under dry water year conditions, MPMW anticipates implementing the demand reduction measures outlined in the WSCP as appropriate to reduce water demands to match the reduction in the supply. However, to be conservative, the MPMW 2020 UWMP and this WSA do not assume additional water conservation will occur in single dry or multiple dry years, even though additional water conservation is likely to occur during dry years or other water supply shortages as a result of MPMW implementing additional water conservation measures.

Table 5-3 presents the projected future single and multiple dry year water demand, as presented in the MPMW 2020 UWMP.

| Table 5-3. Projected Future Water Demand – Dry Years | | | | | |
|---|---|---|---|---|---|
| Hydrologic Condition | Demand Reduction[a] | Projected Water Demand, MG | | | |
| | | 2025 | 2030 | 2035 | 2040 |
| Single Dry Year[b] | 0% | 1,296 | 1,345 | 1,410 | 1,483 |
| Multiple Dry Years[c,d] | 0% | 1,296 | 1,345 | 1,410 | 1,483 |

(a) Conservatively assumes no demand reduction in dry years. Demands may be reduced in dry years as a result of MPMW's implementation of its Water Shortage Contingency Plan; however, such a demand reduction is not assumed or relied upon for the purposes of the Single Dry Year and Multiple Dry Year evaluations for this WSA.

(b) Source: MPMW 2020 UWMP, Table 7-5.

(c) Source: MPMW 2020 UWMP, Table 7-6.

(d) Represents demands for each year of the 5-year multiple dry year period.

# 6.0 MENLO PARK MUNICIPAL WATER SUPPLIES

*10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f) and (g).*

*10910(d)(1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system…under the existing water supply entitlements, water rights, or water service contracts.*

*10910(e) If no water has been received in prior years by the public water system…under the existing water supply entitlements, water rights, or water service contracts, the public water system…shall also include in its water supply assessment…an identification of the other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system.*

*10910(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment.*

*(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.*

*(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most recent bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.*

*(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.*

*(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.*

*(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.*

As described in Section 3.4 of this WSA, the projected water demand associated with buildout of ConnectMenlo, which includes the Proposed Project, was accounted for in MPMW's most recently adopted Urban Water Management Plan. The descriptions provided below for MPMW's water supplies are based on the MPMW 2020 UWMP (adopted in May 2021) and the SFPUC 2020 UWMP (adopted in June 2021).

## 6.1 Water Supply Overview

MPMW currently purchases all of its potable water supplies from the SFPUC RWS. MPMW has reservoirs in its Upper Zone to provide for emergency supply and an emergency groundwater well has been constructed at MPMW's Corporation Yard. Additional groundwater wells and reservoirs for emergency supply are in the planning stages for the Lower Zone and the High Pressure Zone.

Recycled water supplied by West Bay Sanitary District (WBSD) is currently utilized within the MPMW service area for irrigation at the Sharon Heights Golf & Country Club and is under development for the Bayfront Area. According to the MPMW 2020 UWMP, MPMW plans to utilize up to 120 MG/yr of recycled water from WBSD for landscape and golf course irrigation and commercial non-potable applications at Sharon Heights and in the Bayfront Area.

## 6.2 Water Supply from the SFPUC RWS

The SFPUC RWS supplies water to both retail and wholesale customers. Retail customers include residents, businesses, and industries located within the City and County of San Francisco's boundaries. Wholesale customers include 26 cities and water supply agencies in Alameda, San Mateo and Santa Clara counties, including MPMW.

MPMW is a member agency of Bay Area Water Supply and Conservation Agency (BAWSCA) and purchases treated water from the SFPUC RWS in accordance with the November 2018 Amended and Restated Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda, San Mateo and Santa Clara Counties, which was adopted in 2019. The term of the agreement is 25 years, with a beginning date of July 1, 2009 and an expiration date of June 30, 2034. Per the agreement, MPMW has an Individual Supply Guarantee (ISG) of 4.456 million gallons per day (mgd), or 1,630 million gallons per year, supplied by the SFPUC RWS. Over the last five years (2016-2020) MPMW has purchased between 52 percent and 66 percent of its ISG.

Additional discussion of the SFPUC RWS water supplies is provided in MPMW's 2020 UWMP and SFPUC's 2020 UWMP.

## 6.3 Groundwater Supply

MPMW does not rely upon groundwater supplies for its potable water supply since the entirety of the MPMW supply is purchased from the SFPUC RWS. However, MPMW has undertaken a multi-year Emergency Water Storage/Supply Project to construct emergency groundwater wells. As such, this WSA evaluates groundwater basin conditions pursuant to Section 10910(f).

### *6.3.1 Groundwater Basin Description*

The MPMW service area overlies the southern end of the Santa Clara Valley Groundwater Basin's San Mateo Plain Groundwater Subbasin (DWR basin number 2-9.03; DWR, 2004; or "subbasin"). The

subbasin is not adjudicated, nor has it been found by the Department of Water Resources (DWR) to be in a condition of overdraft. As part of the implementation of the Sustainable Groundwater Management Act (SGMA), the subbasin was ranked as a "very low priority" basin under the California Statewide Groundwater Elevation Monitoring basin prioritization process. As such, the basin is not subject to the requirements of SGMA.

Located within the 45-square mile San Francisquito Creek Watershed, the MPMW service area contains both mountainous bedrock terrain and comparatively flat alluvial deposits. Coarse- and fine-grained alluvial deposits from the San Francisquito Creek can be found in the MPMW service area. There is a shallow aquifer and a deep aquifer that has an upper and a lower zone in the MPMW service area. Both aquifers lie beneath a laterally extensive confining layer. The shallow aquifer is unconfined while the deep aquifer is semi-confined. Pump tests and empirical transmissivity data show that it is feasible to develop a municipal supply from the groundwater subbasin. It is estimated that the groundwater subbasin can be as thick as 1,000 feet in some locations.

Groundwater in the Santa Clara Valley Groundwater Basin naturally flows toward the San Francisco Bay from the uplands in the southwest. Reverse groundwater gradients, from the San Francisco Bay toward the uplands, have been seen when pumping has exceeded the rate of recharge. The estimated annual recharge rate of the San Francisquito Creek watershed ranges from 4,000 to 8,000 acre-feet per year, equivalent to 3.6 to 7.2 mgd.

Additional discussion of the groundwater conditions and groundwater management is provided in MPMW's 2020 UWMP.

### *6.3.2 MPMW Emergency Water Storage/Supply Project*

The MPMW Emergency Water Storage/Supply Project intends to provide a backup water supply to MPMW's Lower Zone, which lacks emergency storage, in the event water from the SFPUC RWS is reduced or unavailable. The MPMW Emergency Water Storage/Supply Project will provide a total capacity of up to 3,000 gpm, or approximately 4.32 mgd, between two to three wells at separate locations. MPMW initiated the project in 2010 and completed site screening, site ranking, and detailed engineering and hydrologic evaluation in 2013, including extensive community engagement. The City selected the Corporation Yard at 333 Burgess Drive for the first well, completed the CEQA evaluation in 2016, and drilled the well in 2017. Construction of the well facility (e.g., generator, disinfection equipment, associated piping) was completed in late 2020, and MPMW is working with the State Water Resources Control Board (SWRCB) to permit the well. MPMW is also investigating locations for a future underground reservoir for the Lower Zone and High Pressure Zone.

The SWRCB Division of Drinking Water classifies wells as "active" or "standby." Active wells, with water quality testing requirements every 3 years, must meet all primary and secondary standards and have no restrictions on when the well can be used. Standby wells, with water quality testing requirements every 9 years, must meet all primary standards (but not secondary standards) and have restrictions that the well cannot be used for more than 14 days per year or more than 5 consecutive days. To provide flexibility, the City plans to permit its emergency wells as "active" wells as long as primary and secondary standards can be met. The City's plan is to use the wells for emergency purposes only but have the flexibility to provide well water during emergencies that last more than 14 days per year or more than 5 consecutive days.

## 6.4 Recycled Water Supply

WBSD provides wastewater collection services to the MPMW service area. WBSD also acts as the recycled water purveyor in MPMW's Upper Zone and WBSD is developing a recycled water system to serve the Lower Zone and High Pressure Zone.

Currently, recycled water is only used at the Sharon Heights Golf & Country Club, which is a 170-acre property located in the Upper Zone of MPMW's service area. The recycled water system consists of the Sharon Heights Recycled Water Facility, a pump station, recycled water distribution pipelines to the golf course irrigation system, and a solids disposal pipeline. In 2020, the satellite wastewater treatment plant (WWTP) provided 20 MG of recycled water to the Sharon Heights Golf & Country Club, offsetting demand in potable water purchased from SFPUC. A second phase of the project, in the very early planning stages, could supply approximately 28 MG of recycled water over seven months a year to the Stanford Linear Accelerator Center for irrigation and industrial uses such as for cooling towers.

Planning for a similar recycled water facility in the Bayfront Area is ongoing. WBSD has completed a feasibility study exploring the viability of a Resource Recovery Center at WBSD's former treatment plant behind Bedwell Bayfront Park, which could produce approximately 500,000 gallons per day of recycled water for reuse (the MPMW 2020 UWMP projects an annual recycled water supply of 72 MG/yr from this new facility). The feasibility study concluded that the project is feasible. In a public/private partnership with Meta (the Project Applicant), the WBSD Board of Directors spearheaded the effort to install 2,800 feet of purple recycled water pipe parallel with the storm drainpipe Meta was replacing on Chilco Street. This pipe will be used to distribute recycled water in the area. According to WBSD, recycled water will be used for irrigation, industrial purposes, firefighting, public fill stations and toilet flushing in the Bayfront Area.

## 6.5 Summary of Existing and Additional Planned Future Water Supplies

Table 6-1 provides a summary of MPMW's current and projected future normal year supplies as presented in MPMW's 2020 UWMP. The availability and reliability of MPMW's water supplies in dry years is discussed in Section 7 of this WSA.

**Table 6-1. MPMW Current and Projected Future Water Supplies – Normal Years**

| Water Source | Water Supply, MG | | | | |
|---|---|---|---|---|---|
| | 2020 Actual[a,b] | 2025[c] | 2030[c] | 2035[c] | 2040[c] |
| Potable Water - Purchased from SFPUC RWS | 1,069 | 1,630 | 1,630 | 1,630 | 1,630 |
| Recycled Water – Sharon Heights Recycled Water Facility | 20 | 48 | 48 | 48 | 48 |
| Recycled Water – Bayfront Recycled Water Facility | -- | 0 | 72 | 72 | 72 |
| **Total** | **1,089** | **1,678** | **1,750** | **1,750** | **1,750** |

(a) 1,069 MG represents only 65.5% of the ISG to MPMW.
(b) Source: MPMW 2020 UWMP, Table 4-7.
(c) Source: MPMW 2020 UWMP, Table 6-9.

# 7.0 WATER SUPPLY RELIABILITY

*10910(c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.*

*10911(a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water supply assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:*

*(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.*

*(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.*

*(3) Based on the consideration set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to able to acquire additional water supplies.*

The current reliability of MPMW's water supply is largely dependent upon its water supply contract with SFPUC and SFPUC's water supply reliability. The reliability discussion provided below is based on the MPMW 2020 UWMP (adopted in May 2021) and the SFPUC 2020 UWMP (adopted in June 2021). It should be noted that SFPUC's 2020 UWMP extends to a 2045 horizon year, which is beyond the statutorily required horizon year of 2040 presented in the MPMW 2020 UWMP.

## 7.1 SFPUC RWS Reliability

Information regarding the reliability of the SFPUC RWS was provided to MPMW by BAWSCA, in coordination with SFPUC, during the preparation of the MPMW 2020 UWMP. The following sections describe the potential impacts of the 2018 Bay-Delta Plan Amendment on SFPUC RWS reliability, allocation of RWS supplies during supply shortages, as well as SFPUC's Alternative Water Supply Planning Program designed to investigate and plan for new water supplies to address future long-term water supply reliability challenges and vulnerabilities on the RWS.

### *7.1.1 Potential Impacts of the 2018 Bay-Delta Plan Amendment on SFPUC RWS Reliability*

In December 2018, the 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 percent of the "unimpaired flow" on the three tributaries from February through June in every year type, whether wet, normal, dry, or critically dry.

The SWRCB has stated that it intends to implement the Bay-Delta Plan Amendment on the Tuolumne River in 2022, assuming all required approvals are obtained by that time. But implementation of the Plan Amendment is uncertain for several reasons:

- 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 two legal challenges filed by the federal government, at the request of the U.S. Department of Interior, Bureau of Reclamation in state and federal courts. These cases are in the early stage and there have been no dispositive court rulings to date.
- 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 (FERC) 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).
- 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 California Environmental Protection Agency and the leadership of the Newsom administration. 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.[6]

[6] In late October 2021, State regulators announced that these negotiations stopped before an agreement was reached. It is unclear whether or when negotiations might be reinitiated.

Because of the uncertainties surrounding the implementation of the Bay-Delta Plan Amendment, the SFPUC 2020 UWMP analyzed two supply scenarios, one with the Bay-Delta Plan Amendment assuming implementation starting in 2023, and one without the Bay-Delta Plan Amendment. Results of these analyses are summarized as follows[7]:

- If the Bay-Delta Plan Amendment is implemented, SFPUC will be able to meet its contractual obligations to its wholesale customers as presented in the SFPUC 2020 UWMP in normal years but would experience significant supply shortages in dry years. In single dry years, supply shortages would range from 36 to 46 percent. In multiple dry years, supply shortages would range from 36 to 54 percent. Implementation of the Bay-Delta Plan Amendment will require rationing in all single dry and multiple dry years through 2045.
- If the Bay-Delta Plan Amendment is not implemented, SFPUC would be able to meet 100 percent of the projected purchases of its wholesale customers during all year types through 2045 except during the fourth and fifth consecutive dry years for base year 2045 when 15 percent wholesale supply shortages are projected.

In June 2021, in response to various comments from wholesale customers regarding the reliability of the RWS as described in SFPUC's 2020 UWMP, the SFPUC provided a memorandum describing SFPUC's efforts to remedy the potential effects of the Bay-Delta Plan Amendment. As described in the memorandum (included in Appendix B of this WSA), SFPUC's efforts include the following:

- Pursuing a Tuolumne River Voluntary Agreement
- Evaluating the drought planning scenario in light of climate change
- Pursuing alternative water supplies
- In litigation with the State over the Bay-Delta Plan Amendment
- In litigation with the State over the proposed Don Pedro FERC Water Quality Certification

### *7.1.2 Allocation of RWS Supplies During Supply Shortages*

The wholesale customers and SFPUC adopted the November 2018 Amended and Restated Water Supply Agreement in 2019, which included a Water Shortage Allocation Plan (WSAP) to allocate water from the RWS to retail and wholesale customers during system-wide shortages of 20 percent or less, including such shortages occurring as a result of implementation of the Bay-Delta Plan Amendment. The WSAP has two tiers which are described below.

- The Tier One Plan allocates water between SFPUC and the wholesale customers collectively based on the level of the shortage (up to 20 percent). This plan applies only when SFPUC determines that a system-wide water shortage exists and issues a declaration of a water shortage emergency under California Water Code Section 350. The SFPUC may also opt to request voluntary cutbacks from San Francisco and the wholesale customers to achieve

[7] BAWSCA Drought Allocation Tables by Agency (Table E: Percent Cutback to the Wholesale Customers with Bay-Delta Plan and Table N: Percent Cutback to the Wholesale Customers Without Bay-Delta Plan), dated April 1, 2021.

necessary water use reductions during drought periods. The allocations outlined in the Tier One Plan are provided in Table 7-1.

**Table 7-1. Tier One Plan Water Shortage Allocations**

| System-Wide Reduction Required, percent | Share of Available Water, percent | |
|---|---|---|
| | SFPUC | Wholesale Customers |
| ≤ 5 | 35.5 | 64.5 |
| 6 to 10 | 36.0 | 64.0 |
| 11 to 15 | 37.0 | 63.0 |
| 16 to 20 | 37.5 | 62.5 |

- The Tier Two Plan allocates the collective wholesale customer share among the wholesale customers based on a formula that accounts for each wholesale customer's ISG, seasonal use of all available water supplies, and residential per capita use. BAWSCA calculates each wholesale customer's Allocation Factors annually in preparation for a potential water shortage emergency.

BAWSCA recognizes that the Tier Two Plan was not designed for RWS shortages greater than 20 percent, and in a memorandum dated March 1, 2021, BAWSCA provided a refined methodology to allocate RWS supplies during projected future single dry and multiple dry years in the instance where supply shortfalls are greater than 20 percent for the purposes of the BAWSCA member agencies' 2020 UWMPs. The revised methodology developed by BAWSCA allocates the wholesale supplies as follows:

- When the average Wholesale Customers' RWS shortages are 10 percent or less, an equal percent reduction will be applied across all agencies. This is consistent with the existing Tier Two requirements in a Tier Two application scenario.
- When average Wholesale Customers' shortages are between 10 and 20 percent, the Tier Two Plan will be applied.
- When the average Wholesale Customers' RWS shortages are greater than 20 percent, an equal percent reduction will be applied across all agencies.

In another memorandum dated February 18, 2021, BAWSCA explains that in actual RWS shortages greater than 20 percent, BAWSCA Member Agencies would have the opportunity to negotiate and agree upon a more nuanced and equitable approach. This would likely consider basic health and safety needs, the water needs to support critical institutions, and minimizing economic impacts on individual communities and the region. As such, the allocation method described in the MPMW 2020 UWMP is only intended to serve as the preliminary basis for the 2020 UWMP supply reliability analysis. The analysis provided in the SFPUC 2020 UWMP and the MPMW 2020 UWMP does not in any way imply an agreement by BAWSCA member agencies as to the exact allocation methodology. BAWSCA member agencies are in discussions about jointly developing an allocation method that would consider additional equity factors in the event that SFPUC is not able to deliver its contractual supply volume, and its cutbacks to the RWS supply exceed 20 percent.

### *7.1.3 Alternative Water Supply Program*

In early 2020, the SFPUC began implementation of the Alternative Water Supply Planning Program (AWSP), a program designed to investigate and plan for new water supplies to address future long-term water supply reliability challenges and vulnerabilities of the RWS particularly in light of the possible implementation of the Bay-Delta Plan Amendment.

Included in the AWSP is a suite of diverse, non-traditional supply projects that, to a great degree, leverage regional partnerships and are designed to meet the water supply needs of the SFPUC Retail and Wholesale Customers through 2045. As of the most recent Alternative Water Supply Planning Quarterly Update, SFPUC has budgeted $264 million over the next ten years to fund water supply projects. The drivers for the program include: (1) the adoption of the Bay-Delta Plan Amendment and the resulting potential limitations to RWS supply during dry years; (2) the net supply shortfall following the implementation of SFPUC's Water System Improvement Plan (WSIP)[8]; (3) San Francisco's perpetual obligation to supply 184 mgd to the Wholesale Customers; (4) adopted Level of Service Goals to limit rationing to no more than 20 percent system-wide during droughts; and, (5) the potential need to identify water supplies that would be required to offer permanent status to interruptible customers.

The SFPUC is considering several water supply options and opportunities to meet all foreseeable water supply needs, including surface water storage expansion, recycled water expansion, water transfers, desalination, and potable reuse. These efforts and their expected benefit to supply reliability are listed below, and described in further detail in the MPMW 2020 UWMP and SFPUC 2020 UWMP:

- Daly City Recycled Water Expansion (Regional; Normal and Dry-Year Supply)
- Alameda County Water District – Union Sanitary District Purified Water Partnership (Regional; Normal and Dry-Year Supply)
- Crystal Springs Purified Water (Regional; Normal and Dry-Year Supply)
- Los Vaqueros Reservoir Expansion (Regional; Dry Year Supply)
- Bay Area Brackish Water Desalination (Regional; Normal and Dry-Year Supply)
- Calaveras Reservoir Expansion (Regional; Dry Year Supply)
- Groundwater Banking (Dry Year Supply)
- Inter-Basin Collaborations

Capital projects under consideration would be costly and are still in the early feasibility and conceptual planning stages. The exact yields from these projects are not quantified at this time, as these supply

[8] The Water System Improvement Program (WSIP) is a $4.8 billion dollar, multi-year capital program to upgrade the SFPUC's regional and local water systems. The program repairs, replaces, and seismically upgrades crucial portions of the Hetch Hetchy Regional Water System. The program consists of 87 projects (35 local projects located within San Francisco and 52 regional projects) spread over seven counties from the Sierra foothills to San Francisco. The San Francisco portion of the program is 100 percent complete as of October 2020. The Regional portion is approximately 99 percent complete. The current forecasted date to complete the overall WSIP is May 2023. Additional information on the WSIP is provided in Chapter 7 of MPMW's 2020 UWMP.

projects would take 10 to 30 years to implement and the exact amount of water that can be reasonably developed is currently unknown.

As with traditional infrastructure projects, there is a need to progress systematically from planning to environmental review, and then on to detailed design, permitting and construction of these alternative water supply projects. Given the complexity and inherent challenges, these projects will require a long lead time to develop and implement. SFPUC staff have developed an approach and timeline to substantially complete planning and initiate environmental review by July 2023 for a majority of the alternative water supply projects under consideration.

Additional information on the AWSP is provided in Chapter 7 of MPMW's 2020 UWMP.

## 7.2 MPMW Water Supply Reliability

In the MPMW 2020 UWMP, projected normal year supplies are shown to be adequate to satisfy MPMW's projected normal year demands. However, in the MPMW 2020 UWMP, and this WSA, MPMW's purchased supplies from the SFPUC RWS assume dry year supply reductions as a result of the implementation of the Bay-Delta Plan Amendment, which significantly reduces dry year allocations for SFPUC wholesale customers. Recycled water is estimated to be available during all hydrologic years at a volume that meets MPMW's projected recycled water demands.

Table 7-2 shows MPMW's projected supplies during normal, single dry and multiple dry years through 2040 based on the assumptions in the MPMW 2020 UWMP which assumes implementation of the Bay-Delta Plan Amendment. Based on the SFPUC's analysis, similar water supply quantities would be available to MPMW in 2045 under the various hydrologic conditions.[9]

**Table 7-2. Projected MPMW Water Supplies with Bay-Delta Plan Amendment**

| Hydrologic Condition | Projected Water Supply, MG[(a)] | | | |
|---|---|---|---|---|
| | 2025 | 2030 | 2035 | 2040 |
| Normal Year[(b)] | 1,678 | 1,750 | 1,750 | 1,750 |
| Single Dry Year[(c)] | 877 | 978 | 1,018 | 1,062 |
| Multiple Dry Years – Year 1[(d)] | 877 | 978 | 1,018 | 1,062 |
| Multiple Dry Years – Year 2[(d)] | 760 | 854 | 887 | 927 |
| Multiple Dry Years – Year 3[(d)] | 760 | 854 | 887 | 927 |
| Multiple Dry Years – Year 4[(d)] | 760 | 854 | 887 | 832 |
| Multiple Dry Years – Year 5[(d)] | 760 | 854 | 824 | 832 |

(a) Includes projected potable water supply from the SFPUC RWS and projected recycled water supply (48 MG/yr in 2025 and 120 MG/yr for 2030 to 2040) (see Table 6-1).
(b) Source: MPMW 2020 UWMP, Table 7-4.
(c) Source: MPMW 2020 UWMP, Table 7-5.
(d) Source: MPMW 2020 UWMP, Table 7-6

[9] BAWSCA Drought Allocation Tables by Agency (Table K: Individual Agency Drought Allocations, Base Year 2045, With Bay-Delta Plan), dated April 1, 2021.

The water supply estimates provided in Table 7-2 use the best available data at the time of the MPMW 2020 UWMP, but do not account for the following factors:

- Potential changes to the implementation of the Bay-Delta Plan Amendment as discussed in Section 7.1.1 of this WSA
- Climate change impacts on the SFPUC RWS
- Potential delays in completion of the WSIP[10]

For comparison purposes, the SFPUC 2020 UWMP also evaluated a scenario without implementation of the Bay-Delta Plan Amendment. Table 7-3 shows MPMW's projected supplies during normal, single dry and multiple dry years for 2025 through 2040 assuming that the Bay-Delta Plan Amendment is not implemented. SFPUC's analysis indicated that it would be able to meet 100 percent of the wholesale projected purchases during all year types through 2045 except during the fourth and fifth consecutive dry years for base year 2045 when a 16.5 percent supply shortfall is projected for MPMW (note that 2045 supplies are not shown in Table 7-3 as they were not shown in MPMW's 2020 UWMP).

As required under SB 610, in light of these identified water supply shortages, Section 8 of this WSA describes MPMW's proposals for reducing water demands and developing additional water supplies, including measures that are being undertaken to acquire and develop those water supplies.

**Table 7-3. Projected MPMW Water Supplies without Bay-Delta Plan Amendment**

| Hydrologic Condition | Projected Water Supply, MG[(a)] | | | |
|---|---|---|---|---|
| | 2025 | 2030 | 2035 | 2040 |
| Normal Year[(b)] | 1,678 | 1,750 | 1,750 | 1,750 |
| Single Dry Year[(c)] | 1,344 | 1,465 | 1,530 | 1,603 |
| Multiple Dry Years – Year 1[(c)] | 1,344 | 1,465 | 1,530 | 1,603 |
| Multiple Dry Years – Year 2[(c)] | 1,344 | 1,465 | 1,530 | 1,603 |
| Multiple Dry Years – Year 3[(c)] | 1,344 | 1,465 | 1,530 | 1,603 |
| Multiple Dry Years – Year 4[(c,d)] | 1,344 | 1,465 | 1,530 | 1,603 |
| Multiple Dry Years – Year 5[(c,d)] | 1,344 | 1,465 | 1,530 | 1,603 |

(a) Includes projected potable water supply from the SFPUC RWS (based on projected purchases) and projected recycled water supply (48 MG/yr in 2025 and 120 MG/yr for 2030 to 2040) (see Table 6-1).

(b) Source: MPMW 2020 UWMP, Table 7-4.

(c) Source: BAWSCA Drought Allocation Tables by Agency (Table A: Wholesale RWS Actual Purchases in 2020 and Projected Purchases for 2025, 2030, 2035, 2040 and 2045), dated April 1, 2021. Totals include projected recycled water supply.

(d) A 16.5 percent reduction in supply from the SFPUC RWS is projected for MPMW in the fourth and fifth years of a multiple dry year drought, but not until 2045 (BAWSCA Drought Allocation Tables by Agency (Table O2: Individual Agency Drought Allocations, Base Year 2045, Without Bay-Delta Plan), dated April 1, 2021.

[10] The San Francisco portion of the WSIP is 100 percent complete as of October 2020. The Regional portion of the WSIP is approximately 99 percent complete. The current forecasted date to complete the overall WSIP is May 2023.

# 8.0 DETERMINATION OF WATER SUPPLY SUFFICIENCY BASED ON THE REQUIREMENTS OF SB 610

> *10910(c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.*
>
> *10911 (a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies.*

Because of the uncertainties surrounding the implementation of the Bay-Delta Plan Amendment, this WSA presents findings for two scenarios, one assuming the Bay-Delta Plan Amendment is implemented and one assuming that the Bay-Delta Plan Amendment is not implemented.

Table 8-1 summarizes the scenario where it is assumed the Bay-Delta Plan Amendment is implemented. Under this scenario, the total projected water supplies determined to be available for the Proposed Project in normal years will meet the projected water demand associated with the Proposed Project, in addition to MPMW's existing and planned future uses, through 2040. However, with the implementation of the Bay-Delta Plan Amendment, significant supply shortfalls are projected in dry years for agencies that receive water supplies from the SFPUC RWS, as well as other agencies whose water supplies would be affected by the Amendment. For MPMW, supply shortfalls are projected in single dry years (ranging from 27 to 32 percent) and in multiple dry years (ranging from 27 to 44 percent) through 2040. Based on SFPUC's analysis, similar supply shortfalls would occur through 2045.

If supply shortfalls do occur, MPMW expects to meet these supply shortfalls through water demand reductions and other shortage response actions by implementation of its WSCP.[11] The projected single dry year shortfalls would require implementation of Stage 3 or 4 of the MPMW WSCP, and the projected multiple dry year shortfalls would require implementation of Stage 3, 4 or 5 of the MPMW WSCP.

As described in Section 7.1.3 of this WSA, the SFPUC is implementing an Alternative Water Supply Planning Program to investigate and plan for new water supplies to address future long-term water supply reliability challenges and vulnerabilities on the RWS. Also, as described in Section 6.3.2 of this WSA, MPMW is implementing an Emergency Water Storage/Supply Project to provide a backup water supply to MPMW's Lower Zone. However, because these potential additional supplies are still being developed, they are not included in Table 8-1.

[11] A main focus of MPMW's planned demand reduction measures is to increase public outreach and keep customers informed of the water shortage emergency and actions they can take to reduce consumption. The City will utilize its emergency supply well(s) as supply augmentation during WSCP Stages 5 and 6. Other actions that the City will take will include coordination with other agencies, implementing drought surcharge, increasing water waste patrols, etc. Additional information on MPMW's WSCP is provided in Chapter 8 of MPMW's 2020 UWMP.

**Table 8-1. MPMW Summary of Water Demand Versus Supply with Bay-Delta Plan Amendment During Hydrologic Normal, Single Dry, and Multiple Dry Years**

| Hydrologic Condition | | Supply and Demand Comparison, MG | | | |
|---|---|---|---|---|---|
| | | 2025 | 2030 | 2035 | 2040 |
| Normal Year | | | | | |
| Available Water Supply[(a)] | | 1,678 | 1,750 | 1,750 | 1,750 |
| Total Water Demand[(b)] | | 1,296 | 1,345 | 1,410 | 1,483 |
| Potential Surplus (Deficit) | | 382 | 405 | 340 | 267 |
| Percent Shortfall of Demand | | - | - | - | - |
| Single Dry Year | | | | | |
| Available Water Supply[(c)] | | 877 | 978 | 1,018 | 1,062 |
| Total Water Demand[(d)] | | 1,296 | 1,345 | 1,410 | 1,483 |
| Potential Surplus (Deficit) | | (419) | (367) | (392) | (421) |
| Percent Shortfall of Demand | | 32% | 27% | 28% | 28% |
| Multiple Dry Years | | | | | |
| Multiple-Dry Year 1 | Available Water Supply[(c)] | 877 | 978 | 1,018 | 1,062 |
| | Total Water Demand[(d)] | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | (419) | (367) | (392) | (421) |
| | Percent Shortfall of Demand | 32% | 27% | 28% | 28% |
| Multiple-Dry Year 2 | Available Water Supply[(c)] | 760 | 854 | 887 | 927 |
| | Total Water Demand[(d)] | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | (536) | (491) | (523) | (557) |
| | Percent Shortfall of Demand | 41% | 37% | 37% | 38% |
| Multiple-Dry Year 3 | Available Water Supply[(c)] | 760 | 854 | 887 | 927 |
| | Total Water Demand[(d)] | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | (536) | (491) | (523) | (557) |
| | Percent Shortfall of Demand | 41% | 37% | 37% | 38% |
| Multiple-Dry Year 4 | Available Water Supply[(c)] | 760 | 854 | 887 | 832 |
| | Total Water Demand[(d)] | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | (536) | (491) | (523) | (652) |
| | Percent Shortfall of Demand | 41% | 37% | 37% | 44% |
| Multiple-Dry Year 5 | Available Water Supply[(c)] | 760 | 854 | 824 | 832 |
| | Total Water Demand[(d)] | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | (536) | (491) | (586) | (652) |
| | Percent Shortfall of Demand | 41% | 37% | 42% | 44% |

(a) From Table 6-1 of this WSA.
(b) From Table 5-2 of this WSA.
(c) From Table 7-2 of this WSA.
(d) From Table 5-3 of this WSA.

Table 8-2 summarizes the scenario where it is assumed the Bay-Delta Plan Amendment is not implemented. Under this scenario, the total projected water supplies determined to be available for the Proposed Project in normal years, single dry years and multiple dry years will meet the projected water demand associated with the Proposed Project, in addition to MPMW's existing and planned future uses through 2040. As described in Section 7.2 of this WSA, based on SFPUC's analysis, a 16.5 percent supply shortfall is projected during the fourth and fifth consecutive dry years for base year 2045 (note that 2045 supplies and demands are not shown in Table 8-2 as they were not shown in MPMW's 2020 UWMP). These projected supply shortfalls are significantly less than the projected supply shortfalls if the Bay-Delta Plan Amendment is implemented.

If supply shortfalls do occur, MPMW expects to meet these supply shortfalls through water demand reductions and other shortage response actions by implementation of its WSCP.[12] The projected multiple dry year shortfalls in 2045 would require implementation of Stage 2 of the MPMW WSCP.

The water demand associated with buildout of ConnectMenlo, which includes the Proposed Project, is included in the MPMW water demand projections in its 2020 UWMP, and the Proposed Project would be subject to the same water conservation and water use restrictions as other water users within the MPMW system.

[12] A main focus of MPMW's planned demand reduction measures is to increase public outreach and keep customers informed of the water shortage emergency and actions they can take to reduce consumption. The City will utilize its emergency supply well(s) as supply augmentation during WSCP Stages 5 and 6. Other actions that the City will take will include coordination with other agencies, implementing drought surcharge, increasing water waste patrols, etc. Additional information on MPMW's WSCP is provided in Chapter 8 of MPMW's 2020 UWMP.

**Table 8-2. MPMW Summary of Water Demand Versus Supply without Bay-Delta Plan Amendment During Hydrologic Normal, Single Dry, and Multiple Dry Years**

| Hydrologic Condition | | Supply and Demand Comparison, MG | | | |
|---|---|---|---|---|---|
| | | 2025 | 2030 | 2035 | 2040 |
| Normal Year | | | | | |
| Available Water Supply[(a)] | | 1,678 | 1,750 | 1,750 | 1,750 |
| Total Water Demand[(b)] | | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | 382 | 405 | 340 | 267 |
| | Percent Shortfall of Demand | - | - | - | - |
| Single Dry Year | | | | | |
| Available Water Supply[(c)] | | 1,344 | 1,465 | 1,530 | 1,603 |
| Total Water Demand[(d)] | | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | 48 | 120 | 120 | 120 |
| | Percent Shortfall of Demand | - | - | - | - |
| Multiple Dry Years | | | | | |
| Multiple-Dry Year 1 | Available Water Supply[(c)] | 1,344 | 1,465 | 1,530 | 1,603 |
| | Total Water Demand[(d)] | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | 48 | 120 | 120 | 120 |
| | Percent Shortfall of Demand | - | - | - | - |
| Multiple-Dry Year 2 | Available Water Supply[(c)] | 1,344 | 1,465 | 1,530 | 1,603 |
| | Total Water Demand[(d)] | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | 48 | 120 | 120 | 120 |
| | Percent Shortfall of Demand | - | - | - | - |
| Multiple-Dry Year 3 | Available Water Supply[(c)] | 1,344 | 1,465 | 1,530 | 1,603 |
| | Total Water Demand[(d)] | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | 48 | 120 | 120 | 120 |
| | Percent Shortfall of Demand | - | - | - | - |
| Multiple-Dry Year 4 | Available Water Supply[(c)] | 1,344 | 1,465 | 1,530 | 1,603 |
| | Total Water Demand[(d)] | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | 48 | 120 | 120 | 120 |
| | Percent Shortfall of Demand | - | - | - | - |
| Multiple-Dry Year 5 | Available Water Supply[(c)] | 1,344 | 1,465 | 1,530 | 1,603 |
| | Total Water Demand[(d)] | 1,296 | 1,345 | 1,410 | 1,483 |
| | Potential Surplus (Deficit) | 48 | 120 | 120 | 120 |
| | Percent Shortfall of Demand | - | - | - | - |

(a) From Table 6-1 of this WSA.
(b) From Table 5-2 of this WSA.
(c) From Table 7-3 of this WSA.
(d) From Table 5-3 of this WSA.

# 9.0 VERIFICATION OF WATER SUPPLY SUFFICIENCY BASED ON THE REQUIREMENTS OF SB 221

The Proposed Project, with up to 1,730 residential dwelling units, is also subject to the requirements of SB 221 (Government Code section 66473.7). SB 221 applies to residential development projects of more than 500 dwelling units (such as the Proposed Project) and requires that the water supplier (MPMW) provide a written verification that the water supply for the Proposed Project is sufficient.

Verification must demonstrate supply sufficiency by showing that water supplies available during Normal, Single Dry and Multiple Dry years within a projected 20-year period will meet the projected demand associated with the Proposed Project, in addition to existing and planned future uses, including, but not limited to, agriculture and industrial uses. Per the requirements of SB 221, the following must be considered:

- Historical water deliveries for the previous 20 years
- Urban water shortage contingency analysis prepared for the UWMP
- Supply reduction for specific water use sectors
- Amount of water expected from specified supply projects

The specific considerations to be evaluated for the SB 221 verification are described below and reference applicable sections of the MPMW 2020 UWMP and this WSA.

## 9.1 Historical Water Deliveries

MPMW's water supplies are described in Section 6 of this WSA and Chapter 6 of the MPMW 2020 UWMP. Table 9-1 presents MPMW's historical use of these supplies over the past 20 years. The use of these supplies will continue into the future with increasing recycled water usage, as described in Section 6 of this WSA.

**Table 9-1. MPMW Historical Water Supplies**

| Water Source | Historical Water Supply, MG | | | | |
|---|---|---|---|---|---|
| | 2000 | 2005 | 2010 | 2015 | 2020 |
| Potable Water Purchased Water from the SFPUC RWS | 1,354[(a)] | 1,268[(b)] | 1,052[(c)] | 883[(c)] | 1,069[(c)] |
| Recycled Water Purchased from WBSD | -- | -- | -- | -- | 20[(d)] |
| **Total** | **1,354** | **1,268** | **1,052** | **883** | **1,089** |

(a) MPMW 2015 UWMP, Appendix E, Table 4
(b) MPMW 2015 UWMP, Table 3-1.
(c) MPMW 2020 UWMP, Table 4-2.
(d) MPMW 2020 UWMP, Table 4-7.

Water supply availability and reliability during Normal, Single Dry and Multiple Dry years is described in Section 7 of this WSA.

## 9.2 Projected Water Demand by Customer Sector

Projected potable and recycled water demands in the MPMW service area are described in Section 5.2 of this WSA based on information provided in Chapter 4 of MPMW's 2020 UWMP. Projected potable water demand by customer sector within MPMW's service area is documented in the MPMW's 2020 UWMP (Chapter 4) and is summarized in Table 9-2.

**Table 9-2. Actual and Projected Potable Water Demands**

| Water Use Type | Water Demand, MG | | | | |
|---|---|---|---|---|---|
| | 2020 (Actual)[a] | 2025[b] | 2030[b] | 2035[b] | 2040[b] |
| Single Family | 361 | 306 | 299 | 293 | 288 |
| Multi-Family | 113 | 158 | 176 | 203 | 230 |
| Commercial | 203 | 346 | 345 | 373 | 401 |
| Industrial | 140 | 134 | 122 | 112 | 102 |
| Institutional/ Governmental | 98 | 98 | 105 | 115 | 126 |
| Landscape | 139 | 95 | 61 | 71 | 85 |
| Losses | 12 | 110 | 116 | 122 | 128 |
| Other Potable | 3 | 1 | 1 | 1 | 2 |
| **Total** | **1,069** | **1,248** | **1,225** | **1,290** | **1,362** |

(a) MPMW 2020 UWMP, Table 4-1.
(b) MPMW 2020 UWMP, Table 4-6.

As described in Section 2.2 of this WSA, the water demand for the Proposed Project is included in the MPMW 2020 UWMP under the approved ConnectMenlo development limit. The projected potable water demand for the Proposed Project will be reduced through the use of recycled water supplies to meet the non-potable water demands for the Proposed Project.

## 9.3 Water Shortage Contingency Analysis

Chapter 8 and Appendix J of the MPMW 2020 UWMP provide a Water Shortage Contingency Plan to address situations when catastrophic water supply interruptions occur due to regional power outage, earthquake, or other disasters; and when drought occurs. The primary objective of the WSCP is to ensure that MPMW has adequate resources and management responses needed to protect health and human safety, minimize economic disruption, and preserve environmental and community assets during a water supply shortage or interruption. The plan is based on Menlo Park Municipal Code Section 7.35, requiring water rationing and conservation and granting MPMW the authority to enforce penalties.

The MPMW 2020 WSCP builds upon the WSCP established in 2015, including additional provisions required by California Water Code. On an annual basis, MPMW in coordination with BAWSCA will evaluate water supply information provided by SFPUC or BAWSCA to determine if a water shortage exists, as well as the severity of a particular water shortage. In response to water use reductions required by SFPUC or another governing body, City Council may declare a water shortage. The MPMW 2020 WSCP defines six water shortage stages ranging from 10 percent to greater than 50 percent water shortage, in addition to

water waste prohibitions that are in effect at all times. MPMW monitors water use in its service area through monthly meter readings, which allows high water use to be identified and resolved during a water shortage. In addition, MPMW plans to install advanced metering infrastructure over the next two fiscal years to provide automated real-time water use data, and allow MPMW to aggressively target leaks and high water use.

If an emergency or drought condition were to occur that requires MPMW to implement its WSCP, all MPMW customers, including those within the Proposed Project, would be subject to the same water conservation and water use restrictions included in the 2020 WSCP.

## 9.4 Verification of Sufficient Water Supply

As described in Section 8 of this WSA, the sufficiency of supplies to meet the Proposed Project demands depends on the assumed reliability of the SFPUC RWS supplies, which depends on the assumed implementation of the Bay-Delta Plan Amendment. If it is assumed the Bay-Delta Plan Amendment is implemented, projected supplies during normal years are sufficient to meet the Proposed Project demands, but significant supply shortfalls are projected in dry years for agencies that receive water supplies from the SFPUC RWS, as well as other agencies whose water supplies would be affected by the Amendment. For MPMW, supply shortfalls are projected in single dry years (ranging from 27 to 32 percent) and in multiple dry years (ranging from 27 to 44 percent) through 2040, with similar findings through 2045 based on SFPUC's analysis. If it is assumed the Bay-Delta Plan Amendment is not implemented, projected supplies during normal years, single dry years and multiple dry years are sufficient to meet the Proposed Project demands through 2040; a 16.5 percent supply shortfall is projected during the fourth and fifth consecutive dry years for base year 2045 based on SFPUC's analysis.

As described in Section 8 of this WSA, if supply shortfalls occur, MPMW expects to meet these supply shortfalls through water demand reductions and other shortage response actions by implementation of its WSCP. Under the scenario which assumes the Bay-Delta Plan Amendment is implemented, the projected single dry year and multiple dry year shortfalls would require implementation of Stages 3, 4 or 5 of the MPMW WSCP. Under the scenario which assumes the Bay-Delta Plan Amendment is not implemented, the projected multiple dry year shortfalls in 2045 would require implementation of Stage 2 of the MPMW WSCP. The Proposed Project would be subject to the same water conservation and water use restrictions as other water users within the MPMW system.

# 10.0 WATER SUPPLY ASSESSMENT APPROVAL PROCESS

> *10910 (g)(1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.*

The Menlo Park City Council must approve this WSA at a regular or special meeting. This WSA will be included in the Draft EIR being prepared for the Proposed Project.

# 11.0 REFERENCES

Bay Area Water Supply and Conservation Agency, 2021. Drought Allocation Tables by Agency. April 1, 2021.

City of Menlo Park. City Municipal Code Chapters 16.43 O Office District and 16.45 R-MU Residential Mixed Use District.

Erler & Kalinowski, Inc., 2016a. *Water Supply Evaluation Study, ConnectMenlo – General Plan and M-2 Area Zoning Update, Menlo Park, California*. Prepared for City of Menlo Park. February 2016.

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Freyer & Laureta, Inc. 2022. *Willow Village Project Water Demand, Alternative Water Source Assessment and Water Modeling Memorandum.* January 2022.

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PlaceWorks. 2016. *ConnectMenlo Draft Environmental Impact Report*. General Plan Land Use & Circulation Elements and M-2 Area Zoning Update. June 2016

San Francisco Public Utilities Commission. 2019. *Water Supply Reliability Information for BAWSCA Member Agencies' Water Supply Assessments*. July 2019.

San Francisco Public Utilities Commission. 2021. *2020 Urban Water Management Plan for the City and County of San Francisco*. June 2021.

San Francisco Public Utilities Commission. 2021. Memorandum regarding Regional Water System Supply Reliability and UWMP 2020. June 2, 2021.

Winzler & Kelly. 2014. *City of Menlo Park Final 2010 Urban Water Management Plan and Update to the Water Shortage Contingency Plan*. Originally published June 2011 and amended November 2014.

# Appendix A

## Willow Village Project Water Demand, Alternative Water Source Assessment and Modeling Memorandum (January 2022)

FREYER & LAURETA, INC.

# TECHNICAL MEMORANDUM

January 27, 2022

To: Eric Harrison
Senior Vice President
Signature Development Group

From: Richard Laureta, PE

RE: Willow Village Project Water Demand, Alternative Water Source Assessment, and Water Modelling Memorandum

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**BACKGROUND**

This memorandum presents how the subject project is meeting the City's Water Use Budget Guidelines for New Developments in the Office, Life Sciences and Residential Mixed-Use Zoning Districts as described in Sections 16.43.140 and 16.45.130 "Green and sustainable building" of the Municipal Code. The anticipated water consumption for the proposed development has been developed using industry-standard literature references, information from similar, mixed-use developments and from applicable building certification programs, such as USGBC's LEED framework and the CALGreen code. While water use by parcel and by program are provided herein, our understanding is that the City will take a comprehensive look at the water budget across all parcels and programs. The data presented in the Technical Memorandum includes data for the baseline project and updated values for an increase of 200 residential units to the baseline project. This Technical Memorandum also presents the estimated percent savings the total Water Demand for the project will benefit from with the use of recycled water for non-potable uses, for both the baseline and 200-unit variant scenarios.

Also attached to this Technical Memorandum as Appendices are the Water Use Budget per Parcel for both the baseline and 200-unit variant scenarios, and the Water Flow Rate Criteria for Water System Modelling Technical Memorandum.

The Project team is available to meet and discuss this information with the City staff and their consultants should any questions arise or should any additional information be required. Thank you for the opportunity to present this information to the City of Menlo Park.

## WATER USE BUDGET

The Willow Village Project exceeds 250,000 square feet in gross floor area and thus must submit a proposed water budget with accompanying calculations, per Section 16.43.140.3.C and 16.45.130.3.C of the Municipal code. The water budget accounts for the potable water demand reduction resulting from the use of an alternative water source for all City-approved non-potable applications. Table 1 below presents a summary of the Baseline Project water use budget. Please refer to the accompanying Microsoft Excel spreadsheet document titled "Willow Village Water Use Budget baseline" for the supporting calculations for Table 1. Table 2 below presents a summary of the Project EIR Increased Residential Density Variant. Please refer to the accompanying Microsoft Excel spreadsheet document titled "Willow Village Water Use Budget residential 200-unit variant" for the supporting calculations for Table 2.

Indoor Water Demands

Water budget calculations are presented in terms of building use (program) for non-residential and residential mixed-use spaces. Occupancy information was either provided by the Project architects or is based off Table 1004.5 Occupant Load in the 2019 California Building Code (CBC). Fixture demands are developed based on 2019 CALGreen fixture flow rates and LEED frequency of fixture use and duration times. Note that water demand factors from literature were used for some retail programs (grocery and food and beverage) to better represent water demands for these water-intense retail spaces. Refer to "Indoor" tab in the attached spreadsheet for the unit demands and estimated water demands.

Cooling demands are presented for the two programs that will be met with water-based cooling: office buildings and event space. Monthly water use demands are calculated using the variance in mean monthly temperature for Menlo Park. Refer to "Cooling" tab in the attached spreadsheet for cooling demands for these two spaces.

Outdoor Water Demands

Planning level irrigation demands are calculated in accordance with Menlo Park Municipal Code Chapter 12.44 Water-Efficient Landscaping Ordinance. Evapotranspiration data was found in the CIMIS Reference Evapotranspiration Zone Map, Department of Water Resources, 1999. Per Section 12.44.030.xxx, areas irrigated with recycled water are deemed a "Special landscape area (SLA)". Section 12.44.030.s states that special landscape areas shall not exceed an ET adjustment factor (ETAF) value of 1.0. As outlined in a following section of this memo, an alternate water supply is expected for this project and thus an ETAF of 1.0 was used in the calculations. Refer to the "Irrigation" tab in the previously described spreadsheets for these planning level demands.

Water Losses

It is anticipated that some water losses would occur on-site through the distribution system and fixtures. For example, leaky fixtures, pipe connections, broken sprinkler heads and taps unintentionally left running can be sources of unplanned water use. The Project team has included a 10% leakage factor in each water demand to adequately account for these scenarios. As a nearby jurisdictional precedent, this buffer aligns with values used by the SFPUC potable water allocation program.

## Table 1 Water Use Budget Summary – Baseline Project

| TOTAL DEMANDS | | | | | |
|---|---|---|---|---|---|
| | Demand (Mgal/month) | | | | |
| Month | Indoor Potable | Toilet Flushing | Irrigation | Cooling | Total |
| January | 8.30 | 1.80 | 1.02 | 0.20 | 11.32 |
| February | 7.49 | 1.62 | 1.23 | 0.24 | 10.58 |
| March | 8.30 | 1.80 | 1.87 | 0.62 | 12.59 |
| April | 8.03 | 1.74 | 2.63 | 0.59 | 12.99 |
| May | 8.30 | 1.80 | 3.06 | 0.92 | 14.08 |
| June | 8.03 | 1.74 | 3.45 | 1.10 | 14.32 |
| July | 8.30 | 1.80 | 3.57 | 1.11 | 14.77 |
| August | 8.30 | 1.80 | 3.40 | 1.39 | 14.88 |
| September | 8.03 | 1.74 | 2.63 | 1.00 | 13.40 |
| October | 8.30 | 1.80 | 2.04 | 0.94 | 13.07 |
| November | 8.03 | 1.74 | 1.32 | 0.43 | 11.52 |
| December | 8.30 | 1.80 | 1.02 | 0.26 | 11.37 |
| **Annual** | **97.67** | **21.17** | **27.24** | **8.80** | **154.89** |

## Table 2 Water Use Budget Summary – Increase Residential Density Variant

| TOTAL DEMANDS | | | | | |
|---|---|---|---|---|---|
| | Demand (Mgal/month) | | | | |
| Month | Indoor Potable | Toilet Flushing | Irrigation | Cooling | Total |
| January | 8.79 | 1.88 | 1.02 | 0.20 | 11.90 |
| February | 7.94 | 1.70 | 1.23 | 0.24 | 11.11 |
| March | 8.79 | 1.88 | 1.87 | 0.62 | 13.17 |
| April | 8.51 | 1.82 | 2.63 | 0.59 | 13.55 |
| May | 8.79 | 1.88 | 3.06 | 0.92 | 14.66 |
| June | 8.51 | 1.82 | 3.45 | 1.10 | 14.89 |
| July | 8.79 | 1.88 | 3.57 | 1.11 | 15.35 |
| August | 8.79 | 1.88 | 3.40 | 1.39 | 15.47 |
| September | 8.51 | 1.82 | 2.63 | 1.00 | 13.96 |
| October | 8.79 | 1.88 | 2.04 | 0.94 | 13.65 |
| November | 8.51 | 1.82 | 1.32 | 0.43 | 12.08 |
| December | 8.79 | 1.88 | 1.02 | 0.26 | 11.96 |
| **Annual** | **103.55** | **22.18** | **27.24** | **8.80** | **161.77** |

## UNIT WATER DEMAND FACTORS

Water demand factors for similar, mixed-use projects are presented below for interior demands and seasonal demands (cooling demands and irrigation demands). It is our project team's understanding that the WSA study will use these values to calculate water demands for the Project. The following sections describe the proposed water demand factors for each program area.

### Interior Demands

Table 3 presents water demands for each program per person and per area for ease of reference and includes the increased residential variant. Office, residential and hotel demands were developed by "building-up" an occupant's daily water demand through fixture flow rates and expected frequency of use. These values were equated to water demand per area for comparison to the retail demands, available as gallon per building floor area in the literature. References are provided for each demand factor.

**TABLE 3: Interior demands and associated water demand factors (Increased Residential Variant)**

| Program | Water Demand, MGY (excluding leakage factor) | Gross Floor Area (GFA, sq. ft.) | Occupancy (capita) | Water Demand Factors | | Demand Breakdown | | *Reference* |
|---|---|---|---|---|---|---|---|---|
| | | | | gal/ca-d | gal/sf-d | Potable (%) | Non-Potable (%) | |
| Office | 30.3 | 1,250,000 | 7,993 | 14.16 | 0.07 | 78 | 22 | *4* |
| Event Space | 1.6 | 350,000 | 320 | 13.7 | 0.01 | 78 | 22 | *4* |
| Residential (per unit) | 61.9 | 1,930 | 3,860 | 44.0 | 87.90 | 80 | 20 | *4* |
| Hotel (per room) | 6.6 | 193 | 444 | 40.7 | 93.56 | 85 | 15 | *1, 4* |
| Grocery | 1.9 | 36,500 | - | - | 0.14 | 73 | 27 | *5* |
| Food and Beverage | 6.4 | 23,000 | 441 | 39.9 | 0.77 | 73 | 27 | *1,2,3,4* |
| Coworking / Office | 0.2 | 6,000 | 92 | 6.2 | 0.10 | 51 | 49 | *4* |
| Fitness | 0.6 | 20,000 | 460 | 3.5 | 0.08 | 83 | 17 | *4* |
| Pharmacy | 0.1 | 14,000 | 268 | 1.1 | 0.02 | 43 | 57 | *2, 4* |
| Cinema | 0.2 | 20,000 | 383 | 1.1 | 0.02 | 43 | 57 | *2, 4* |
| Bowling | 0.2 | 20,000 | 383 | 1.1 | 0.02 | 43 | 57 | *2, 4* |
| Parcels West of Willow | | | | | | | | |
| Retail | 0.2 | 11,339 | 247 | 1.98 | 0.04 | 44 | 56 | *4* |
| Food Service | 3.7 | 11,339 | 247 | 41.1 | 0.90 | 98 | 2 | *1,2,3,4* |
| Service Station | 0.5 | 5,500 | 120 | 10.8 | 0.24 | 8 | 92 | |
| **TOTAL** | **114.3** | | | | | | | |

*References:*

1. Pacific Institute, "Waste Not, Want Not: Appendix E", 2003
2. California Building Code 2019, Table 1004.5 Occupant Load
3. Crites & Tchobanoglous, "Small and Decentralized Wastewater Management Systems", Table 4-2
4. Build-up based on anticipated occupancy, CalGreen fixture flows and LEED frequency of use.
5. AWWA, "Commercial and Institutional End Uses of Water", 2000

**Office**

The proposed office demand factor of 14.16 gal/ca-d is based primarily on CalGreen fixture flow rates for offices and fixture frequency of use per LEED. Water demands for offices include restrooms and the occasional shower user. Additional amenities are planned as part of the proposed office program including onsite cafe and a private fitness center. The water use associated with these amenities has been estimated using data measured at similar facilities in operation. Water demand at the cafes is built up based on meals per person per day and gallons of water use per meal using these data. Water demand at the fitness center includes additional showering.

The projected average daily occupancy in the proposed offices is calculated at the annual level to account for weekends and holidays. Occupancy values anticipate that 100% of staff are present on weekdays and 15% of staff occupy the office buildings on weekends and holidays; an additional 15% of unseated, support staff are also included. The resulting occupancy factor is 73%, or about 268 days of the year when offices are at full occupancy. Accounting for this anticipated occupancy, the proposed demand factor is 0.07 gal/sf-d.

**Event Center**

Events of varying scales will be held at the proposed event center throughout the year, ranging from 100 to 5,000 occupants per event. It is estimated that the event center will host 55 events per year. The proposed demand factor is estimated by assuming those participating in events would use an equivalent amount of water per day to that of a full-time employee (restroom and food facilities). Over the course of a year, it is estimated that there will be 117,500 event attendees. The total annual water demand for the events center is divided across the 350,000 square feet of gross floor area to calculate a proposed water demand factor of 0.01 gal/sf-d.

**Residential**

The Project plan proposes 1,930 residential units and estimates an average of two occupants per unit. Using residential fixture flow rates from the 2019 CalGreen Building Standards Code, Section 4.303, a residential demand factor of 44.0 gal/ca-d was developed. This value aligns with published municipal values such as in San Francisco, where SFPUC reports residential water demand to be approximately 41 gal/ca-d.[1] Each residential unit is estimated to use 88.0 gal/d.

[1] SFPUC Water Resources Report FY '16-'17: https://sfwater.org/modules/showdocument.aspx?documentid=11472

**Hotel**
The Project proposes 193 hotel rooms and estimates an average of two occupants per room. It is assumed that there would be an additional 15% support staff. Similar to the residential demand factors, the hotel demand factor was built-up using CalGreen fixture flow rates for toilets, sinks and showers. CalGreen does not present values for commercial laundry in hotels nor demands for the hotel kitchen and icemakers. As such a demand factor for these additional demands was applied using another reference.[2] These sources yield a demand factor of 93.6 gallons per room per day.

**Retail and Commercial**
Demands at retail and commercial spaces can vary depending on the type of establishment. Retail spaces are expected to have demands associated with restrooms for employees and transients (customers). Restaurants have a much higher water demand for activities including cooking, cleaning, and consumption.

Typical retail demands, which were applied to pharmacy, cinema, and bowling areas, were developed using CalGreen fixture flow rates and an expected customer load of 60 sf/ca based on the 2019 California Building Code (CBC), Table 1004.5. Transients demands are associated with using retail restroom facilities. Retail employees are estimated to be 15% of total customers and are expected to use the same amount of water as someone in an office building over the course of a day. This approach yields a demand factor of 0.02 gal/sf-d.

The American Water Works Association (AWWA) conducts a water submetering study periodically that provides demand factors for program types not available in other literature. The grocery store demand factor is taken from the most recent such study.[3]

The food and beverage unit demand factor is built up from a gallon per restaurant seat value. The CBC density for restaurants (60 sf/ca) was used to estimate that there would be 383 restaurant seats. Each seat serves 5 meals per day[2] and 9 gallons per meal.[4] Accounting for an additional 15% occupancy for employees yields a unit demand for restaurants of 0.77 gal/sf-d.

The public retail fitness water demands were built up using CalGreen fixture flow rates and an increased shower and laundry demand. Using a density of 50 sf/ca[5] and accounting for an additional 15% occupancy for employees yields a unit demand factor for fitness of 0.08 gal/sf-d.

Lastly, the coworking and office space is estimated to have the same core fixture demands as the campus office space, excluding cafe and fitness amenities. It is expected that the

[2] 2000 Pacific Institute study “Commercial Water Use and Potential Savings: Appendix E”
[3] 2000 AWWA study “Commercial and Institutional End Uses of Water”.
[4] Crites & Tchobanoglous, "Small and Decentralized Wastewater Management Systems", Table 4-2
[5] California Building Code 2019, Table 1004.5 Occupant Load

coworking and office space would have twice the density of the campus office and will use 0.10 gal/sf-d.

**Seasonal Demands**

**Cooling Demand**
It is anticipated that retail and residential program areas will employ air-based cooling technologies; therefore, a water demand for mechanical cooling has not been assigned to those buildings. Water demands for cooling were estimated for the campus and event space only. Cooling technology selection has not been finalized and will impact these demands. Project mechanical engineers estimate that cooling demands for the campus space will range between 2.8-4.8 gal/sf-year and the event space will use 1.4 - 4.5 gal/sf-year. Conservatively using the high end of these ranges results in an annual demand of 8.0 MGY.

**Irrigation Demand**
There will be an estimated 18 acres of irrigated landscape within the Project area, including potential green roofs. Irrigated areas are outlined in Table 3. These are estimated values and are based on preliminary landscape concepts that will be further refined during the design process.

**TABLE 4: Planning level irrigated areas and potential annual irrigation demands**

| Parcel | Area | Irrigated Area (gsf) | Irrigation Demands (gallons per year) | Notes |
|---|---|---|---|---|
| Parcels 2 – 7 | Retail/Residential | 292,000 | 9,043,000 | Irrigated area is calculated as 50% of parcel area. |
| Parcel 1 | Event Building | 161,032 | 4,987,000 | Includes 2.1-acre elevated park. |
| Parcel 1 | Office Campus | 103,623 | 3,209,000 | |
| Parcels A & B | Park | 169,884 | 5,261,000 | Assume 100% of parcel is irrigated. |
| Parcels C, D, E | Private Street Medians | 42,000 | 1,301,000 | Assumes equivalent of 10% of parcel is street median and irrigated area. |
| Public ROW | Public ROW Street Medians | 19,000 | - | |
| **TOTAL IRRIGATED AREA** | | 768,539 | 23.8 MGY | |
| Parcels West of Willow | | 31,117 | 1.0 MGY | |
| **TOTAL** | | 799,656 | 24.8 MGY | |

**Water Losses**
This water budgets presented in Tables 1 and 2 include a 10% leakage factor for water losses. It is anticipated that some water losses would occur on-site through leaky fixtures, pipe connections and taps unintentionally left running, for example.

## ALTERNATIVE WATER SOURCE ASSESSMENT

As previously noted, the proposed project exceeds 250,000 square feet of new construction, which under Section 16.43.140.3.E and 16.45.130.3.E of the Municipal code, requires an alternative water source assessment. Two scenarios to supply the project with recycled water for non-potable water uses have been contemplated:

- Scenario 1: Connect to a new off-site water reuse facility owned and operated by the West Bay Sanitary District (WBSD)
- Scenario 2: Construct on-site water reuse facilities (WRFs) to treat wastewater from the site

Under both scenarios, the proposed project with increased residential units would be able to achieve an approximate 36 percent reduction in potable water demand by serving nearly all of the non-potable water demands (including cooling, irrigation, and toilet flushing) with recycled water.

The Project Applicant is currently pursuing Scenario 1 in coordination with WBSD. WBSD has completed a feasibility study exploring the viability of a Resource Recovery Center at WBSD's former treatment plant behind Bedwell Bayfront Park, which could produce 500,000 gallons per day of recycled water for reuse. In a public/private partnership with Facebook (the Project Applicant), the WBSD Board of Directors spearheaded the effort to install 2,800 feet of purple recycled water pipe parallel with the sanitary sewer and storm drainpipe Facebook was replacing on Chilco Street. This pipe will be used to distribute recycled water in the area. Recycled water will be used for irrigation, industrial purposes, firefighting, public fill stations and toilet flushing in the Bayfront Area.

Table 5 below presents a summary of the reduction in potable water demand for both the baseline and 200-unit variant scenarios, by serving nearly all non-potable water demands with recycled water.

**TABLE 5: Percentage of Water Demand Savings**

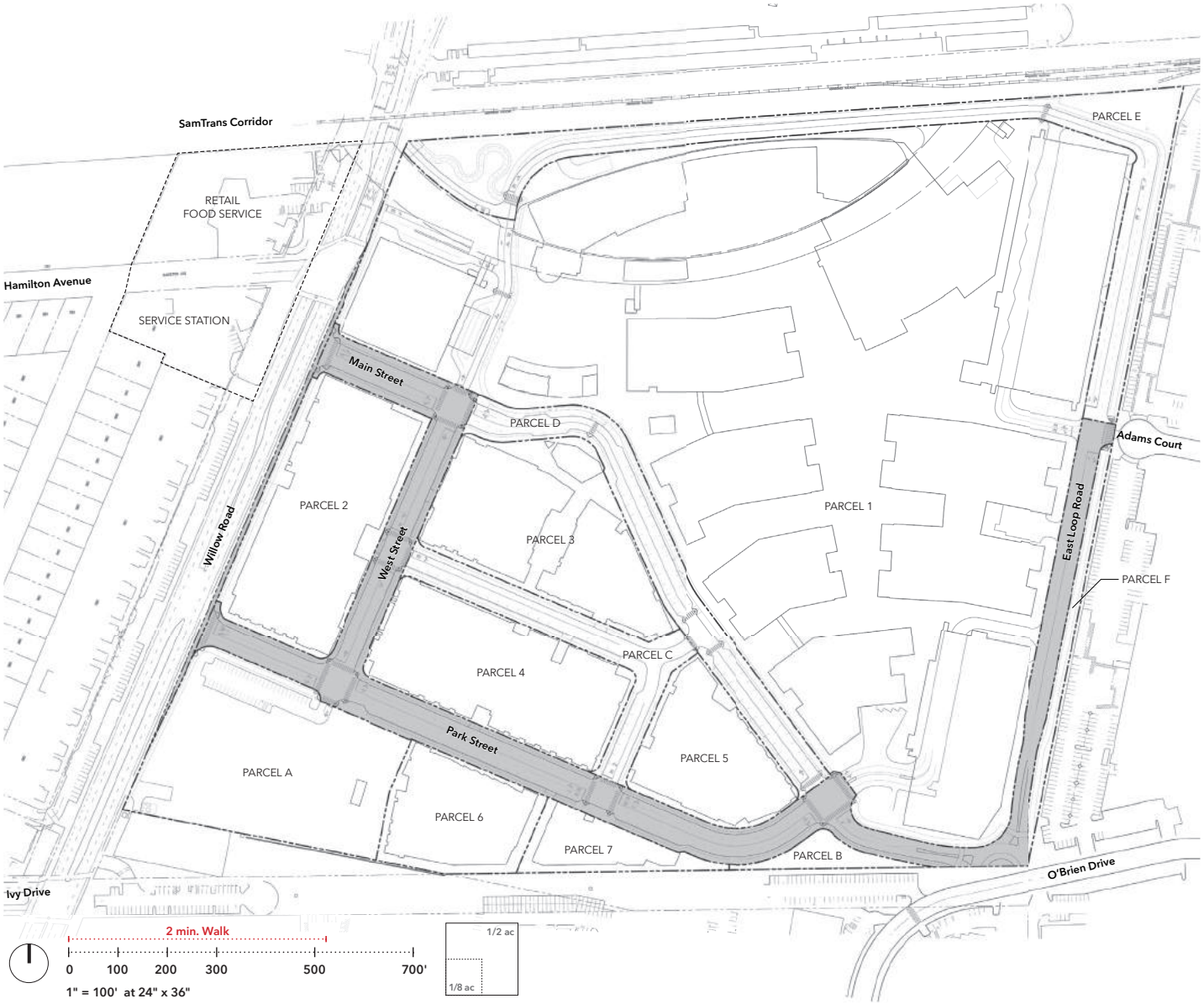
| Development Scenario | Total Water Demand (Mgal/year) | Recycled Water Use (Mgal/year) | Reduction Percentage (%) |
|---|---|---|---|
| Baseline | 154.89 | 57.21 | 37 |
| Baseline with 200 Unit Variant | 161.77 | 58.22 | 36 |

January 27, 2022

# APPEDIX A

# Water Use Budget per Parcel
# Baseline and Residential Unit Variant Scenarios

**FREYER & LAURETA, INC.**




| LEGEND | |
|---|---|
| | Public Right of Way |

**Peninsula Innovation Partners**

# WILLOW VILLAGE

*Menlo Park, CA*

**Conceptual Parcel Plan**

Janurary 27, 2022

**PARCEL BY PARCEL**

| Land Use | Parcel | Demand (MGY) | | | | |
|---|---|---|---|---|---|---|
| | | Indoor Water Use | | Irrigation | Cooling | Total |
| | | Potable | NP | | | |
| Willow Village | | | | | | |
| Retail | Parcel 1 | 30.79 | 8.01 | 10.89 | 8.00 | 57.70 |
| Park + Open Space | Parcel A | 0.00 | 0.00 | 4.86 | 0.00 | 4.86 |
| Park + Open Space | Parcel B | 0.00 | 0.00 | 0.40 | 0.00 | 0.40 |
| Roads | Parcel C | 0.00 | 0.00 | 0.14 | 0.00 | 0.14 |
| Retail + Residential | Parcel 2 | 11.50 | 2.24 | 1.54 | 0.00 | 15.27 |
| Retail + Residential | Parcel 3 | 16.28 | 3.77 | 1.38 | 0.00 | 21.43 |
| Residential | Parcel 4 | 11.24 | 1.92 | 1.27 | 0.00 | 14.43 |
| Retail + Residential | Parcel 5 | 7.93 | 1.48 | 0.78 | 0.00 | 10.19 |
| Residential | Parcel 6 | 4.55 | 0.78 | 0.72 | 0.00 | 6.04 |
| Residential | Parcel 7 | 2.74 | 0.47 | 0.36 | 0.00 | 3.57 |
| Roads | Public ROW | 0.00 | 0.00 | 0.23 | 0.00 | 0.23 |
| Roads | Parcel D | 0.00 | 0.00 | 0.37 | 0.00 | 0.37 |
| Roads | Parcel E | 0.00 | 0.00 | 0.56 | 0.00 | 0.56 |
| Park + Open Space | Parcel F | 0.00 | 0.00 | 0.30 | 0.00 | 0.30 |
| **Sub-Total Willow Village** | | 85.04 | 18.65 | 23.80 | 8.00 | 135.49 |
| Parcels West of Willow (proposed total) | | | | | | |
| Retail | 871-883 Hamilton Ave. | 0.08 | 0.10 | | | |
| Food Service | and 1401 Willow Road | 3.64 | 0.06 | 0.96 | 0.00 | 5.32 |
| Service Station | 1399 Willow Road | 0.04 | 0.43 | | | |
| **Sub-Total Parcels West of Willow** | | 3.76 | 0.60 | 0.96 | 0.00 | 5.32 |
| Leakage Factor | | 10% | 10% | 10% | 10% | 10% |
| **TOTAL** | | **97.67** | **21.17** | **27.24** | **8.80** | **154.89** |

## Water Demand by Parcel - Baseline Scenario

**PARCEL BY PARCEL**

| Land Use | Parcel | Demand (MGY) | | | | |
|---|---|---|---|---|---|---|
| | | Indoor Water Use | | Irrigation | Cooling | Total |
| | | Potable | NP | | | |
| Willow Village | | | | | | |
| Retail | Parcel 1 | 30.79 | 8.01 | 10.89 | 8.00 | 57.70 |
| Park + Open Space | Parcel A | 0.00 | 0.00 | 4.86 | 0.00 | 4.86 |
| Park + Open Space | Parcel B | 0.00 | 0.00 | 0.40 | 0.00 | 0.40 |
| Roads | Parcel C | 0.00 | 0.00 | 0.14 | 0.00 | 0.14 |
| Retail + Residential | Parcel 2 | 11.50 | 2.24 | 1.54 | 0.00 | 15.27 |
| Retail + Residential | Parcel 3 | 16.28 | 3.77 | 1.38 | 0.00 | 21.43 |
| Residential | Parcel 4 | 16.58 | 2.83 | 1.27 | 0.00 | 20.68 |
| Retail + Residential | Parcel 5 | 7.93 | 1.48 | 0.78 | 0.00 | 10.19 |
| Residential | Parcel 6 | 4.55 | 0.78 | 0.72 | 0.00 | 6.04 |
| Residential | Parcel 7 | 2.74 | 0.47 | 0.36 | 0.00 | 3.57 |
| Roads | Public ROW | 0.00 | 0.00 | 0.23 | 0.00 | 0.23 |
| Roads | Parcel D | 0.00 | 0.00 | 0.37 | 0.00 | 0.37 |
| Roads | Parcel E | 0.00 | 0.00 | 0.56 | 0.00 | 0.56 |
| Park + Open Space | Parcel F | 0.00 | 0.00 | 0.30 | 0.00 | 0.30 |
| **Sub-Total Willow Village** | | 90.38 | 19.56 | 23.80 | 8.00 | 141.74 |
| Parcels West of Willow (proposed total) | | | | | | |
| Retail | 871-883 Hamilton Ave. | 0.08 | 0.10 | | | |
| Food Service | and 1401 Willow Road | 3.64 | 0.06 | 0.96 | 0.00 | 5.32 |
| Service Station | 1399 Willow Road | 0.04 | 0.43 | | | |
| **Sub-Total Parcels West of Willow** | | 3.76 | 0.60 | 0.96 | 0.00 | 5.32 |
| Leakage Factor | | 10% | 10% | 10% | 10% | 10% |
| **TOTAL** | | **103.55** | **22.18** | **27.24** | **8.80** | **161.77** |

## Water Demand by Parcel - Residential Variant Scenario

January 27, 2022

# APPEDIX B

# Water Flow Rate Criteria for Water System Modelling Technical Memorandum

**FREYER & LAURETA, INC.**

# WATER FLOW RATE CRITERIA FOR WATER SYSTEM MODELLING TECHNICAL MEMORANDUM

# WILLOW VILLAGE

**100% Submittal**

**January 27, 2022**

**Prepared by:**

FREYER & LAURETA, INC.

# 1.0 Background

This Technical Memorandum provides criteria for water system modeling for the Willow Village Development. Willow Village has two development scenarios, a Baseline Scenario and a scenario that increases the Baseline Scenario by 200 residential units, referred to as the Residential Variant Scenario in this technical memorandum. The Baseline development scenario includes up to 1,730 multi-family residential dwelling units, up to 200,000 square feet of retail and non-office commercial uses, a hotel with up to 193 rooms, up to 1.6 million square feet of office and accessory space, consisting of up to 1.25 million square feet of office space and the balance (i.e., 350,000 square feet if office space is maximized) of accessory space in multiple buildings, and an approximately 3.5-acre public neighborhood park. The Residential Variant development scenario increase residential units to up to 1,930 multi-family residential dwelling units.

## 2.0 Criteria for Water Model

Water Connections

There are four (4) connections to existing water mains proposed for the Willow Village water system, as shown in Figure 1.

Domestic Water Demand

Water demands for each scenario is presented in the Willow Village Project Water Demand and Alternative Source Assessment Technical Memorandum dated January 26, 2022, and shown in Table 1 below.

**TABLE 5: Percentage of Water Demand Savings**

| Development Scenario | Total Water Demand (Mgal/year) | Potable Water Use (Mgal/year) | Recycled Water Use (Mgal/year) |
|---|---|---|---|
| Baseline | 154.89 | 97.68 | 57.21 |
| Residential Variant | 161.77 | 103.55 | 58.22 |

Projected potable water demand for the site is much less that the fire flow required for each building, and fire flow is typically the water demand volume used in system modeling. For this model, we recommend using the Fire Flow Demand for the system water model.

Fire Flow Demand

Specific building types are still being determined and hydrant spacing may be subject to change, however Fire Flow Demand is derived from the Menlo Fire Protection District Ordinance No. 45-2019, an Ordinance of the Menlo Park Fire Protection District Adopting the 2018 Edition of the International Fire Code with the 2018 California Fire Code and Local Amendments.

Table B105.2 from Ordinance No.45-2019 lists allowed fire flow reductions should sprinkler systems be installed. As shown in the table, the Ordinance allows for 50% reduction for sprinklered buildings.

**TABLE B105.2**
**REQUIRED FIRE FLOW FOR BUILDINGS OTHER THAN ONE-AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOMES**

| AUTOMATIC SPRINKLER SYSTEM (Design Standard) | MINIMUM FIRE FLOW (gallons per minute) | FLOW DURATION (hours) |
|---|---|---|
| No automatic sprinkler system | Value in Table B105.1(2) | Duration in Table B105.1(2) |
| Section 903.3.1.1 of the California Fire Code | 50% of the value in Table B105.1(2)[a] | Duration in Table B105.1(2) at the reduced flow rate |
| Section 903.3.1.2 of the California Fire Code | 50% of the value in Table B105.1(2)[b] | Duration in Table B105.1(2) at the reduced flow rate |

For SI: 1 gallon per minute = 3.785L/m
a. The reduced fire flow shall not be less than 1,000 gallons per minute
b. The reduced fire flow shall not be less than 1,500 gallons per minute

Table B105.1(2) lists fire flow requirements in gallons per minute and flow duration required. For purposes of this modeling effort, the maximum flow rate in the Table is used, which is 8,000 gpm at 20 pounds per square inch (psi) with 4 hours of flow duration. Since buildings will be sprinkled, the flow rate value is reduced by 50%.

For modeling purposes to size the on-site water system, the flow rate per building should be 4,000 gpm at 20 psi at 4 hours of flow duration. As also shown in Table B105.2, reduced fire flow shall not be less than 1,500 gpm. For purposes of the model, 4,000 gpm fire flow demand is proposed to be modeled distributed across two fire hydrants closest to each building, using two hydrants at 2,000 gpm each. Fire hydrants are numbered and shown on Figure 1. Proposed fire flow distribution modeling is shown in Table 2.

Recycled Water Demand

It is anticipated that recycled water will be used for a portion of the site including irrigation at the parks at Parcels A, B and the elevated park at Parcel 9. Potential sources of recycled water include an off-site water reuse facility, currently being actively pursued with the West Bay Sanitary District, or onsite water reuse facilities. Recycled water demands for the site include landscape irrigation, toilet fixture flushing and cooling applications for mechanical systems.

Fire Flow Hydrant Tests

Fire flow tests have been on two existing hydrants on-site. The flow test results are included in this memo.

# LEGEND

- DW — EXISTING PUBLIC DOMESTIC WATER
- DW — PUBLIC DOMESTIC WATER
- DW — PRIVATE DOMESTIC WATER
- DOMESTIC WATER STUB
- FW — PRIVATE FIRE WATER
- FIRE WATER STUB
- WATER POINT OF CONNECTION
- WATER POINT OF CONNECTION
- FIRE HYDRANT

SAMTRANS CORRIDOR
NORTH LOOP ROAD
PARCEL E
FH (TYP)
BUILDING 08
ELEVATED PARK
BUILDING 07
NORTH GARAGE
BUILDING 09
HOTEL SERVICE RD
HOTEL
CONNECTION TO EXISTING WATER
ADAMS CT
BUILDING 04
PARCEL 1
BUILDING 05
HAMILTON AVE
CONNECTION TO EXISTING WATER
EAST LOOP ROAD
BUILDING 03
BUILDING 06
PARCEL 2
PARCEL 3
BUILDING 02
PARCEL D
WILLOW ROAD
CENTER ST
PARCEL C
MAIN ST
BUILDING 01
SOUTH GARAGE
WEST ST
PARCEL 4
PARCEL 5
PARCEL F
PARK ST
EAST ST
CONNECTION TO EXISTING WATER
PARCEL A
PARCEL 6
PARCEL 7
PARCEL B
MAIN ST
O'BRIEN DR
O'BRIEN DR
MID PENINSULA HIGH SCHOOL
NORTH
SCALE
1" = 200'

FIGURE 1
PROPOSED WATER SYSTEM

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS
144 North San Mateo Drive • San Mateo, CA 94401
(650)344-9901 • Fax (650)344-9920 • www.freyerlaureta.com

| | |
|---|---|
| DATE: | 11/27/22 |
| SCALE: | AS SHOWN |
| DESIGNED: | - |
| DRAWN: | IRP |
| CHECKED: | RJL |
| PROJ. ENGR: | LH |

# Table 2 - Willow Village Water Loads

## Fire Hydrant & Building Demands

| | | Hydrant Number | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Building** | **Type** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** | **30** | **31** | **32** | **33** | **34** | **Total Flow (gpm)** |
| Parcel 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hotel | Hotel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2000 | 2000 | | 4,000 |
| O1 | Office | | | | | | | | | | | | | | 2000 | 2000 | | | | | | | | | | | | | | | | | | | | 4,000 |
| O2 | Office | | | | | | | | | | | | | | | 2000 | 2000 | | | | | | | | | | | | | | | | | | | 4,000 |
| O3 | Office | | | | | | | | | | | | | | | | 2000 | | 2000 | | | | | | | | | | | | | | | | | 4,000 |
| O4 | Office | | | | | | | | | | | | | | | | | | 2000 | 2000 | | | | | | | | | | | | | | | | 4,000 |
| O5 | Office | | | | | | | | | 2000 | 2000 | | | | | | | | | | | | | | | | | | | | | | | | | 4,000 |
| O6 | Office | | | | | | | | | | 2000 | 2000 | | | | | | | | | | | | | | | | | | | | | | | | 4,000 |
| O7 | Office | | | | | 2000 | 2000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4,000 |
| O8 | Office | | | | 2000 | 2000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4,000 |
| O9 | Office | 2000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2000 | | | 4,000 |
| elevated park (2.1 acres) | Open Space | 2000 | | | | 2000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4,000 |
| North Garage | Parking | | | | | | | 2000 | 2000 | | | | | | | | | | | | | | | | | | | | | | | | | | | 4,000 |
| South Garage | Parking | | | | | | | | | | | 2000 | 2000 | | | | | | | | | | | | | | | | | | | | | | | 4,000 |
| PARCEL 2 | Mixed use | | | | | | | | | | | | | | | | | | | | 2000 | | | | | | | 2000 | | | | | | | | 4,000 |
| PARCEL 3 | Mixed Use | | | | | | | | | | | | | | | | | 2000 | | | | | | 2000 | | | | | | | | | | | | 4,000 |
| PARCEL 4 | Residential | | | | | | | | | | | | | | | | | | | | | | | | | 2000 | 2000 | | | | | | | | | 4,000 |
| PARCEL 5 | Residential | | | | | | | | | | | | | | | | | | | | | | | | 2000 | | | | | | | | | | 2000 | 4,000 |
| PARCEL 6 | Mixed Use | | | | | | | | | | | | | | | | | | | | | | | | | 2000 | 2000 | | | | | | | | | 4,000 |
| PARCEL 7 | Residential | | | | | | | | | | | | | | | | | | | | | | | | | 2000 | | | | | | | | | 2000 | 4,000 |
| **Minimum Demand per Hydrant (gpm)** | | **2000** | **0** | **0** | **2000** | **2000** | **2000** | **2000** | **2000** | **2000** | **2000** | **2000** | **2000** | **0** | **2000** | **2000** | **2000** | **2000** | **2000** | **2000** | **2000** | **0** | **0** | **2000** | **2000** | **2000** | **2000** | **2000** | **0** | **0** | **0** | **0** | **2000** | **2000** | **2000** | |

# Fire Flow Test Report

## *City of Menlo Park - Fire Flow Test Data*

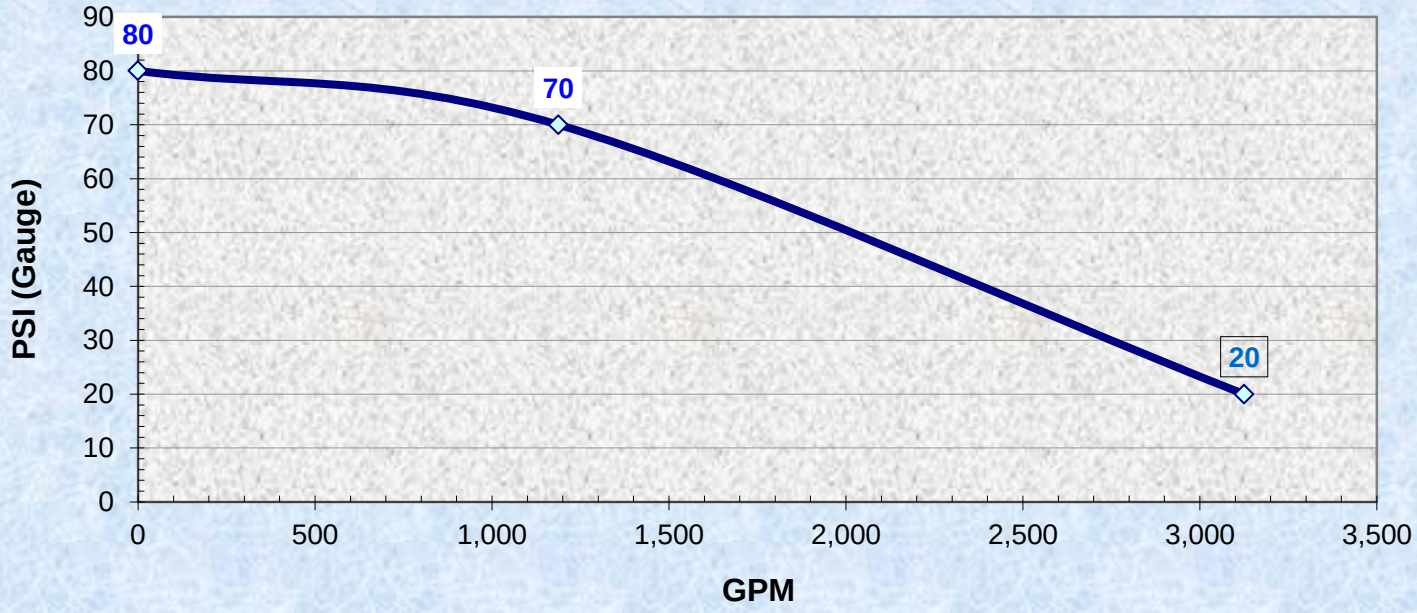
| | | | |
|---|---|---|---|
| Test Crew Names | *E.D, D.K.* | Test Date | *09/12/17* |
| | *1240 Hamilton(Facebook 980)* | Press Zone | Lower |

| | | | | | |
|---|---|---|---|---|---|
| Test Hydrant Location | 1240 Hamilton | Hydrant No. | M9pg.H7 | Static | **80** PSI |
| | | | | Residual | **70** PSI |

| | | | | | |
|---|---|---|---|---|---|
| Flow Hydrant #1 Location | 1098 Hamilton Bldg#59 | Hydrant No. | M8pg.H7 | Pitot | **52** PSI |
| | | | | coefficient | **0.9** |
| | | | | Flow | **1,188** GPM |
| Flow Hydrant #2 Location | | Hydrant No. | | Pitot | PSI |
| | | | | coefficient | |
| | | | | Flow | GPM |
| Flow Hydrant #3 Location | | Hydrant No. | | Pitot | PSI |
| | | | | coefficient | |
| | | | | Flow | GPM |
| | | | | **Total Flow** | **1,188** GPM |

***Fire Flow Test Calculator*** ***Calculated Flow @ 20 PSI*** **3,125 GPM**

## Hydrant Flow Curve



# Fire Flow Test Report

## *City of Menlo Park - Fire Flow Test Data*

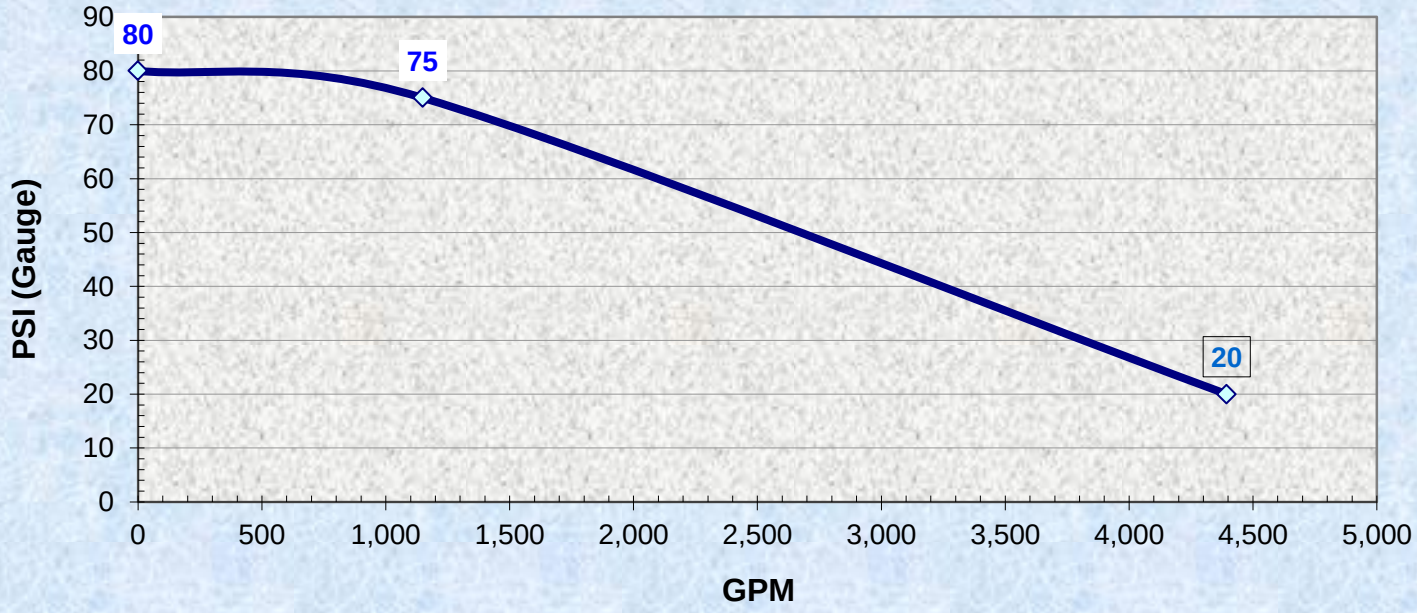
| | | | |
|---|---|---|---|
| Test Crew Names | *E.D, D.K.* | Test Date | *09/12/17* |
| | *1390 Willow Rd.* | Press Zone | Lower |

| | | | | | |
|---|---|---|---|---|---|
| Test Hydrant Location | 1390 Willow Rd. | Hydrant No. | M39pg.H7 | Static | 80 PSI |
| | | | | Residual | 75 PSI |

| | | | | | |
|---|---|---|---|---|---|
| Flow Hydrant #1 Location | 1370 Willow Rd. | Hydrant No. | M40pg.H7 | Pitot | 49 PSI |
| | | | | coefficient | 0.9 |
| | | | | Flow | 1,148 GPM |
| Flow Hydrant #2 Location | | Hydrant No. | | Pitot | PSI |
| | | | | coefficient | |
| | | | | Flow | GPM |
| Flow Hydrant #3 Location | | Hydrant No. | | Pitot | PSI |
| | | | | coefficient | |
| | | | | Flow | GPM |
| | | | | **Total Flow** | 1,148 GPM |

***Fire Flow Test Calculator*** — ***Calculated Flow @ 20 PSI*** 4,394 GPM

## Hydrant Flow Curve



# Appendix B

## Regional Water System Supply Reliability and UWMP 2020 Memorandum (June 2021)

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102
T 415.554.3155
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TO: SFPUC Wholesale Customers

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

DATE: June 2, 2021

RE: Regional Water System Supply Reliability and UWMP 2020

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This memo is in response to various comments from Wholesale Customers we have received regarding the reliability of the Regional Water System supply and San Francisco's 2020 Urban Water Management Plan (UWMP).

As you are all aware, the UWMP makes clear the potential effect of the amendments to the Bay-Delta Water Quality Control Plan adopted by the State Water Resources Control Board on December 12, 2018 should it be implemented. Regional Water System-wide water supply shortages of 40-50% could occur until alternative water supplies are developed to replace those shortfalls. Those shortages could increase dramatically if the State Water Board's proposed Water Quality Certification of the Don Pedro Federal Energy Regulatory Commission (FERC) relicensing were implemented.

We are pursuing several courses of action to remedy this situation as detailed below.

**Pursuing a Tuolumne River Voluntary Agreement**

The State Water Board included in its action of December 12, 2018 a provision allowing for the development of Voluntary Agreements as an alternative to the adopted Plan. Together with the Modesto and Turlock Irrigation Districts, we have been actively pursuing a Tuolumne River Voluntary Agreement (TRVA) since January 2017. We believe the TRVA is a superior approach to producing benefits for fish with a much more modest effect on our water supply. Unfortunately, it has been a challenge to work with the State on this, but we continue to persist, and of course we are still interested in early implementation of the TRVA.

**Evaluating our Drought Planning Scenario in light of climate change**

Ever since the drought of 1987-92, we have been using a Drought Planning Scenario with a duration of 8.5 years as a stress test of our Regional Water System supplies. Some stakeholders have criticized this methodology as being too conservative. This fall we anticipate our Commission convening a workshop

regarding our use of the 8.5-year Drought Planning Scenario, particularly in light of climate change resilience assessment work that we have funded through the Water Research Foundation. We look forward to a valuable discussion with our various stakeholders and the Commission.

**Pursuing Alternative Water Supplies**

The SFPUC continues to aggressively pursue Alternative Water Supplies to address whatever shortfall may ultimately occur pending the outcome of negotiation and/or litigation. The most extreme degree of Regional Water System supply shortfall is modeled to be 93 million gallons per day under implementation of the Bay-Delta Plan amendments. We are actively pursuing more than a dozen projects, including recycled water for irrigation, purified water for potable use, increased reservoir storage and conveyance, brackish water desalination, and partnerships with other agencies, particularly the Turlock and Modesto Irrigation Districts. Our goal is to have a suite of alternative water supply projects ready for CEQA review by July 1, 2023.

**In litigation with the State over the Bay-Delta Plan Amendments**

On January 10, 2019, we joined in litigation against the State over the adoption of the Bay-Delta Water Quality Control Plan Amendments on substantive and procedural grounds. The lawsuit was necessary because there is a statute of limitations on CEQA cases of 30 days, and we needed to preserve our legal options in the event that we are unsuccessful in reaching a voluntary agreement for the Tuolumne River. Even then, potential settlement of this litigation is a possibility in the future.

**In litigation with the State over the proposed Don Pedro FERC Water Quality Certification**

The State Water Board staff raised the stakes on these matters by issuing a Water Quality Certification for the Don Pedro FERC relicensing on January 15, 2021 that goes well beyond the Bay-Delta Plan amendments. The potential impact of the conditions included in the Certification appear to virtually double the water supply impact on our Regional Water System of the Bay-Delta Plan amendments. We requested that the State Water Board reconsider the Certification, including conducting hearings on it, but the State Water Board took no action. As a result, we were left with no choice but to once again file suit against the State. Again, the Certification includes a clause that it could be replaced by a Voluntary Agreement, but that is far from a certainty.

I hope this makes it clear that we are actively pursuing all options to resolve this difficult situation. We remain committed to creating benefits for the Tuolumne River while meeting our Water Supply Level of Service Goals and Objectives for our retail and wholesale customers.

cc.: SFPUC Commissioners
Nicole Sandkulla, CEO/General Manager, BAWSCA