Appendix G

Water Supply Assessment

DRAFT

Water Supply Assessment for the Crossroads West Specific Plan

Prepared for

City of Riverbank

February 2018

WEST YOST ASSOCIATES
Consulting Engineers

487-12-17-13

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consulting engineers

WATER WASTEWATER STORMWATER

Water Supply Assessment for the Crossroads West Specific Plan

Prepared for

City of Riverbank

Project No. 487-12-17-13

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List of Acronyms and Abbreviations

AF	Acre-Feet
AFY	Acre-Feet Per Year
City	City of Riverbank
County	Stanislaus County
CWSP	Crossroads West Specific Plan
DU	Dwelling Units
EIR	Environmental Impact Report
HDR	High Density Residential
IRGMP	Integrated Regional Groundwater Management Plan
LDR	Low Density Residential
MDR	Medium Density Residential
MID	Modesto Irrigation District
MU-1	Mixed Use 1
MU-2	Mixed Use 2
Project	Proposed Project
SB 221	Senate Bill 221
SB 610	Senate Bill 610
sf	Square feet
SOI	Sphere of Influence
UWMP	Urban Water Management Plan
WMP	Water Master Plan
WSA	Water Supply Assessment
WSCP	Water Shortage Contingency Plan

EXECUTIVE SUMMARY

The proposed Project (Project), also referred to as the Crossroads West Specific Plan (CWSP), if approved, consists of up to 1,872 Low Density Residential (LDR) units, up to 192 Medium Density Residential (MDR) units, and up to 388 High Density Residential (HDR) units. The Project also includes up to 550,000 square feet (sf) of Mixed Use 1 (MU-1) uses, and up to 27,000 sf of Mixed Use 2 (MU-2) uses. The City of Riverbank (City) issued a Notice of Preparation and Initial Study for the Project in March 2017. The purpose of this Water Supply Assessment (WSA) is to support the Environmental Impact Report (EIR) that is being prepared for the Project and to perform the evaluation required by Water Code sections 10910 through 10915 in connection with the availability of water supply for the Project. This WSA is not intended to reserve water, or to 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 City policies and procedures, consistent with existing law.

This WSA includes a discussion of the projected potable water demands of the Project (Section 2), determinations required under applicable regulations (Section 3), the City's water service area (Section 4), the City's projected potable and recycled demands through the year 2040 (Section 5), and the City's projected water supply sources and reliability through the year 2040 (Section 6). This WSA also documents the plan to ensure that sufficient water supplies will be available to serve the Project and the other planned development in the City's water service area through the planning period (Section 7).

The projected potable water demand and supplies documented in this WSA are based on the City's 2007 Water Supply Study and Water Master Plan (WMP), the City's 2015 Urban Water Management Plan (UWMP), and additional documents provided by the City. Water Code section 10910(c)(4) states that:

> "*…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.*"

Based on the technical analyses described in this WSA, the total projected water supplies documented to be available for the Project during Normal, Single Dry and Multiple Dry water years, during a 20-year projection, are more than sufficient to meet the projected water demands associated with the Project, in addition to existing and planned future uses. Documentation of the availability of this water to be allocated to this Project is provided in this WSA. The City has determined that its total projected water supplies will meet the above requirement of Water Code section 10910(c)(4), as documented in this WSA.

1.0 INTRODUCTION

The proposed Project (Project), also referred to as the Crossroads West Specific Plan (CWSP), is an approximately 381-acre development of residential and retail land uses to the west of the City's current City limits. The Project consists of up to 1,872 Low Density Residential (LDR) units, up to 192 Medium Density Residential (MDR) units, and up to 388 High Density Residential (HDR) units. The Project also includes up to 550,000 square feet (sf) of Mixed Use 1 (MU-1) uses, and up to 27,000 sf of Mixed Use 2 (MU-2) uses. The MU-1 could consist of a maximum of 550,000 sf of retail uses and no residential uses, or up to 350 units of residential uses and 360,000 sf of retail uses. The purpose of this WSA is to support the Environmental Impact Report (EIR) for the Project. Key topics covered in this introduction include:

- Legal Requirements for the Water Supply Assessment
- Need for and Purpose of Water Supply Assessment
- Water Supply Assessment Preparation, Format and Organization

1.1 Legal Requirements for the 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 that sought to promote more collaborative planning between local water suppliers and cities and counties. Both statutes require that detailed information regarding water availability be provided to city and county decision-makers prior to the approval of large development projects. The purpose of providing such information 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 the demands of proposed projects.

SB 610 amended California Water Code sections 10910 through 10915 to require agencies responsible for land use decisions:

1. To identify the public water purveyor(s) that may supply water for a proposed development project; and
2. To request a WSA from the identified water purveyor(s).

The City is the identified water purveyor for the Project. The purpose of the WSA is to demonstrate the sufficiency of the purveyor's water supplies to satisfy the water demands of the Project, while still meeting the water purveyor's obligations with regard to 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[1] requires an affirmative written verification of sufficient water supply. SB 221 was intended as a fail-safe mechanism to ensure that collaboration on finding the needed water supplies to serve a new large residential subdivision occurs before construction begins.

1.2 Need for and Purpose of Water Supply Assessment

The purpose of this WSA is to perform the evaluation required by Water Code Sections 10910 through 10915 in connection with the City's Project. This WSA is not intended to reserve water, or to 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 City policies and procedures, consistent with existing law.

1.3 Water Supply Assessment Preparation, Format and Organization

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

- Section 1: Introduction
- Section 2: Description of Project
- Section 3: Required SB 610 Determinations
- Section 4: City Water Service Area
- Section 5: City Water Demands
- Section 6: City Water Supplies
- Section 7: Determination of Water Supply Sufficiency Based on the Requirements of SB 610
- Section 8: Water Supply Assessment Approval Process
- Section 9: References

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

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

2.0 DESCRIPTION OF PROJECT

A general description of the Project location, proposed land uses, projected water demand, and proposed water supply is provided below.

2.1 Project Location

The location of the proposed Project, in relation to the current City limits and the City's water service area is shown on Figure 2-1. The Project is located to the west of the City's current City limits within the unincorporated area of Stanislaus County (County) and within the City's Sphere of Influence (SOI). The 381-acre Project Area is bounded on the east by Oakdale Road, on the south by Claribel Road, on the north by the Modesto Irrigation District (MID) Main Canal and the City of Riverbank city limits.

The nine parcels that comprise the Project Area are primarily used for agricultural operations including dairy operations, row crops, and fallow land. Seven home sites exist within the Project Area and many of them have accessory structures on site including storage buildings, shop buildings, and barn structures. Additionally, an approximately 11-acre regional City park, the Riverbank Sports Complex, is currently developed in the northeastern portion of the Project Area, near the intersection of Morrill Road and Oakdale Road. Crawford Road and Morrill Road traverse the Project Area from east to west.

MID provides water supply for the existing agricultural uses and maintains two easements in the Project Area. An MID main canal with a crossing is located along the northern boundary of the Project Area. Residential development is located just north of the Project Area. Additionally, MID Lateral 6 traverses the southern portion of the Plan Area from northeast to southwest. A series of private irrigation ditches distribute the MID water from the on-site canals throughout the Project Area.

The Project Area is surrounded by agricultural uses and residential uses to the southeast, south, southwest, and west. East of the southerly portion of the Project Area is a single family residential subdivision and commercial center. Existing residential subdivisions also exist to the north, northeast, and east of the Project Area. The Project Area is generally flat with a natural gentle slope from northeast to southwest with topography ranging from 111 to 125 feet above mean sea level.

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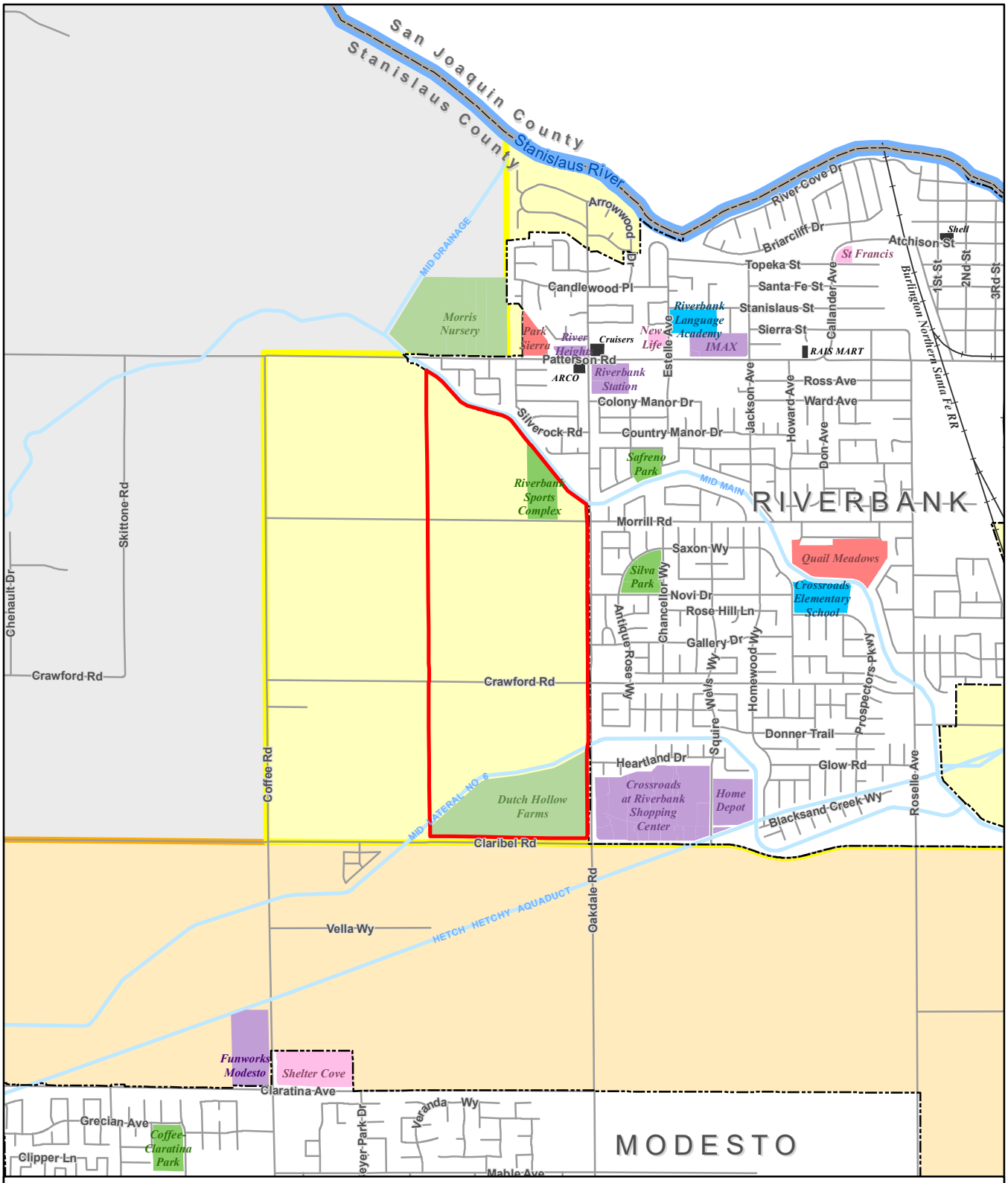


Legend

- Project Boundary
- City Boundary
- Riverbank SOI
- Modesto SOI
- County Boundary
- Canal
- Stanislaus River
- School
- Park
- Church
- Shopping/Entertainment
- Mobile Home Park
- Nursery/Farm
- Gas Station

N

0 500 1,000
Feet

1:28,000

CROSSROADS WEST SPECIFIC PLAN

Figure 2-1. Vicinity Map

Sources: Stanislaus County GIS; Google Maps. Map date: January 18, 2017.

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

2.2 Proposed Land Uses

The Project Area is approximately 381 acres (16,589,000 square feet). The Project consists of a variety of residential and commercial uses. The proposed land uses of the Project are shown in Figure 2-2 and summarized in Table 2-1. Some of the primary goals of the Project include to:

- Create opportunities for housing types responsive to current market conditions, with the flexibility to adapt to changing market conditions;
- Create synergy between the Project Area, containing a mixture of urban uses, with the City's existing commercial node at Crossroads Shopping Center east of Oakdale Road across from the Project site;
- Provide housing opportunities for employees expected in the City through the re-use and development of the Riverbank Industrial Complex;
- Eliminate the planning peninsula created by the city limits in northwest Riverbank;
- Link a mix of urban uses to regional amenities and transportation systems; and
- Improve the City's jobs-to-housing balance.

Table 2-1. Proposed Land Uses[a]

Proposed Land Use	Total Gross Area		Dwelling Units[b]
	square feet	acres	
LDR	10,193,040	234	1,872
MDR	522,720	12	192
HDR	675,180	15.5	388
MU-1[c]	2,352,240	54	350
MU-2[d]	217,800	5	50
Park, Open Space, Regional Sports Park (P)	1,829,520	42	-
Elementary School (S)	522,720	12	-
Right-of-Way and MID Facilities	276,170	6.34	-
Total Project	16,589,400[e]	380.84	2,852

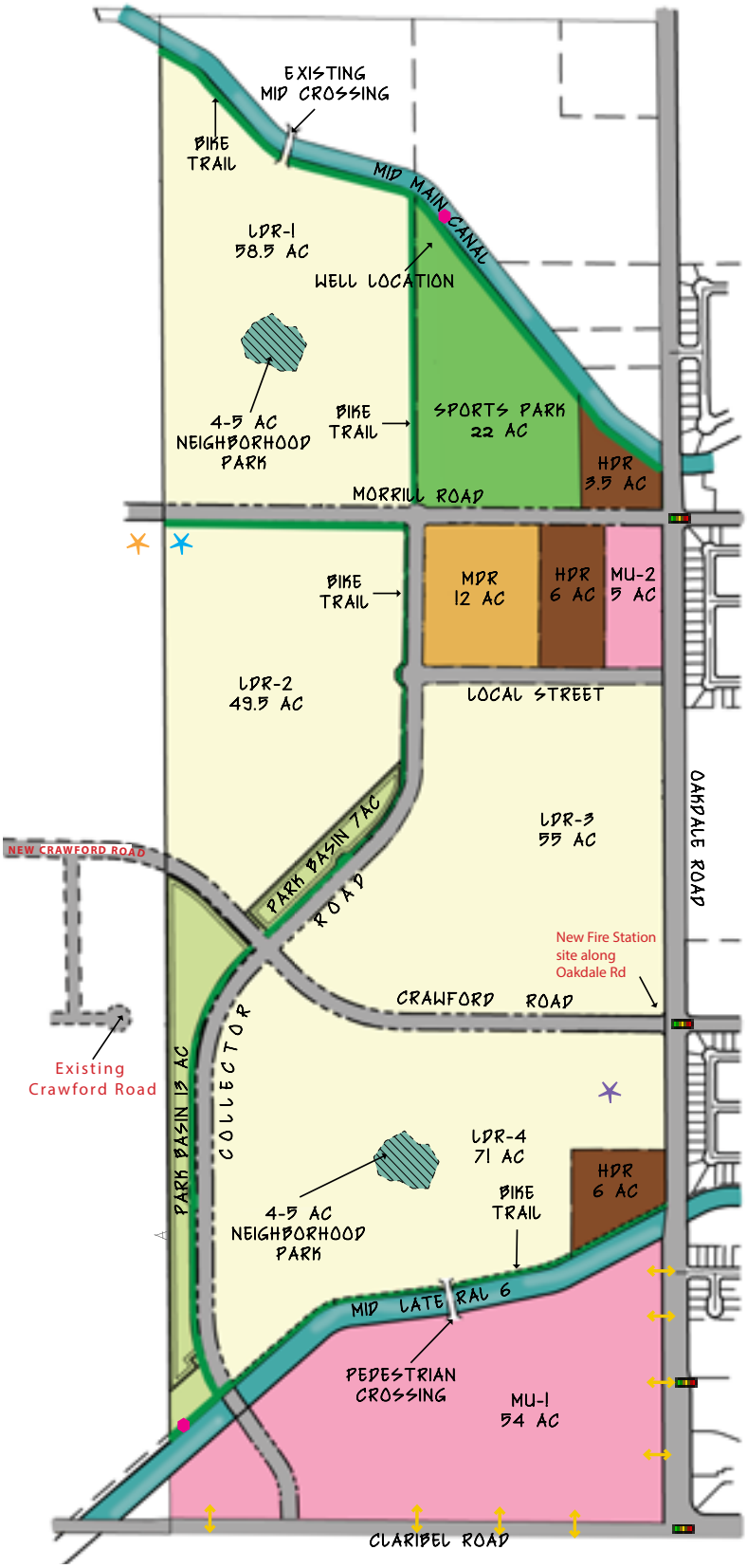
[a] Based on land use data reported in the Notice of Preparation and Initial Study for the Crossroads West Specific Plan (March 2017) for all land uses except for "Right-of-Way and MID Facilities". The "Right-of-Way and MID Facilities" total gross area information is based on email communications with De Novo Planning Group on July 24, 2017.

[b] The dwelling units shown represent the maximum number of dwelling units contemplated under each proposed land use.

[c] MU-1 could consist of a maximum of 550,000 sf of retail uses and no residential uses, or up to 350 units of residential uses and 360,000 sf of retail uses.

[d] MU-2 is estimated to develop with up to 27,000 sf of retail, and approximately 25 to 50 MDR or HDR units.

[e] Rounded.



LAND USE DATA

- LOW-DENSITY RESIDENTIAL (LDR) - 5-8 DU/Acre [3, 4]
- MEDIUM DENSITY RESIDENTIAL (MDR) - 8-16 DU/Acre
- HIGH DENSITY RESIDENTIAL (HDR) - 20+ DU/Acre
- REGIONAL SPORTS PARK (P)
- MIXED USE 1 (MU-1) [5]
- MIXED USE 2 (MU-2)
- K-5 School (S)
- PARK/BASIN (P)
- Neighborhood Park
- ARTERIALS, COLLECTORS AND LOCAL STREETS

LEGEND/NOTES

- ACCESS POINTS FOR COMMERCIAL
- EXISTING TRAFFIC SIGNALS
- K-5 SCHOOL [3] (S)
- ACTIVE ADULT [2]
- FUTURE MIDDLE SCHOOL EXPANSION
- BIKE TRAIL
- STORM DISCHARGE

NOTES:

[1] Total acreage does not include the existing Right-of-Ways for the MID Main Canal, Oakdale Road, MID Lateral 6, or Claribel Road.
[2] Active Adult is allowed anywhere within the LDR designation.
[3] The School location is a placeholder within the LDR.
[4] LDR unit count includes Neighborhood Park land which has an underlying land use designation of LDR.
[5] In Mixed Use 1, development could consist of all retail (550,000 sf) and no residential; or up to 350 units of residential and about 360,000 sf of retail.
[6] Park area included in LDR acres

N

Source: MVE, Inc. Map date: February 13, 2017.

CROSSROADS WEST SPECIFIC PLAN

Figure 8. Coneptual Land Use Plan

The Project will include between 1,170 and 1,872 LDR units, between 96 and 192 MDR units, between 248 and 388 HDR units, as well as mixed use areas with between zero and 350 MDR or HDR units in the MU-1 area and between 25 to 50 MDR or HDR units in the MU-2 area. The Project also includes between 360,000 sf and 550,000 sf of retail uses in the MU-1 area and up to 27,000 sf retail uses in the MU-2 area. The CWSP is designed to provide flexibility, so there are various other hypothetical combinations of retail and residential development, but no more than the maximum density presented would be allowed without an amendment approved by the City. Furthermore, the Project would increase the size of the existing 11-acre Riverbank Sports Complex, to 22 acres and a 10 to 12-acre elementary school is also proposed within the Project Area. Furthermore, the Project would be required to build a new municipal water well and a 1.69-million gallon peaking reservoir in accordance with the City's 2007 Water Master Plan.

2.3 Project Projected Water Demand

Residential water use factors are based on the City's 2007 WMP. The residential land use based water use factors shown in Table 2-2 were applied to the proposed land uses shown in Table 2-1 to project total water demands for the Project.

Table 2-2. Unit Water Demand Factors[a]

Residential Land Use Categories	Unit Demand Factor, GPD/DU
LDR	625
MDR	600
HDR	435
Non Residential Land Use Categories	**Unit Demand Factor, GPD/acre**
MU-1[b]	435
MU-2[c]	435
Park, Open Space, Regional Sports Park (P)	2,500
Elementary School (S)	2,000

[a] Source: City of Riverbank Water Supply Study and Water Master Plan (November 2007).
[b] MU-1 could consist of a maximum of 550,000 sf of retail uses and no residential uses, or up to 350 units of residential uses and 360,000 sf of retail uses. Unit demand factor for land use category "Mixed Use Office Retail Residential, Residential" was used for MU-1.
[c] MU-2 is estimated to develop with up to 27,000 sf of retail, and approximately 25 to 50 MDR or HDR units. Unit demand factor for land use category "Mixed Use Office Retail Residential, Residential" was used for MU-2.

The Project total water demand projection is shown in Table 2-3. As shown in that table, the total gross water demand is 2,013 AFY. The water demand projection includes a 11.7 percent factor for unaccounted-for water to match the system water loss reported in the City's 2015 American Water Works Association Water Auditing Worksheet, included in the 2015 UWMP as Appendix C.

Table 2-3. Projected Water Demand					
Component	Quantity	Water Factor	Units	Annual Water Demand, GPD	Annual Water Demand, AFY
LDR	1,872 DU	625	GPD/DU	1,170,000	1,311
MDR	192 DU	600	GPD/DU	115,200	129
HDR	388 DU	435	GPD/DU	168,780	189
MU-1	54 acres	435	GPD/acre	23,490	26
MU-2	5 acres	435	GPD/acre	2,175	2
P	42 acres	2,500	GPD/acre	105,000	118
S	12 acres	2,000	GPD/acre	24,000	27
Right-of-Way and MID Facilities	6.34 acres	0	GPD/acre	0	0
Unaccounted-for-Water[(a)]	-	-	-	188,211	211
Total Water Demand				1,796,856	2,013

[(a)] Based on 11.7 percent of total water production (City's 2015 American Water Works Association Water Auditing Worksheet and City 2015 UWMP, October 2016).

As indicated above, the parcels in the Project Area are currently served surface water from MID. The MID water supply source is the Tuolumne River. Although historical water use records are not available for these parcels, it is estimated, based on MID allocation limits set between 2010 and 2017 applied to the entire 381-acre Project Area, that existing surface water use in the Project Area averages up to 1,111 acre-feet per year (AFY) and may be as high as 1,523 in some years. Records of supplemental groundwater pumping by individual farmers or landowners, if any, were not available as this report was prepared. Based on the Project's projected potable water demand of 2,013 AFY, shown in Table 2-3, the Project's water demand is expected to be greater than the current water use in the Project Area.

2.4 Projected Water Supply for Project

The water demands for the Project will be served using the City's existing and future portfolio of potable water supplies.

3.0 REQUIRED SB 610 DETERMINATIONS

The following determinations must be made, pursuant to Senate Bill (SB) 610.

3.1 Does SB 610 apply to the Project?

Water Code sections 10910 and 10912 state:

> *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.*

Since the Project includes more than 500 dwelling units, SB 610 applies to the Project.

3.2 Does SB 221 apply to the 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 (DU). The Project, with its proposed up to 2,852 residential dwelling units, is subject to the requirements of SB 221.

3.3 Who is the identified public water system?

Water Code sections 10910 and 10912 state:

> *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…*

As shown on Figure 2-1, the Project is currently located within MID's irrigation service area. However, the City will be the identified public water system for the Project.

3.4 Does the City have an adopted Urban Water Management Plan (UWMP) and does the UWMP include the projected water demand for the Project?

Water Code section 10910 states:

> *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 City's 2015 UWMP, which was adopted on October 25, 2016. The 2015 UWMP includes existing and projected water demands for existing and projected future land uses to be developed in the City's water service area through the year 2035. The proposed Project area is not included within the City's 2015 UWMP as the Project area is not currently part of the City's service area.

The City's ability to meet the projected water demands for the Project is described in Section 7 of this WSA.

4.0 CITY WATER SERVICE AREA

A general description of the City's current service area and projected growth rates are provided below.

4.1 General Description

The City is located within the Stanislaus and San Joaquin Basins of the Great Central Valley, adjacent and south of the Stanislaus River. The City is approximately 4 miles to the southwest of the City of Oakdale and is just northeast of the City of Modesto. The Riverbank area is considered semi-arid and is characterized by hot, dry summers and mild, wet winters. In 2015, the City's population was 23,572.

The City supplies potable water to all the residential, commercial, and institutional/governmental water users within City limits. The City also supplies water to several residential locations and complexes outside the City limits, but within the Sphere of Influence.

4.2 City Growth Rates

The City's population growth rate has fluctuated in recent years. Between 2014 and 2015, the population grew 5.9 percent while between 2011 and 2012, population growth was only 0.6 percent. In the 2015 UWMP, the City used a 1.6 percent future projected average population growth rate through 2035 based on historical average growth data from 2005 through 2015.

The City's 2009 General Plan assumed a 140 percent increase in population, from 21,757 in 2008 to 52,500 in 2025, the year of buildout of the General Plan. However, recent trends in population growth suggest that the population is not growing as quickly as anticipated in the General Plan.

5.0 CITY WATER DEMANDS

Water Code section 10910 states:

> *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 have been taken primarily from the City's 2015 UWMP, which was adopted in October 2016. The Project is located just outside of the City's current service area. Supplemental information from other available reports has been included to provide the most recent data available and to meet the specific requirements of SB 610.

The following topics are covered in this section:

- City's Existing and Projected Water Demand
- Dry Year Water Demand

5.1 City Existing and Projected Water Demand

The City's water demand has fluctuated over time with a peak of 5,187 acre-feet (AF) water use occurring in 2007 followed by a noticeable decrease in annual water use despite a steady population increase within the City's sphere of influence. City staff believes the reduction in water use after 2007 was due to conservation efforts and the effect of the economic downturn. In the future, water demand is expected to increase as approved projects build out and new developments are approved and constructed in accordance with the City's water service area. The existing and projected total water demand, assuming normal year conditions, for the City in 5-year increments through 2035, based on the City's 2015 UWMP, is shown in Table 5-1. Table 6-2 also shows projected total water demand, assuming normal year conditions, for the City in 2040 based on extrapolations of the 2035 demands from the 2015 UWMP.

Table 5-1. Existing and Projected Future Water Demand for the City of Riverbank, AFY

Year	2015[a]	2020[b]	2025[b]	2030[b]	2035[b]	2040[c]
Total Water Demand	3,878	4,165	4,475	4,786	5,096	5,406

[a] Based on the City's 2015 Urban Water Management Plan, Table 4-1.

[b] Based on the City's 2015 Urban Water Management Plan, Table 4-2.

[c] The City's 2015 Urban Water Management Plan did not include a projection for projected water demand in 2040. The value shown here is based on increasing demands by 310 AF from 2035 projections. This same method of adding 310 AF to the previous 5-year increment's demand projection is the method used in the 2015 UWMP for projecting the water demand in years 2025 through 2035. This projected water demand increase assumes an approximate 1.6 percent growth in water demands, to be consistent with the 1.6 percent increase in historical average population growth from 2005 through 2015, according to the 2015 UWMP.

5.2 Dry Year Water Demand

The City has a Water Shortage Contingency Plan (WSCP) included in the 2015 UWMP to address situations when catastrophic water supply interruptions occur due to regional power outage, earthquake, or other disasters; and when drought occurs. The City's WSCP describes four stages of short-term water demand reduction measures that would be required during times when potable water supply is reduced. As will be discussed below, the City does not anticipate any reduction in potable supply due to dry year conditions through 2035. Therefore, the water shortage stages will most likely be implemented due to power outages, earthquakes, or other disasters rather than drought-related supply issues. The water shortage stages, and their respective anticipated reduction in potable water demand, are shown in Table 5-2.

Table 5-2. Water Shortage Contingency Plan Projected Demand Reduction[(a)]

Water Shortage Stage Description	Projected Demand Reduction, percent
Baseline Water Conservation	0
Stage 1 Minimal Action	15
Stage 2 Moderate Action	25
Stage 3 Severe Action	35
Stage 4 Critical Action	50

[(a)] Source: City's 2015 Urban Water Management Plan, Table 8-1.

The projected future water demand shown above in Table 5-1 is based on future normal hydrologic years. However, as indicated in the 2015 UWMP, the City does not anticipate a reduction in available water supplies under any hydrologic condition as described in the following sections.

5.2.1 Single Dry Year Demand Conditions

As indicated in the 2015 UWMP, the City does not anticipate a change in available water supplies or water demands during single-dry year hydrologic conditions. Therefore, the City would not expect the Project water demand to vary in single-dry years compared to normal hydrologic circumstances.

5.2.2 Multi-Dry Year Demand Condition

As indicated in the 2015 UWMP, during a multi-dry year event, the City does not anticipate a change in available water supplies or water demands. Therefore, the City would also not expect the Project water demand to vary in multi-dry year events compared to normal hydrologic circumstances.

Table 5-3 presents the projected future dry year potable water demand.

Table 5-3. Projected Future Dry Year Potable Water Demand

Hydrologic Condition	Demand Reduction[a]	2020	2025	2030	2035	2040
Single Dry Year[b], af/yr	0%	4,165	4,475	4,786	5,096	5,406
Multiple Dry Years, af/yr[c,d]	0%	4,165	4,475	4,786	5,096	5,406

[a] Conservatively assumes no demand reduction in dry years. Demands may be reduced in dry years as a result of the City'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] See Table 7-3 Single Dry Year Supply and Demand Comparison of the City's 2015 UWMP.
[c] See Table 7-4 Multiple Dry Years Supply and Demand Comparison of the City's 2015 UWMP.
[d] Represents demands for each year of the 3-year multiple dry year period.

In the City's 2015 UWMP, and this WSA, the additional water conservation which may occur in single dry or multiple dry years is not assumed to happen. This is a conservative assumption as additional water conservation may indeed occur as a result of the City's implementation of additional water conservation measures as outlined in the City's WSCP in response to multiple dry years or other water supply shortages.

6.0 CITY WATER SUPPLIES

Key topics addressed in this section include:

- Regulatory Background
- City Existing and Projected Potable Water Supplies

6.1 Regulatory Background

Water Code section 10910 states:

> *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, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts*
>
> *10910(d)(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:*
>
> *(A) Written contracts or other proof of entitlement to an identified water supply.*
>
> *(B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.*
>
> *(C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.*
>
> *(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.*
>
> *10910(e) If no water has been received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts, the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall also include in its water supply assessment pursuant to subdivision (c), 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, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of water supply within its water supply assessments.*

As the City relies exclusively on groundwater as a potable water supply, water supply for the Project would be groundwater.

The water supply for the Project will have the same water supply reliability and water quality as the water supply available to the City's other existing and future water customers. Proponents of the Project will provide their proportionate share of required funding to the City for the acquisition and delivery of potable groundwater to the Project area.

The water supplies needed to serve the Project (together with existing water demands and planned future uses) are described in the City's 2015 UWMP. Therefore, the summary description of the City's groundwater supplies, provided below, have been taken for the most part, from the City's 2015 UWMP, which was adopted in October 2016.

6.2 City Existing and Projected Potable Water Supplies

The City's sole source of water supply is groundwater. The City's potable groundwater is delivered through a pressurized distribution system. The City's water supply and distribution system includes ten wells with pumps, two one million-gallon (MG) peaking reservoirs with booster pump stations, and over 44 miles of pipeline 8 inches to 12 inches in diameter. There are also several miles of 4-inch and 6-inch diameter pipelines. The City's wells range in depth from 240 feet to 830 feet with an average depth of 440 feet. Yields from the wells range from 620 gallons per minute (gpm) at Well No. 2 to 1,500 gpm at Wells No. 10 and 12. The average yield is about 1,000 gpm, while the total available yield from all wells is 10,785 gpm (17,400 AFY if operated continuously). The average specific capacity of the City's wells between 1999 and 2015 was approximately 71 gpm/ft of drawdown. A summary of the well capacities and other well data is shown in Table 6-1, below.

Table 6-1. City of Riverbank Well Data[a]

Well Number	Construction Date	Completed Depth, feet	Well Capacity, gpm	Specific Capacity Range, gpm/ft drawdown	Estimated Pumping Level, feet bgs, at Max Production and Max Static DTW
2	1956	240	660	45 to 47	85
3	1965	420	625	24 to 35	90
4	1972	436	900	up to 74	75
5	1978	385	900	56 to 81	90
6	1981	560	1,000	up to 122	76
7	1990	NA	1,200	up to 75	82
8	2001	260	1,200	unknown	116
9	2004	392	1,300	up to 50	89
10	2007	830	1,500		
12	2010	602	1,500	up to 43	120
Total Well Capacity, gpm			10,785	—	—
Firm Well Capacity, gpm[b]			9,285	—	—

[a] Source: 2015 UWMP, Appendix F.
[b] Firm well capacity is the total well capacity with the largest well out of service.

In addition to the wells shown in Table 6-1, the Project would be required to build a new municipal water well so the available capacity would be even greater than what is shown in the table. The new well associated with the Project is not included in Table 6-1 as it is only conceptual at present.

As detailed in the 2015 UWMP, the City's groundwater wells are located in the Modesto groundwater subbasin and the City is part of the Stanislaus and Tuolumne Rivers Groundwater Basin Association and was a part of the development of the Integrated Regional Groundwater

Management Plan (IRGMP) for the Modesto Subbasin in 2005. Based on the IRGMP for the Modesto Subbasin, and various groundwater investigations performed on groundwater availability in the subbasin, including the Self-Certification of Supply Reliability for Three Additional Years of Drought (as required by the State Water Resources Control Board in 2016), the City's groundwater supplies are expected to be highly reliable as is described in further detail below. More details about the groundwater basin is available in the 2015 UWMP.

6.2.1 Groundwater Supply Reliability

As stated in Section 5, the City does not anticipate a quantitative reduction in available water supplies under any hydrologic condition. Furthermore, historic water quality at the City's wells has been excellent, with no Safe Drinking Water Act violations to-date. The City expects this water quality to continue and, therefore, does not project any water supply changes due to water quality.

The anticipated reliability of potable groundwater supplies in Normal, Single Dry, and Multiple Dry hydrologic conditions is shown in Table 6-2.

Table 6-2. City of Riverbank Groundwater Supply Reliability, AFY[(a)]

Water Supply	Normal Year	Single Dry Year	Multiple Dry Years		
			Year 1	Year 2	Year 3
Groundwater	17,400	17,400	17,400	17,400	17,400
Total Water Supply Available	17,400	17,400	17,400	17,400	17,400
Percent of Normal Year	100%	100%	100%	100%	100%

(a) Source: 2015 UWMP, approved by City Council October 25, 2016, Tables 7-3 and 7-4.

6.2.2 Additional Planned Future Potable Water Supplies

An eleventh well, Well No. 11, has been designed and is planned for the south side of Santa Fe Street, east of Central Avenue in rural northeastern Riverbank. The City's 2007 WMP suggested the addition of sixteen new groundwater wells (including Well No. 11), with a capacity of 1,500 gpm each, to meet 20 percent reserve capacity provisions and maximum day demands, as well as emergency storage requirements at build-out conditions. Eight of these new wells would be in the area west of the current City limits, some of which would be in the Project area. With the exception of Well No. 11, all other additional wells are currently only conceptual.

Aside from plans to gradually add wells to the City's groundwater network, the City does not have other planned future potable water supplies. At present, conjunctive (surface water) uses are limited to natural groundwater recharge from surface water. Should Oakdale Irrigation District embark on a program of supplying treated surface water for municipal uses, opportunities to purchase water may become available.

6.2.3 Future Potable Water Supply Reliability

The City's 2015 UWMP concluded that only a small percentage of the storage capacity in the upper 300 feet of the aquifer is tapped and it appears that properly spaced wells will be able to provide the required capacity at full build out.

7.0 DETERMINATION OF WATER SUPPLY SUFFICIENCY BASED ON THE REQUIREMENTS OF SB 610

Water Code section 10910 states:

> *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.*

According to the City's 2015 UWMP, the total water supplies available in 2015 (17,400 AF), satisfied the actual water demand in 2015 (3,878 AF). Therefore, the City had approximately 13,522 AF of unallocated water supply in 2015. The 2015 unallocated water supply significantly exceeds the 2,013 AFY total water demand of the Project.

The total water supplies projected to be available in 2035 in all year types (17,400 AF), satisfies the projected potential water demand in 2035 in all year types (5,096 AF). With the projection of supply and demand presented in Section 5 for 2040, the total water supplies projected to be available in 2040 in all year types (17,400 AF), satisfies the projected potential water demand in 2040 in all year types (5,406 AF). Therefore, the City is projected to have approximately 11,994 AF of unallocated water supply in 2040 under all water year types. The future anticipated unallocated water supply significantly exceeds the 2,013 AFY total water demand of the Project.

The comparison of projected potable water demand and supplies for the 20-year planning period is shown in Table 7-1.

Table 7-1. Summary of Potable Water Demand Versus Supply During Hydrologic Normal, Single Dry, and Multiple Dry Years for the City of Riverbank, AFY[a]

Hydrologic Condition		Supply and Demand Comparison				
		2020	2025	2030	2035	2040
Normal Year						
Available Water Supply		17,400	17,400	17,400	17,400	17,400
Total Water Demand (with Project)[b]		6,178	6,488	6,799	7,109	7,419
Potential Surplus (Deficit)		11,222	10,912	10,601	10,291	9,981
Single Dry Year						
Available Water Supply		17,400	17,400	17,400	17,400	17,400
Total Water Demand (with Project)		6,178	6,488	6,799	7,109	7,419
Potential Surplus (Deficit)		11,222	10,912	10,601	10,291	9,981
Multiple Dry Years						
Multiple-Dry Year First Year Supply	Available Water Supply	17,400	17,400	17,400	17,400	17,400
	Total Water Demand (with Project)	6,178	6,488	6,799	7,109	7,419
	Potential Surplus (Deficit)	11,222	10,912	10,601	10,291	9,981
Multiple-Dry Year Second Year Supply	Available Water Supply	17,400	17,400	17,400	17,400	17,400
	Total Water Demand (with Project)	6,178	6,488	6,799	7,109	7,419
	Potential Surplus (Deficit)	11,222	10,912	10,601	10,291	9,981
Multiple-Dry Year Third Year Supply	Available Water Supply	17,400	17,400	17,400	17,400	17,400
	Total Water Demand (with Project)	6,178	6,488	6,799	7,109	7,419
	Potential Surplus (Deficit)	11,222	10,912	10,601	10,291	9,981

[a] Normal year demands are from Table 5-1 and dry year demands are based off the demand assumptions stated in Section 5.2. Available water supplies are from Table 6-2.
[b] From Tables 2-3 and 5-1.

Using the Dry Year demand assumptions stated in Section 5.2, no potential deficits in potable water supply occur. In other words, the City's available supplies and demand reduction plans are sufficient to meet projected demands through 2040. Therefore, the City's total projected water supplies can easily satisfy the Project demands during Normal, Single Dry, and Multiple Dry water years over a 20-year projection.

Pursuant to Water Code section 10910(c)(4), and based on the technical analyses described in this Water Supply Assessment, the total projected water supplies documented to be available for the Project during Normal, Single Dry, and Multiple Dry water years during a 20-year projection are more than sufficient to meet the projected water demand associated with the Project, in addition to existing and planned future uses.

8.0 WATER SUPPLY ASSESSMENT APPROVAL PROCESS

Water Code sections 10910 and 10911 state:

> *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.*
>
> *10911 (b) The city or county shall include the water supply assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.*

SB 610 and SB 221 apply to the Project and, therefore, the City has prepared this WSA documenting that available water supplies are sufficient to meet the demands of the Project under normal, single-dry, and multiple-dry year conditions. The Riverbank City Council must approve this WSA at a regular or special meeting. Furthermore, the City must include this WSA in the Draft EIR being prepared for the Project.

9.0 REFERENCES

City of Riverbank General Plan 2005 – 2025, 2009.

City of Riverbank Water Supply Study and Water Master Plan, November 2007.

City of Riverbank 2015 Urban Water Management Plan, adopted by City Council on October 25, 2016.

Notice of Preparation and Initial Study for the Crossroads West Specific Plan, March 2017.