Appendix E

SB 610 Water Supply Assessment

RIVER ISLANDS PHASE 2 DEVELOPMENT WATER SUPPLY ASSESSMENT

September 2020

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ACRONYMS

ACE	Altamont Commuter Express
Act	California Urban Water Management Planning Act
ADWF	Average Dry Weather Flow
AF	acre-feet
AFY	acre-feet per year
Bay-Delta Plan	Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary
CEQA	California Environmental Quality Act
cfs	cubic feet per second
City	City of Lathrop
CLSP	Central Lathrop Specific Plan
COCs	constituents of concern
CTF	Consolidated Treatment Facility
DBCP	1,2-dibromo-3-chloropropane
DGWTP	DeGroot Water Treatment Plant
DOF	California Department of Finance
DWR	Department of Water Resources
EDB	ethylene dibromide
EIR	Environmental Impact Report
ft bgs	feet below ground surface
GPCD	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
GSAs	Groundwater Sustainability Agencies
GSH	Glenn Springs Holdings, Inc.
GSPs	Groundwater Sustainability Plans
GWMP	Groundwater Management Plan
I-5	Interstate 5
IWRMP	Integrated Water Resources Master Plan

Lathrop CTF	Lathrop Consolidated Treatment Facility
LAWTF	Louise Avenue Water Treatment Facility
MCLs	maximum contaminant levels
Mg/L	milligrams per liter
MGD	million gallons per day
MWQCF	Manteca Wastewater Quality Control Facility
NLs	notification levels
NPDES	National Pollution Discharge Elimination System
OCC	Occidental Chemical Corporation
OID	Oakdale Irrigation District
PFAS	polyfluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
ppt	parts per trillion
Project	Phase 2 Development Area
River Islands	River Islands at Lathrop
RL	response level
SB	Senate Bill
SCWSP	South County Water Supply Program
SEIR	Subsequent Environmental Impact Report
SGMA	Sustainable Groundwater Management Act
SSJID	South San Joaquin Irrigation District
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WDR	Waste Discharge Requirements
WSA	Water Supply Assessment
WSCP	Water Shortage Contingency Plan
WSDA	Water Supply Development Agreement
WSMP	Water System Master Plan
WWTF	Wastewater Treatment Facility

1. INTRODUCTION

California Water Code:
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.

10914 (a) Nothing in this part is intended to create a right or entitlement to water service or any specific level of water service.
(b) Nothing in this part is intended to either impose, expand, or limit any duty concerning the obligation of a public water system to provide certain service to its existing customers or to any future potential customers.
(c) Nothing in this part is intended to modify or otherwise change existing law with respect to projects which are not subject to this part.
(d) This part applies only to a project for which a notice of preparation is submitted on or after January 1, 1996.

The City of Lathrop (City) has prepared this Water Supply Assessment (WSA) for the River Islands at Lathrop (River Islands) Phase 2 development (Project) pursuant to California Water Code Sections 10910-10915 as required by Senate Bill (SB) 610 and SB 221. To increase the accessibility of the information presented herein, each section of the WSA that responds directly to a requirement of the Water Code begins with a recitation of the applicable language from the pertinent Water Code provisions which are addressed in that section of the WSA.

The purpose of this WSA is to perform the evaluation required by SB 610 and SB 221 in connection with the Project to assess the sufficiency of projected water supplies relative to projected Project demand for a 20-year period, or until 2040; it is not to reserve water or to function as a "will serve" letter or any other form of commitment to supply water (per 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.

1.1 Project Background

1.1.1 City of Lathrop

The City is located in San Joaquin County, approximately 10 miles south of the City of Stockton and directly west of the City of Manteca, as shown in **Figure 1**. The City lies east of the Coastal Range that separates California's Central Valley from the San Francisco Bay Area. Interstate 5 (I-5), a major north-south interstate corridor, bisects the City. The City is also connected to Highway 120, which runs east-west through the southeastern-most part of the City, and by Interstate 205, which connects Interstate 580 to I-5. The City is also bisected by the Altamont Commuter Express (ACE) train, which travels along the southern and eastern border of the City. The original City was developed primarily east of I-5. However, newer master-planned developments within the City boundary are located west of I-5, including River Islands. The City currently encompasses an area of approximately 13,400 acres, or about 20.9 square miles; however, its sphere of influence is slightly larger (approximately 13,600 acres or 21.2 square miles) and includes two unincorporated areas northeast and southeast of the City boundaries.

The City is one of the fastest growing cities in California. As of January 1, 2020, Lathrop's population was 26,833 people, which represents a 5.6 percent growth from 2019 as reported by the California Department of Finance (DOF) (California DOF, 2020). In the 26-year period between 1990 and 2016, the City grew by approximately 224 percent, from approximately 6,800 to 22,100 residents (California DOF, 2007, 2012, 2016). The City anticipates that its population will continue to grow in the future given its several planned large residential developments that have been approved or are pending, including River Islands. Currently, the City's rate of growth for new housing is the second

highest in the State at 4.79 percent (City of Lathrop, 2020). More than 18,000 single-family and 350 multi-family units are approved to be built over the next 20 years. Per the City's 2015 UWMP, the population served is projected to reach 74,577 people by 2040 and 93,485 at buildout (EKI, 2017). To continue to meet the water needs of the growing community, the City carefully manages its available water resources.

1.1.2 River Islands at Lathrop

The City has a number of approved and developing large development projects within the City's boundary, the largest of which is River Islands. River Islands is a mixed use, water-oriented master-planned community, containing approximately 4,905 acres located west of the San Joaquin River on Stewart Tract and Paradise Cut (a flood control bypass connecting the San Joaquin River and Old River in the Sacramento-San Joaquin River Delta). The River Islands development area is shown in **Figure 2**. The new development is bringing new residences along with retail services, educational and recreational amenities, employment, and environmental enhancements to the City.

The River Islands project area can be delineated into Phase 1 and Phase 2 areas. A mix of low-, medium-, and high-density residential units are proposed, consisting in total of 15,010 homes (Phase 1 and 2, combined). Since 2014, River Islands continues to construct new housing adjacent to an extensive lake system, with connectivity to the surrounding rivers, allowing a range of lifestyles from more urban to more rural. Mixed-use commercial and town centers will include a variety of workplaces, retail, entertainment, and restaurant venues. In addition, a number of parks and schools are proposed throughout the Phase 1 and Phase 2 areas, with two public schools and six public parks already constructed. About 1,500 residential units were constructed and occupied by the end of 2019, with estimated completion of Phase 1 in 2025. Phase 1 was the subject of a previous WSA, developed in August 2002, entitled *City of Lathrop SB 610 Water Supply Assessment Report for Mossdale Landing, River Islands at Lathrop, and Lathrop Station* (2002 WSA) (Nolte, 2002). This WSA has been prepared to address the proposed general plan and West Lathrop Specific Plan amendments for the Phase 2 development of River Islands proposed by the developer.

1.1.3 South San Joaquin Irrigation District

South San Joaquin Irrigation District (SSJID) supplies the City with imported treated surface water through the South County Water Supply Program (SCWSP). SSJID was formed in 1909 under the Irrigation District Act and covers approximately 72,000 acres in the southeastern portion of San Joaquin County. The Cities of Manteca, Ripon, and Escalon account for approximately 20,000 acres of the SSJID service area. In 2005, SSJID began delivery of up to 32,000 acre-feet per year (AFY) of treated surface water from Woodward Reservoir to the Cities of Manteca, Lathrop, and Tracy for the SCWSP; this volume is expected to increase to up to 43,000 AFY with implementation of Phase II of the SCWSP. The City of Escalon is also expected to receive treated surface water from SSJID in the future. River Islands will receive a total of 3,500 acre-feet (AF) of SCWSP potable water in accordance with an agreement with the City.

1.1.4 Project Description

The Project covers an area of approximately 2,500 acres of land and open space located west of the Phase 1 development area on Stewart Tract and Paradise Cut. The Project proposes to expand beyond Phase 1 development to accommodate additional residential, retail, and commercial development. Residential development includes multi-family dwellings (condominiums, apartments, etc.) as well as attached single-family homes similar to units already constructed with Phase 1. A "Village Center" mixed-use area at Paradise Road is planned, as is a mixed-use transit-oriented development as part of the Employment Center District that complements the future planned Valley Link (formerly ACE) transit station. In total, buildout of Phase 2 is projected to result in 10,726 new residential dwelling units. Phase 2 also includes additional lakes, parks, schools, and an expansion of the transportation/circulation system. **Figure 3** presents the land use designations for the Project, and planned Project development is detailed by land use type in **Table 1**. Additional information regarding the Project can be found in Appendix A.

Figure 1: City of Lathrop Location within San Joaquin County

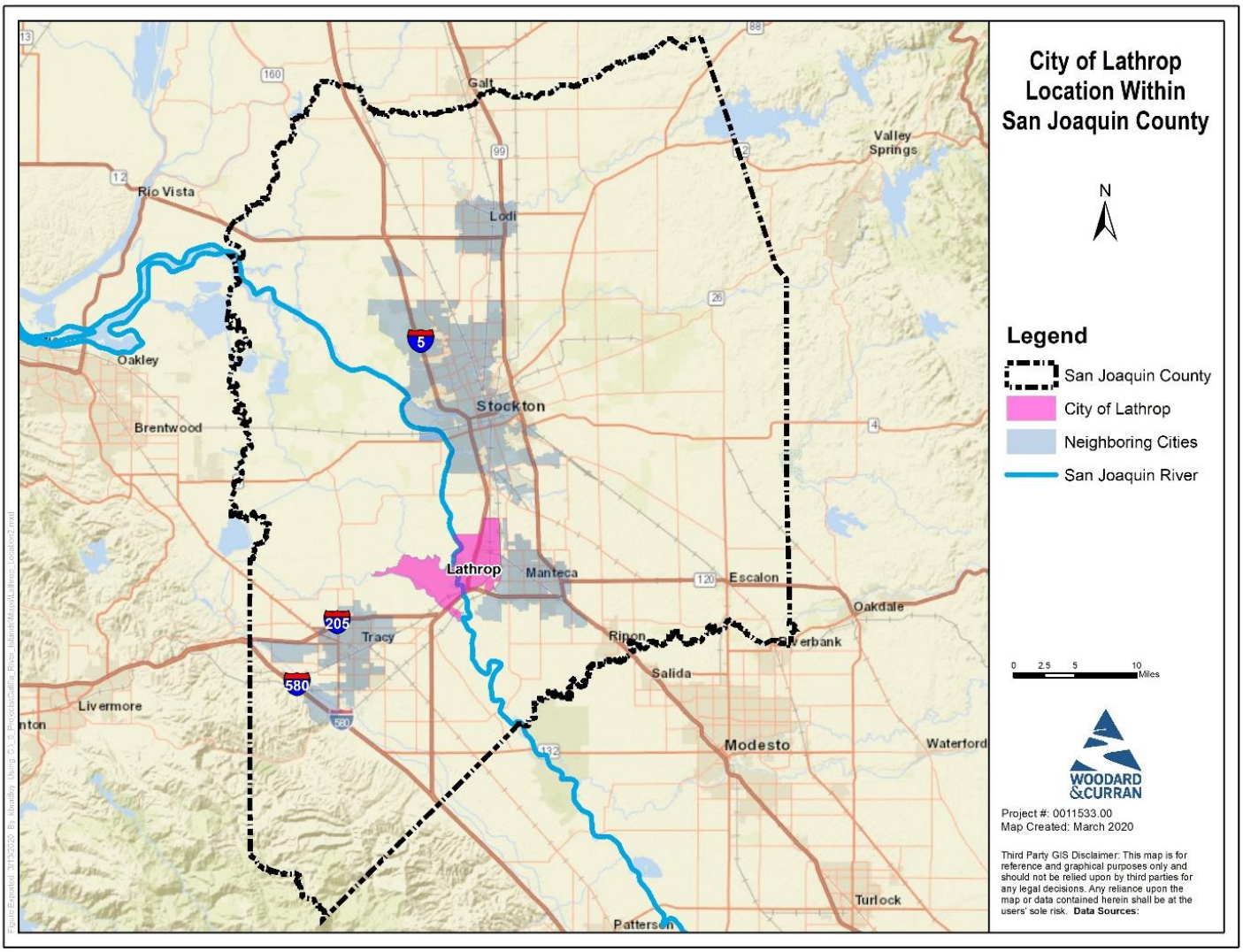


Figure 2: River Islands at Lathrop Development Area

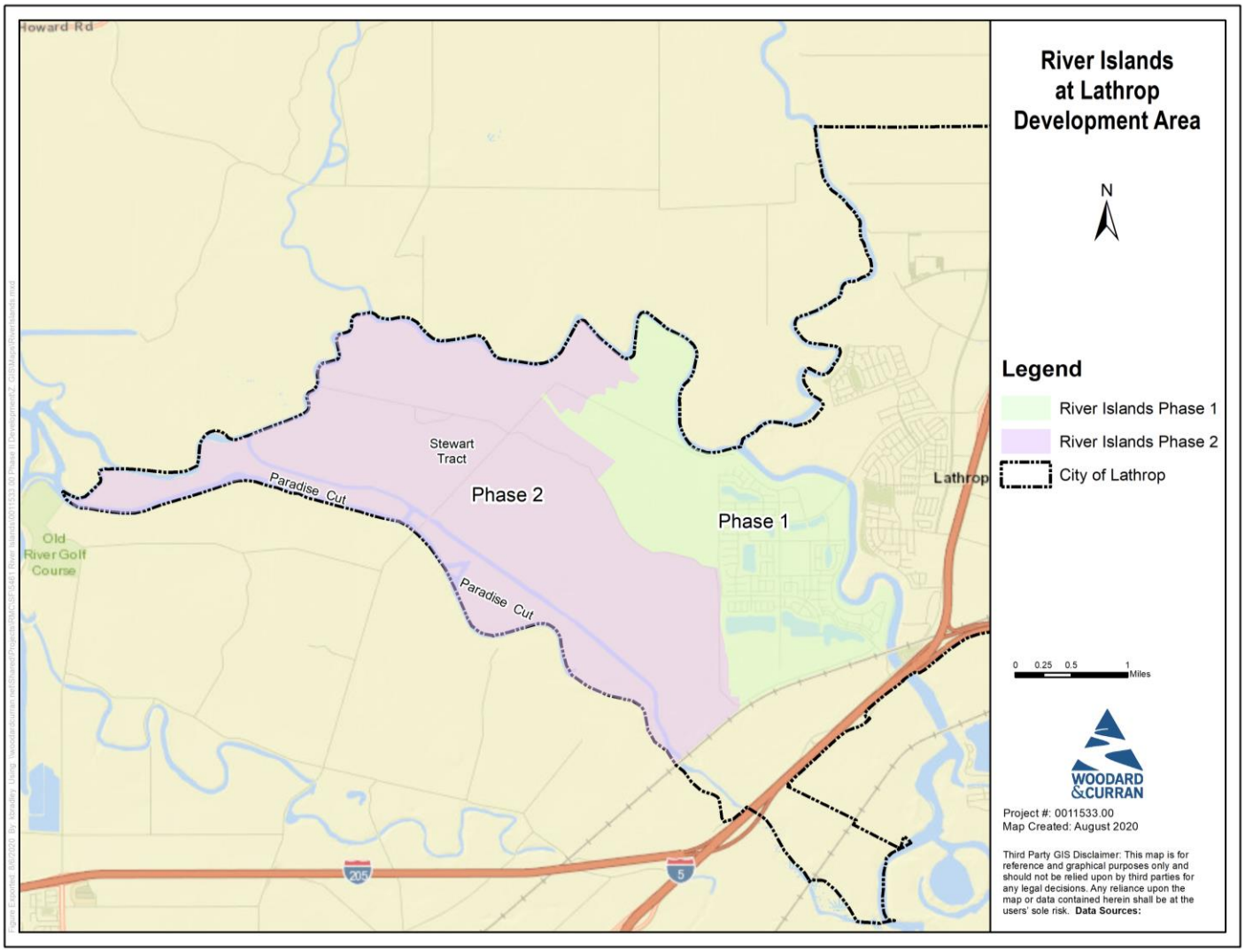


Figure 3: River Islands Proposed Land Use (Phase 1 and Phase 2 Development Area)

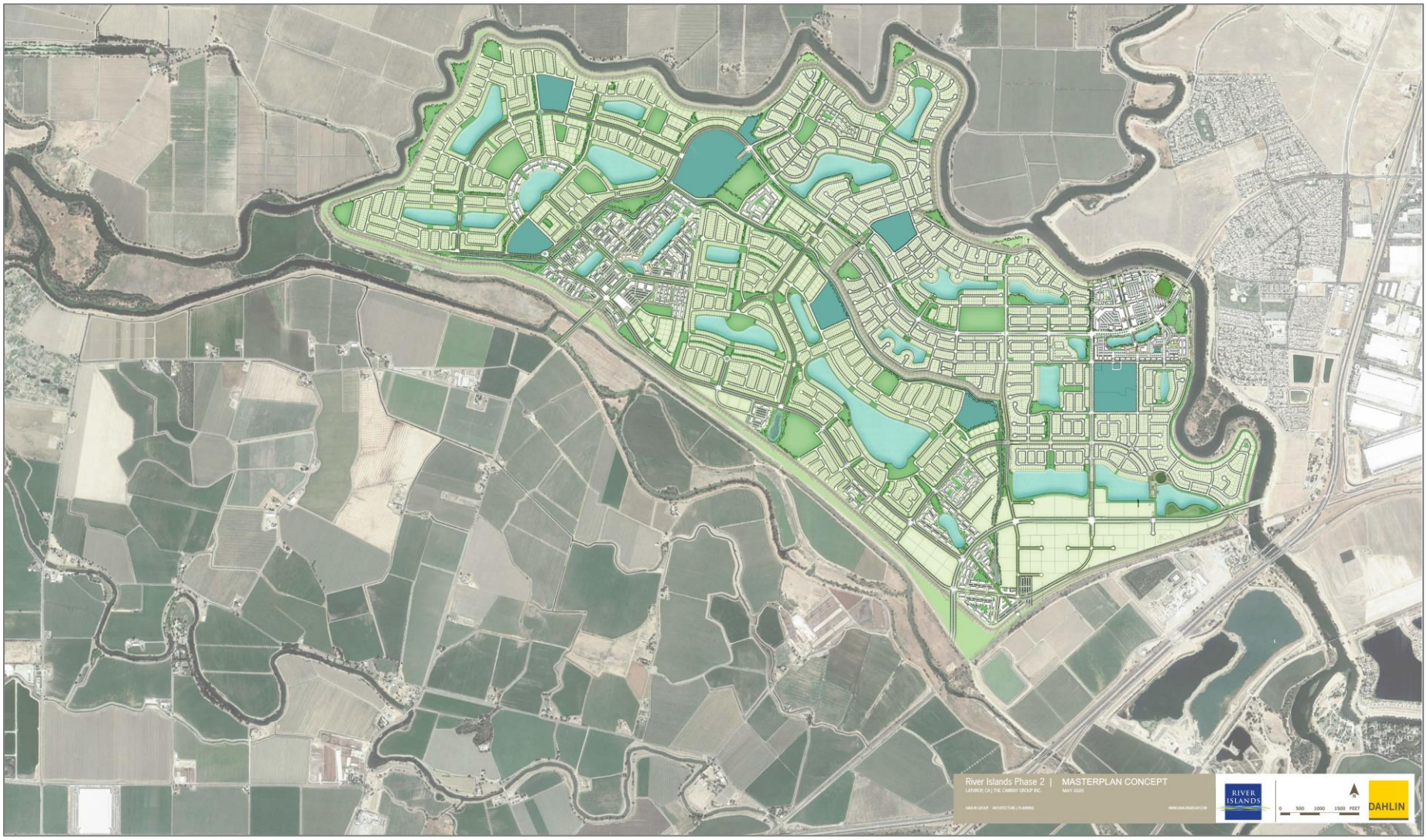


Table 1: Phase 2 Project Development at Buildout

	Residential Density (units/acre)	Residential Units	Project Area (acres)	Project Area (SF)
Residential				
Low Density Residential	1.0 – 9.0	4,061	-	-
Medium Density Residential	9.0 – 15.0	3,150	-	-
High Density Residential	15.0 – 35.0	3,515	-	-
Non-Residential				
Commercial[1]	-	-	135.6	5,906,364
Schools	-	-	109.7	4,778,532
Parks and Open Space[2]	-	-	211.5	9,213,349
Roadway Landscape Area[3]	-	-	39.7	1,728,679
Total		**10,726**	**496**	**21,626,924**

Source: Data provided by Califia, the Project developer (September 2020).
Notes:
1. Includes the planned River Islands Town Center and Employment Center.
2. Includes only irrigated parks and open space areas.
3. Includes only irrigated roadway landscape areas.

1.2 Applicability

1.2.1 When a WSA is Required

California Water Code:
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. 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.

As shown in **Table 2** and discussed in Section 1.1.4 above, the Project includes the following development:

Table 2: Proposed Phase 2 Project Development

Category	Residential Units	Project Area (SF)
Residential	10,726	N/A
Commercial[1]	N/A	5,906,364
Public/Institutional[2]	N/A	15,720,560
Total	**10,726**	**21,626,924**

Source: Data provided by Califia, the Project developer (September 2020).
Notes:
1. Includes the planned River Islands Town Center and Employment Center.
2. Includes planned schools, parks and open space (irrigated areas only), and roadway landscape areas (irrigated areas only).

Since the Project is subject to the California Environmental Quality Act (CEQA) and includes an overall net increase in development that meets or exceeds the criteria set forth in Water Code Section 10912(a), it qualifies as a "project" and is subject to the requirements of SB 610.

1.2.2 Public Water System Identified

California Water Code:
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 whose service area includes the project site and any water system adjacent to the project site 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 in Section 10912, that may supply water for the project. If the city or county is not able to identify any public water system that may supply water for the project, the city or county shall prepare the water assessment required by this part after consulting with any entity serving domestic water supplies whose service area includes the project site, the local agency formation commission, and any public water system adjacent to the project site.

10912 (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.
(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 that 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.

The City operates the public water system that provides water supply to the Project area and is the only proposed supplier for the Project. The City obtains the majority of its water from local groundwater sources and from imported water supplied by SSJID through the SCWSP. The City also owns and operates the Lathrop Consolidated Treatment Facility (Lathrop CTF), which provides recycled water to the City's service area.

1.2.3 Required for Submittal of Assessment

California Water Code
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.
(2) Prior to the expiration of the 90-day period, if the public water system intends to request an extension of time to prepare and adopt the assessment, the public water system shall meet with the city or county to request an extension of time, which shall not exceed 30 days, to prepare and adopt the assessment.
(3) If the public water system fails to request an extension of time, or fails to submit the assessment notwithstanding the extension of time granted pursuant to paragraph (2), the city or county may seek a writ of mandamus to compel the governing body of the public water system to comply with the requirements of this part relating to the submission of the water supply assessment.
(h) Notwithstanding any other provision of this part, if a project has been the subject of a water supply assessment that complies with the requirements of this part, no additional water supply assessment shall be required for subsequent projects that were part of a larger project for which a water supply assessment was completed and that has complied with the requirements of this part and for which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has concluded that its water supplies are sufficient to meet the projected water demand associated with the proposed project, in addition to the existing and planned future uses, including, but not limited to, agricultural and industrial uses, unless one or more of the following changes occurs:
(1) Changes in the project that result in a substantial increase in water demand for the project.
(2) Changes in the circumstances or conditions substantially affecting the ability of the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), to provide a sufficient supply of water for the project.
(3) Significant new information becomes available that was not known and could not have been known at the time when the assessment was prepared.

As indicated above, River Islands Phase 1 was the subject of a previous WSA developed in 2002. In 2003, the City approved a number of entitlements for the overall River Islands at Lathrop project, including amendments to the General Plan, West Lathrop Specific Plan, a Vesting Tentative Map for Phase 1, an Amended and Restated Development Agreement and certified a Subsequent Environmental Impact Report (SEIR). The approved overall River Islands project includes a mix of residential, commercial, office, recreational, educational, and open space uses. The overall project, first approved in 2003, has been updated and amended for Phase 1 development in particular, in 2005, 2007, 2012, 2014, 2015 and 2018. These amendments to the original approval were covered by an addendum under CEQA which did not trigger an update to the original WSA. Phase 2 requires an EIR, and project approvals include a new vesting tentative map which necessitates this WSA.

River Islands Phase 2 Project is the subject of this WSA. In accordance with SB 610 and SB 221, this assessment evaluates the City's planned future water demand in light of the anticipated increase in projected demand from the proposed Phase 2 development, the City's projected water supply, and a determination of the sufficiency of City water

supplies for the net increase in demand of the Project over the next 20 years, in addition to existing and planned future uses.

1.3 Urban Water Management Plan and Other Resources

California Water Code
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).
(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).
(3) If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available 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 the public water system's existing and planned future uses, including agricultural and manufacturing uses.

In accordance with the California Urban Water Management Planning Act (Act), the City adopted its 2015 Urban Water Management Plan (UWMP) in October 2017. As required by the Act, the 2015 UWMP includes an assessment of projected water supplies required to meet future demands. The projected water demand associated with the Project was not accounted for in the most recently adopted UWMP, thus CWC Section 10910(c)(3) applies and this water supply assessment includes a discussion of whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection period will meet the projected water demand associated with the Project in addition to the public water system's existing and planned future uses.

In December 2019, the City prepared a Water System Master Plan (2019 WSMP) Update. Developed as part of the City's Integrated Water Resources Master Plan (IWRMP) Update, the WSMP provides a comprehensive update to the City's Potable Water System, Wastewater System, and Recycled WSMPs. This WSMP focused on development of water demand unit factors and projections, hydraulic assessment of the City's existing water infrastructure and key planned improvements, and development of recommended water system capital improvement projects. Information from the 2019 WSMP is the initial basis for the elements of this WSA addressing demands and supplies from all sources of water as it contains new information regarding groundwater supplies and SSJID reliability, updated from the 2015 UWMP.

The City's 2015 UWMP water demand projections and the Project water demand projections were the original basis for the demand assessment in this WSA, but they have been updated by the City. The City is currently in the process of developing its 2020 UWMP and prepared revised demand projections in August 2020, which are presented in Appendix B of this document. Those revised projections are adopted as part of this WSA. The City's 2019 WSMP single- and multiple-dry year supply analysis and the SSJID 2015 UWMP were the original sources for the dry year evaluations of this WSA. The City's single- and multiple-dry year supply estimates too have been updated for this WSA to reflect the removal of certain City groundwater wells as anticipated future groundwater supplies.

2. WATER SUPPLY

This section discusses the existing and projected water supplies available to the City. The subsections describe the various types of supplies, including the assumptions and methodology used for estimations. Also discussed are the factors that could affect future water supply reliability.

2.1 Existing Water Supplies

California Water Code:
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.
(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.

The Project's water needs are served by the City, which obtains water from both imported surface water and local groundwater sources. The City receives treated Stanislaus River water through the SCWSP that is operated by the SSJID and discussed in Section 2.1.1. The City also owns and operates six groundwater production wells, although Wells #9 and #21 are currently inactive as discussed in Section 2.1.2. Due to the relatively high cost of SCWSP water, the City has historically relied upon its groundwater wells as the primary source of supply. The City's surface water and groundwater production for 2014-2018 is summarized in **Table 3**; 2019 water supply, inclusive of recycled water, is summarized in **Table 4**. The City generates recycled wastewater as a non-potable supply for agricultural irrigation currently, and for urban irrigation ultimately. The City also has long-standing water conservation programs that provide supply through reducing current demands and assuring that future water use is efficient.

The following subsections describe the current water supply sources for the City. Information presented in this section has been excerpted from the City's 2015 UWMP, 2019 WSMP, and 2019 Recycled WSMP.

Table 3: Summary of City of Lathrop Potable Water Supply in Prior Years (2014-2018)

Potable Supply Source	Actual Volume (AFY)[1]				
	2014	2015	2016	2017	2018
Purchased or Imported Supplies	445	241	252	921	1,947
Groundwater	3,563	3,204	3,394	3,247	2,605
Total Potable Supplies	**4,008**	**3,445**	**3,646**	**4,168**	**4,552**

Note:
1. Source: City of Lathrop 2015 UWMP (EKI, 2017).

Table 4: Summary of Current (2019) City of Lathrop Water Supply

Supply Source	Available Supply		
	Actual Volume (AFY)[1]	Percentage of Potable Supply	Annual Contract/Capacity (AFY)
Potable Supplies			
Purchased or Imported Supplies	4,273	96%	6,887[1]
Groundwater	179	4%	4,720[2]
Total Potable Supplies	**4,452**	**100%**	**11,607**
Non-Potable Supplies			
Recycled Water	944	N/A	N/A
Total Non-Potable Supplies	**944[3]**	**N/A**	**N/A**

Sources: City of Lathrop 2019 WSMP, Table 5-1 (EKI, 2019) and City of Lathrop staff email communication (September 2020).
Notes:

1. 6,887 AFY is the maximum volume that the City may purchase from SSJID under SCWSP Phase I under their current contract (SSJID, 2019). These supplies are available following the sale of 1,120 AFY to the City of Tracy.
2. Assumes wells are operated at 50% maximum capacity on an annual basis.
3. Reflects amount of water applied for irrigation purposes.

2.1.1 Existing Wholesale Water Supply – SSJID

The City currently purchases imported surface water from SSJID through the SCWSP, which supplies treated Stanislaus River water under the provisions of the Water Supply Development Agreement between the City and SSJID, dated October 1, 1995 (SSJID, 1995).

2.1.1.1 SSJID Surface Water Entitlements

SSJID and neighboring Oakdale Irrigation District (OID) were formed in 1909 following the acquisition of the old Tulloch Ditch Company water rights. SSJID and OID receive a major portion of their water supply from the Stanislaus River, pursuant to a number of pre-1914 water rights, beginning with 1853 diversion rights. Based on these pre-1914 water rights, SSJID and OID are entitled to a combined 1,816.6 cubic feet per second (cfs) of direct surface water diversions from the Stanislaus River annually. These pre-1914 water rights are held jointly between SSJID and OID and are adjudicated (Provost & Pritchard, 2016).

SSJID's water deliveries are largely governed by a 1988 Agreement and Stipulation with the United States Bureau of Reclamation (USBR) and OID, which recognized and protected the OID and SSJID's senior water rights that would be affected by the New Melones Reservoir (Provost & Pritchard, 2016). The agreement entitles SSJID and OID to 600,000 AFY of supply in years when inflow to New Melones Reservoir is equal to or exceeds 600,000 AF. SSJID's share of this allotment is 300,000 AFY. In years when inflow to New Melones Reservoir is less than 600,000 AF, the entitlement is reduced based on a predetermined formula. During periods of normal flow, SSJID's entitlement to New Melones water is 300,000 AFY.

2.1.1.2 SCWSP Deliveries

The SCWSP is a partnership between SSJID and the cities of Lathrop, Manteca, Tracy, and Escalon for the cities to acquire, by purchase, treated water up to the amount specified as a project allotment in the 1995 Water Supply Development Agreement.[1] The City finances delivery of this supply by way of its adopted budget.

The SCWSP was planned to be implemented in two phases. Phase I was completed in 2005 and consisted of an intake facility at Woodward Reservoir, the Nick C. DeGroot Water Treatment Plant (DGWTP), and about 35 miles of pipe ending in the City of Tracy. The DGWTP is located near Woodward Reservoir in San Joaquin County, and the treatment process at the facility includes pre-chlorination, coagulation, dissolved air floatation pretreatment for removal of solids and dissolved material, chemical stabilization to minimize internal pipe corrosion, membrane filtration, and chlorination for disinfection. The total Phase I capacity of the SCWSP is approximately 31,500 AFY. Phase II is anticipated to increase the treatment capacity of the DGWTP to approximately 43,000 AFY. SSJID has experienced increased demand in recent years and is exploring options to extend the distribution system constructed in Phase I and potentially expand treatment capacity as part of a Phase II project, but the schedule for these expansions remain uncertain (Provost & Pritchard, 2016).

The 1995 Water Supply Development Agreement (WSDA) between the City and SSJID, as well as the year 2000 and August 2020 amendments to the WSDA, provides the City with a Phase I allocation of 8,007 AFY and a total allocation of 11,791 AFY after completion of Phase II. In August 2013, the City sold 1,120 AFY of SCWSP water to the City of Tracy.[2] Therefore, the City's remaining SSJID allocation is 6,887 AFY for Phase I and a total of 10,671 AFY after completion of Phase II. Each of the four participating cities has an agreement with SSJID to receive treated water through December 2029. If SSJID and the cities do not agree to extend the contract past 2029, SSJID agrees to transfer the project to a Joint Powers Authority composed of the four cities which would then be responsible for operation and maintenance of the SCWSP. Section 2.3.1.1 discusses future uncertainties in available surface water supply as a result of ongoing planning efforts by the State Water Resources Control Board (SWRCB).

The SCWSP transmission system has been designed to deliver seasonal peak flows to each City through a transmission pipeline to turnout facilities. The transmission system is currently operated by gravity flow. In SCWSP Phase II, a treated water pump station will be installed at the DGWTP to deliver pumped flows. The SCWSP will deliver flows to Lathrop at two locations: the existing turnout at Lathrop Road, east of McKinley Avenue (Lathrop SSJID Turnout 1), and a turnout in the River Islands area off Golden Valley Parkway, west of Stewart Road and west of Manthey Road (Lathrop SSJID Turnout 2). The second SSJID turnout in the River Islands area is currently under construction and is expected to be completed in early 2021. The City also has an intertie with SSJID near the Tracy Pump Station, which is currently in operation. The intertie is located near the intersection of Stewart Road and Manthey Road. The planned capacity of each is provided in **Table 5**.

[1] The City of Escalon is under contract to purchase water from SCWSP but has not yet constructed a pipeline to convey that water to its facilities (EKI, 2017).

[2] "Lathrop-Tracy Purchase, Sale and Amendment Agreement," dated August 6, 2013.

Table 5: Lathrop SSJID Turnouts, Basis of Design

Supply Source	Phase I Flows		Phase II Flows (Cumulative)	
	(AFY)	(MGD)	(AFY)	(MGD)
Lathrop SSJID Design Flows				
Contractual Allocation	8,007	7.1	11,791	10.5
Sale to City of Tracy	-1,120	-1.0	-1,120	-1.0
Remaining Allocation	6,887	6.1	10,671	9.5
Peaking Factors	2.1		2.0	
Remaining Peak Flow	14,462	12.9	21,342	19.1
Lathrop Design Turnout Capacity				
Lathrop SSJID Turnout 1 (existing)	8,401	7.5	8,401	7.5
Lathrop SSJID Turnout 2 (planned)[1]	6,061	5.41	12,938	11.55

Source: South San Joaquin Irrigation District South County Water Supply Program Basis of Design Report (Black and Veatch, 2002), modified to account for the sale of 1,120 AFY (1 MGD) of the City's Phase 1 SSJID allocation to the City of Tracy. There are currently no plans to increase sales to the City of Tracy following completion of SCWSP Phase II.

Note:

1. Lathrop SSJID Turnout 2 construction is independent of the SCWSP Phase II construction.

2.1.2 Groundwater

California Water Code

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

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

(2) (A) A description of any groundwater basin or basins from which the proposed project will be supplied.

(B) 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.

(C) For a basin that has not been adjudicated that is a basin designated as high- or medium-priority pursuant to Section 10722.4, information regarding the following:

(i) Whether the department has identified the basin as being subject to critical conditions of overdraft pursuant to Section 12924.

(ii) If a groundwater sustainability agency has adopted a groundwater sustainability plan or has an approved alternative, a copy of that alternative or plan.

(D) For a basin that has not been adjudicated that is a basin designated as low- or very low priority pursuant to Section 10722.4, 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 supply 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 subparagraph (D) of paragraph (4) of subdivision (b) of Section 10631.

In addition to the SSJID supply, the City owns and operates a total of five groundwater production wells within the Tracy Subbasin (Wells 6, 7, 8, 9, and 10), which produce the majority of the City's water supply. These five wells are listed in **Table 6** along with their existing maximum pumping capacity. Each is located within the City, east of I-5, as shown in **Figure 5**. Groundwater from these wells is treated to remove arsenic at the Louise Avenue Water Treatment Facility (LAWTF), which came online in 2012. As shown, the combined maximum pumping capacity of Wells 6 through 10 is 7,250 gallons per minute (gpm), although this is limited by the treatment capacity of the LAWTF (6,250 gpm). For the purposes of this evaluation, it is assumed that the City's wells are pumped at 50 percent of their maximum capacity on an annual basis. Given this supply assumption, the City's current annual groundwater supply capacity is equivalent to approximately 5,850 AFY if all five wells were in service. As explained below, Well 9 is currently offline, which reduces the groundwater supply to approximately 4,720 AFY. The City currently has no plans to increase production at their active wells to account for Well 9 production loss.

The City owns an additional well (Well 21) that includes a treatment facility (Well 21 Water Treatment Facility) designed for disinfection and manganese treatment. Well 21 has remained inactive since 2013 due to sanding in the well and elevated levels of arsenic and uranium. Well 21 is also above the response level (RL) for per- and polyfluoroalkyl substances (PFAS), and the City is working to relocate the well and provide improvements to bring it back on-line. The City has begun engineering design for the replacement of Well 21 and Well 21 Water Treatment Facility.

In addition, since the publication of the 2015 UWMP, Well 9 was also taken offline due to elevated PFAS above the RL. The City is investigating alternatives to bring this well back online such that the drinking water will be below the RL for PFAS. Potential options include conducting well profiling at Well 9 to evaluate potential modifications, relocating Well 9 to address PFAS and other constituents of concern (COCs), and providing treatment at the Louise Avenue Water Treatment Facility or Well 21 Water Treatment Facility. The option to provide PFAS treatment for Well 9 at the Well 21 Water Treatment Facility would remove limitation for groundwater production based on LAWTF treatment capacity. Because Wells 9 and 21 are currently offline, the Current Well Capacity estimate in **Table 6** does not include production from these two wells.

Table 6: Groundwater Production Well Capacities and Annual Yields

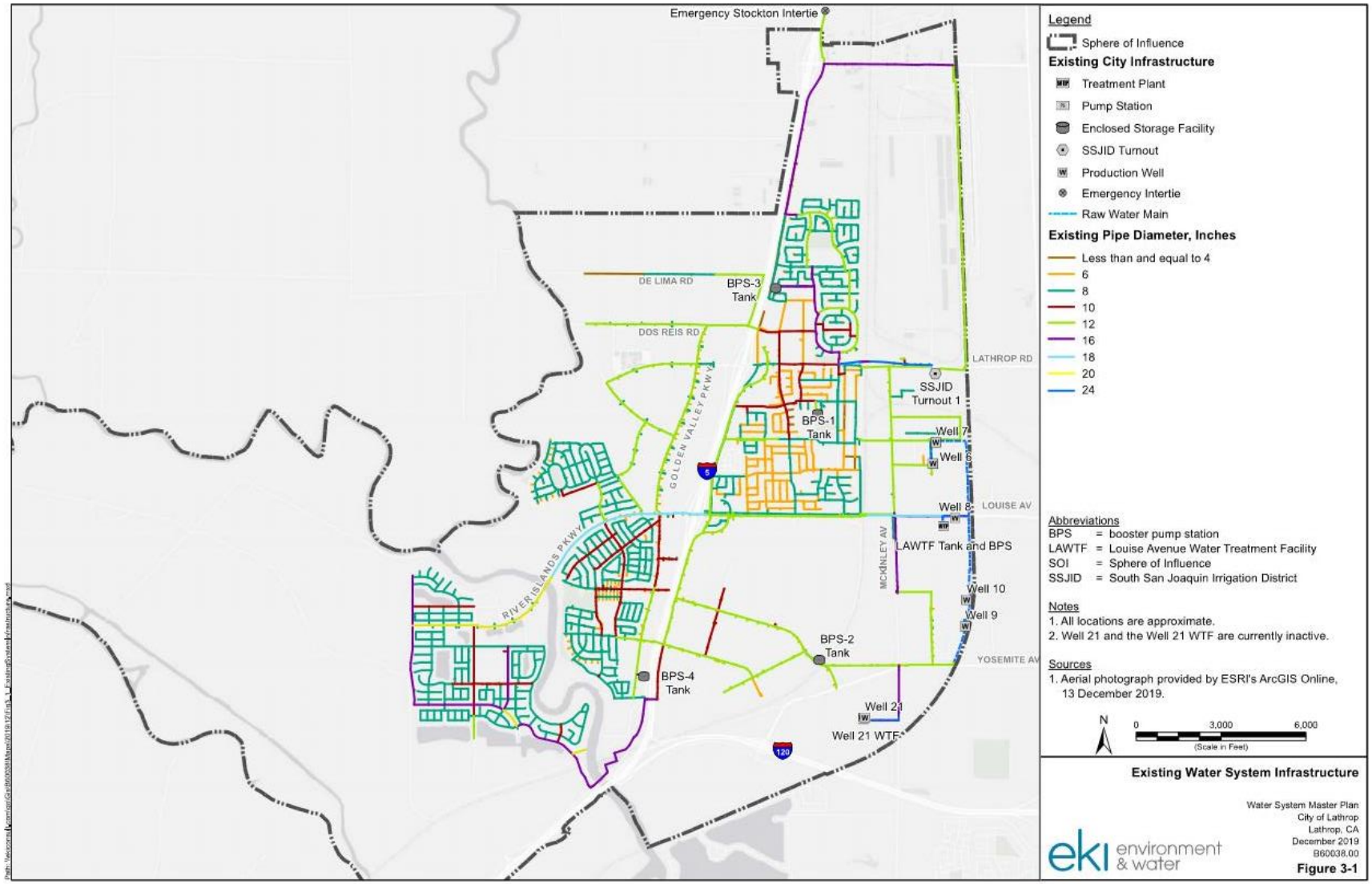
Well Number & Status	Existing Maximum Pumping Capacity	
	Measured Flow Rate (gpm)	Estimated Annual Yield (AFY)[1]
Well 6 (Active)	1,650	1,330
Well 7 (Active)	1,400	1,130
Well 8 (Active)	1,100	890
Well 10 (Active)	1,700	1,370
Subtotal	**5,850**	**4,720**
LAWTF Treatment Capacity[2]	**6,250**	**5,850**
Well 21 (Inactive since 2013)[3]	1,500	1,210
Well 9 (Currently inactive)	1,400	1,130
Current Well Capacity[4]	**5,850**	**4,720**
Possible Future Well Capacity[5,6]	**8,750**	**7,060**

Source: City of Lathrop 2019 WSMP, Table 5-3 (EKI, 2019)

Notes:

1. Assumes wells are operated at 50% maximum capacity on an annual basis.
2. Maximum capacity of LAWTF is 6,250 gpm. Estimated annual yield assumes that annual yield of Wells 6-10 is not limited by LAWTF capacity on an annual basis.
3. The City is considering upgrading Well 21 and its water treatment facility over multiple phases to be able to utilize its full capacity.
4. Does not include Well 21 or Well 9 and is limited by LAWTF design capacity.
5. Assumes that the Well 21 upgrades have been completed and Wells 9 and 10 are treated at the Well 21 Water Treatment Facility. This includes the full capacity of Wells 6-10 and Well 21.
6. While these numbers are consistent with the City of Lathrop 2019 WSMP, relocation or modifications to Wells 9 and 21 to allow pumping from locations within the aquifer with reduced PFAS or other COCs may likely result in lower production rates from these wells. Because a solution has not been confirmed, water from Well 9 and Well 21 are identified as Possible Future Well Capacity.

Figure 4: Location of City of Lathrop Production Wells



The City plans to utilize its existing groundwater wells (excluding Well 9 and Well 21) to supply water in the future and has no plans to expand its groundwater productions beyond potentially bringing Well 21 and Well 9 online. In previous water supply planning documents (RBF, 2009; West Yost, 2013), the City has included plans to construct a wellfield surrounding Well 21 that includes up to three additional wells (Well 22 through 24). However, due to the conditions of the semi-confined aquifer at Well 21 and the need for wells to be placed farther apart to avoid interfering with each other, the feasibility of such a wellfield is in question. There are also concerns that a wellfield at this location would induce the migration of higher total dissolved solids (TDS) water towards the City's other wells.

2.1.2.1 Groundwater Basin

The City is located within the Tracy Subbasin (DWR Bulletin 118 number 5-22.15),[3] within the San Joaquin Valley Groundwater Basin (DWR 5-22) (DWR, 2003).[4] In 2014, the State Legislature passed the Sustainable Groundwater Management Act (SGMA), requiring the formation of Groundwater Sustainability Agencies (GSAs) and preparation of Groundwater Sustainability Plans (GSPs) to sustainably manage groundwater supplies. The California Department of Water Resources (DWR) has identified the Tracy Subbasin as a Medium priority non-critically overdrafted groundwater basin that is subject to the requirements of SGMA. Accordingly, the Subbasin must submit a GSP by January 31, 2022. The GSP will define sustainable management goals, minimum thresholds, and measurable objectives and provide an implementation plan to evaluate, monitor, and manage the use of the Tracy Subbasin sustainably so as to avoid undesirable results (e.g., lowering of groundwater levels, depletion of groundwater storage, surface water depletion, water quality degradation, land subsidence, and seawater intrusion). To the extent that the Tracy Subbasin GSP implements restrictions to groundwater pumping to the Project, the Project's water supply may change; however, the Tracy Subbasin GSP is in early stages of development (it is due to DWR in January 2022) and no decisions relating to such restriction have occurred to date.

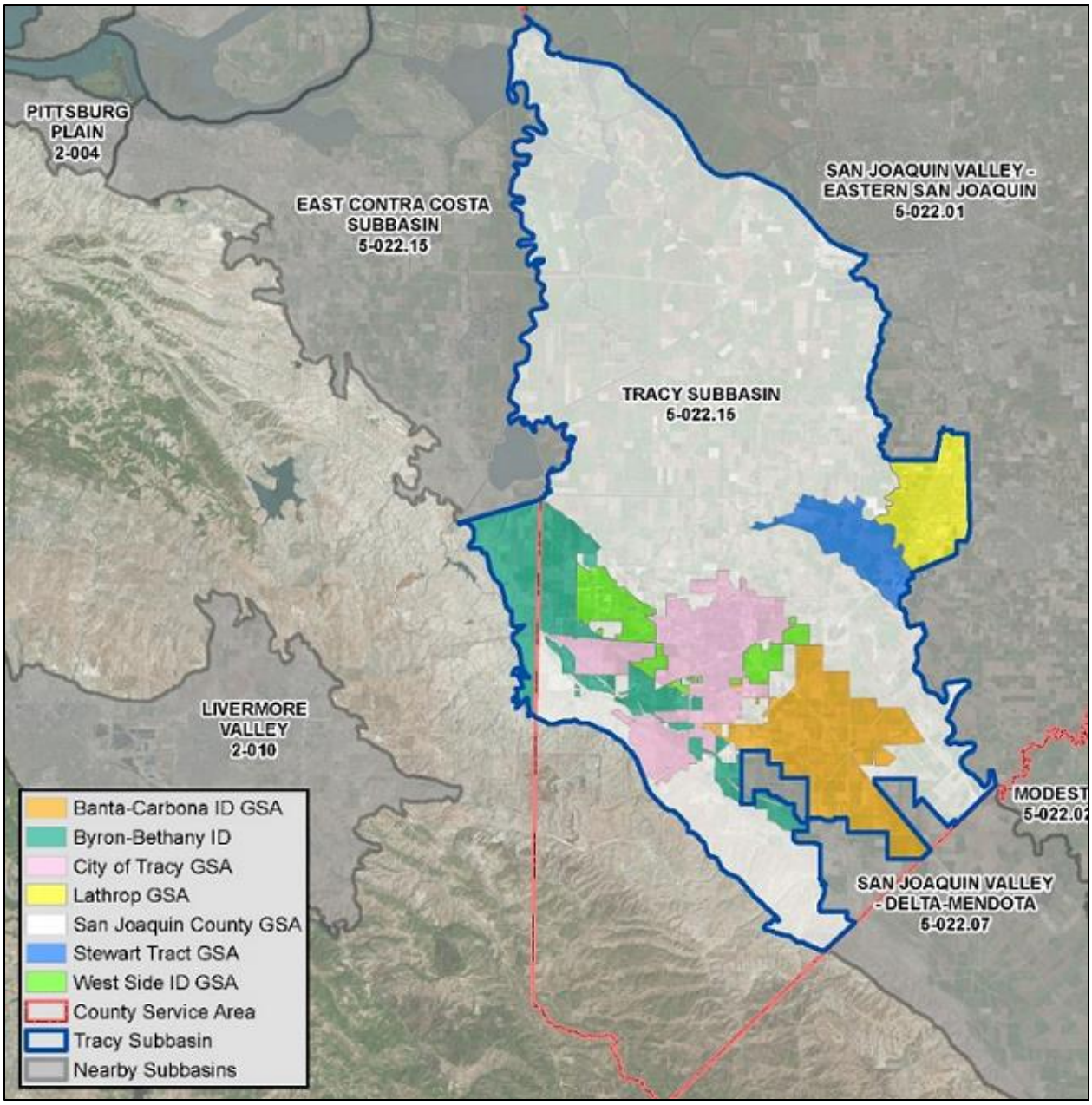
The City of Lathrop has formed a GSA and participates with other Tracy Subbasin GSAs to support the preparation and implementation of a subbasin GSP. The Stewart Tract GSA has been formed to allow the developer of River Islands Project to participate in the GSP process (as the primary landowner within Reclamation District 2062) for the portion of the City of Lathrop west of the San Joaquin River. Including the Stewart Tract GSA and the City of Lathrop GSA, seven GSAs are working cooperatively to develop a single GSP that covers the Tracy Subbasin.

The Tracy Subbasin, shown in **Figure 5,** is bounded to the north and the east by the San Joaquin River (except for a portion of the Subbasin boundary that extends east of the San Joaquin River to follow the jurisdictional boundary of the City of Lathrop), to the south by a combination of the San Joaquin-Stanislaus County line and the jurisdictional boundaries of water agencies, and to the west by the extent of sedimentary deposits bounded by the Diablo Range. The Tracy Subbasin has a surface area of 345,000 acres (539 square miles) and consists of two primary aquifers, a shallow, unconfined aquifer and a deeper confined aquifer, separated by a regional aquitard called the Corcoran Clay.

[3] DWR's Bulletin 118 is an inventory and assessment of available information on the occurrence and nature of California's groundwater to inform decisions affecting the protection, use, and management of the resource. DWR publishes Bulletin 118 to meet requirements of the California Water Code (Section 12924) to identify California's groundwater basins, investigate patterns of groundwater extraction and recharge within those basins, and define basins that are subject to critical conditions of overdraft (DWR, 2019).

[4] The City submitted a basin boundary modification request in June 2018 to modify the boundaries of the Eastern San Joaquin Subbasin and the Tracy Subbasin to align with the City's City Limit. This modification was approved in 2019 and therefore the entire City of Lathrop lies within the Tracy Subbasin.

Figure 5: Tracy Groundwater Subbasin



The unconfined aquifer in the region of the City of Tracy is primarily composed of older and younger alluvium. The older alluvium tends to be loosely to moderately compacted silt, sand, and gravel deposits with a thickness of approximately 150 feet. Younger alluvium is generally unconsolidated silt, sand, and gravel with a thickness of less than 100 feet. Groundwater recharge to the unconfined aquifer is from the Coast Ranges, and groundwater may be discharging to the San Joaquin River. Groundwater elevations in the unconfined aquifer have been relatively steady over time, and groundwater flows from south to north towards the Sacramento-San Joaquin Delta.

The confined aquifer is primarily composed of the Tulare Formation and is separated from the unconfined aquifer by the Corcoran Clay. The Tulare Formation is moderately permeable, and most of the larger production wells extract from this formation. The thickness of the Tulare Formation is approximately 1,400 feet. Groundwater elevations in the confined aquifer are monitored by the City of Tracy, who operates several production wells for municipal use. Historically, groundwater production by the City of Tracy has resulted in a pumping depression. In its most recent UWMP, however, the City of Tracy reported that groundwater elevations have risen steadily in the past decade and the pumping depression has decreased in size as the City of Tracy has reduced its reliance on groundwater (EKI, 2016).

The base of fresh water, defined as water with a TDS concentration of greater than 2,000 milligrams per liter (mg/L), ranges from 800 to 2,000 feet below ground surface (ft bgs), and is generally higher in the vicinity of the City of Lathrop. Since the portion of the Tracy Subbasin where the City pumps its groundwater is located east of the San Joaquin River, conditions are similar to the Eastern San Joaquin Subbasin near the San Joaquin River. Groundwater levels in some portions of the Eastern San Joaquin Subbasin have been declining for many years, while groundwater levels in other areas have remained stable or increased in recent years. The western and southern portions of the Eastern San Joaquin Subbasin, near the City of Lathrop, have experienced less change in groundwater levels in part due to minimal groundwater pumping in the Sacramento-San Joaquin River Delta area and the import of surface water for agricultural and urban uses.

Groundwater storage capacity in the Tracy Subbasin has not been estimated. However, based on values reported for the Tracy-Patterson Storage Unit (Hotchkiss and Balding, 1989), it has been inferred that the storage capacity of the southern portion of the Tracy Subbasin – extending from the southern boundary of the basin to one-mile north of the City of Tracy – is 1.3 million AF. A discussion of the hydrogeology of the Tracy Subbasin is provided in the Tracy Regional Groundwater Management Plan (GWMP) (GEI, 2007) and is summarized in Section 2.1.2.2. Although groundwater quality constraints in the vicinity of the City of Lathrop represent potential uncertainties, groundwater from the Tracy Subbasin is generally sufficient, in terms of both volume and water quality, to meet the projected water demand associated with the proposed Project.

2.1.2.2 Historical Groundwater Management

In the Tracy Subbasin, Byron-Bethany Irrigation District, Banta-Carbona Irrigation District, the City of Tracy, and San Joaquin County formed a Groundwater Advisory Committee to facilitate the development of a regional groundwater management plan for the Tracy Subbasin. The City of Tracy received a grant from DWR to develop the plan, and in 2007, 7 years prior to the passage of SGMA, the entities adopted the Tracy GWMP.

The Tracy GWMP concluded that the Tracy Subbasin experiences groundwater quality issues in portions of the basin associated with nitrate, boron, sulfate, chloride, and TDS. As such, many of the groundwater management options that were recommended focused on creating available storage and managing pumping in order to increase water quality within the basin.

2.1.3 Wastewater and Recycled Water

Wastewater from the City is treated at two facilities: the regional Manteca Wastewater Quality Control Facility (MWQCF) and the City-owned Lathrop Consolidated Treatment Facility (CTF). Tertiary effluent from the Lathrop CTF is currently

conveyed through the recycled water system to storage ponds and sprayfields, where the treated water is used for irrigation.

Wastewater generated in the areas east of I-5 and north of Louise Avenue is conveyed to the MWQCF. Most of the City's wastewater generated east of I-5 in the Historic Lathrop area is conveyed via gravity sewers and lift stations to a regional pump station, the O Street Pump Station. The O Street Pump Station then conveys wastewater via a 12-inch diameter force main to the MWQCF. This 12-inch-diameter force main also conveys wastewater from the McKinley Avenue Pump Station, the LAWTF Pump Station, and other private stations that serve the industrial areas east of the I-5 to the MWQCF. In 2015, 1,043 AF of wastewater was collected from the City's service area and conveyed to MWQCF.

Wastewater generated in the Crossroads industrial area and areas west of I-5, including the River Islands development, is conveyed to the Lathrop CTF. Currently, wastewater from the Central Lathrop Specific Plan (CLSP) and River Islands development areas is conveyed to the Mossdale Pump Station via the CLSP Low Storm and Sewer Pump Station and the River Islands Interim Pump Station, respectively. The City plans to expand the CLSP pump station and is constructing a new River Islands Pump Station to convey wastewater from these development areas directly to the Lathrop CTF as development proceeds. The new River Islands Pump Station is expected to be completed in 2020. In 2015, 429 AF of wastewater was collected from the City's service area and conveyed to Lathrop CTF for treatment and reuse. This value was approximately 840 AF in 2018.

Several large industrial facilities (e.g., Simplot, a former Libbey-Owens-Ford glass plant facility, Sharpe Army Depot, and former Carpenter Company facility) manage their wastewater onsite.[5] California Natural Products manages the majority of their wastewater and sends the remaining flows to either the J Street Lift Station or the McKinley Avenue Pump Station.

The City's two collection systems are connected by the Mossdale Intertie, which crosses beneath I-5 on River Islands Parkway and Louise Avenue. The intertie is not routinely operated but could potentially be utilized in the future to reroute Lathrop CTF influent to the MWQCF to improve system efficiency and cost effectiveness.

2.1.3.1 Manteca Water Quality Control Facility (MWQCF)

The City owns 14.7 percent of the MWQCF capacity by contract with the City of Manteca. However, the City does not participate in the operation of the plant nor does it receive recycled water from the MWQCF. Disinfected tertiary effluent is discharged to the San Joaquin River. A portion of the secondary effluent is used to irrigate crops owned by the City of Manteca. The current MWQCF design capacity is 9.87 million gallons per day (MGD) and the City's allocated capacity is approximately 1.45 MGD (Lathrop, 2016). The MWQCF is permitted for future expansions of up to 26.97 MGD, of which the City would be allocated up to 3.97 MGD, should the City elect to maintain its proportional allotment. However, the City of Manteca does not have near-term plans to expand the capacity of the MWQCF.

2.1.3.2 Lathrop Consolidated Treatment Facility (Lathrop CTF)

Daily operation of the Lathrop CTF is contracted to a private contractor, Veolia Water North America. In August 2015, the City began diverting wastewater from the Crossroads area to the Lathrop CTF and decommissioned the adjacent Crossroads wastewater treatment facility (WWTF). In Summer 2018, the City completed a Phase 2 Expansion of the facility to a total capacity of 2.5 MGD Average Dry Weather Flow (ADWF) to accommodate future growth in the

[5] The former Libbey-Owens-Ford glass manufacturing facility has been modified into a typical industrial facility and is in the process of removing its private wastewater treatment facility and connecting to City sewer services. The Sharpe Army Depot is in the process of being sold as excess property. The City of Lathrop will soon provide water and sewer service to the site, and the existing wastewater treatment facility will be removed.

Mossdale, Central Lathrop, and River Islands development areas. The permitted capacity is limited by recycled water storage and disposal capacity (currently 1.69 MGD ADWF). The Lathrop CTF is permitted for a maximum capacity of up to 6.0 MGD with additional expansions. The City has the ability to further upgrade the Lathrop CTF to increase the treatment capacity up to 9.0 MGD as needed.[6]

Wastewater treatment and disposal at the City's Lathrop CTF is regulated under Waste Discharge Requirements (WDR) Order No. R5-2016-0028. Because the Lathrop CTF applies treated effluent to land, it is not subject to the National Pollution Discharge Elimination System (NPDES) requirements for discharges to surface water.[7] Wastewater treatment processes at the Lathrop CTF include secondary treatment, tertiary filtration, and disinfection prior to storage and disposal. The Lathrop CTF produces disinfected tertiary recycled water suitable for irrigation at parks, landscape strips, median islands, pond berms, and agricultural fields.

The City has constructed and is operating a 10-acre percolation basin at former land application site, LAS-3, located northeast of the Lathrop CTF for the disposal of 0.3 MGD of tertiary treated effluent. For this, the City prepared a comprehensive analysis of percolation basins for groundwater recharge in Percolation Disposal Capacity Evaluation (Stantec, 2014). In addition, a recent study of the percolation capacity at the former LAS-3 supported an increase in capacity from 330,000 gallons per day (gpd) to 361,000 gpd and was approved in September 2019.

2.1.3.3 Recycled Water Use and Distribution

The recycled water distribution system conveys tertiary effluent from a storage pond at the Lathrop CTF to lined storage ponds and agricultural land application areas throughout the City. The system consists of approximately 113,000 linear feet of recycled water piping infrastructure and four booster pump stations. The pond parcels total 52 acres, with a combined capacity of approximately 139 million gallons. These distributed storage ponds are used to store recycled water during low irrigation demand periods (i.e., winter) for use during high irrigation demand periods (i.e., summer). The storage ponds and agricultural land application areas are located in the East Lathrop, Mossdale Landing East, and River Islands areas. During 2015, the City recycled 429 AFY of tertiary effluent, which was applied to agricultural irrigation.

In the near-term, the City plans to continue agricultural land applications and construct additional storage and percolation ponds and agricultural sprayfields as the City's wastewater flow to the Lathrop CTF increases. Consistent with the City's 2015 UWMP, projected recycled water used for agricultural irrigation is estimated to be equal to the volume of treated effluent available. As stated in the 2015 UWMP, agricultural land application remains as the primary recycling method for the City's tertiary effluent.

For the longer term, the City is developing a recycled water implementation plan that will support the use of recycled water to irrigate public landscaping. All major new City developments (Mossdale, Central Lathrop, and River Islands) are connected to the recycled water system to enable the future use of recycled water for public landscape areas. These landscaping areas include existing and planned, parks and playgrounds, schoolyards, roadway medians, commercial landscaping, and open space.

2.1.4 Other Non-Potable Supplies

In addition to the City's anticipated recycled water supplies, River Islands has constructed a municipal irrigation system which utilizes City recycled water to supply the needs of the public landscape areas. When City recycled water supply is low or unavailable, lake water (a combination of stormwater and native groundwater) is utilized to meet non-potable

[6] The City previously completed a project-level Environmental Impact Report (EIR) for treatment capacity up to 6.0 MGD at the CTF. Post combination with Crossroads WWTF, the program-level EIR treatment capacity at the CTF has increased to 9.0 MGD.

[7] However, the City is currently pursuing a surface water discharge permit.

demands within River Islands.[8] The City issued a Recycled Water User Permit to Reclamation District 2062 to allow them to irrigate parks, medians, and street side landscaping with recycled water. This recycled water system will be owned and operated by Reclamation District 2062.

2.1.5 Water Conservation

Although the City's population has steadily increased over recent years, the increase in total water demand has been buffered by a general decline in per capita water use since 2004, as described in the City of Lathrop 2015 UWMP. The City continues to implement water conservation programs. Water conservation and demand management are an integral part of the City's water management strategy. The City of Lathrop is committed to integrating water conservation into future supply and demand solutions for both the water system and the wastewater treatment/reuse system. The City implements the following demand management measures and best management practices:

- Distribution system water loss auditing and water loss controls;
- Enforcement of its Water Waste Prevention ordinance;
- Metering and monthly billing of all water customers;
- Public education and outreach;
- Full time water conservation program coordination and staffing; and
- Free services to help customers use water wisely in sectors, including large landscape irrigation.

The Water Conservation Act of 2009 (SBx7-7) required urban water retailers to set a total gallons per capita per day (GPCD) water use reduction target of 20 percent by year 2020 from a calculated baseline water use. In 2012, the City adopted its 2020 target of 188 GPCD. In 2016, per capita water use dropped to 147 GPCD, which is well below the City's SBx7-7 reduction target; however, this was during a period of mandated reduction in urban water use due to drought. Additional details regarding the City's conservation efforts can be found in the City's 2015 UWMP.

2.2 Future Water Supplies

As discussed above, the City is currently reviewing phased upgrades to the Well 21 WTF, which may eventually expand its treatment capacity to 4,500 gpm. This could allow for the treatment of the total maximum capacity of Wells 9, 10, and 21. The City is also reviewing options to bring Well 9 back online. For purposes of supply planning, the City is currently assuming Wells 21 and 9 will remain off-line (a conservative assumption).

In addition to groundwater wells, the City's SSJID supply is anticipated to increase from 6,887 AFY to 10,671 AFY with the implementation of Phase II of the SCWSP. The timing of Phase II is unknown, but for water supply planning purposes it is assumed that SSJID Phase II will be available to the City by 2040, consistent with the City of Lathrop 2015 UWMP. Permits for construction of the infrastructure required for Phase II SCWSP are not yet known and will be identified in subsequent CEQA documentation for the project. However, if construction occurs in or near creeks and wetlands, a Streambed Alteration Agreement from the California Department of Fish and Wildlife and Section 401 and 404 permits from the Central Valley Regional Water Quality Control Board and The United States Army Corps of Engineers may be required. Encroachment permits may also be required depending on the alignment chosen for any

[8] Recycled water is equal to the wastewater generated. Lake water is equal to the stormwater collection volume and runoff. It is not required that lake water be metered.

pipelines. At the time that Phase II is implemented, a capital outlay program for financing the delivery of this supply will be developed. No additional regulatory approvals are anticipated to be required for delivery of Phase II supply.

The City's water supply planning efforts anticipate that future potable water supply will remain similar to the current supply portfolio with the addition of Phase II SCWSP surface water. Additionally, the City plans to expand its recycled water program and continue its current conservation efforts to reduce overall water use. Future supply projections are discussed in the subsections below. **Table 7** presents the City's projected potable supply in 5-year increments through 2040. The values presented in this table reflect the City's contractual allotments from the SCWSP and the City's current and planned future groundwater production. The actual availability of these water supplies depends on reliability factors based on water year conditions, discussed in Section 2.3.

Table 7: Current and Projected Potable Water Supply Entitlements (2020-2040)

Supply Type	Potable Water Source	Current and Projected Supply (AFY)					
		2015 (Existing)	2020	2025	2030	2035	2040
Current Supplies							
Imported/Purchased Water[1]	SSJID SCWSP Contract	6,887	6,887	6,887	6,887	6,887	6,887
Groundwater[2]	City Wells	4,720	4,720	4,720	4,720	4,720	4,720
Anticipated Additional Future Supplies							
Imported/Purchased Water[3]	SSJID SCWSP Contract	-	-	-	-	-	3,784
Groundwater[4]	City Wells	-	0	0	0	0	0
Total		**11,607**	**11,607**	**11,607**	**11,607**	**11,607**	**15,391**

Source: City of Lathrop 2019 WSMP, Table 5-4 (EKI, 2019)

Notes:

1. The City's total Phase I allotment of SCWSP water, following the 2013 sale to the City of Tracy, of 1,120 AFY is 6,887 AFY.
2. Reflects the City's firm groundwater capacity, assuming Wells 21 and 9 remain offline.
3. The City's total Phase II allotment of SCWSP water, following the 2013 sale to the City of Tracy, is 10,671 AFY.
4. Potential additional groundwater supplies may be obtained through the Well 21 WTF upgrade, which could be completed in two phases. Phase 1 is anticipated to be completed by 2020 and Phase 2 is anticipated to be completed by 2025. Potential additional groundwater may also include bringing Well 9 back on-line. However, for this report, water from Well 21 and Well 9 are not included as Anticipated Additional Future Supplies.

Table 8 presents the City's projected recycled water supply in 5-year increments through 2040, as well as supplemental supplies from other non-potable source that are available to the River Islands development (Phase 1 and Phase 2).

Table 8: Current and Projected Non-Potable Water Supply (2020-2040)

Supply Type	Level of Treatment	Current and Projected Supply (AFY)					
		2015 (Existing)	2020	2025	2030	2035	2040
Recycled Water[1]	Tertiary	429	1,159	2,103	3,061	3,775	4,479
Other Non-Potable Sources[2]	Chlorination	0	153	367	617	869	1,121

Source: City of Lathrop 2015 UWMP, Table 6-4 (EKI, 2017)

Notes:

1. Recycled water supplies will be supplemented by the River Islands development if needed.
2. River Islands will have the ability to supplement City recycled water supplies with lake and river water. These supplemental sources can be used to meet up to 100% of River Islands non-potable demands if recycled water supplies are unavailable.

2.3 Water Supply Reliability

Various conditions may influence the reliability of the City's water supplies in the future. The following sections evaluate the reliability of the City's supplies, including SSJID entitlements and local groundwater yield through 2040, and discusses potential constraints on these supplies.

2.3.1 SSJID Water Reliability

Various conditions may influence total water supply available to SSJID. This section describes the water rights held by SSJID and the City's entitlement to the SSJID supply.

As discussed in Section 2.1.1, the 1995 Water Supply Development Agreement provides the contractual relationship between SSJID and the City and includes specific rates of delivery and maximum amounts of water that SSJID is obligated to supply to the City. Due to the seniority of the water rights underlying the SCWSP, SSJID's pre-1914 appropriative rights to Stanislaus River water, the City has historically assigned a high reliability to SCWSP water. However, the recent drought has caused the City to revise its reliability projections for SCWSP water in dry years. In August 2014, due to concerns about decreasing water levels in the New Melones Reservoir, SSJID curtailed water deliveries to the SCWSP contracting cities to 80 percent of their monthly allocations. This 20 percent curtailment translated into an allocation to the City of approximately 85 percent of its annual contractual entitlement in 2014. In 2015, SSJID allocated water to each SCWSP contracting city based upon actual water use in 2013. Under this allocation scheme, the City was assigned 85 percent of its actual water use in 2013. In both 2014 and 2015, however, the City purchased less than its dry year allocation and instead relied primarily on groundwater.

Given the inconsistency in SCWSP allocation in recent years and the uncertainty regarding dry year allocation in the future, the City has relied upon the dry year allocation adopted by SSJID in its 2015 UWMP (Provost & Pritchard, 2016), which assumes a proportionate reduction in deliveries to urban and agricultural users. The projected urban and agricultural demands presented in SSJID's 2015 UWMP are summarized in **Table 9**. The urban demand is assumed to be equal to the SCWSP Phase I contract amount (31,552 AFY). Agricultural demands within the SSJID service area are projected to decrease gradually as irrigation practices become more efficient.

Table 9: SCWSP Projected Water Demands

	Estimated Demand (AFY)			
	2020	2025	2030	2035
Contracted Urban Demand	31,552	31,552	31,552	31,552
Projected Agricultural Demand	274,100	271,800	269,500	267,200
Total	**305,652**	**303,352**	**301,052**	**298,752**

Source: City of Lathrop 2019 WSMP, Table 5-5 (EKI, 2019)

Table 10 summarizes projected SCWSP supplies and demands in normal years, single-dry years, and multiple-dry years from 2020 to 2040. Projected SSJID supplies are held constant over the forecast period. At the same time, demands decrease slightly over this period due to improved agricultural water use efficiencies. Therefore, projected SCWSP shortages decrease over time. As shown in the SSJID 2015 UWMP, SSJID anticipates that minor shortfalls (i.e., less than 2 percent) may be experienced by the SCWSP in normal years, based upon the availability of water supplies in 2010. In single-dry years, SSJID projects that the SCWSP will receive a shortfall of up to 26 percent, based upon SSJID's water supplies in 1977. In a 3-year, multiple-dry year scenario, SSJID projects SCWSP shortages of up to 15 percent in the first year, up to 12 percent in the second year, and up to 17 percent in the third year. The multiple-dry years reliability assumptions are based upon SSJID's experiences from 1990 to 1992.

Projected SSJID supplies available to the City in normal years, single-dry years, and multiple-dry years are shown in **Table 11**. The City anticipates that it will have access to more than 98 percent of its SCWSP supply in normal years. In single-dry years, the City projects that it will receive between 74 and 75 percent of its SCWSP supply. In a 3-year, multiple-dry year scenario, the projected SCWSP allocations range from 85 to 87 percent in the first year, 88 to 90 percent in the second year, and 83 to 85 percent in the third year[9]. Section 8(a) of the 1995 Water Supply Development Agreement stipulates that reductions in SCWSP deliveries shall be distributed pro rata among the SCWSP participants based upon each participant's allotment. Therefore, it is assumed that the percent shortfalls will be the same percent shortfall experienced by the City in dry years (EKI, 2019).

[9] Single-dry year and multi-dry year scenarios are based on historical record. SSJID uses 1977 as the benchmark for a single-dry year type because this was the year with the lowest water supply available to the District. Similarly, SSJID uses 1990-1992 as the benchmark for multi-dry year type because this was the lowest water supply available to the District for a consecutive 3-year period. As a result of what occurred in those year types, deliveries are higher in a multi-year scenario than in a dry-year scenario.

Table 10: SSJID SCWSP Supply Available Under Normal and Dry Year Conditions

	Estimated Supply and Demand (AFY)				
	2020	**2025**	**2030**	**2035**	**2040[1]**
Normal Year					
Total SCWSP Projected Supply	30,969	31,203	31,442	31,684	31,684
Total SCWSP Projected Demand	31,552	31,552	31,552	31,552	31,552
Surplus or Deficit	-583	-349	-110	132	132
Percent Shortfall	1.8%	1.1%	0.3%	--	--
Single-Dry Year					
Total SCWSP Projected Supply	23,226	23,403	23,581	23,763	23,763
Total SCWSP Projected Demand	31,552	31,552	31,552	31,552	31,552
Surplus or Deficit	-8,326	-8,149	-7,971	-7,789	-7,789
Percent Shortfall	26%	26%	25%	25%	25%
Multiple-Dry Year – First Year					
Total SCWSP Projected Supply	26,839	27,043	27,250	27,459	27,459
Total SCWSP Projected Demand	31,552	31,552	31,552	31,552	31,552
Surplus or Deficit	-4,713	-4,509	-4,302	-4,093	-4,093
Percent Shortfall	15%	14%	14%	13%	13%
Multiple-Dry Year – Second Year					
Total SCWSP Projected Supply	27,614	27,823	28,036	28,251	28,251
Total SCWSP Projected Demand	31,552	31,552	31,552	31,552	31,552
Surplus or Deficit	-3,938	-3,729	-3,516	-3,301	-3,301
Percent Shortfall	12%	12%	11%	10%	10%
Multiple-Dry Year – Third Year					
Total SCWSP Projected Supply	26,086	26,284	26,484	26,688	26,688
Total SCWSP Projected Demand	31,552	31,552	31,552	31,552	31,552
Surplus or Deficit	-5,466	-5,268	-5,068	-4,864	-4,864
Percent Shortfall	17%	17%	16%	15%	15%

Source: City of Lathrop 2019 WSMP, Table 5-6 (EKI, 2019)

Note:

1. It is assumed that 2040 projected supplies and demand are consistent with 2035 estimates. : In summer 2018, the City completed a Phase 2 Expansion of the facility to a total capacity of 2.5 MGD ADWF to accommodate future growth in the Mossdale, Central Lathrop, and River Islands development areas. The Lathrop CTF is permitted for a maximum capacity of up to 6.0 MGD with additional expansions.

Table 11: SCWSP Supply Available to the City Under Normal and Dry Year Conditions

	Estimated Supply (AFY)				
	2020	2025	2030	2035	2040
Contracted Phase I Allotment	6,887	6,887	6,887	--	--
Contracted Phase II Allotment	--	--	--	10,671	10,671
Normal Year					
Projected SCWSP Allocation	98%	99%	100%	100%	100%
Projected SCWSP Supply	6,760	6,811	6,863	10,671	10,671
Single-Dry Year					
Projected SCWSP Allocation	74%	74%	75%	75%	75%
Projected SCWSP Supply	5,070	5,108	5,147	8,037	8,037
Multiple-Dry Year – First Year					
Projected SCWSP Allocation	85%	86%	86%	87%	87%
Projected SCWSP Supply	5,858	5,903	5,948	9,287	9,287
Multiple-Dry Year – Second Year					
Projected SCWSP Allocation	88%	88%	89%	90%	90%
Projected SCWSP Supply	6,027	6,073	6,119	9,555	9,555
Multiple-Dry Year – Third Year					
Projected SCWSP Allocation	83%	83%	84%	85%	85%
Projected SCWSP Supply	5,694	5,737	5,781	9,026	9,026

Source: City of Lathrop 2019 WSMP, Table 5-7 (EKI, 2019)

2.3.1.1 Potential Future Requirements of the Bay-Delta Plan

The future reliability of the City's full SCWSP allocation is uncertain due to ongoing planning efforts by the SWRCB. On December 12, 2018, the SWRCB adopted revisions to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan). The adopted changes include increasing flows on the San Joaquin River and its tributaries, including the Stanislaus River, starting at 40 percent of unimpaired flow from February to June, with a range of 30 to 50 percent depending on biological conditions. The SWRCB also approved a framework for accepting voluntary agreements to pursue a combination of flow and "non-flow" measures that improve conditions for fish and wildlife where allowances for reduced river flows may be developed.

Historical median February through June flows from 1984 to 2009 in the Stanislaus River were approximately 40 percent of unimpaired flows, meaning that flows were below the starting goal of 40 percent in half of the years between 1984 and 2009. Based on preliminary estimates made by SSJID (2016), the 40 percent unimpaired flows criteria would increase the SCWSP supply shortfall in a single-dry year from 25 to 36 percent (11 percent increase), and from 16 to 29 percent (13 percent increase) during the third consecutive year of multiple-dry years by 2040 (EKI, 2019).[10] Potential supply impacts have significant uncertainty and will be updated in the City of Lathrop 2020 UWMP based on information provided by SSJID and others. At this time, it is uncertain how these new flow criteria and potential voluntary agreements would directly affect SCWSP supplies and the frequency of shortfalls. Given current uncertainties, these

[10] Based on information presented by OID and SSJID, combined OID and SSJID formula water available under 40% unimpaired flow criteria will be 381,000 AFY during 1976-1977, and 422,000 AFY during 2015-2016. These values were used for the basis of a single-dry year and the third consecutive year of multiple-dry years, respectively. The SCWSP projected supplies are calculated as 50% of combined OID and SSJID formula water available, similar to what was assumed in SSJID's 2015 UWMP.

proposed changes are not included in the water supply reliability evaluation of this WSA. However, **Table 26** in Section 5.2 shows how future supply would be affected based on preliminary estimates made by SSJID and as noted above.

2.3.1.2 Water Quality Impacts on Reliability

The SCWSP receives water from the Stanislaus River, which is considered to be of high quality prior to treatment and excellent quality following treatment at the DGWTP. The 2011 Stanislaus River Watershed Sanitary Survey, prepared by the Stanislaus/Calaveras River Group and Stockton East Water District, identified several potential sources of contamination in the upper Stanislaus River watershed (Stanislaus/Calaveras River Group and Stockton East Water District, 2011). These sources included recreational activities at Woodward Reservoir, confined animal facilities, cattle grazing, old septic systems, and wastewater disposal. Source control measures have been implemented to mitigate for these potential water quality threats. If water quality begins to degrade, SSJID will evaluate watershed management programs or modifications to the treatment process at the DGWTP.

2.3.2 Groundwater Supply Reliability

The City currently relies upon groundwater produced from its four active wells (Wells 6, 7, 8 and 10) to meet its demands. In the future, the City is reviewing potential increased groundwater production by bringing Well 21 and Well 9 back online.

As discussed in Section 2.1.2, the reliability of the City's groundwater supplies has historically been limited by water quality constraints. While groundwater quality constrains contribute to supply uncertainties, they are primarily an issue of treatability, rather than supply limitation. Further, the City has demonstrated the ability to modify its groundwater operations to adapt to changing water quality conditions. Therefore, the City is projecting to receive 100 percent of its current groundwater supplies in all year types. As SGMA is implemented in the Tracy Subbasin, the City's groundwater supply reliability may need to be re-evaluated. GSP developments can be evaluated during water supply verification if restrictions to groundwater supply are proposed.

2.3.2.1 Water Quality Impacts on Reliability

One of the biggest threats to the City's ability to use groundwater to meet potable water demands is water quality. The primary water quality concerns in the City's groundwater are arsenic, manganese, uranium, TDS, groundwater contamination from industrial processes, and perfluorinated constituents of emerging concern.

2.3.2.1.1 Arsenic and Uranium

Wells 6 through 8 and 10 are currently treated for arsenic at LAWTF, and the City is considering improving and expanding the Well 21 WTF to include treatment for arsenic. Well 21 has also experienced elevated concentrations of uranium.

The presence of naturally occurring arsenic and uranium in the groundwater underlying the City impacts the reliability of the City's groundwater supply. Expansion of groundwater production in the future is limited by the costs associated with treatment and the availability of adequate supplies to conduct blending.

2.3.2.1.2 Total Dissolved Solids

The City's groundwater supply reliability is also impacted by the migration of groundwater with TDS concentrations in excess of the secondary MCL of 500 mg/L (the recommended limit for aesthetic considerations such as odor and taste), a factor which may make the planned wellfield near Well 21 infeasible due to the potential for expanded pumping to induce the migration of high TDS water of greater concentration than currently present at the well site. Wells 6 through 10 are located immediately east of groundwater with high TDS concentrations, based on water quality data from City wells and sampling and analysis data from both shallow and deep monitoring wells collected by private entities (SGI,

2008). Previous studies have indicated that TDS concentrations may be higher in the vicinity of Well 21 than in Wells 6 through 10. In September 2014, TDS concentrations in Well 9 and Well 10 ranged from 270 mg/L to 310 mg/L (UNICO Engineering, 2015), which is below the secondary MCL.[11] During the same sampling event, concentrations of TDS within Well 21 ranged from 630 mg/L to 660 mg/L, which is above the recommended secondary MCL but well below the upper limit of 1,000 mg/L and suitable for drinking water and irrigation.[12]

2.3.2.1.3 Industrial Contamination

Groundwater contamination has been identified at several locations in the City due to industrial processes. Contamination plumes are associated with pollution from Sharpe Army Depot and Occidental Chemical Corporation (OCC), now owned by J.R. Simplot Company (Simplot).[13] Contamination of groundwater at the Sharpe Army Depot consists primarily of trichloroethene, tetrachloroethene, and cis-1,2-dichloroethene. The plume is located at depths of approximately 50 to 150 ft bgs. Due to concerns of potential contamination from the plume, the City abandoned Well 5 and constructed Well 10 as a replacement well. Three groundwater extraction and treatment systems are located at Sharpe Army Depot and are used to treat existing groundwater contamination (RBF, 2009).

The OCC plume, in the upper aquifer, consists primarily of the pesticides 1,2-dibromo-3-chloropropane (DBCP) and ethylene dibromide (EDB), and the chemical solvent sulfolane. The OCC has been conducting investigation and remediation activities at the site since 1979, and a groundwater remedial system has been in place since 1982. The current groundwater remedial system extracts groundwater from up to 18 extraction wells and treats the groundwater using granular activated carbon. Treated water is then re-injected into the confined aquifer beneath the Corcoran Clay, which is located between 230 ft bgs and 300 ft bgs.

Sulfolane has not been detected in any of the City's wells; however, it has been detected in Simplot's water supply well within 1,000 feet from the City's well field. In July 2018, OCC subsidiary Glenn Springs Holdings, Inc. (GSH) and the City met to discuss the migration of sulfolane to Simplot's supply wells and towards the City's Wells 9 and 10. To prevent further migration of sulfolane towards the City's well field, the City shut down all of its wells in January 2019 and OCC expanded its groundwater extraction system. The City plans to restart Wells 6, 7, 8, and 10 in late 2020, with pumping monitored to limit plume migration.

2.3.2.1.4 Unregulated and Emerging Contaminants

Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) are organic chemicals synthesized for water and lipid resistance and are used in a wide variety of consumer products as well as fire-retarding foam and various industrial processes. These chemicals tend to accumulate in groundwater, frequently associated with source locations such as a factory or airfield. There are currently no maximum contaminant levels (MCLs) for PFOS or PFOA; however, the SWRCB announced in February 2020 that it is establishing RLs of 10 parts per trillion (ppt) for PFOA and 40 ppt for PFOS (SWRCB, 2020).[14] Under a new California law (Assembly Bill 756), if a water system receives a SWRCB

[11] These values are generally confirmed by the City's Consumer Confidence Reports for 2014 and 2015, where TDS concentrations in groundwater ranged from 280 mg/L to 387 mg/L. Since Well 21 was inactive during this period, these values are representative of water quality within Wells 6 through 10.

[12] Samples were collected in two private wells in the vicinity of Well 21. Concentrations of TDS in these wells ranged from 500 mg/L to 570 mg/L.

[13] The OCC site is currently owned by J. R. Simplot Company, which operates two supply wells for on-site potable and production uses. OCC retains remediation responsibilities through its subsidiary Glenn Springs Holdings, Inc.

[14] This action follows the SWRCB's August 2019 reduction of the NLs for the two contaminants from 14 to 5.1 ppt for PFOA and from 13 to 6.5 ppt for PFOS. A notification level is a health-based concentration of a contaminant in drinking water that warrants notification and further monitoring and assessment.

order for testing and finds that the PFOA or PFOS concentration exceeds the RL, the system is required to take the water source out of service, provide treatment, or notify their customers in writing. Water systems are also required to take several other measures to communicate the test results to the public.

PFAS concentrations detected at each of the City's active wells have tested above the notification levels (NLs); however, Well 9 and Well 21 have exceeded the SWRCB RLs. Well 21 has been inactive since 2013, but Well 9 will remain offline in the near-term due to elevated PFAS concentrations. The City is currently assessing treatment options to reduce PFOS and PFOA concentrations as part of the effort to resume production from Well 21 and to bring Well 9 back online.

3. WATER DEMAND

This section discusses the City's water demands and those anticipated for the Project, including the assumptions and methodology used to estimate the existing and projected water demand.

3.1 Future Water Demands

This section presents the projected water demands in 5-year increments during a 20-year planning horizon for the proposed Project. The water demand factors that serve as the basis for the assessment are described below in Section 3.1.1.

3.1.1 Water Demand Factors

Projected water demand factors are presented in **Table 12**. Water demand factors were provided by the City in August 2020 and are consistent with those used in the City's updated demand projections. Initial development of this WSA included using published demand numbers based on the 2019 WSMP. After discussions with the City, it was determined that new, more updated numbers would be used since updated demand projections were under development for preparation of the City of Lathrop 2020 UWMP. These updated demand projections are based on meter readings of thousands of homes over the past several years and are included in Appendix B.

Water demand factors of 315, 235, and 135 gpd per dwelling unit are used for Low, Medium, and High Density Residential land use categories, respectively. This is consistent with the water demand factors used by the City in their updated demand projections for residential development in River Islands. A water demand factor of 860 gpd/acre is used for the Town Center and Employment Center, consistent with the Commercial land use water demand factor used in the City's updated demand projections. A water demand factor of 1,500 gpd/acre is used for Schools, and 2,450 gpd/acre is used for Parks and Open Space and for Roadway Landscape Area land uses, also consistent with the water demand factors used in the City's updated demand projections for the River Islands development.

Table 12: Project Water Demand Factors

Land Use Category	Residential Density (DU/acre)	Water Demand Factor
Low Density Residential	1.0 – 9.0	315 gpd/DU[2]
Medium Density Residential	9.0 – 15.0	235 gpd/DU[3]
High Density Residential	15.0 – 35.0	135 gpd/DU[4]
Commercial[1]	-	860 gpd/acre[5]
Schools	-	1,500 gpd/acre[6]
Parks and Open Space	-	2,450 gpd/acre[7]
Roadway Landscape Area	-	2,450 gpd/acre[8]

Notes:

1. Includes the planned River Islands Town Center and Employment Center.
2. Water demand factor is modified from the City's updated demand projections (August 2020) (Appendix B) for Low Density Residential land use to account for efficiencies associated with new construction in the River Islands area.
3. Water demand factor is modified from the City's updated demand projections (August 2020) (Appendix B) for Medium Density Residential land use to account for efficiencies associated with new construction in the River Islands area.
4. Water demand factor is from the City's updated demand projections (August 2020) (Appendix B) for High Density Residential land uses.
5. Water demand factor is from the City's updated demand projections (August 2020) (Appendix B) for Commercial land uses.
6. Water demand factor is from the City's updated demand projections (August 2020) (Appendix B) for Schools.
7. Water demand factor is from the City's updated demand projections (August 2020) (Appendix B) for Parks and Open Space land uses.
8. Water demand factor is from the City's updated demand projections (August 2020) (Appendix B) for Street Landscape Area.

3.1.2 Project Water Demand Projections

3.1.2.1 Baseline Demands

The Project site is currently mostly undeveloped and/or agricultural land. There are a few single-family residences, a horse ranch and other agriculture-related buildings located on a few areas of the Project site. The Project site also contains the Central Drainage Ditch, a long agricultural ditch that bisects the Stewart Tract, along with a small pond located near Paradise Cut.

Despite some existing water demand at the Project site, proposed Project demands were compared against a baseline that assumes no existing water demand at the Project site. This approach is consistent with the approach taken in the 2002 WSA for River Islands development and is the most conservative method for estimating demands for the WSA as it applies the lowest baseline for existing usage in the Project area.

3.1.2.2 New Project Demands

Anticipated Phase 2 Project construction, detailed by land use categories, is provided in **Table 13**. As shown, the Project will add over 10,000 new residential units and nearly 500 acres of new commercial, institutional, and landscape/open space development, which translates to a total projected water demand of 3,798 AFY at buildout.

Table 13: Project Phase 2 Water Demand Projections by Land Use

Land Use Category	Residential Units (units)	Project Area (acres)	Water Demand Factor	Total Demand (gpd)
Low Density Residential	4,061	-	315 gpd/DU	1,279,215
Medium Density Residential	3,150	-	235 gpd/DU	740,227
High Density Residential	3,515	-	135 gpd/DU	474,552
Total Residential	*10,726*	-	-	2,493,994
Commercial[1]	-	135.6	860 gpd/acre	116,609
Schools	-	109.7	1,500gpd/acre	164,550
Parks and Open Space[2]	-	211.5	2,450gpd/acre	518,198
Roadway Landscape Areas[3]	-	39.7	2,450 gpd/acre	97,228
Total	**10,726**	**496**		**3,390,578**
Total Project Demand (AFY)				**3,798**

Notes:
1. Includes the planned River Islands Town Center and Employment Center.
2. Includes only irrigated parks and open space areas.
3. Includes only irrigated roadway landscape areas.

Landscape irrigation for the planned Town Center, Employment Center, schools, parks, open spaces, and roadway landscape acres will be served by non-potable supplies. **Table 14** provides a breakdown of the non-potable demands compared to total demands. It is anticipated that approximately 760 AFY (or nearly 20 percent) of the Project's 3,798 AFY total demand will be met by non-potable supplies.

Table 14: Project Potable and Non-Potable Demand by Land Use

Land Use Category	Total Demand (gpd)	% Demand for Non-Potable Water[1]	Non-Potable Demand (gpd)	Potable Demand (gpd)
Residential	2,493,994	N/A	0	2,493,994
Commercial[2]	116,609	15%	17,491	99,117
Schools	164,550	50%	106,958	57,593
Parks and Open Space	518,198	90%	466,378	51,820
Roadway Landscape Areas[3]	97,228	90%	87,505	9,723
Total	**3,390,578**		**678,332**	**2,712,246**
Project Demand (AFY)	**3,798**		**760**	**3,038**

Notes:
1. Non-potable water demand data provided by Califia, the Project developer (July 2020).
2. Commercial non-potable demand is for frontage landscaping and does not include on-site use.
3. Roadway landscape areas will be irrigated with non-potable water where access allows.

3.1.2.3 Project Development Phasing

Based on information available at time of publishing, it is expected that the entire Project will be developed over the span of about 20 years, with the majority of development occurring approximately linearly through buildout (anticipated at 2040). Ten percent of the proposed low and medium density residential development is expected to be completed by 2025, with the remainder of the development progressing linearly from 2025 through buildout in 2040. Alternatively, approximately 60 percent of the proposed schools are anticipated to be completed by 2025, with the remaining constructed approximately linearly through buildout, and nearly 80 percent of proposed parks and open space areas are expected to be developed in the second half of project development, between 2030 and 2040. A complete breakdown of the anticipated phasing of the Project development and associated demands are presented in **Table 15** and **Table 16,** respectively.

Table 15: Phase 2 Project Development Phasing by Land Use Category

Land Use Category	2020-2025	2025-2030	2030-2035	2035-2040	Buildout (2040)
Residential (units)					
Low Density Residential	406	1,624	2,843	4,061	**4,061**
Medium Density Residential	315	1,260	2,205	3,150	**3,150**
High Density Residential	0	1,172	2,343	3,515	**3,515**
Non-Residential (acres)					
Commercial[1]	0	45.2	90.4	135.6	**135.6**
Schools	64.6	80.1	95.1	109.7	109.7
Parks and Open Space[2]	8.8	38.4	99.0	159.6	159.6
Roadway Landscape Area[3]	6.8	35.1	63.4	91.6	91.6
Total (acres)	**80**	**199**	**348**	**496**	**496**
Total (units)	**721**	**4,056**	**7,391**	**10,726**	**10,726**

Source: Data provided by Califia, the Project developer (September 2020).
Notes:
1. Includes the planned River Islands Town Center and Employment Center.
2. Includes only irrigated parks and open space areas.
3. Includes only irrigated roadway landscape areas.

Table 16: Phase 2 Project Phased Demand Projections

Project Phased Demand		Projected Water Use (AFY)			
	2020	2025	2030	2035	2040 (Buildout)
Potable Demand	0	268	1,186	2,112	3,038
Non-Potable Demand	0	109	276	518	760
Total Demand	**0**	**378**	**1,462**	**2,630**	**3,798**

3.1.3 Comparison to 2002 Projections

The 2002 WSA previously developed for the River Islands development (Phase 1 and Phase 2) anticipated 11,000 new residential dwelling units by buildout in 2025. In addition, the analysis anticipated a 164,000 square-foot school, 175,111 square feet of village commercial development, and 478,288 square feet of service commercial development (Nolte, 2002). **Table 17** contains the associated projected water demands for the anticipated River Islands development.

Table 18 compares these 2002 projections to updated projections using new land use information and updated water demands factors (see **Table 12**). Actual potable demands are used for the built-out portion of Phase 1 and demands for remaining planned Phase 1 development have been projected using the same water demand assumptions as the Phase 2 analysis. Details on the updated Phase 1 analysis can be found in Appendix C.

As shown in **Table 18**, an additional 610 AFY in projected demands at buildout in 2040 are estimated beyond the 2002 projections. However, the 2002 WSA did not specify which demands would be met by non-potable supplies. Thus, when non-potable demands are broken out, the 2002 WSA overestimates the development's total potable water needs by 511 AFY. Under the current analysis, an additional 1,121 AFY is anticipated to be met by non-potable water supplies.

Table 17: 2002 Water Supply Assessment Projected Demand

Land Use Category	Water Demand Factor (gpd/acre)	Projected Water Use (AFY)									
		2005		2010		2015		2020		2025	
		Average Daily Demand (gpd)	Annual Demand (AFY)	Average Daily Demand (gpd)	Annual Demand (AFY)	Average Daily Demand (gpd)	Annual Demand (AFY)	Average Daily Demand (gpd)	Annual Demand (AFY)	Average Daily Demand (gpd)	Annual Demand (AFY)
Low Density Residential	1,760	192,896	216.1	651,024	729.3	1,302,048	1,458.6	2,246,904	2,517.0	3,191,760	3,575.5
Medium Density Residential	3,000	-	-	49,200	55.1	98,100	109.9	130,050	145.7	162,000	181.5
High Density Residential	4,200	-	-	66,780	74.8	133,140	149.1	197,400	221.1	261,660	293.1
Town Center	1,500	4,500	5.0	35,250	39.5	70,500	79.0	70,500	79.0	70,500	79.0
Employment Center	1,500	-	-	196,950	220.6	393,900	441.3	393,900	441.3	393,900	441.3
Retail Commercial	1,500	-	-	-	-	-	-	7,800	8.7	15,450	17.3
Golf Clubhouses	1,500	-	-	-	-	-	-	14,850	16.6	29,550	33.1
Animal Campus	1,500	-	-	13,650	15.3	13,650	15.3	13,650	15.3	13,650	15.3
Schools	3,000	-	-	91,800	102.8	91,800	102.8	259,050	290.2	426,300	477.5
Total		**197,396**	**221**	**1,104,654**	**1,237**	**2,103,138**	**2,356**	**3,334,104**	**3,735**	**4,564,770**	**5,114**

Source: City of Lathrop 2002 WSA, Table 9 (Nolte, 2002)

Table 18: Comparison of 2002 WSA and Updated Demands

	Projected Water Use (AFY)									
	2020		2025		2030		2035		2040 (Buildout)	
	Potable	Non-Potable	Potable	Non-Potable	Potable	Non-Potable	Potable	Non-Potable	Potable	Non-Potable
2002 WSA Projected Demands[1]	3,735	0	5,114	0	5,114	0	5,114	0	5,114	0
Updated Phase 1 Demands[2]	779	153	1,287	258	1,387	341	1,476	351	1,565	361
Updated Project Demands (Phase 2)	0	0	268	109	1,186	276	2,112	518	3,038	760
Total Updated Demands (Phase 1 and Phase 2)	779	153	1,556	367	2,573	617	3,588	869	4,603	1,121
Net Change in Demand									**-511**	**1,121**

Notes:

1. Source: City of Lathrop 2002 WSA, Table 9 (Nolte, 2002)
2. Land use data and phasing assumptions were provided by the Project developer and are detailed in Appendix C. Demands for existing Phase 1 development are included in this total. Existing Phase 1 demands were calculated based on land use and water demand factors, rather than using actual demands.

3.1.4 City of Lathrop Projected Demands

The City updated its citywide water demand projections through 2040 as part of developing its 2019 WSMP. That projection was based on historical water use, population, and employment projections. Those projections were recently revised, based on more current usage data. As shown in **Table 19**, the River Islands development is projected to account for about 39 percent of the citywide potable demand at buildout.

Table 19: City of Lathrop Projected Demands through 2040

	Projected Water Use (AFY)				
	2020	**2025**	**2030**	**2035**	**2040 (Buildout)**
Potable Demands					
City of Lathrop[1]	4,794	6,076	6,584	6,678	7,129
River Islands Phase 1 Demand[2]	779	1,287	1,387	1,476	1,565
River Islands Phase 2	0	268	1,186	2,112	3,038
Total City Demand[3]	**5,573**	**7,632**	**9,157**	**10,266**	**11,732**
Non-potable Demands					
City of Lathrop[4]	1,006	1,736	2,444	2,906	3,358
River Islands Phase 1 Demand	153	258	341	351	361
River Islands Phase 2	0	109	276	518	760
Total City Demand[5]	**1,159**	**2,103**	**3,061**	**3,775**	**4,479**

Notes:

1. Source: City of Lathrop updated demand projections (August 2020) (Appendix B).
2. Land use data and phasing assumptions were provided by the Project developer and are detailed in Appendix C. Demands for existing Phase 1 development are included in this total. Existing Phase 1 demands were calculated based on land use and water demand factors, rather than using actual demands.
3. Includes City of Lathrop updated demand estimates (August 2020) (Appendix B), excluding River Islands, plus Phase 1 and Phase 2 potable demands.
4. Source: 2015 UWMP (EKI, 2017). Consistent with the 2015 UWMP, projected recycled water demands are estimated to be equal to the volume of treated effluent available (volumes presented previously in Table 8). River Islands Phase 1 and Phase 2 demands have been subtracted from total City demand.
5. Includes City of Lathrop 2015 UWMP recycled water demands, excluding River Islands, plus Phase 1 and Phase 2 non-potable demands.

4. DRY YEAR ANALYSIS

When comparing water demand and water supplies to determine availability of a long-term reliable water supply for the proposed development, the assessment must consider available supply under normal, single-dry year, and multiple-dry year conditions. The purpose of this assessment is to evaluate the likelihood of potential supply shortfalls under various hydrologic conditions. If potential shortfalls are likely to occur, this assessment can also provide a basis for planning for those conditions.

The City's projected water supply reliability in normal, single-dry year, and multiple-dry years is described in the following sections.

4.1 Normal Years

The City's projected potable water supply in normal years are presented in **Table 20**. In normal years, the City expects to receive between 98 and 100 percent of its SCWSP supplies and 100 percent of its normal groundwater supply, consistent with 2019 WSMP analyses. The normal year supply reliability is based upon SSJID's water supplies in 2010, consistent with the SSJID 2015 UWMP.

Table 20: Projected Potable Water Supply in Normal Years

Water Source	Water Right or Contract	Reliability	Allocation	Contractual Entitlement (AFY)				
				2020	2025	2030	2035	2040
Current Supplies								
SCWSP Phase I	SSJID Contract[1]	Pre-1914	98-100%[2]	6,760	6,811	6,863	6,887	6,887
Groundwater	N/A[3]	--	100%	4,720	4,720	4,720	4,720	4,720
Anticipated Future Supplies								
SCWSP Phase II	SSJID Contract[4]	Pre-1914	98-100%[2]	--	--	--	--	3,784
Groundwater	N/A[5]	--	100%	0	0	0	0	0
Total SCWSP Supplies				6,760	6,811	6,863	6,887	10,671
Total Groundwater				4,720	4,720	4,720	4,720	4,720
Normal Year Total				**11,480**	**11,531**	**11,583**	**11,607**	**15,391**

Source: City of Lathrop 2019 WSMP, Table 5-8 (EKI, 2019)

Notes:

1. The City's total Phase I allotment of SCWSP water, following the 2013 sale to the City of Tracy, is 6,887 AFY.
2. During a normal water year, the City expects to receive between 98% and 100% of its SCWSP water supply allocation. The City's projected SCWSP allocations are presented in Table 11.
3. Reflects the City's estimated groundwater yield for Wells 6, 7, 8, and 10.
4. The City's total Phase II allotment of SCWSP water, following the 2013 sale to the City of Tracy, is 10,671 AFY. Potential additional groundwater supplies may be obtained through the Well 21 WTF upgrade, which could be completed in two phases. Phase 1 is anticipated to be completed by 2020 and Phase 2 is anticipated to be completed by 2025. Potential additional groundwater may also include bringing Well 9 back online. However, for this report, water from Well 21 and Well 9 are not included as Anticipated Future Supplies.

4.2 Single-Dry Years

The City's projected water supplies in single-dry years are presented in **Table 21.** In single-dry years, the City expects to receive between 74 and 75 percent of its SCWSP supplies and 100 percent of its normal groundwater supply consistent with 2019 WSMP analyses. The single-dry year supply reliability is based upon SSJID's water supplies in 1977, consistent with the SSJID 2015 UWMP.

Table 21: Projected Potable Water Supply in Single-Dry Years

Water Source	Water Right or Contract	Reliability	Allocation	Contractual Entitlement (AFY)				
				2020	2025	2030	2035	2040
Current Supplies								
SCWSP Phase I	SSJID Contract[1]	Pre-1914	74-75%[2]	5,070	5,108	5,147	5,187	5,187
Groundwater	N/A[3]	--	100%	4,720	4,720	4,720	4,720	4,720
Anticipated Future Supplies								
SCWSP Phase II	SSJID Contract[4]	Pre-1914	74-75%[2]	--	--	--	--	2,850
Groundwater	N/A[5]	--	100%	0	0	0	0	0
Single-Dry Year Total				**9,790**	**9,828**	**9,867**	**9,907**	**12,757**

Source: City of Lathrop 2019 WSMP, Table 5-9 (EKI, 2019)

Notes:

1. The City's total Phase I allotment of SCWSP water, following the 2013 sale to the City of Tracy, is 6,887 AFY.
2. During a single-dry water year, the City expects to receive between 74% and 75% of its SCWSP water supply allocation. The City's projected SCWSP allocations are presented in Table 11.
3. Reflects the City's estimated groundwater yield for Wells 6, 7, 8, and 10.
4. The City's total Phase II allotment of SCWSP water, following the 2013 sale to the City of Tracy, is 10,671 AFY.
5. Potential additional groundwater supplies may be obtained through the Well 21 WTF upgrade, which could be completed in two phases. Phase 1 is anticipated to be completed by 2020 and Phase 2 is anticipated to be completed by 2025. Potential additional groundwater may also include bringing Well 9 back online. However, for this report, water from Well 21 and Well 9 are not included as Anticipated Future Supplies.

4.3 Multiple-Dry Years

The City's projected water supplies in multiple-dry years are presented in **Table 22**. In multiple-dry years, the City expects to receive between 83 and 85 percent of its SCWSP supplies and 100 percent of its normal groundwater supply, consistent with City of Lathrop 2019 WSMP analyses. The multiple-dry year supply reliability is based upon SSJID's water supplies over the period 1990 through 1992, consistent with the SSJID 2015 UWMP.

Table 22: Projected Potable Water Supply in Multiple-Dry Years

Potable Water Source	Water Right or Contract	Reliability	Allocation	Contractual Entitlement (AFY)				
				2020	2025	2030	2035	2040
Multiple-Dry Years – First Year								
Current Supplies								
SCWSP Phase I	SSJID Contract[1]	Pre-1914	83-85%[2]	5,858	5,903	5,948	5,994	5,994
Groundwater	N/A[3]	--	100%	4,720	4,720	4,720	4,720	4,720
Anticipated Future Supplies								
SCWSP Phase 2	SSJID Contract[4]	Pre-1914	83-85%[2]	--	--	--	--	3,293
Groundwater	N/A[5]	--	100%	0	0	0	0	0
Total				**10,578**	**10,623**	**10,668**	**10,714**	**14,007**
Multiple-Dry Years – Second Year								
Current Supplies								
SCWSP Phase II	SSJID Contract[1]	Pre-1914	83-85%[2]	6,027	6,073	6,119	6,167	6,167
Groundwater	N/A[3]	--	100%	4,720	4,720	4,720	4,720	4,720
Anticipated Future Supplies								
SCWSP Phase 2	SSJID Contract[4]	Pre-1914	83-85%[2]	--	--	--	--	3,388
Groundwater	N/A[5]	--	100%	0	0	0	0	0
Total				**10,747**	**10,793**	**10,839**	**10,887**	**14,275**
Multiple-Dry Years - Third Year								
Current Supplies								
SCWSP Phase I	SSJID Contract[1]	Pre-1914	83-85%[2]	5,694	5,737	5,781	5,825	5,825
Groundwater	N/A[3]	--	100%	4,720	4,720	4,720	4,720	4,720
Anticipated Additional Future Supplies								
SCWSP Phase 2	SSJID Contract[4]	Pre-1914	83-85%[2]	--	--	--	--	3,201
Groundwater	N/A[5]	--	100%	0	0	0	0	0
Total				**10,414**	**10,457**	**10,501**	**10,545**	**13,746**

Source: City of Lathrop 2019 WSMP, Table 5-10 (EKI, 2019)

Notes:

1. The City's total Phase I allotment of SCWSP water, following the 2013 sale to the City of Tracy, is 6,887 AFY.
2. During multiple-dry years, the City expects to receive between 83% and 85% of its SCWSP water supply allocation in each of the three years. The City's projected SCWSP allocations are presented in Table 11.
3. Reflects the City's estimated groundwater yield for Wells 6, 7, 8 and 10.
4. The City's total Phase II allotment of SCWSP water, following the 2013 sale to the City of Tracy, is 10,671 AFY.
5. Potential additional groundwater supplies may be obtained through the Well 21 WTF upgrade, which could be completed in two phases. Phase 1 is anticipated to be completed by 2020 and Phase 2 is anticipated to be completed by 2025. Potential additional groundwater may also include bringing Well 9 back on-line. However, for this report, water from Well 21 and Well 9 are not included as Anticipated Additional Future Supplies.

5. SUFFICIENCY DETERMINATION

5.1 Supply and Demand Comparison

The total water demand anticipated for the Project is 3,798 AFY at buildout, as shown previously in **Table 13.** Of this total buildout demand, 760 AFY is anticipated to be met by recycled water. Projected water supply and demand for the entire City of Lathrop service area is presented in **Table 23**. As shown, the City's current and planned water supply is sufficient to meet all demands, including those proposed for the Project, in normal water years.

The 2019 WSMP shows insufficient supply to meet total demand under normal year conditions in 2035 and at buildout. The updated projections below include revised demand estimates for the River Islands project area, and now show the supplies as sufficient to meet total demands.

Table 23: City of Lathrop Water Demand (Including River Islands) versus Normal Year Water Supply

Water Use Category	2020	2025	2030	2035	2040 (Buildout)
Potable Water					
Supply (AFY)[1,2]	11,480	11,531	11,583	11,607	15,391
Demand (AFY)	5,573	7,632	9,157	10,266	11,732
Sufficient Supply?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Recycled Water					
Supply (AFY)[3]	1,159	2,103	3,061	3,775	4,479
Demand (AFY)	1,159	2,103	3,061	3,775	4,479
Sufficient Supply?[4]	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

1. Source: City of Lathrop 2019 WSMP (EKI, 2019), Table 5-8. Assumes both Well 21 and Well 9 remain offline.
2. Groundwater supply assumes that there will be no curtailments or limitations under the GSP currently being developed for the Tracy Subbasin.
3. Source: 2015 UWMP (EKI, 2017). Consistent with the 2015 UWMP, projected recycled water demands are estimated to be equal to the volume of treated effluent available (volumes presented previously in Table 8). River Islands will have the ability to supplement City recycled water supplies with lake and river water. These supplemental sources can be used to meet up to 100% of River Islands non-potable demands if recycled water supplies are unavailable.
4. Based on discussions between the River Islands developer Califia and the City of Lathrop, it is anticipated that there will be sufficient recycled water supplies to meet the new recycled water demands of River Islands.

5.2 Supply and Demand Comparison in Dry Years

The assessment below considers available supply under single-dry and multiple-dry water year conditions to evaluate the potential for shortfalls in supply under such hydrologic conditions. Per the City's 2015 UWMP, the City's Water Shortage Contingency Plan includes demand reduction measures that would be implemented to eliminate any supply shortfall. A summary of the City's dry year demands with the Project is included in **Table 24**. A comparison of the projected supplies and demands under single-dry and multiple-dry year conditions is presented in **Table 25**. As shown in the table, the City's supply is sufficient to meet total projected demands (the City's planned and future uses and the Project) in all years in multiple-dry year conditions. In single-dry years conditions, there is an anticipated supply shortage in 2035 of 4 percent before accounting for the implementation of the City of Lathrop's Water Shortage Contingency Plan, which is discussed further in Section 5.2.1. If the supply is not sufficient, the City will enact conservation and demand management measures to ensure demand does not exceed supply. For the purpose of this analysis, City water supplies at buildout are assumed to be consistent with 2040 supplies, which makes this a conservative estimate. In addition, per the 2015 UWMP, the City has planned for water shortages and would enact more stringent water conservation measures and/or the appropriate stage of the Water Shortage Contingency Plan

described in the City's 2015 UWMP across the entire service area, including the Project area, to ensure demand does not exceed supply.

Table 24: City of Lathrop Potable Water Demand (Including River Islands) During Dry Year Conditions

Potable Demand[1]	2020	2025	2030	2035	2040
Single-Dry Year (AFY)[2]	5,573	7,632	9,157	10,266	11,732
Multiple-Dry Year (AFY)[3]					
First Year	5,573	7,632	9,157	10,266	11,732
Second Year	5,573	7,632	9,157	10,266	11,732
Third Year	5,573	7,632	9,157	10,266	11,732

Notes:

1. Source: City of Lathrop updated demand projections (August 2020) (Appendix B). City demand estimates for the River Islands area have been excluded, and projected River Islands Phase1 and Phase 2 potable demands, phased in five-year increments through 2040 were then added to the City demand totals.
2. Single-dry year demand (AFY) is assumed to be consistent with normal year demand.
3. Multiple-dry year demand (AFY) is assumed to be consistent with normal year demand.

Table 25: City of Lathrop Water Demand (Including River Islands) versus Dry Year Supply

		2020	2025	2030	2035	2040 (Buildout)
Total Supply[1]	**Single-Dry Year (AFY)**	9,790	9,828	9,867	9,907	12,757
Total Demand – Single-Dry Year (AFY)[2]		**5,573**	**7,632**	**9,157**	**10,266**	**11,732**
Sufficient Supply?[3]	**Single-Dry Year**	Yes	Yes	Yes	No	Yes
Supply Exceeded By:		0%	0%	0%	4%	0%
Total Supply[1]	**Multiple-Dry Year (AFY)**					
	First Year	10,578	10,623	10,668	10,714	14,007
	Second Year	10,747	10,793	10,839	10,887	14,275
	Third Year	10,414	10,457	10,501	10,545	13,746
Total Demand – Multiple-Dry Year (All Years) (AFY)[2]		**5,573**	**7,632**	**9,157**	**10,266**	**11,732**
Sufficient Supply?[3]	**Multiple-Dry Year**					
	First Year	Yes	Yes	Yes	Yes	Yes
	Second Year	Yes	Yes	Yes	Yes	Yes
	Third Year	Yes	Yes	Yes	Yes	Yes
Supply Exceeded By:		0%	0%	0%	0%	0%

Notes:

1. Source: City of Lathrop 2019 WSMP (EKI, 2019), Table 5-12 and Table 5-13.
2. Source: City of Lathrop updated demand projections (August 2020) (Appendix B). City demand estimates for the River Islands area have been excluded, and projected River Islands Phase1 and Phase 2 potable demands, phased in five-year increments through 2040 were then added to the City demand totals.
3. If the supply is not sufficient, the City will enact conservation and demand management measures to ensure demand does not exceed supply.

As discussed in Section 2.3.1.1, the SWRCB adopted revisions in December 2018 to the Bay-Delta Plan. The adopted changes include increasing flows on the San Joaquin River and its tributaries, including the Stanislaus River, starting at 40 percent of unimpaired flow from February to June, with a range of 30 to 50 percent depending on biological conditions. Based on preliminary estimates made by SSJID (2016), the 40 percent unimpaired flows criteria would

increase the SCWSP supply shortfall in a single-dry year from 25 to 36 percent (11 percent increase), and from 16 to 29 percent (13 percent increase) during the third consecutive year of multiple-dry years by 2040 (EKI, 2019).[15]

While this WSA does not account for these reductions, an optional analysis was run to evaluate the potential impact of the Bay-Delta Plan voluntary agreements, should they be implemented using a 40 percent unimpaired flow criteria. **Table 26** below shows how the supply and demand comparison is affected by the voluntary agreements under single-dry and multiple-dry year conditions. As shown in the table, the City's total projected demands (the City's planned and future uses and the Project) could be met by projected supplies through 2025 under the single-dry year condition, with 4, 16, and 3 percent supply shortages in years 2030, 2035, and 2040, respectively. Projected demands could be met in multiple-dry year conditions through 2025 and at Project buildout in 2040, with 0.2 and 12 percent supply shortages in years 2030 and 2035, respectively. Per the 2015 UWMP, the City has planned for water shortages and would increase water conservation programming, enact more stringent water conservation measures and/or the appropriate stage of the Water Shortage Contingency Plan described in the City's 2015 UWMP across the entire service area, including the Project area, to further ensure demand does not exceed supply should the voluntary agreement cutbacks be implemented.

Table 26: Supply and Demand Comparison Accounting for Voluntary Agreements

		2020	2025	2030	2035	2040 (Buildout)
Total Supply[1]	**Single-Dry Year (AFY)**	9,790	8,747	8,782	8,817	11,354
Total Demand – Single-Dry Year (AFY)[2]		**5,573**	**7,632**	**9,157**	**10,266**	**11,732**
Sufficient Supply?	Yes	Yes	Yes	No	No	No
Supply Exceeded By:		0%	0%	4%	16%	3%
Total Supply[1]	**Multiple-Dry Year (AFY)**					
	First Year	10,578	10,623	10,668	10,714	14,007
	Second Year	10,747	10,793	10,839	10,887	14,275
	Third Year	10,414	10,457	10,501	10,545	13,746
Total Demand – Multiple-Dry Year (All Years) (AFY)[2]		**5,573**	**7,632**	**9,157**	**10,266**	**11,732**
Sufficient Supply?[3]	**Multiple-Dry Year**					
	First Year	Yes	Yes	Yes	Yes	Yes
	Second Year	Yes	Yes	Yes	Yes	Yes
	Third Year	Yes	Yes	No	No	Yes
Supply Exceeded By:		0%	0%	0.2%	12%	0%

Notes:

1. Source: City of Lathrop 2019 WSMP (EKI, 2019), Table 5-12 and Table 5-13. Single-dry year supply reduced by 11% beginning in 2025. Third year of multiple-dry year supply reduced by 13% beginning in 2025.
2. Source: City of Lathrop updated demand projections (August 2020) (Appendix B). City demand estimates for the River Islands area have been excluded, and projected River Islands Phase1 and Phase 2 potable demands, phased in five-year increments through 2040 were then added to the City demand totals.
3. If the supply is not sufficient, the City will enact conservation and demand management measures to ensure demand does not exceed supply.

[15] Based on information presented by Oakdale Irrigation District (OID) and SSJID, combined OID and SSJID formula water available under 40% unimpaired flow criteria will be 381,000 AFY during 1976-1977, and 422,000 AFY during 2015-2016. These values were used for the basis of a single-dry year and the third consecutive year of multiple-dry years, respectively. The SCWSP projected supplies are calculated as 50% of combined OID and SSJID formula water available, similar to what was assumed in SSJID's 2015 UWMP.

5.2.1 Water Shortage Contingency Plan

As part of the UWMP process, all urban suppliers are required to prepare a water shortage contingency plan detailing how the supplier would manage supplies during water shortages of up to 50 percent. Should the City experience a water shortage or catastrophic supply interruption in the future, the City would enact more stringent water conservation measures and/or the appropriate stage of the City's Water Shortage Contingency Plan (as described in the City's UWMP) across the entire service area, including the Project area, to ensure demand does not exceed supply. In the event of catastrophic supply interruption due to a disaster such as an earthquake, major fire, flooding, or sabotage, the City maintains emergency standby generators at wells and pump stations to provide uninterrupted water supply. The City's 2015 UWMP includes additional details on the City's Water Shortage Contingency Plan (WSCP), including the following information:

- A description of stages of action the City will take in response to a water supply shortage;
- A description of non-essential water uses during a water shortage, and water use prohibitions, penalties, and consumption reduction methods; and
- An analysis of revenue impacts due to reduced sales during shortages.

The City is anticipated to have sufficient supplies to meet demands inclusive of the Project in dry years in all years except 2035 in a single-dry year scenario. This shortage would be met through the City's implementation of conservation programming and/or the WSCP. Because the shortage in 2035 is anticipated to be less than 10 percent, demands would be less than supply if the City were to implement Stage 1 of its WSCP. This would likely result in a corresponding 10 percent reduction in demand and make up for the shortages identified in the above table.

6. NON-APPLICABLE SECTIONS OF WATER CODE 10910 – 10915

The following sections of the Water Code do not apply to this WSA because they are contingent on conditions that do not apply in the City's assessment of water supply for the Project.

> *10911 (a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water supply assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:*
> *(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.*
> *(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.*
> *(3) Based on the considerations set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to be able to acquire additional water supplies.*
>
> *10915 The County of San Diego is deemed to comply with this part if the Office of Planning and Research determines that all of the following conditions have been met:*
> *(a) Proposition C, as approved by the voters of the County of San Diego in November 1988, requires the development of a regional growth management plan and directs the establishment of a regional planning and growth management review board.*
> *(b) The County of San Diego and the cities in the county, by agreement, designate the San Diego Association of Governments as that review board.*
> *(c) A regional growth management strategy that provides for a comprehensive regional strategy and a coordinated economic development and growth management program has been developed pursuant to Proposition C.*
> *(d) The regional growth management strategy includes a water element to coordinate planning for water that is consistent with the requirements of this part.*
> *(e) The San Diego County Water Authority, by agreement with the San Diego Association of Governments in its capacity as the review board, uses the association's most recent regional growth forecasts for planning purposes and to implement the water element of the strategy.*
> *(f) The procedures established by the review board for the development and approval of the regional growth management strategy, including the water element and any certification process established to ensure that a project is consistent with that element, comply with the requirements of this part.*
> *(g) The environmental documents for a project located in the County of San Diego include information that accomplishes the same purposes as a water supply assessment that is prepared pursuant to Section 10910.*

7. CONCLUSION

California Water Code:
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.
(c) The city or county may include in any environmental document an evaluation of any information included in that environmental document provided pursuant to subdivision (b). The city or county 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 or county determines that water supplies will not be sufficient, the city or county shall include that determination in its findings for the project.

Based on the analysis presented in this WSA, the City has adequate supply to serve the City's demands inclusive of the Project through buildout in 2040 under normal year and multiple dry-year supply conditions. In single-dry years conditions, there is an anticipated supply shortage in 2035 before accounting for the implementation of the City's WSCP. To avoid a potential supply shortfall, the City would increase water conservation programming and/or implement the appropriate stage of its WSCP to ensure demand does not exceed supply. Because the shortage in 2035 in a single-dry year condition is less than 10 percent (estimated at 4 percent), it is anticipated that this shortage would be mitigated by the City implementing Stage 1 of its WSCP.

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APPENDIX A: RIVER ISLANDS PROJECT DEVELOPMENT DETAILS

APPENDIX B: CITY OF LATHROP UPDATED DEMAND PROJECTIONS (AUGUST 2020)

APPENDIX C: RIVER ISLANDS PHASE 1 ANALYSIS

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