



**FINAL  
WATER SUPPLY ASSESSMENT**

**for the proposed**

**SOUTH MAIN MIXED USE PROJECT**

**January 8, 2020**

**Prepared by the  
CITY OF REDWOOD CITY  
PUBLIC WORKS SERVICES DEPARTMENT**

## 1. OVERVIEW

On December 9, 2019, the City of Redwood City (City) Public Works Services Department received a request from the Community Development & Transportation Department to prepare a Water Supply Assessment (WSA) for the South Main Mixed Use (Project). This WSA has been prepared in accordance with California Water Code Section 10910, subdivision(g)(2), and is to be presented to the Redwood City Council for its consideration at the time of EIR certification.

### Water Use Characteristics

City staff and Project engineers used the City's Engineering Standards for Water System Design Criteria (known as " Attachment Q") to develop demand estimates for the Project. These estimates are summarized in Table 1.

**Table 1. Project Water Demand (af/yr)**

|                 | Existing Demand | Proposed Project Demand | Potable Demand | Recycled Demand | Net New Potable Demand |
|-----------------|-----------------|-------------------------|----------------|-----------------|------------------------|
| Residential (a) | 3.6             | 79.8                    | 55.9           | 24.0            | 52.3                   |
| Commercial (b)  | 85.9            | 77.2                    | 15.4           | 61.8            | -70.5                  |
| Irrigation      | 0               | 7.5                     | 0              | 7.5             | 0                      |
| Other (c)       | 0               | 28.4                    | 28.4           | 0               | 28.4                   |
| <b>Total</b>    | <b>89.5</b>     | <b>193.0</b>            | <b>99.8</b>    | <b>93.2</b>     | <b>10.3</b>            |

a) Potable water for Residential uses is 70% of Proposed Project Demand, Recycled Water is 30% of Proposed Project Demand

b) Potable water for Commercial uses is 20% of Proposed Project Demand, Recycled Water is 80% of Proposed Project Demand

c) Includes child care, and retail spaces

This WSA has been developed to determine if the City has sufficient water to meet the expected future water demands of the Project together with those of existing customers and planned future development. As shown in the City's 2015 Urban Water Management Plan (UWMP), City-wide demand for potable water is projected to be 12,086 af/yr in the year 2040, which is below the City's Individual Water Supply Guarantee (ISG) of 12,243 af/yr. This demand includes the proposed Project and anticipated growth in demand projected to occur between 2015 and 2040

### 2018 Bay-Delta Plan Amendment

In December 2018, the State Water Resources Control Board (SWRCB) adopted amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan Amendment) to establish water quality objectives to maintain the health of the Bay-Delta ecosystem. The SWRCB is required by law to regularly review this plan. The adopted Bay-Delta Plan Amendment was developed with the stated goal of increasing salmonid populations in three San Joaquin River tributaries (the Stanislaus, Merced, and Tuolumne Rivers) and the Bay-Delta. The Bay-Delta Plan Amendment requires the release of 40% of the

“unimpaired flow”<sup>1</sup> on the three tributaries from February through June in every year type, whether wet, normal, dry, or critically dry.

If the Bay-Delta Plan Amendment is implemented, the SFPUC will be able to meet its contractual obligations to its Wholesale Customers as presented in the SFPUC’s 2015 UWMP in normal years. The SFPUC’s 2015 UWMP already assumes shortages in single and multiple dry years through 2040, but implementation of the Bay-Delta Plan Amendment will result in greater shortages.

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

First, under the Clean Water Act, the United States Environmental Protection Agency (U.S. EPA) must approve the water quality standards identified in the Plan Amendment within 90 days from the date the approval request is received. By letter dated June 11, 2019, EPA rejected the SWRCB’s two-page submittal as inadequate under the requirements of the Clean Water Act. Pursuant to EPA’s letter, the Board has 90 days to respond with a submittal that complies with the law. At this point, EPA has neither approved, nor disapproved, any of the revised water quality objectives. It is uncertain whether the U.S. EPA will approve or disapprove the water quality standards in the future. Furthermore, the determination could result in litigation.

Second, since adoption of the Bay-Delta Plan Amendment, over a dozen lawsuits have been filed in both state and federal court, challenging the SWRCB’s adoption of the Bay-Delta Plan Amendment, including 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.

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

Fourth, in recognition of the obstacles to implementation of the Bay-Delta Plan Amendment, SWRCB Resolution No. 2018-0059 adopting the Bay-Delta Plan Amendment directed staff to help complete a “Delta watershed-wide agreement, including potential flow measures for the Tuolumne River” by March 1, 2019, and to incorporate such agreements as an “alternative” for a future amendment to the Bay-Delta Plan to be presented to the SWRCB “as early as possible after December 1, 2019.” In accordance with the SWRCB’s instruction, on March 1, 2019, SFPUC, in partnership with other key stakeholders, submitted a proposed project description for the Tuolumne River that could be the basis for a voluntary substitute agreement with the SWRCB

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

("March 1st Proposed Voluntary Agreement"). On March 26, 2019, the San Francisco Public Utilities Commission adopted Resolution No. 19-0057 to support SFPUC's participation in the Voluntary Agreement negotiation process. To date, those negotiations are ongoing under the California Natural Resources Agency and the leadership of the Newsom administration. The negotiations for a voluntary agreement have made significant progress since an initial framework was presented to the SWRCB on December 12, 2018. The package submitted on March 1, 2019 is the product of renewed discussions since Governor Newsom took office. While significant work remains, the package represents an important step forward in bringing together diverse California water interests.

For all these reasons, whether and when the Bay-Delta Plan Amendment will be implemented, and how those amendments if implemented will affect the SFPUC's, and thereby Redwood City's, water supply is currently uncertain and possibly speculative. Given this uncertainty, this WSA analyzes water supply and demand through 2040 under three scenarios:

1. No implementation of the Bay-Delta Plan Amendment or the March 1st Proposed Voluntary Agreement ("Scenario 1"),
2. Implementation of the March 1st Proposed Voluntary Agreement ("Scenario 2"), and
3. Implementation of the Bay-Delta Plan Amendment ("Scenario 3").

### **WSA Determination**

Scenario 1: The City has sufficient water to meet all of its expected future water demands, including the demands of the proposed Project, in normal years. In single and multiple dry year scenarios, the City would implement its Water Shortage Contingency Plan (WSCP) to curtail demands and ensure that its supplies remain sufficient to serve all users, including the proposed Project. This determination is contingent upon the use of recycled water which requires an extension of the recycled water distribution pipeline to the Project locations.

Scenario 2: The City has sufficient water to meet all of its expected future water demands, including the demands of the proposed Project, in normal years. It is anticipated in single and multiple dry year scenarios, the City would implement its Water Shortage Contingency Plan (WSCP) to curtail demands and ensure that its supplies remain sufficient to serve all users, including the proposed Project. This is based on the assumption that demand will not be curtailed beyond the SFPUC Level of Service goal to not exceed 20% system wide rationing. This determination is contingent upon the use of recycled water which requires an extension of the recycled water distribution pipeline to the Project locations

Scenario 3: The City has sufficient water to meet all of its expected future water demands, including the demands of the proposed Project, in normal years. In dry years with the implementation of its Water Shortage Contingency Plan the City will not be able to meet anticipated demand with or without the Project.

## **2. BACKGROUND**

### **State Laws**

During 2001, the California Legislature enacted two laws – SB 610 (Costa) and SB 221 (Kuehl) – each designed to achieve greater coordination during the land use planning process between water suppliers and local land use agencies when considering certain large-scale development projects.

SB 610 requires preparation of a WSA for any development whose approval is subject to the California Environmental Quality Act (CEQA) and which meets the definition of “project” in Water Code Section 10910 (g)(1), (2) – i.e., residential development projects of more than 500 dwelling units or other types of developments (e.g., hotels and motels, commercial buildings, industrial parks, etc.) using a comparable amount of water.

The WSA must describe the proposed project’s water demand over a 20-year period, identify the sources of water available to meet that demand and include an assessment of whether or not those water supplies are, or will be, sufficient to meet the demand for water associated with the proposed project, in addition to the demand of existing customers and other planned future development. The available water supply must be based on three water supply scenarios: normal year, single dry year, and multiple dry years. If the conclusion is that water supplies are or will be insufficient, then the WSA is to describe plans (if any) for acquiring additional water supplies, and the measures that are being undertaken to acquire and develop those supplies.

SB 221 is similar in many respects to SB 610. However, it applies only to residential projects of 500 units or more and requires the land use planning agency to include as a condition of approval of a tentative map, parcel map or development agreement a requirement that “sufficient water supply” be available. Proof of a sufficient water supply must be based on a written verification from the public water system that will serve the development.

Thus, the WSA required by SB 610 is to be prepared sufficiently early in the development review process that it can be incorporated in the CEQA evaluation and documentation of the project. SB 221, by contrast, becomes operative at the point that the City is considering approval of a tentative subdivision map.

### **The City’s Roles and Responsibilities Under SB 610**

Both SB 610 and SB 221 were drafted on the assumption that the land use planning agency (i.e., the city or county) is not the water supplier for the proposed project. The statutes thus identify distinct duties on the city/county and on the water supplier – which is assumed to be an entirely separate agency. In the case of Redwood City, this assumption is not applicable since the City performs both roles. However, the statute’s terminology, while awkward, can be adapted to the City’s situation relatively easily.

The “City,” as that term is used in the statute, means the components of city government that have responsibilities for the land use decision process. At the staff level, in Redwood City this is the Community Development & Transportation Department, Planning and Housing Division.

The “water supplier,” for SB 610 purposes, can be understood to mean the Public Works Services Department, which is responsible for the City’s Water Enterprise Fund.

The “governing body,” as used in SB 610, refers to the City Council, which is required to approve the WSA at a regular or special meeting.

In Redwood City, the Community Development & Transportation Department is responsible for requesting the preparation of the WSA, including sufficient information about the project. The Public Works Services Department is responsible for preparing the WSA. The City Council is responsible for approving the WSA. The Community Development Department then directs the inclusion of the WSA in the environmental documentation of the project.

### **Use of the WSA**

As noted above, the WSA shall be included in the environmental document prepared for the project. In the case of the South Main Mixed Use Project, it will be included in the Draft EIR prepared for the project.

At the stage of project approval/disapproval, the City “shall determine based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses.” If the City determines at that point that water supplies will not be sufficient, it must include that determination in its findings for the project.

### **Urban Water Management Plan (UWMP)**

A foundational document for compliance with both SB 610 and SB 221 is the Urban Water Management Plan (UWMP). Both of these statutes identify the UWMP as a planning document that, if properly prepared, can be used by a water supplier to meet the standards set forth in both statutes. The City of Redwood City has adopted an UWMP pursuant to the State of California Urban Water Management Planning Act. The UWMP was last updated/adopted by the City Council on June 13, 2016 and duly forwarded to the California State Department of Water Resources (DWR). The water supply and demand analysis contained in this WSA is based, in part, on information contained within the City’s adopted 2015 UWMP.

### **3. DETERMINATION OF APPLICABILITY OF SB 610 TO SOUTH MAIN MIXED USE PROJECT**

The DWR has prepared a flowchart (see Attachment 1) to assist in the determination of the applicability of SB 610 to projects and identify what WSAs must address. Based on the City’s review of the Project development application, the City has determined that the South Main Mixed Use Project is subject to CEQA, and it is considered a “project” as defined by Water Code §10912. Therefore, the City, as both Lead Agency and Water Supplier, is required to prepare an SB 610 WSA. The determination of whether the City’s UWMP accounts for the demand associated with the project is discussed in Section 5 below.

### **4. REDWOOD CITY WATER SUPPLY**

#### **Potable Water Supply**

The City of Redwood City receives 100% of its potable water supply from the San Francisco Regional Water System operated by the San Francisco Public Utilities Commission (SFPUC). Existing water supply entitlements, rights and/or water service contracts relevant to this water supply are:

*1984 Settlement Agreement and Master Water Sales Contract between Suburban Purchasers and the City and County of San Francisco.* The Master Contract primarily addresses the rate-making methodology used by San Francisco in setting wholesale water rates for its wholesale customers in addition to addressing water supply and water shortages for the regional water system. The Master Contract expired on June 30, 2009. The Master Contract provided for a 184 million gallon per day (mgd) “Supply Assurance” to the SFPUC’s wholesale customers, subject to reduction in the event of drought, water shortage, earthquake, other acts of God, or rehabilitation and maintenance of the system. The Master Contract does not guarantee that San Francisco will meet peak daily or hourly customer demands when their annual usage exceeds the Supply Assurance. The SFPUC’s wholesale customers have agreed to the allocation of 184 mgd Supply Assurance among themselves, with each entity’s share of the Supply Assurance set forth on a

schedule adopted in 1993. This Supply Assurance survives expiration of the Master Contract in 2009.

*Water Supply Agreement between The City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County, and Santa Clara County (July 2009).* Redwood City, along with 26 other Bay Area water suppliers, signed the Water Supply Agreement and an Individual Water Sales Contract with San Francisco in 2009. Redwood City's contracted Supply Assurance from the SFPUC is 12,243 af/yr.

### **Recycled Water Supply**

The Redwood City Council approved a recycled water project in 2003 with the goal of reducing demand on the Hetch Hetchy system. Silicon Valley Clean Water and Redwood City entered into agreements for the production and distribution of recycled water that is treated to the California State Title 22 standards for non-potable unrestricted use. The recycled water can be used for landscape irrigation, industrial applications, and other approved indoor uses such as toilet flushing in new commercial, and some multi-family buildings. The recycled water system has been designed to deliver up to 3,238 af/yr. Current demand on the recycled water system is approximately 700 af/yr. In 2008, the City Council of Redwood City adopted a Recycled Water Use Ordinance and established a Recycled Water Service Area. Specific uses of recycled water including landscape irrigation and toilet flushing are required within the Recycled Water Service Area for new developments. However, for properties outside of the Recycled Water Service Area recycled water use is voluntary.

### **Groundwater supply**

Groundwater is not a source of potable water supply for Redwood City because of water quality, reliability, and long-term production capacity concerns. Local groundwater is currently used by a limited number of private well owners for domestic and irrigation uses. The City does not include groundwater as a source of supply in its 2015 UWMP.

### **Dry Year Water Supplies**

Since adoption of the UWMP, the following milestones on the San Francisco Regional Water System have occurred:

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

### **Summary of Current and Planned Water Supplies**

As shown in Table 2 Redwood City's water supply and demand is balanced with some room for unplanned growth through 2040. Existing and projected water supplies available for Redwood City from 2015 through 2040 in five-year increments are shown in Table 3.

**Table 2. Projected Supply vs. Demand for Normal Year Scenario**

|                             | Projected Water Demand (af/yr) |               |               |               |               |
|-----------------------------|--------------------------------|---------------|---------------|---------------|---------------|
|                             | 2020                           | 2025          | 2030          | 2035          | 2040          |
| Potable Water Supply        | 12,243                         | 12,243        | 12,243        | 12,243        | 12,243        |
| Potable Water Demand        | 11,167                         | 11,478        | 11,605        | 11,801        | 12,086        |
| <i>Surplus or (Deficit)</i> | <i>1,076</i>                   | <i>765</i>    | <i>638</i>    | <i>442</i>    | <i>157</i>    |
| Recycled Water Supply       | 892                            | 1,072         | 1,252         | 1,431         | 1,611         |
| Recycled Water Demand       | 892                            | 1,072         | 1,252         | 1,431         | 1,611         |
| <i>Surplus or (Deficit)</i> | <i>0</i>                       | <i>0</i>      | <i>0</i>      | <i>0</i>      | <i>0</i>      |
| <b>Total Water Demand</b>   | <b>12,059</b>                  | <b>12,550</b> | <b>12,856</b> | <b>13,232</b> | <b>13,697</b> |

Source: Redwood City, 2015 Urban Water Management Plan, Table 6-2

**Table 3. Current and Projected Water Demands**

|                           | Projected Water Demand (af/yr) |               |               |               |               |               |
|---------------------------|--------------------------------|---------------|---------------|---------------|---------------|---------------|
|                           | 2015                           | 2020          | 2025          | 2030          | 2035          | 2040          |
| Potable Water Demand      | 8,877                          | 11,167        | 11,478        | 11,605        | 11,801        | 12,086        |
| Recycled Water Demand     | 712                            | 892           | 1,072         | 1,252         | 1,431         | 1,611         |
| <b>Total Water Demand</b> | <b>12,059</b>                  | <b>12,059</b> | <b>12,550</b> | <b>12,856</b> | <b>13,232</b> | <b>13,697</b> |

Source: Redwood City, 2015 Urban Water Management Plan, Table 3-4

### Additional Water Supplies

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

The capital projects that are under consideration would be costly and are still in the early feasibility or conceptual planning stages. Because these water supply projects would take 10 to 30 or more years to implement, and because required environmental permitting negotiations may reduce the amount of water that can be developed, the yield from these projects are not currently incorporated into SFPUC's supply projections. Capital projects would be funded through rates from both Wholesale and SFPUC Retail Customers based on mutual agreement, as the additional supplies would benefit all customers of the RWS, unless otherwise noted. State and federal grants and other financing opportunities would also be pursued for eligible projects, to the extent feasible, to offset costs borne by ratepayers.



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## **7. Calaveras Reservoir Expansion (Regional)**

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

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

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

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

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

- **Evaluation of Recycled Water Throughout Service Area**

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

## 5. THE SOUTH MAIN MIXED USE PROJECT AND ITS PROJECTED WATER DEMAND

### Project Description

The proposed Project includes 6 blocks totaling 8.3 acres, labeled blocks A-F in the map below. The mixed-use redevelopment includes 540 multifamily residential units (including 147 affordable units), 530,000 sq. ft. of office, 8,860 sq. ft. of retail, 18,878 sq. ft. of entertainment, and a 8,563 sq. ft. child care facility.



### Projected Water Demand

The City bases its water demand projections on the adopted *City Engineering Standards for Water Demand Projection Criteria (Attachment Q)*. Project engineers provided demand estimates in Attachment Q, which have been reviewed by the City's Engineering Division. A summary of existing and projected demand is included in the request to prepare this WSA.

### Does the 2015 UWMP account for the South Main Mixed Use Project demands?

The South Main Mixed Use Project was not specifically included in the 2015 UWMP, however, the Project is consistent with the growth projections in the 2010 General Plan which formed the basis of the growth projections in the 2015 UWMP. With that in mind the Project is included in the UWMP.

### Recycled Water Uses

Redwood City Municipal Code Chapter 38, Article VIII, Sec. 38.50 requires that new Commercial Properties, and New Apartments and Condominiums within the Recycled Water Service Area shall use recycled water for landscape irrigation and internally for toilet flushing. The City's Recycled Water Development Standards (Attachment U) further prescribes the uses for recycled water and excludes the use of recycled water in tenant improvement spaces intended for retail

uses, and makes the use of recycled water in child care facilities optional. For properties outside of the Recycled Water Service Area recycled water use is voluntary.

The Water Demand Projections worksheet (Attachment Q) does not differentiate between potable or recycled water uses. During the preparation of the UWMP the City did not have any existing properties using recycled water for internal uses, so estimates were used to identify the ratio of potable and recycled water for internal uses.

- For residential properties it was estimated that for all internal uses 75% would be for potable water and 25% would be for recycled water.
- For commercial properties it was estimated that for all internal uses 20% would be for potable water and 80% would be for recycled water.

Since the 2015 UWMP was prepared a number of projects have been completed that have been dual plumbed for internal use of recycled water, but are not yet using recycled water because the Recycled Water Distribution System has not been expanded to service those properties. However, separate water meters were installed at these projects for future recycled water use and are currently using potable water. Actual demand was reviewed at these properties to verify the accuracy of the estimated ratio between potable and recycled water with the results closely matching the estimates.

- For residential properties actual demand for internal uses was 70% potable water and 30% recycled water.
- For commercial properties actual demand for internal uses was 20% potable water and 80% recycled water.

The South Main Mixed Use Project is within the Recycled Water Service Area. To determine the ratio of potable and recycled water for the Project the actual demand ratios were applied to internal uses for commercial and residential uses. Areas identified for retail and child care uses were allocated to 100% potable water, and landscape irrigation was allocated to 100% recycled water. A summary of these demands is available in Table 1.

Additionally, the recycled water distribution system pipelines terminate at the intersection of Walnut St. and Marshall St. in Redwood City and would need to be extended to and along the frontage of the Project areas in order to supply recycled water to the Project. Block F is within the Downtown Precise Plan area and extension of the recycled water distribution system is planned for future construction by the City. Blocks A through E are outside the Downtown Precise Plan area and extension of the recycled water distribution system is not currently planned by the City and would need to be constructed as part of the project.

## **6. WATER SUPPLY SUFFICIENCY ANALYSIS**

The following section provide a supply and demand comparison for the three scenarios described in Section 1 of this report. Procedures for determining SFPUC RWS supply availability are provided in the Water Shortage Allocation Plan (WSAP) between the SFPUC's Retail and Wholesale Customers which is referred to as Tier 1 of the WSAP. The WSAP further allocates the supplies amongst Wholesale Customers (BAWSCA Members) under Tier 2 of the WSAP to derive available supply for each wholesale customer including Redwood City.

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

Under this Scenario this WSA determines that the City has sufficient water supplies to serve the Project and all other existing and planned future demands, provided that the City implements its WSCP to curtail demands in single and multiple dry year scenarios.

The WSCP lists a number of actions to be taken by the City and water customers in the event of a water shortage for the purpose of reducing water demands, and includes 5 stages of curtailment levels, ranging from 10 percent to greater than 30 percent depending on the severity of the water shortage. The WSCP indicates a Stage 1 water shortage may need to be declared in a single dry year scenario, and in a multiple dry year scenario a Stage 4 water shortage may need to be declared. In either shortage scenario, adding the Project's water demands would not change the water shortage Stage that would need to be declared, and the Project would not require additional curtailments from existing or planned customers beyond the curtailments that would be required without the Project. Table 4 includes the reduction in potable water demand anticipated due to the implementation of the WSCP for each dry year scenario. The values are taken from the Drought Response Tool which can be found in Appendix O of the 2015 UWMP.

In a single dry year scenario, the City would be required to implement the WSCP to curtail demands by five and five tenths percent (5.5%). With the Project the City would need to curtail demands in a single dry year by an additional four tenths of one percent (0.4%) for a total of five and nine tenths percent (5.9%). It should be noted that the Project only adds one tenth of one percent (0.1%) of curtailment over the amounts required by other planned and proposed projects.

In a multiple dry year scenario, the City would be required to implement its WSCP to curtail demands by twenty-one and seven tenths percent (21.7%). With the Project the City would need to curtail demands in a multiple dry year by an additional three tenths of one percent (0.3%) for a total of twenty two percent (22%).

The above conclusions assume that the Project includes an extension of the City's Recycled Water pipeline to the Project, and subsequent compliance with the recycling water requirements in the City's Municipal Code (Chapter 38, Article VIII (Section 38.50 et seq.)). Redwood City is not currently limited in its recycled water capacity and has sufficient supply for the project in normal and dry years. The Project's anticipated net demand for recycled water is 93.2 af/yr, which is well within the City's available recycled water supplies.

**Table 4. Project Water Summary for Year 2040 (af/yr)**

| Description                                |   | Normal Year | 1st Dry Year | 2nd Dry Year | 3rd Dry Year |
|--|---|-------------|--------------|--------------|--------------|
| <b>2015 UWMP Baseline</b>                  |   |             |              |              |              |
| Baseline from 2105 UWMP                    | Potable Water Demand without Project (a)                            | 12,086      | 12,086       | 12,086       | 12,086       |
|  | Potable Water Supply (b)  | 12243       | 11,418       | 9,467        | 9,467        |
|  | Potable Water Shortage without Project (b)                          | 0           | 668          | 2,619        | 2,619        |
|  | Recycled Water Supply (b)(d)  | 1,611       | 1,611        | 1,611        | 1,611        |
|  | Recycled Water Demand Including Project                             | 1,611       | 1,611        | 1,611        | 1,611        |
| <b>Project Demands</b>                     |   |             |              |              |              |
| Potable Demand Not Included in 2015 UWMP   | Net New Potable Demand for Project (c)                              | 10          | 10           | 10           | 10           |
|  | Net New Potable Demand for Other Projects (f)                       | 35          | 35           | 35           | 35           |
|  | Baseline Potable Water Demand Plus All Project Demands              | 12,131      | 12,131       | 12,131       | 12,131       |
| <b>Shortage Analysis</b>                   |   |             |              |              |              |
| Baseline from 2105 UWMP                    | Baseline Potable Supply Shortfall (b)                               | 0           | -668         | -2619        | -2619        |
|  | Percent Potable Baseline Shortfall                                  | 0.0%        | 5.5%         | 21.7%        | 21.7%        |
| Baseline Plus Other Projects               | Baseline Potable Supply Shortfall Plus Other Projects (f)           | 0           | -703         | -2654        | -2654        |
|  | Percent Potable Supply Shortfall Plus Other Projects (f)            | 0.0%        | 5.8%         | 22.0%        | 22.0%        |
| Baseline, Other Projects, & Project        | Potable Supply Shortfall with Project and Other Projects(f)         | 0           | -713         | -2664        | -2664        |
|  | Percent Potable Supply Shortfall with Project and Other Projects(f) | 0.0%        | 5.9%         | 22.0%        | 22.0%        |
| Potable Supply with Implementation of WSCP | Water Shortage Contingency Plan (WSCP) Stage                        | NA          | 1            | 4            | 4            |
|  | Reduction in Demand from WSCP (e)                                   | NA          | -1111        | -3248        | -3248        |
|  | Baseline Surplus Potable Supply with WSCP                           | NA          | 225          | 1990         | 1990         |
|  | Surplus Potable Supply with WSCP with Project and Other Projects    | NA          | 180          | 1945         | 1945         |



- a) Redwood City, 2015 Urban Water Management Plan, Table 6-1
- b) Redwood City, 2015 Urban Water Management Plan, Table 6-4
- c) Net new potable demand includes total project demands less existing uses and less recycled water uses.
- d) Total Recycled Water Production Capacity per Agreement with Silicon Valley Clean Water is 3,238 af/yr
- e) Potential reduction in demand from the WSCP - Drought Response Tool, Redwood City, 2015 UWMP, Appendix O
- f) Other Projects include Broadway Plaza, and Harbor View Place Projects

### **Scenario 2: Implementation of the Voluntary Agreement**

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

### **Scenario 3: Implementation of the Bay-Delta Plan Amendment**

Under this Scenario this WSA determines that the City has sufficient water supplies to serve the Project in normal years, however, there will not be sufficient supplies to meet demand in single and multiple dry years even with the implementation of the WSCP to curtail demand.

With the implementation of the Bay-Delta Plan Amendment the SFPUC RWS is projected to experience significant shortfalls in single dry and multiple dry years starting as soon as 2022 and through 2040, regardless of whether the proposed project is constructed. These significant shortfalls are a result of implementation of the Bay-Delta Plan Amendment and not attributed to the incremental demand associated with the proposed project.

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

Given the severity of the reduction in RWS supply with implementation of the Bay-Delta Plan Amendment, existing and planned dry-year supplies would not be enough to meet projected water demand obligations for BAWSCA Wholesale Customers without rationing above the SFPUC's RWS Level of Service goal of limiting rationing to 20% on a system-wide basis for all dry years starting as soon as 2022. Although the WSAP does not address implications to supply during system-wide shortages above 20%, the WSAP indicates that if system-wide shortage greater than 20% were to occur, RWS supply would be allocated between retail and Wholesale Customers per the rules corresponding to a 16-20% system-wide reduction, subject to consultation and negotiation between the SFPUC and its Wholesale Customers to modify the allocation rules. These allocation rules result in Tier 1 shortfalls of 85 to 124 million gallons per day, or 46-68%, across the wholesale service area. Under this scenario Redwood City baseline supply shortfalls are anticipated to be 42.4% in a single dry year and 55.9% in multiple dry years after applying the Tier 1 and Tier 2 reductions in demand per the WSAP.

In a single dry year scenario, the City would implement the WSCP to curtail demand, however, the WSCP would fall short and there would not be enough supply to meet demand for existing customers (including other projects). After including the reductions in demand from the WSCP there will be a supply shortfall of 379 af/yr or 5.2%. With the Project there would be a supply shortfall of 390 af/yr or 5.3%.

In a multiple dry year scenario, the City would implement the WSCP to curtail demand, however, the WSCP would fall short and there would not be enough supply to meet demand for existing customers (including other projects). After including the reductions in demand from the WSCP there will be a supply shortfall of 2,004 af/yr or 27.3%. With the Project there would be a supply shortfall of 2,014 af/yr or 27.4%.

The potential reduction in demand in the WSCP is derived from the Drought Response Tool (DRT) which was used in the preparation of the 2015 UWMP.

The Drought Response Tool (DRT) is an Excel spreadsheet model that has been developed to assist water suppliers with:

- Evaluating baseline water use by sector and by indoor/outdoor use;
- Identifying customer sectors (e.g., Residential; Commercial, Industrial and Institutional [CII]; and Dedicated Irrigation) and uses to target for water savings;
- Evaluating a menu of drought response actions and estimate their water savings potential; and
- Tracking progress against the water use reduction goal associated with a stage of action in the supplier's Water Shortage Contingency Plan.

Outputs from the DRT for WSCP Stages 1 through 4 (supply shortages up to 30%) are included in Appendix O of the 2015 UWMP, however, Stage 5 (50% shortage) was not included. To determine if the WSCP will be sufficient to curtail demands to meet the drought supply the DRT worksheet was used with a minimum residential use of 35 gallons per person per day, maximum reductions for all outdoor uses of potable water by 90%, and a maximum reduction of commercial indoor uses by 50%. Assuming all drought response actions are 100% effective this would result in a potential savings of 54%. However, after factoring potential implementation rates of the drought response actions the potential savings is estimated to be 42%.

It should be noted that the DRT is only a predictive tool that generates a water savings potential based on an assumed set of water use and savings inputs, including Drought Response Actions, savings estimates, and implementation rates. The DRT does not guarantee water savings or other performance metrics.

Table 5 below includes a summary of baseline supply and demand, project demands, and a shortage analysis.

**Table 5. Project Water Summary for Year 2040 (af/yr)**

| Description                                |   | Normal Year | 1st Dry Year | 2nd Dry Year | 3rd Dry Year |
|--|---|-------------|--------------|--------------|--------------|
| <b>2015 UWMP Baseline</b>                  |   |             |              |              |              |
| Baseline from 2105 UWMP                    | Potable Water Demand without Project (a)                            | 12086       | 12086        | 12086        | 12086        |
|  | Potable Water Supply (b)  | 12243       | 6959         | 5334         | 5334         |
|  | Potable Water Shortage without Project (b)                          | 0           | 5127         | 6752         | 6752         |
|  | Recycled Water Supply (b)(d)  | 1611        | 1611         | 1611         | 1611         |
|  | Recycled Water Demand Including Project                             | 1611        | 1611         | 1611         | 1611         |
| <b>Project Demands</b>                     |   |             |              |              |              |
| Potable Demand Not Included in 2015 UWMP   | Net New Potable Demand for Project (c)                              | 10          | 10           | 10           | 10           |
|  | Net New Potable Demand for Other Projects (f)                       | 35          | 35           | 35           | 35           |
|  | Baseline Potable Water Demand Plus All Project Demands              | 12131       | 12131        | 12131        | 12131        |
| <b>Shortage Analysis</b>                   |   |             |              |              |              |
| Baseline from 2105 UWMP                    | Baseline Potable Supply Shortfall (b)                               | 0           | -5127        | -6752        | -6752        |
|  | Percent Potable Baseline Shortfall                                  | 0.0%        | 42.4%        | 55.9%        | 55.9%        |
| Baseline Plus Other Projects               | Baseline Potable Supply Shortfall Plus Other Projects (f)           | 0           | -5162        | -6787        | -6787        |
|  | Percent Potable Supply Shortfall Plus Other Projects (f)            | 0.0%        | 42.7%        | 56.2%        | 56.2%        |
| Baseline, Other Projects, & Project        | Potable Supply Shortfall with Project and Other Projects(f)         | 0           | -5173        | -6797        | -6797        |
|  | Percent Potable Supply Shortfall with Project and Other Projects(f) | 0.0%        | 42.8%        | 56.2%        | 56.2%        |
| Potable Supply with Implementation of WSCP | Water Shortage Contingency Plan (WSCP) Stage                        | NA          | 5            | NA           | NA           |
|  | Reduction in Demand from WSCP (e)                                   | NA          | -4783        | -4783        | -4783        |
|  | Baseline Shortfall Potable Supply with WSCP                         | NA          | 344          | 1969         | 1969         |
|  | Potable Supply Shortfall with WSCP with Project and Other Projects  | NA          | 390          | 2014         | 2014         |

- a) Redwood City, 2015 Urban Water Management Plan, Table 6-1
- b) Redwood City, 2015 Urban Water Management Plan, Table 6-4
- c) Net new potable demand includes total project demands less existing uses and less recycled water uses.
- d) Total Recycled Water Production Capacity per Agreement with Silicon Valley Clean Water is 3,238 af/yr
- e) Potential reduction in demand from the WSCP - Drought Response Tool
- f) Other Projects include Broadway Plaza, and Harbor View Place Projects

## **7. REFERENCES**

- City of Redwood City 2015 Urban Water Management Plan (UWMP).
- *Water Supply & Development, A User's Guide to California Statutes including SB 221 (Kuehl) & SB 610 (Costa)*. Association of California Water Agencies, 2002.
- 1984 Master Sales Agreement between Suburban Purchasers and the City and County of San Francisco.
- 2009 *Water Supply Agreement between The City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County, and Santa Clara County*.
- *Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001*. California Department of Water Resources, October 2003.

## **8. ATTACHMENTS**

Attachment 1: SB 610 Flowchart

Attachment 2: South Main Mixed Use - Attachment Q Worksheets

## SB 610 Flowchart

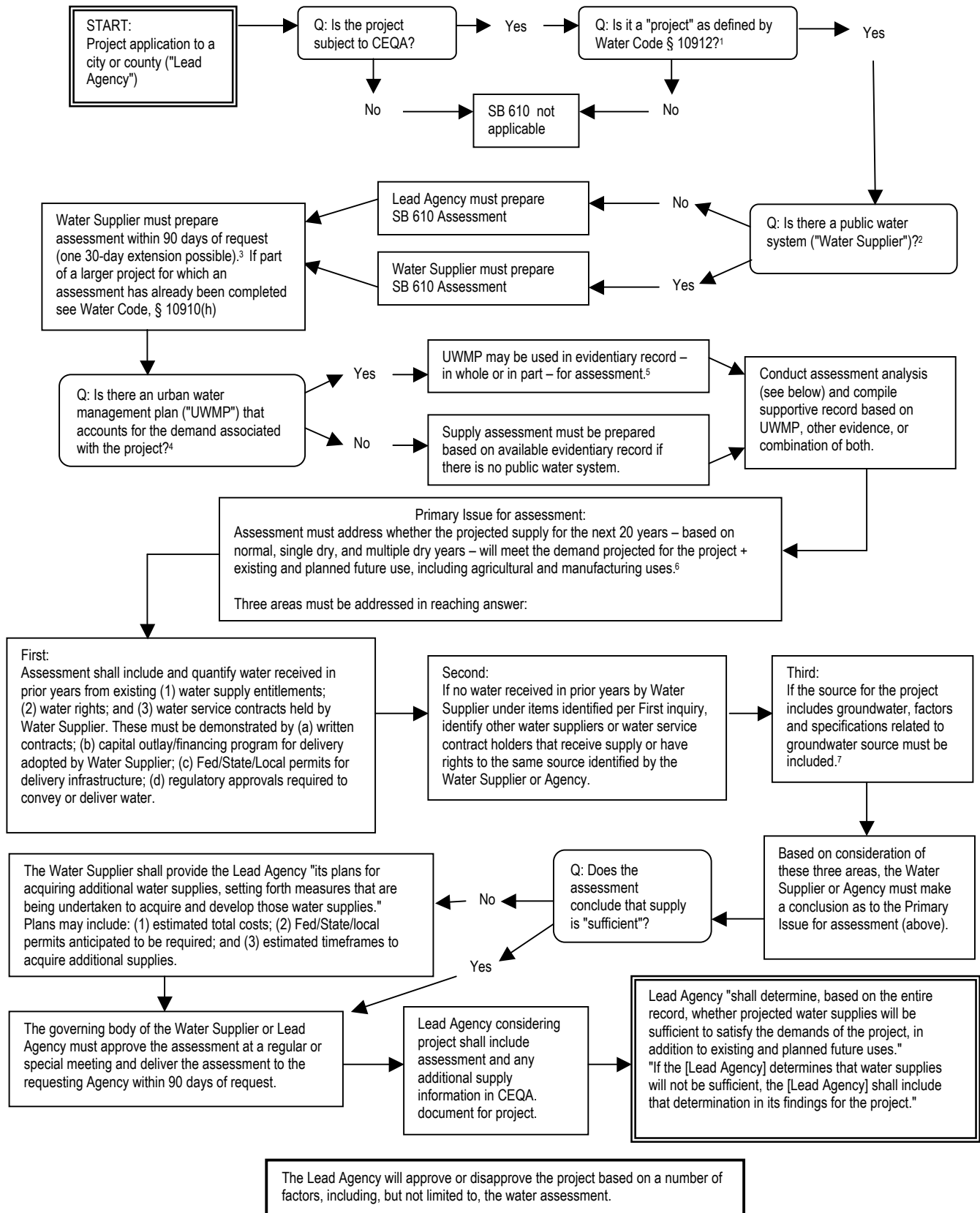


Chart Courtesy of the  
The Building Industry Legal Defense

**Footnote 1:**

California Water Code section 10912.

For the purposes of this part, the following terms have the following meanings:

- (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.
- (b) If a public water system has fewer than 5,000 service connections, then "project" means any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of the public water system's existing service connections, or a mixed-use project that would demand an amount of water equivalent to, or greater than, the amount of water required by residential development that would represent an increase of 10 percent or more in the number of the public water system's existing service connections.

**Footnote 2:**

California Water Code section 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. A public water system includes all of the following:

- (1) Any collection, treatment, storage, and distribution facility under control of the operator of the system which is used primarily in connection with the system.
- (2) Any collection or pretreatment storage facility not under the control of the operator that is used primarily in connection with the system.
- (3) Any person who treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption. It also means a system that will become a public water supplier if the project puts it over 3,000 service connections.

**Footnote 3:**

California Water Code section 10910, subdivision (g)(1).

**Footnote 4:**

The requirement for and contents of an urban water management plan are provided in California Water Code section 10631, as amended by SB 610 in 2001.

**Footnote 5:**

California Water Code section 10910, subdivision (c)(2) provides that the UWMP may be used, but it may or may not provide all of the information needed.

**Footnote 6:**

See California Water Code section 10910, subdivisions (c)(3) & (4); see also Government Code section 66473.7, subdivision (a)(2) [SB 221]

**Footnote 7:**

California Water Code section 10910, subdivision (f):

- (f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water assessment:
  - (1) A review of any information contained in urban water management plan relevant to the identified water supply for 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 current 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, historic 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, historic 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.

## ATTACHMENT Q ( 1 of 3 )

### WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1601 ECR - Pcl A - Existing CAL. BY EM  
JOB NUMBER 18190 CHKD. BY EM  
JOB LOCATION Redwood City, CA DATE 09/20/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
\_\_\_\_\_ Units X 2.2 Persons = \_\_\_\_\_ Persons
- \_\_\_\_\_ Persons X 60\* GPD = \_\_\_\_\_ GPD Projected

#### **B. OFFICE/COMMERCIAL**

\_\_\_\_\_ sqft X 0.13 gpd/sqft = \_\_\_\_\_ GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

**E. ALL OTHERS SEE PAGE 3:** = 9,120 GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

\_\_\_\_\_ sqft X 3.5 cuft of water /sqft of \_\_\_\_\_ CUFT/YR  
landscape per year

To convert to GPD:

\_\_\_\_\_ cuft/yr X 7.48 gal/ X 1 yr/ = \_\_\_\_\_ GPD Projected  
cuft 365 days

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 9,120 GPD Projected

#### Section E Calculation Summary

Retail : 90 ft x 450 gpd / 25 ft = 1,620 gpd

Service: 10 bays x 750 gpd = 7,500 gpd

# ATTACHMENT Q ( 1 of 3 )

## WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1601 ECR - Pcl B - Existing CAL. BY EM  
JOB NUMBER 18190 CHKD. BY EM  
JOB LOCATION Redwood City, CA DATE 09/20/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
\_\_\_\_\_ Units X 2.2 Persons = \_\_\_\_\_ Persons
- \_\_\_\_\_ Persons X 60\* GPD = \_\_\_\_\_ GPD Projected

#### **B. OFFICE/COMMERCIAL**

\_\_\_\_\_ sqft X 0.13 gpd/sqft = \_\_\_\_\_ GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

**E. ALL OTHERS SEE PAGE 3:** = 28,020 GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

\_\_\_\_\_ sqft X 3.5 cuft of water /sqft of \_\_\_\_\_ CUFT/YR  
landscape per year

To convert to GPD:

\_\_\_\_\_ cuft/yr X 7.48 gal/ X 1 yr/ = \_\_\_\_\_ GPD Projected  
cuft 365 days

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 28,020 GPD Projected

#### Section E Calculation Summary

Retail : 140 ft x 450 gpd / 25 ft = 2,520 gpd

Service: 34 bays x 750 gpd = 25,500 gpd



## ATTACHMENT Q ( 1 of 3 )

### WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1601 ECR - Pcl C - Existing CAL. BY EM  
JOB NUMBER 18190 CHKD. BY EM  
JOB LOCATION Redwood City, CA DATE 09/20/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
24 Units X 2.2 Persons = 53 Persons
- 53 Persons X 60\* GPD = 3,180 GPD Projected

#### **B. OFFICE/COMMERCIAL**

\_\_\_\_\_ sqft X 0.13 gpd/sqft = \_\_\_\_\_ GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

**E. ALL OTHERS SEE PAGE 3:** = 9,000 GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

\_\_\_\_\_ sqft X 3.5 cuft of water /sqft of  
landscape per year = \_\_\_\_\_ CUFT/YR

To convert to GPD:

\_\_\_\_\_ cuft/yr X 7.48 gal/ X 1 yr/ = \_\_\_\_\_ GPD Projected  
cuft 365 days

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 12,810 GPD Projected

#### Section E Calculation Summary

Service: 12 bays x 750 gpd = 9,000 gpd

## ATTACHMENT Q ( 1 of 3 )

### WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1601 ECR - Pcl D - Existing CAL. BY EM  
JOB NUMBER 18190 CHKD. BY EM  
JOB LOCATION Redwood City, CA DATE 09/20/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
\_\_\_\_\_ Units X 2.2 Persons = \_\_\_\_\_ Persons
- \_\_\_\_\_ Persons X 60\* GPD = \_\_\_\_\_ GPD Projected

#### **B. OFFICE/COMMERCIAL**

\_\_\_\_\_ sqft X 0.13 gpd/sqft = \_\_\_\_\_ GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

**E. ALL OTHERS SEE PAGE 3:** = 7,140 GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

\_\_\_\_\_ sqft X 3.5 cuft of water /sqft of  
landscape per year = \_\_\_\_\_ CUFT/YR

To convert to GPD:

\_\_\_\_\_ cuft/yr X 7.48 gal/ X 1 yr/  
cuft 365 days = \_\_\_\_\_ GPD Projected

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 7,140 GPD Projected

#### Section E Calculation Summary

Manufacturing: 12,600 sf / 200 sf/pp = 63 pp x 30 gpd = 1,890 gpd

Service: 7 bays x 750 gpd = 5,250 gpd

# ATTACHMENT Q ( 1 of 3 )

## WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1601 ECR - Pcl E - Existing CAL. BY EM  
JOB NUMBER 18190 CHKD. BY EM  
JOB LOCATION Redwood City, CA DATE 09/20/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
\_\_\_\_\_ Units X 2.2 Persons = \_\_\_\_\_ Persons
- \_\_\_\_\_ Persons X 60\* GPD = \_\_\_\_\_ GPD Projected

#### **B. OFFICE/COMMERCIAL**

\_\_\_\_\_ sqft X 0.13 gpd/sqft = \_\_\_\_\_ GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

**E. ALL OTHERS SEE PAGE 3:** = 18,900 GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

\_\_\_\_\_ sqft X 3.5 cuft of water /sqft of \_\_\_\_\_ CUFT/YR  
landscape per year

To convert to GPD:

\_\_\_\_\_ cuft/yr X 7.48 gal/ X 1 yr/ = \_\_\_\_\_ GPD Projected  
cuft 365 days

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 18,900 GPD Projected

#### Section E Calculation Summary

for BAWSCA Agencies "

Health Club: 13,800 sf / 50 sf/pp = 276 pp x 25 gpd = 6,900 gpd

Service: 16 bays x 750 gpd = 12,000 gpd

## ATTACHMENT Q ( 1 of 3 )

### WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1601 ECR - Pcl A - Future  
JOB NUMBER 18190  
JOB LOCATION Redwood City, CA

CAL. BY EM  
CHKD. BY EM  
DATE 10/21/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)

         Units X 2.8 Persons =          Persons

2. Multi - Family (8-20 Units/Acre)

         Units X 2.5 Persons =          Persons

3. High - Density (21+ Units/Acre)

252 Units X 2.2 Persons = 554 Persons

554 Persons X 60\* GPD = 33,240 GPD Projected

#### **B. OFFICE/COMMERCIAL**

         sqft X 0.13 gpd/sqft =          GPD Projected

#### **C. HOTEL**

         rooms X 195 gpd/room =          GPD Projected

#### **D. RESTAURANTS**

         seats X 30 gpd/seat =          GPD Projected

#### **E. ALL OTHERS SEE PAGE 3:**

= 2,160 GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

15,132 sqft X 3.5 cuft of water /sqft of landscape per year = 52,962 CUFT/YR

To convert to GPD:

52,962 cuft/yr X 7.48 gal/ cuft X 1 yr/ 365 days = 1,085 GPD Projected

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 36,485 GPD Projected

#### Section E Calculation Summary

Retail : 120 ft x 450 gpd / 25 ft = 2,160 gpd

## ATTACHMENT Q ( 1 of 3 )

### WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1601 ECR - Pcl B - Future  
JOB NUMBER 18190  
JOB LOCATION Redwood City, CA

CAL. BY EM  
CHKD. BY EM  
DATE 10/21/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
\_\_\_\_\_ Units X 2.2 Persons = \_\_\_\_\_ Persons
- \_\_\_\_\_ Persons X 60\* GPD = \_\_\_\_\_ GPD Projected

#### **B. OFFICE/COMMERCIAL**

109,379 sqft X 0.13 gpd/sqft = 14,219 GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

**E. ALL OTHERS SEE PAGE 3:** = 21,255 GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

25,251 sqft X 3.5 cuft of water /sqft of landscape per year = 88,379 CUFT/YR

To convert to GPD:

88,379 cuft/yr X 7.48 gal/ cuft X 1 yr/ 365 days = 1,811 GPD Projected

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 37,285 GPD Projected

#### Section E Calculation Summary

Retail : 160 ft x 450 gpd / 25 ft = 2,880 gpd

Child Care: 8,563 sf / 35 sf/pp = 245 pp x 75 gpd = 18,375 gpd

# ATTACHMENT Q ( 1 of 3 )

## WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1601 ECR - Pcl C - Future  
JOB NUMBER 18190  
JOB LOCATION Redwood City, CA

CAL. BY EM  
CHKD. BY EM  
DATE 10/21/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
\_\_\_\_\_ Units X 2.2 Persons = \_\_\_\_\_ Persons
- \_\_\_\_\_ Persons X 60\* GPD = \_\_\_\_\_ GPD Projected

#### **B. OFFICE/COMMERCIAL**

163,402 sqft X 0.13 gpd/sqft = 21,242 GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

#### **E. ALL OTHERS SEE PAGE 3:**

= \_\_\_\_\_ GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

13,202 sqft X 3.5 cuft of water /sqft of landscape per year = 46,207 CUFT/YR

To convert to GPD:

46,207 cuft/yr X 7.48 gal/ cuft X 1 yr/ 365 days = 947 GPD Projected

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 22,189 GPD Projected

\* From SFPUC Demand Study by URS, " Projected Water Usage for BAWSCA Agencies " , Tech Memo of August 2006.

## ATTACHMENT Q ( 1 of 3 )

### WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1601 ECR - Pcl D - Future  
JOB NUMBER 18190  
JOB LOCATION Redwood City, CA

CAL. BY EM  
CHKD. BY EM  
DATE 10/21/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
249 Units X 2.2 Persons = 548 Persons
- 548 Persons X 60\* GPD = 32,880 GPD Projected

#### **B. OFFICE/COMMERCIAL**

\_\_\_\_\_ sqft X 0.13 gpd/sqft = \_\_\_\_\_ GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

#### **E. ALL OTHERS SEE PAGE 3:**

= \_\_\_\_\_ GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

12,091 sqft X 3.5 cuft of water /sqft of landscape per year = 42,319 CUFT/YR

To convert to GPD:

42,319 cuft/yr X 7.48 gal/ cuft X 1 yr/ 365 days = 867 GPD Projected

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 33,747 GPD Projected

\* From SFPUC Demand Study by URS, " Projected Water Usage for BAWSCA Agencies " , Tech Memo of August 2006.

## ATTACHMENT Q ( 1 of 3 )

### WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1601 ECR - Pcl E - Future  
JOB NUMBER 18190  
JOB LOCATION Redwood City, CA

CAL. BY EM  
CHKD. BY EM  
DATE 10/21/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
\_\_\_\_\_ Units X 2.2 Persons = \_\_\_\_\_ Persons
- \_\_\_\_\_ Persons X 60\* GPD = \_\_\_\_\_ GPD Projected

#### **B. OFFICE/COMMERCIAL**

257,356 sqft X 0.13 gpd/sqft = 33,456 GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

**E. ALL OTHERS SEE PAGE 3:** = 1,980 GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

26,746 sqft X 3.5 cuft of water /sqft of landscape per year = 93,611 CUFT/YR

To convert to GPD:

93,611 cuft/yr X 7.48 gal/ cuft X 1 yr/ 365 days = 1,918 GPD Projected

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 37,354 GPD Projected

Section E Calculation Summary

Retail : 110 ft x 450 gpd / 25 ft = 1,980 gpd



# ATTACHMENT Q ( 1 of 3 )

## WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1304 El Camino Real - Existing CAL. BY EM  
JOB NUMBER 18255 CHKD. BY \_\_\_\_\_  
JOB LOCATION Redwood City, CA DATE 09/20/2019

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
\_\_\_\_\_ Units X 2.2 Persons = \_\_\_\_\_ Persons
- \_\_\_\_\_ Persons X 60\* GPD = \_\_\_\_\_ GPD Projected

#### **B. OFFICE/COMMERCIAL**

\_\_\_\_\_ sqft X 0.13 gpd/sqft = \_\_\_\_\_ GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

**E. ALL OTHERS SEE PAGE 3:** = 4,500 GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

\_\_\_\_\_ sqft X 3.5 cuft of water /sqft of \_\_\_\_\_ CUFT/YR  
landscape per year

To convert to GPD:

\_\_\_\_\_ cuft/yr X 7.48 gal/ X 1 yr/ = \_\_\_\_\_ GPD Projected  
cuft 365 days

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 4,500 GPD Projected

#### Section E Calculation Summary

Service: 6 bays x 750 gpd = 4,500 gpd

## ATTACHMENT Q ( 1 of 3 )

### WATER DEMAND PROJECTION WORKSHEET

JOB TITLE 1304 El Camino Real - Future CAL. BY EM  
JOB NUMBER 18255 CHKD. BY EM  
JOB LOCATION Redwood City, CA DATE 09/20/19

### INDOOR WATER DEMAND PROJECTION

#### **A. RESIDENTIAL**

1. Single Family (1-7 Units/Acre)  
\_\_\_\_\_ Units X 2.8 Persons = \_\_\_\_\_ Persons
2. Multi - Family (8-20 Units/Acre)  
\_\_\_\_\_ Units X 2.5 Persons = \_\_\_\_\_ Persons
3. High - Density (21+ Units/Acre)  
39 Units X 2.2 Persons = 86 Persons
- 86 Persons X 60\* GPD = 5,160 GPD Projected

#### **B. OFFICE/COMMERCIAL**

\_\_\_\_\_ sqft X 0.13 gpd/sqft = \_\_\_\_\_ GPD Projected

#### **C. HOTEL**

\_\_\_\_\_ rooms X 195 gpd/room = \_\_\_\_\_ GPD Projected

#### **D. RESTAURANTS**

\_\_\_\_\_ seats X 30 gpd/seat = \_\_\_\_\_ GPD Projected

**E. ALL OTHERS SEE PAGE 3:** = \_\_\_\_\_ GPD Projected

### LANDSCAPING WATER DEMAND PROJECTION

910 sqft X 3.5 cuft of water /sqft of landscape per year = 3,185 CUFT/YR

To convert to GPD:

3,185 cuft/yr X 7.48 gal/ cuft X 1 yr/ 365 days = 65 GPD Projected

### TOTAL DOMESTIC WATER DEMAND PROJECTION

**INDOOR + LANDSCAPING PROJECTION** = 5,225 GPD Projected

\* From SFPUC Demand Study by URS, " Projected Water Usage for BAWSCA Agencies " ,  
Tech Memo of August 2006.

## ATTACHMENT Q ( 2 of 3 )

### WATER DEMAND PROJECTION WORKSHEET OCCUPANT LOADS

JOB TITLE \_\_\_\_\_  
JOB NUMBER \_\_\_\_\_  
JOB LOCATION \_\_\_\_\_

CAL. BY \_\_\_\_\_  
CHKD. BY \_\_\_\_\_  
DATE \_\_\_\_\_

#### **DESIGNED USE OF THE FACILITY**

#### **OCCUPANT LOAD OF FLOOR AREA**

##### **A. SCHOOL/CLASSROOM**

20 sqft/person

##### **B. HEALTH CLUB**

50 sqft/person/shift  
(3 shifts per day)

##### **C. MANUFACTURING AREAS**

200 sqft/person

##### **D. NURSERIES (DAY-CARE)**

35 sqft/person

##### **E. STORAGE FACILITIES**

300 sqft/person

## ATTACHMENT Q ( 3 of 3 )

### WATER DEMAND PROJECTION WORKSHEET UNIT LOADS

JOB TITLE \_\_\_\_\_  
JOB NUMBER \_\_\_\_\_  
JOB LOCATION \_\_\_\_\_

CAL. BY \_\_\_\_\_  
CHKD. BY \_\_\_\_\_  
DATE \_\_\_\_\_

#### **TYPE OF ESTABLISHMENT**

#### **VOLUME OF CONSUMPTION/DAY**

|   |                            |
|---|----------------------------|
| Assembly Halls                                      | 2 gal per seat             |
| Bowling Alley                                       | 75 gal per lane            |
| Churches  | 7 gal per seat             |
| Dance Halls   | 2 gal per person           |
| General Hospitals                                   | 0.27 gal per sqft          |
| Health Clubs  | 25 gal per person          |
| Laundries   | 400 gal per machine        |
| Manufacturing (excluding industrial usage)          | 30 gal per person/shift    |
| Motels with bath, toilet and kitchen wastes         | 170 gal per room           |
| Nursing homes/Daycare                               | 75 gal per person          |
| Medical Offices (other than hospitals)              | 0.18 gal per sqft          |
| Research and Development                            | 0.21 gal per sqft          |
| Schools   | 35 gal per person          |
| Service Station                                     | 750 gal per bay            |
| Storage facilities                                  | 1 gal per person           |
| Stores (Retail type)                                | 450 gal per 25 ft frontage |
| (Food -- non-restaurant type)                       | 900 gal per 25 ft frontage |
| Trailer parks or tourist camps (with built-in bath) | 50 gal per person          |