TRACY HILLS SPECIFIC PLAN
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
VOLUME II
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APPENDIX F-2
WATER SUPPLY ASSESSMENT FOR TRACY HILLS SPECIFIC PLAN DRAFT REPORT, DATED SEPTEMBER 2014

CITY OF TRACY

TRACY HILLS SPECIFIC PLAN

SB610/SB221 WATER SUPPLY ASSESSMENT

FINAL DRAFT REPORT

Prepared for

City of Tracy

September 2014

WEST YOST ASSOCIATES
Consulting Engineers

404-02-13-99

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Elizabeth Drayer

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EXECUTIVE SUMMARY

Overview

The Tracy Hills Specific Plan (Proposed Project) is one of the City of Tracy's (City) future service areas as defined in the City's General Plan Sphere of Influence (SOI) and the developable portion of the Proposed Project is located within the existing City Limits. The Proposed Project consists of approximately 6,175 acres (of which 2,732 acres are developable)[1] on the southwestern side of the City's SOI.

The Proposed Project meets the definition of a "Project" per California Water Code sections 10910 through 10915, as established by Senate Bill 610 (SB 610) in 2001, thus requiring the preparation of this Water Supply Assessment (WSA). The Proposed Project also meets the definition of a residential subdivision and therefore must also meet the requirements of California Government Code section 66473.7(a)(1), as established by SB 221 in 2001.

The Proposed Project area is generally bounded on the north by the Delta-Mendota Canal, on the east by Corral Hollow Road, and on the west and south by the Tracy foothills. The Proposed Project includes 5,499 residential dwelling units with housing types ranging from residential estate to apartments and condominiums. Non-residential land uses include light industrial, office, commercial, business park, schools, neighborhood parks, a golf course and open space. The Proposed Project is proposed to develop in several phases starting in 2015.

Potable and Recycled Water Demands and Supply Availability

Projected water demands for buildout of the Proposed Project total approximately 5,700 acre-feet per year (af/yr), of which about approximately 3,730 af/yr is potable water demand and approximately 1,970 af/yr is recycled water demand for landscape irrigation.

Potable water supplies for the Proposed Project will include:

- Approximately 2,430 af/yr of surface water supplies from the Byron Bethany Irrigation District (BBID)
  - — These supplies are based on pre-1914 water rights and are firm and well-established
  - — These supplies can be used within the portion of the BBID Raw Water Service Area 2 which is also within the Central Valley Project (CVP) Consolidated Place of Use (CPOU)
  - — An agreement between the City and BBID for use of these supplies was approved in August 2013

[1] Based on Tracy Hills Specific Plan (Table 1-1 Land Use Plan Projected Buildout) provided by the City on June 12, 2014.

  - — A long-term exchange contract between the United States Bureau of Reclamation (USBR) and BBID providing for the exchange of water was executed in April 2014 and allows for the conveyance of these BBID supplies to the City using the Delta-Mendota Canal (DMC)

- Approximately 630 af/yr of surface water supplies from BBID's CVP supplies
  - — Approximately 1,315 af/yr available in conjunction with annexation of 387 acres of agricultural land within the Proposed Project area
  - — These supplies have agricultural reliability and are subject to significantly reduced deliveries in dry years
  - — These supplies can be used within the BBID CVP service area (formerly held by the Plain View Water District, PVWD)
  - — An agreement between the City and BBID for use of these CVP supplies has not yet been negotiated, but will be required to secure the needed supplies to meet the projected demands of the Proposed Project
  - — These supplies will need to be supplemented with additional dry-year supplies (approximately 500 af/yr) to be acquired through additional storage capacity (approximately 1,500 af) in the Semitropic Water Storage District Groundwater Storage Bank to assure adequate supplies for the Proposed Project in dry years
  - — An agreement between the City and Semitropic for additional storage has not yet been negotiated, but will be required to secure the needed supplies meet the projected demands of the Proposed Project in dry years
- Approximately 670 af/yr of local groundwater supplies
  - — Groundwater supplies are to be used in areas of the Proposed Project which are not eligible for the use of the BBID pre-1914 or CVP surface water supplies

Approximately 1,970 af/yr of recycled water supplies will be used to meet the landscape irrigation demands at buildout of the Proposed Project. Because recycled water supplies may not be initially available to meet the landscape irrigation demands associated with the initial phases of the Proposed Project, potable water supplies, if available, may be used in the interim period before recycled water becomes available (see Section 2.4 for further discussion).

Proponents of the Proposed Project will provide their proportionate share of required funding to the City and BBID for the acquisition, treatment and delivery of treated potable and recycled water supplies to the Proposed Project area.

Pursuant to Water Code section 10910(c)(4), and based on the technical analyses described in this Water Supply Assessment, this Water Supply Assessment demonstrates that the City's existing and additional planned future water supplies are sufficient to meet the City's existing and projected future water demands, including those future water demands associated with the Proposed Project, to the year 2035 under all hydrologic conditions (including Normal Years, Single Dry Years, and Multiple Dry Years).

Verification of Sufficient Water Supply

In accordance with the requirements of SB 221, Section 8.0 of this WSA provides a verification of sufficient water supply to meet the projected demands associated with the Proposed Project, in addition to the City's existing and planned future uses, including, but not limited to, agricultural and industrial uses.

As noted above, and further described in this WSA, an agreement between the City and BBID for use of BBID pre-1914 water supplies to meet the projected demands associated with the Proposed Project was approved in August 2013 and a long-term agreement between the USBR and BBID to convey those supplies to the City's John Jones Water Treatment Plant via the DMC was executed in April 2014. Two additional water supply agreements will be required to secure the needed water supplies to meet the projected demands of the Proposed Project:

1. An agreement between the City and BBID for use of BBID's CVP supplies; and
2. An agreement between the City and Semitropic for additional dry-year storage.

Recycled water infrastructure will also need to be constructed to deliver recycled water supplies to the Proposed Project. Until such recycled water infrastructure is constructed, potable water supplies, if available, may be used in the interim to meet landscape irrigation demands within the Proposed Project consistent with the City's recycled water ordinance.

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1.0 INTRODUCTION

1.1 Legal Requirement for Water Supply Assessment

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

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

- Identify any public water purveyor that may supply water for a proposed development project; and
- Request a Water Supply Assessment (WSA) from the identified water purveyor.

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

SB 221 amended State law (California Government Code section 66473.7) to require that approval by a city or county of certain residential subdivisions[2] requires an affirmative written verification of sufficient water supply. SB 221 was intended as a fail-safe mechanism to ensure that collaboration on finding the needed water supplies to serve a new large residential subdivision occurs before construction begins. Section 8.0 of this WSA provides such a written verification.

1.2 Need For and Purpose of Water Supply Assessment

The purpose of this WSA is to perform the evaluation required by Water Code sections 10910 through 10915 in connection with the City of Tracy's (City) proposed Tracy Hills Specific Plan (Proposed Project). It is not to reserve water, or to function as a "will serve" letter or any other form of commitment to supply water (see Water Code section 10914). The provision of water service will continue to be undertaken in a manner consistent with applicable City policies and procedures, consistent with existing law.

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

1.3 Water Supply Assessment Preparation, Format and Organization

This WSA for the Proposed Project has been prepared by West Yost Associates (West Yost). The City is the identified water purveyor for the Proposed Project.

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

- Section 1: Introduction
- Section 2: Description of Proposed Project
- Section 3: Required SB 610 Determinations
- Section 4: City of Tracy Water Service Area
- Section 5: City of Tracy Water Demands
- Section 6: City of Tracy Water Supplies
- Section 7: Determination of Water Supply Sufficiency based on the requirements of SB 610
- Section 8: Verification of Sufficient Water Supply based on the requirements of SB 221
- Section 9: Water Supply Assessment Approval Process
- Section 10: References

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

1.4 Acronyms and Abbreviations Used in this Water Supply Assessment

The following acronyms and abbreviations have been used throughout this WSA.

af	Acre-Feet
af/ac/yr	Acre-Feet Per Acre Per Year
af/yr	Acre-Feet Per Year
ASR	Aquifer Storage And Recovery
BBID	Byron Bethany Irrigation District
BCID	Banta Carbona Irrigation District
BiOps	Biological Opinions
Bookman	Bookman-Edmonston (A.K.A. GEI Consultants and Navigant)
bgs	Below Ground Surface
BMO	Basin Management Objectives
CEQA	California Environmental Quality Act
City	City of Tracy
CPOU	CVP Consolidated Place of Use

CVP	Central Valley Project
DMC	Delta-Mendota Canal
DPH	California Department of Public Health
DWR	California Department of Water Resources
EIR	Environmental Impact Report
ET_o	Evapotranspiration
FONSI	Finding of No Significant Impact
GMO	Growth Management Ordinance
GMP	Groundwater Management Plan
gpm	Gallons Per Minute
JJWTP	John Jones Water Treatment Plant
K/J/C	Kennedy/Jenks/Chilton
LAFCo	Local Area Formation Commission
M&I	Municipal And Industrial
MCL	Maximum Contaminant Levels
mgd	Million Gallons Per Day
mg/L	Milligrams Per Liter
Msl	Mean Sea Level
NEPA	National Environmental Policy Act
Proposed Project	Tracy Hills Specific Plan
PVWD	Plain View Water District
RGA	Residential Growth Allotment
RWQCB	Regional Water Quality Control Board
SB 221	California State Senate Bill 221 of 2001 (California Government Code Section 66473.7)
SB 610	California State Senate Bill 610 of 2001 (California Water Code Sections 10910 Through 10915)
SCWSP	SSJID South County Water Supply Project
Semitropic	Semitropic Water Storage District Groundwater Storage Bank
sf	Square Feet
SOI	Sphere of Influence
SSJID	South San Joaquin Irrigation District
TBD	To Be Determined
TDS	Total Dissolved Solids
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WCRP	Water Conservation and Rationing Plan
WSA	Water Supply Assessment
WSCP	Water Shortage Contingency Plan
WSID	West Side Irrigation District
West Yost	West Yost Associates
WWTP	City of Tracy Wastewater Treatment Plant

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2.0 DESCRIPTION OF PROPOSED PROJECT

2.1 Proposed Project Location

The Proposed Project is located in the City of Tracy's (City) existing City Limits and General Plan Sphere of Influence (SOI), and consists of approximately 6,175 acres (of which 2,732 acres are developable[3]) on the southwestern side of the City's SOI. The Proposed Project area is generally bounded on the north by the Delta-Mendota Canal, on the east by Corral Hollow Road, and on the west and south by the Tracy foothills. The location of the Proposed Project in relation to the current City Limits and the City's General Plan SOI is shown on Figure 1.

Development of the Proposed Project is proposed to be constructed in several phases starting with Phase 1a in 2015. It should be noted that this WSA evaluates the availability and reliability of the City's water supplies to serve buildout of the Proposed Project; no evaluation of individual development phases is provided.

The Proposed Project area overlies portions of irrigation district service areas, including the Byron Bethany Irrigation District (BBID) Central Valley Project (CVP) service area and the BBID Raw Water Service Area 2 (see Figure 2). Also, the agreement between the United States Bureau of Reclamation (USBR) and the BBID for the exchange of "non-project" water from BBID for "project" water from the USBR limits the use of the "project" water to the CVP Consolidated Place of Use (CPOU)[4]. The relationship of these irrigation district service areas to the available water supply for the Proposed Project is described in Section 2.4.

2.2 Proposed Land Uses and Acreages

The Proposed Project includes 5,499 residential dwelling units with housing types ranging from residential estate to apartments and condominiums. Non-residential land uses include light industrial, office, commercial, business park, schools, neighborhood parks, a golf course, and open space. Proposed land uses for the Proposed Project are summarized in Table 1.

[3] Based on Tracy Hills Specific Plan (Table 1-1 Land Use Plan Projected Buildout) provided by the City on June 12, 2014.

[4] "Non-project" water refers to water sources that are not Central Valley Project water supplies (*e.g.*, the BBID pre-1914 water supplies). "Project" water refers to Central Valley Project water supplies managed by the United States Department of the Interior, Bureau of Reclamation (USBR).

Table 1. Proposed Land Uses for the Proposed Project

Proposed Land Use	Tracy Hills Specific Plan Gross Developable Acres[(a)]	Tracy Hills Adjusted Developable Acres[(b)]	Proposed Residential Dwelling Units
Residential Estate	95.6	95.6	122
Low Density Residential	1,216.0	973.3	3,238
Medium Density Residential	318.1	314.6	2,014
High Density Residential	9.2	9.2	125
Light Industrial	363.1	353.1	
General Highway Commercial	102.4	102.4	
Mixed Use Business Park	214.6	209.6	
Neighborhood Parks	[(c)]	42.2	
Schools	[(c)]	34.0	
Golf Course	[(c)]	185.0	
Open Space	119.8	119.8	
Road Right-of-Way (segments over California Aqueduct/railroad)	3.2	3.2	
Interstate-580 Right-of-Way	137.5	137.5	
California Aqueduct Right-of-Way	140.1	140.1	
Union Pacific Railroad	12.0	12.0	
Totals	2,732	2,732	5,499

(a) Land Use Zoning Approximate Gross Acres as included in the Tracy Hills Specific Plan, Table 1-1, received from City June 12, 2014.

(b) Adjusted developable acres as provided by RJA, June 2014. Acres adjusted by extracting acres from Residential, Industrial, Commercial and Business Park land use gross acres for Neighborhood Parks, Schools and Golf Course for purposes of calculating total water demands for the Proposed Project (see Table 3).

(c) Acreages for Neighborhood Parks, Schools and Golf Course not accounted for separately in the Tracy Hills Specific Plan; included in Residential, Industrial, Commercial and Business Park land use gross acres.

2.3 Projected Water Demand

2.3.1 Water Use Factors and Assumptions

As part of the Citywide Water System Master Plan, the City adopted unit water use factors for use in projecting potable and recycled water demand based on the proposed future land uses within the City's General Plan SOI[5]. These are described below.

[5] As established in the City of Tracy Citywide Water System Master Plan, prepared by West Yost Associates, Final Report dated December 2012, and included in the City's 2010 UWMP.

2.3.1.1 Potable Water Use Factors

Potable water use factors for various land uses were established based on historical metered water use data for various land use types, taking into consideration reduced water use as a result of new building codes, improved water use efficiency and water conservation measures.

The potable water use factors for residential land uses were based on the proposed density (number of dwelling units per acre) and were established based on gallons per day of water consumption per dwelling unit (gpd/du) (ranging from a high of 429 gpd/du for low density residential to a low of 220 gpd/du for high density residential). These residential potable water use factors were applied to the proposed number of dwelling units in each residential land use category to estimate the residential potable water demand.

For non-residential land uses, the potable water use factor for commercial land uses was established to be 2.0 acre-feet per acre per year (af/ac/yr), and the potable water use factor for office and industrial land uses was established to be 1.5 af/ac/yr. The non-residential water use factors were applied to the gross acres to estimate the non-residential potable water demand.

2.3.1.2 Recycled Water Use Factors

In the Citywide Water System Master Plan, exterior recycled water use was assumed to be 4.0 af/ac/yr for irrigated landscape areas, including roadway medians and other landscape areas. For the Proposed Project, since irrigated landscape areas have not yet been specifically defined for each parcel, it has been assumed that 7 percent of the gross acreage designated as Residential Estate and Low Density Residential, 15 percent of the gross acreage designated for other uses (except Open Space and Golf Course), 33 percent of the gross acreage designated as Open Space, and 100 percent of the golf course within the Proposed Project site would be landscaped and irrigated with recycled water. The use of potable water supplies to meet these landscape irrigation demands in the interim period before recycled water becomes available to the Proposed Project is described in Section 2.4.

Table 2 summarizes the City's adopted unit water use factors for the land use designations applicable to the Proposed Project site.

Table 2. City of Tracy Adopted Water Use Factors	
Land Use Designation	Water Use Factor, af/ac/yr[(a)]
Residential Estate/Low Density Residential	429 gpd/du
Medium Density Residential	310 gpd/du[(b)]
High Density Residential	220 gpd/du[(b)]
Commercial	2.0 af/ac/yr[(c)]
Business Park	1.5 af/ac/yr[(c)]
Industrial	1.5 af/ac/yr[(c)]
Landscape Irrigation	4.0 af/ac/yr[(c,d)]

(a) As established in the Citywide Water System Master Plan, prepared by West Yost Associates, Final Report dated December 2012, and included in the City's 2010 UWMP dated May 2011.
(b) Landscape irrigation to be met with recycled water, which is not included in this water use factor. See Landscape Irrigation Factor to be applied to proposed landscaped areas.
(c) Non-residential water use factors to be applied based on gross acreages.
(d) Landscape irrigation to be met entirely with recycled water when it becomes available. It has been assumed that 7 percent of the gross acreage designated as Residential Estate and Low Density Residential, 15 percent of the gross acreage designated for other uses (except Open Space and Golf Course), 33 percent of the gross acreage designated as Open Space, and 100 percent of the golf course within the Proposed Project site would be landscaped and irrigated with recycled water.

2.3.2 Water Demand Calculations

Based on the water use factors described above, the projected water demand at buildout of the Proposed Project is shown on Table 3. As shown, assuming unaccounted for water of 7.5 percent of the total water production needed to serve the Proposed Project[6], the total water demand for the Proposed Project at buildout is projected to be approximately 5,700 acre-feet per year (af/yr). Of this total water demand, the potable water demand at buildout is projected to be approximately 3,730 af/yr and the recycled water demand at buildout is projected to be approximately 1,970 af/yr.

2.4 Projected Water Supply

In general, the water demands for the Proposed Project will be served using the City's existing and future portfolio of water supplies. Proponents of the Proposed Project will provide their proportionate share of required funding to the City and BBID for the acquisition and delivery of treated potable and recycled water supplies to the Proposed Project area.

However, for this Proposed Project, the location of the Proposed Project development in relation to the irrigation district service areas (see Figure 2) is an important factor in determining the availability of water supply to serve the Proposed Project. Due to the nature of water rights and various place of use restrictions, and the relationship of the Proposed Project area to irrigation district boundaries and the CVP CPOU, only selected water supply sources can be used to meet projected water demands on specific portions of the Proposed Project area. These restrictions are summarized below and further described in Section 6.0 of this WSA.

[6] Unaccounted for water of 7.5 percent is added to the projected water demand by dividing the projected water demand by 0.925, as the unaccounted for factor is based on 7.5 percent of the total required production (water supply).

Table 3. Tracy Hills Water Demand at Buildout

	Area	Dwelling Units	Unit Water Demand Factor				Total Annual Demand	Potential Potable Water Demand	Potential Recycled Water Demand
Land Use Designation	ac	dus		Units		Units	af/yr	af/yr	af/yr
Residential Estates	95.6	122	429	gpd/du			59	59	-
Low Density Residential	973.3	3,238	429	gpd/du			1,556	1,556	-
Medium Density Residential	314.6	2,014	310	gpd/du			699	699	-
High Density Residential	9.2	125	220	gpd/du			31	31	-
Light Industrial	353.1	-	1,338	gpd/ac	1.50	af/ac/yr	529	529	-
General Highway Commercial	102.4	-	1,784	gpd/ac	2.00	af/ac/yr	205	205	-
Mixed Use Business Park	209.6	-	1,338	gpd/ac	1.50	af/ac/yr	314	314	-
Neighborhood Parks	42.2	-	3,568	gpd/ac	4.00	af/ac/yr	169	-	169
Schools	34.0	-	1,338	gpd/ac	1.50	af/ac/yr	51	51	-
Golf Course	185.0	-	3,568	gpd/du	4.00	af/ac/yr	739	-	739
Landscape (excluding parks)[(a)]	228.3	-	3,568	gpd/ac	4.00	af/ac/yr	912	-	912
Open Space Corridors	119.8		-		-		-	-	-
Road Right-of-Way	3.2		-		-		-	-	-
Interstate-580 Right-of-Way	137.5		-		-		-	-	-
California Aqueduct Right-of-Way	140.1		-		-		-	-	-
Union Pacific Railroad	12.0		-		-		-	-	-
SUBTOTALS	2,732	5,499					5,264	3,444	1,820
TOTALS (WITH 7.5% UAFW)							**5,691**	**3,723**	**1,968**
TOTALS (rounded)							5,700	3,730	1,970

[(a)] Landscape acres are utilized for calculating irrigation water demands and are a subset of the other land use designation acres, and are therefore not included in the total acres. Landscaped areas calculated based on 7 percent of gross acreage designated as Residential Estate and Low Density Residential, 15 percent of gross acreage designated for other uses (except Open Space and Golf Course), 33 percent of gross acreage designated for Open Space, and 100 percent of the Golf Course.

- BBID pre-1914 surface water supplies can only be used within the BBID Raw Water Service Area 2 (see Figure 2), and because of the USBR/BBID Exchange Agreement to deliver water supplies to the City for the Proposed Project, the BBID pre-1914 surface water supplies delivered via the Exchange Agreement can only be used within the portion of the BBID Raw Water Service Area 2 which is also within the CVP CPOU (see Figure 2) (see Section 6.1.4 for further discussion); and
- BBID CVP surface water supplies can be used within the BBID CVP service area (formerly held by the Plain View Water District, PVWD) (see Figure 2) (see Section 6.2.1 for further discussion).

Table 4 summarizes the proposed water supply sources for the various portions of the Proposed Project area based on the irrigation district boundaries and places of use. Each of these water supplies is described in more detail in Section 6.0 of this WSA.

Because recycled water supplies for the Proposed Project may not be initially available to meet the landscape irrigation demands associated with the initial phases of the Proposed Project, potable water supplies, if available, may be used in the interim period before recycled water becomes available (the interim use of these supplies to meet the landscape irrigation demands are subject to the same potable water supply use restrictions described in Table 4). It is assumed that the interim water supply for landscape irrigation will be distributed and delivered within the Proposed Project area using a recycled water distribution system (*i.e.*, "purple pipe") installed within the Proposed Project area consistent with the City's recycled water ordinance (see further discussion below). When recycled water becomes available, these "purple pipes" will then be disconnected from the City's potable water system and will be used to distribute and deliver recycled water supplies from the City's wastewater treatment plant (see Section 6.4.1 for further discussion).

Table 4. Proposed Project Water Demands and Water Supplies within Irrigation District Boundaries

Portion of Proposed Project	Relationship to Irrigation District Boundaries	Approximate Acres	Projected Water Demand			Projected Water Supply	
			Potable Water Demand, af/yr	Recycled Water Demand, af/yr	Total Water Demand, af/yr	Potable Water Supply Source	Recycled Water Supply Source
• Phase 1a • Phase 1b • Portions of Phase 2 and Phase 3 north of CVP CPOU boundary • Phase 4 • Portion of Phase 5 south of Western Pacific Railroad and west of Lammers Road	• Inside BBID Raw Water Service Area 2 • Inside CVP Consolidated Place of Use (CPOU)	1,454	2,430	1,290	3,720	BBID Pre-1914 Surface Water Supply (to be purchased by the City from BBID and delivered to City via an exchange agreement between USBR and BBID)	Recycled Water from the City's Wastewater Treatment Plant (WWTP) (when available)
• Portions of Phase 2 and Phase 3 south of CVP CPOU boundary	• Inside BBID Raw Water Service Area 2 • Outside CVP Consolidated Place of Use (CPOU)	325	370	290	660	City Groundwater Supply	
• Portion of Phase 5 north of the California Aqueduct (not including portion west of Lammers Road)	• Outside BBID Raw Water Service Area 2 • Inside BBID CVP Service Area	387	630	290	920	BBID CVP Surface Water Supply	
• Portion of Phase 5 south of California Aqueduct • Portion of Phase 5 north of Western Pacific Railroad and west of Lammers Road	• Outside BBID Raw Water Service Area 2 • Outside BBID CVP Service Area (not within an irrigation district service area)	152	300	100	400	City Groundwater Supply	
• Proposed Project areas with no water demand (Open Space Corridors, Road ROW, I-580 ROW, California Aqueduct ROW, Union Pacific Railroad),	• Not applicable	413	--	--	--	Not applicable	Not applicable
	Totals	2,732	3,730	1,970	5,700		

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3.0 REQUIRED DETERMINATIONS

3.1 Does SB 610 apply to the Proposed Project?

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

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

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

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

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

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

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

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

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

Based on the following facts, SB 610 does apply to the Proposed Project.

- The City of Tracy has determined that the Proposed Project is subject to the California Environmental Quality Act (CEQA) and that an Environmental Impact Report (EIR) is required.
- The Proposed Project, with its proposed 5,499 residential dwelling units, and other non-residential land uses, meets the definition of a "Project" as specified in Water Code section 10912(a) paragraph (1) as defined for residential development.

The Proposed Project has not been the subject of a previously adopted WSA and has not been included in an adopted WSA for a larger project. Therefore, according to Water Code section 10910(a), a WSA is required for the Proposed Project.

3.2 Does SB 221 apply to the Proposed Project?

In 2001, SB 221 amended State law to require that approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply. Per California Government Code section 66473.7(a)(1), a subdivision means a proposed residential development of more than 500 dwelling units. The Proposed Project, with its proposed 5,499 residential dwelling units, is therefore subject to the requirements of SB 221. Section 8.0 of this WSA provides the required written verification of sufficient water supply.

3.3 Who is the identified public water system?

10910(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined by Section 10912, that may supply water for the project

10912 (c) "Public water system" means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections…

As shown on Figure 1, the Proposed Project is located within the City of Tracy City Limits and the City's General Plan SOI. The City's water system service area includes all areas within the City Limits and the General Plan SOI area as they are annexed into the City. Therefore, the City is the identified public water system for the Proposed Project.

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

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

The City's most recently adopted UWMP (the City's 2010 UWMP) was adopted in May 2011 and is incorporated by reference into this WSA[7]. The City's 2010 UWMP included existing and projected water demands for existing and projected future land uses to be developed within the City's General Plan SOI through buildout (estimated to occur in 2040). The water demand projections in the City's 2010 UWMP included existing City water demands (based on 2007 demands), future water demands for developments with approved water supplies (*e.g.*, those projects which have already been approved by the City but have not yet begun construction or have not yet built out), and future water demands for future service areas (including water demands for the Proposed Project).

However, the water demands currently calculated for the Proposed Project are different than those included in the City's 2010 UWMP. Table 5 presents a comparison of the projected water demands for the Proposed Project with those included in the City's 2010 UWMP. As shown, the potable water demand for the Proposed Project is 503 af/yr higher than what was included in the City's 2010 UWMP, and the recycled water demand for the Proposed Project is 69 af/yr higher than what was included in the City's 2010 UWMP. The City's ability to meet the projected water demands for the Proposed Project is described in Section 7.0 of this WSA.

[7] City of Tracy 2010 Urban Water Management Plan, prepared by Erler & Kalinowski, Inc., May 2011.

Table 5. Comparison of Water Demands for the Proposed Project with those included in the City's 2010 UWMP

Document	Potable Water Demand (includes UAFW), af/yr	Recycled Water Demand (includes UAFW), af/yr
Water Supply Assessment for the Tracy Hills Specific Plan (see Table 3)	3,730	1,970
City of Tracy 2010 UWMP[a,b]	3,227	1,901
Difference (increase or decrease from 2010 UWMP)	+503	+69

(a) Per the City's 2010 UWMP Table 7, projected potable water demand for Tracy Hills was 2,985 af/yr + 7.5% UAFW = 3,227 af/yr (2,985/0.925).

(b) Per the City's 2010 UWMP Table 16, projected recycled water demand for Tracy Hills was 1,758 af/yr + 7.5% UAFW = 1,901 af/yr (1,758/0.925).

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4.0 CITY OF TRACY WATER SERVICE AREA

4.1 Water Service Area

The City of Tracy is located in San Joaquin County, California, about 70 miles south of Sacramento and 60 miles east of San Francisco. The existing incorporated area of the City encompasses approximately 22 square miles. The SOI is the area outside of the City limits that the City expects to annex and urbanize in the future. It is the expected physical limit of the City based on the most current information. During the City's recent General Plan update process and in response to Local Agency Formation Commission (LAFCo) policies established in 2007, revisions to the City's SOI were made to more accurately reflect locations where the City may grow in the future and locations where no urban growth is expected. The recently adopted revised SOI encompasses an area of approximately 42 square miles and is 20 square miles larger than the current City limits.

The City's water service area is coterminous with the City limits. As future developments within the SOI, but outside the City Limits, are approved, they will be annexed into the City and served by the City water system. Figure 1 illustrates the current City limits and the SOI. The Proposed Project is located inside the City's existing City limits.

4.2 Population

The State of California Department of Finance population estimate for the City as of January 1, 2014 was 85,146 people[8]. Historical population growth in the City was rapid, with the City growing by 142 percent between 1988 and 2003, a compounded average rate of approximately 6 percent per year. However, recent population growth has slowed and projected near-term population growth is not anticipated to be as rapid as it has been historically.

In 1987, the City adopted a residential Growth Management Ordinance (GMO), which was amended in 2000 by Measure A. The objective of the GMO and Measure A was to achieve a steady and orderly growth rate that allows for the adequate provision of services and community facilities, and includes a balance of housing opportunities. Under the GMO, builders must obtain a Residential Growth Allotment (RGA) in order to secure a residential building permit. The GMO Guidelines were originally adopted by resolution of the City Council in 2001, and were amended in April 2005, May 2009 and most recently in October 2012 (Resolution 2012-214).

The City's projected population increase for 2010 through 2025 is based on the City's General Plan, and for 2025 through 2035 is based on assumed buildout of the City's SOI by 2040 (as assumed in the Citywide Water System Master Plan and the City's 2010 UWMP). However, due to the recent poor economic conditions in the State and in the Tracy area, it is currently unclear if actual development will occur within this assumed time frame and if populations will increase as assumed. It is more likely that development within the General Plan SOI will occur over a longer period of time with buildout occurring sometime after the year 2040.

[8] State of California, Department of Finance, E-1 Population Estimates for Cities, Counties, and the State with Annual Percent Change—January 1, 2013 and 2014, Sacramento, California, May 2014.

Table 6 shows the City's projected population in five-year increments to the year 2035.

Table 6. City of Tracy Historical and Projected Population

	Year	Population[(a)]	Percentage Change over 5-Year Period
Historical	1990	32,827	--
	1995	44,923	6.5%
	2000	56,447	4.7%
	2005	78,546	6.8%
	2010	82,484	1.0%
Projected	2015	89,503	1.6%
	2020	99,440	2.1%
	2025	109,377	1.9%
	2030	117,744	1.5%
	2035	126,110	1.4%

Source: City of Tracy 2010 UWMP, Table 2 Historical and Projected Service Area Population, May 2011; includes 377 residents served by the City in the Larch Clover County Services District.

4.3 Climate

Spring, summer, and fall are generally hot in the City, with temperatures often climbing to over 100 degrees Fahrenheit on summer days. The City's winters are usually mild, although the dense "Tule fog" can last for weeks. Mean winter temperatures range from 40 to 50 degrees Fahrenheit, with an average of 16 days per year having frost. Most precipitation occurs during the winter. The average annual precipitation from the years 1949 to 2013 is recorded by the Western Regional Climate Center as 9.86 inches.

Table 7 summarizes the City's average temperature and rainfall data.

Table 7. City of Tracy Climate Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Average Et_o, inches[(a)]	0.95	1.75	3.48	5.37	6.88	7.79	8.29	7.24	5.33	3.63	1.76	1.01	53.48
Average Max Temperature, °F[(b)]	54.1	61.0	66.7	73.1	80.7	88.0	93.6	92.1	87.9	78.5	64.9	54.7	74.6
Average Min Temperature, °F[(b)]	36.7	40.0	42.6	45.5	50.4	55.2	57.1	55.7	53.9	48.7	42.1	36.6	47.0
Average Rainfall, inches[(b)]	1.90	1.72	1.37	0.84	0.45	0.09	0.03	0.09	0.22	0.52	1.10	1.55	9.86

(a) Source: CIMIS Website: wwwcimis.water.ca.gov, Station 167 Tracy, Monthly Average Evapotranspiration (Eto) Report, downloaded February 2014.

(b) Source: Western Regional Climate Center website: www.wrcc.dri.edu, Tracy Carbona Weather Station (No. 048999), Period of Record 10/1/1949 to 2/28/2013, downloaded February 2014.

5.0 CITY OF TRACY WATER DEMANDS

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

The descriptions provided below for the City's water demands have been taken, for the most part, from the City's 2010 UWMP, which was adopted in May 2011. Supplemental information from other available reports has been included to provide the most recent data available and to meet the specific requirements of SB 610.

5.1 Historical and Existing Water Demand

The City's water demand has increased by over 100 percent since 1986. In 1986, the City's water demand was 8,104 af/yr and, in 2013, the City's water demand was 19,417 af/yr. Figure 3 shows the City's historical annual water demand (based on water production) from 1986 through 2013. Table 8 shows the City's water demand (based on water production) for the past five years.

Table 8. Historical Potable Water Demand

	2009	2010	2011	2012	2013
Total UWMP Water Demand, af/yr[(a)]	16,693	16,603	16,868	17,592	19,417

[(a)] Source: Table 6 Current and Historical Potable Water Demand by Water Demand Sector, City of Tracy 2010 Urban Water Management Plan, May 2011. 2011, 2012 and 2013 data from City water production data.

As shown in Table 8 and Figure 3, the City's highest historical potable water demand (based on water production) was 19,417 af/yr in 2013. The 2013 water demand reflects an increase in demands over recent years where demands were reduced due to water conservation measures which were implemented during the recent drought, wet conditions in 2010 and 2011, as well as poor economic conditions which led to a large number of unoccupied homes and closed businesses.

5.2 Future Water Demand

The City's water demand is anticipated to continue to increase as approved projects build out and new developments are approved and constructed in accordance with the City's General Plan within the City's water service area. However, as discussed above, the rate of growth within the City service area has slowed as a result of the Growth Management Ordinance and the slow economic recovery from the recent economic downturn. Hence, water demands are not anticipated to increase as rapidly as they have in past years.

The City's projected future water demand was determined based on potable water use factors for various land uses based on historical metered water use data for various land use types, and taking into consideration reduced future water use as a result of new building codes, improved water use efficiency and water conservation measures. Table 9 shows the projected potable and recycled water demand through 2035 as presented in the City's 2010 UWMP. Figure 4 illustrates the City's projected water demand through 2035 as presented in the City's 2010 UWMP.

Table 9. Projected Future Water Demand, af/yr

	2015	2020	2025	2030	2035
Total Potable Water Demand[(a)]	23,000	25,000	28,300	31,000	33,600
Total Recycled Water Demand[(b)]	1,200	2,410	3,620	4,830	6,040

(a) Table 8 Projected Potable Water Demand by Water Demand Sector, City of Tracy 2010 Urban Water Management Plan, May 2011. Includes potable water demands for the Proposed Project.
(b) Table 17 Projected Timing of Recycled Water Demand, City of Tracy 2010 Urban Water Management Plan, May 2011.

As discussed in Section 3.4, the potable water and recycled water demands calculated for buildout of the Proposed Project are different than what was included for the Proposed Project area in the City's 2010 UWMP. However, for purposes of this WSA, the differences in the Proposed Project buildout demands are not assumed to change the annual demand projections in the 2010 UWMP as the assumed timing for individual development projects and overall General Plan buildout will likely change over time.

However, based on current projections, demands at buildout of the City's SOI will be different as a result of the currently estimated buildout water demands for the Proposed Project. Table 10 summarizes the City's projected water demand at buildout based on existing users, on-going development projects with approved water supply and future service areas. The Proposed Project is considered to be one of the City's future service areas. As noted previously, buildout of the City's General Plan SOI has been assumed to occur in the year 2040. However, due to the slow economic recovery in the State and in the Tracy area, it is currently unclear if actual development will occur within this assumed time frame and if populations will also increase as assumed. It is likely that development within the General Plan SOI will occur over a longer period of time with buildout occurring sometime after the year 2040.

As shown in Table 10, based on existing users and the development projects with approved water supply, the projected potable water demand is 25,740 af/yr; this projected potable water demand increases to 29,470 af/yr if the Proposed Project is included (includes unaccounted-for water). With the inclusion of other future projects to be developed within the SOI, the projected potable water demand increases to 36,807 af/yr at buildout (assumed to occur in about 2040). This buildout potable water demand is 503 af/yr higher than the buildout demand calculated in the Citywide Water System Master Plan (36,304 af/yr).

Figure 5 shows the City's projected future potable water demand by development stage based on the currently available water demand estimates.

Table 10. Projected Future Potable Water Demand at Buildout by Development Stage

	Future Water Demand, af/yr[a]	Total Future Water Demand, af/yr[b]
Existing Potable Water Demand (2007 Existing Users)		19,176[c]
Development Projects with Approved Water Supply[d]		
Residential Areas Specific Plan	*45*	
Industrial Areas Specific Plan	*574*	
I-205 Corridor Specific Plan	*271*	
Plan "C"	*74*	
Northeast Industrial	*702*	
South MacArthur	*59*	
Downtown Specific Plan (Water Supply Assessment approved by Tracy City Council in April 2009)	*185*	
Infill	*806*	
Ellis Specific Plan (Revised Water Supply Assessment approved by Tracy City Council in January 2013)	*1,076*	
Gateway Phase 1	*0[f]*	
Holly Sugar Sports Park (Water Supply Assessment approved by Tracy City Council in June 2009)	*47*	
Cordes Ranch Specific Plan Project (Water Supply Assessment approved by Tracy City Council in February 2013)	*2,233*	
Subtotal (Development Projects with Approved Water Supply)	6,072	6,564[e]
Subtotal (Existing + Development Projects with Approved Supply)		25,740
Tracy Hills Project (see Table 3 of this WSA)	**3,444**	**3,730[e]**
Subtotal (with Proposed Project)		29,470
Other Future Service Areas[g]		
Westside Residential (URs 5, 7, 8, 9)	*1,169*	
UR 1	*1,237*	
South Linne (UR 11)	*153*	
Gateway PUD (excluding Phase 1)	*[f]*	
Bright (UR 4)	*411*	
Catellus (UR 3)	*839*	
Filios (UR 2)	*70*	
I-205 Expansion	*292*	
Westside Industrial	*618*	
Eastside Industrial	*469*	
Larch Clover County Services District	*847*	
Chrisman Road	*150*	
Rocha	*248*	
Berg/Byron	*164*	
Kagehiro	*120*	
Subtotal (Other Future Service Areas)	6,787	7,337[e]
Total at Buildout		36,807

[a] Does not include unaccounted for water.
[b] Represents projected water demands at buildout. Includes 7.5% unaccounted for water (based on City's historical unaccounted for water).
[c] Based on actual water production in 2007 (includes actual water sales and calculated unaccounted for water in 2007 of 7.1%).
[d] See Development Projects with Approved Water Supply in Table 7 Projected Potable Water Demand Itemized by Future Development, City of Tracy 2010 UWMP, May 2011.
[e] Includes 7.5% unaccounted for water.
[f] Based on Gateway's participation in the Water Exchange Program.
[g] See Future Service (Planning) Areas in Table 7 Projected Potable Water Demand Itemized by Future Development Area, City of Tracy 2010 UWMP, May 2011.

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5.3 Dry Year Water Demand

The City currently has a water conservation program in place, as described in Chapter 6 of the City's 2010 UWMP. The projected future water demand presented in Table 9 includes continued implementation of the City's existing water conservation program, and is based on future normal hydrologic years. In single dry or multiple dry years, the projected future water demand presented in Table 9 does not assume any additional water conservation beyond that assumed in normal years. This is because, as water demands begin to increase in the spring due to the warmer weather conditions, due to the lack of rainfall during the previous winter/spring period, and the subsequent public notification of dry conditions, some water conservation will occur, and summer water demands will likely decrease, essentially balancing out the demands within that year.

This is a conservative assumption as additional water conservation may indeed occur in subsequent years as a result of the City's implementation of additional water conservation measures as outlined in the City's Water Shortage Contingency Plan[9] in response to multiple dry years or other water supply shortages. However, this additional water conservation is not relied upon for purposes of this WSA.

Table 11 presents the projected future dry year potable water demand.

Table 11. Projected Future Dry Year Potable Water Demand, af/yr[(a)]

Hydrologic Condition	Demand Reduction	2015	2020	2025	2030	2035
Single Dry Year	0%	23,000	25,000	28,300	31,000	33,600
Multiple Dry Years[(b)]	0%	23,000	25,000	28,300	31,000	33,600

(a) See Table 8 Projected Potable Water Demand by Water Demand Sector of the City's 2010 UWMP. Includes unaccounted for water of 7.5% based on the City's historical unaccounted for water.
(b) Represents demands for each year of the 3-year multiple dry year period.

[9] The City's Water Shortage Contingency Plan is included as an appendix to the City's 2010 Urban Water Management Plan.

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6.0 CITY OF TRACY WATER SUPPLIES

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

10910(d)(1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts

10910(d)(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:

- *(A) Written contracts or other proof of entitlement to an identified water supply.*
- *(B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.*
- *(C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.*
- *(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.*

10910(e) If no water has been received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts, the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contract-holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of water supply within its water supply assessments.

It is anticipated that the Proposed Project, if approved by the City, would be served from City's existing and future portfolio of water supplies, within the restrictions described in this WSA based on irrigation district boundaries and place of use limitations. The water supply for the Proposed Project will have the same water supply reliability and high water quality as the water supply available to the City's other existing and future water customers. Proponents of the Proposed Project will provide their proportionate share of required funding to the City and BBID for the acquisition and delivery of treated potable and recycled water supplies to the Proposed Project area.

The water supplies needed to serve the Proposed Project (together with existing water demands and planned future uses) are described in the City's 2010 UWMP. Therefore, the descriptions provided below for the City's water supplies have been taken, for the most part, from the City's 2010 UWMP, which was adopted in May 2011. Supplemental information from other available reports has also been included to provide the most recent data available and to meet the specific requirements of SB 610.

The City's existing water supplies and some of the additional planned future water supplies have undergone previous environmental review. These reviews are referenced in the following descriptions and are incorporated by reference as applicable.

6.1 Existing Potable Water Supplies

The City currently receives water supplies from three sources:

- Surface water from the Delta-Mendota Canal (Central Valley Project),
- Surface water from the Stanislaus River via the South County Water Supply Project (delivered by the South San Joaquin Irrigation District (SSJID)), and
- Groundwater pumped from nine groundwater wells located within the City.

In addition, a wholesale water agreement between BBID and the City has been approved for surface water from BBID pre-1914 water rights to serve the Proposed Tracy Hills Project. The agreement, in conjunction with the April 2014 Exchange Agreement between BBID and the USBR, provides for BBID's water to be pumped into the Delta-Mendota Canal (DMC) and delivered to the City's JJTWP for treatment and delivery to the Proposed Tracy Hills Project.

Also, the City has entered into an agreement with the Semitropic Water Storage District for storage of water supplies for use in dry years.

Each of these existing supplies is described below and documentation regarding these supplies (*e.g.*, contracts and agreements) is provided in Appendix A of this WSA. Summary tables listing the City's existing and additional water supplies, and historical and anticipated future quantities, are provided following the discussion of the City's additional water supplies. Figure 6 shows the City's historical use of these existing water supplies.

The City's Capital Improvement Plan (CIP) for the five-year period from Fiscal Year (FY) 2014/15 through FY 2018/19 for water system improvements to serve existing and future customers is provided in Appendix B.

6.1.1 Central Valley Project Water via the Delta-Mendota Canal

In July 1974, the City entered into a 40-year contract with the USBR for an annual entitlement of 10,000 af/yr of surface water with Municipal and Industrial (M&I) reliability from the CVP via the DMC. In 2004, the USBR approved the assignment of 5,000 af/yr of Ag-reliability CVP contract entitlement to the City from the Banta Carbona Irrigation District (BCID). Also in 2004, the USBR approved the assignment of 2,500 af/yr of Ag-reliability CVP contract entitlement water to the City from the WSID, with the option to purchase an additional 2,500 af/yr of CVP contract entitlement from the WSID (the additional assignment agreement was approved by the City and the WSID in December 2013). For both of these assignments, Negative Declarations were prepared pursuant to the provisions of the California Environmental Quality Act (CEQA) (BCID Assignment: SCH No. 2002072106; WSID Assignment: SCH No. 2002072107) and for each a Finding of No Significant Impact (FONSI) was issued for compliance with the National Environmental Policy Act (NEPA).

In December 2013, the City entered into an Interim Renewal Contract with the USBR providing for water service from the CVP. The Interim Renewal Contract includes 10,000 af/yr of M&I water and 7,500 af/yr of Ag water from the BCID and WSID assignments described above. The contract also acknowledges the City's option to purchase an additional 2,500 af/yr of CVP contract entitlement from the WSID (this additional assignment agreement was approved by the City and the WSID in December 2013). A copy of the City's Interim Renewal Contract with the USBR is included in Appendix A.

Historical M&I and Ag allocations for the CVP water supplies for the last several years are summarized in Table 12. In the CVP system, in accordance with the USBR's Central Valley Project Draft Water Shortage Policy dated September 11, 2001, an M&I contractor is eligible for 75 percent M&I reliability applied to the contractor's historical use, with certain adjustments. This M&I reliability may be reduced when the allocation of Ag-reliability water is reduced below 25 percent of contract entitlement (see Table 12 below for current 2014 allocations which reflect the Water Shortage Policy).

Table 12. Historical Allocations for USBR Central Valley Project Water Supplies

Year	M&I Allocation for South of Delta Contractors (% of contract supply)	Ag Allocation for South of Delta Contractors (% of contract supply)
2005	100%	85%
2006	100%	100%
2007	75%	50%
2008	75%	40%
2009	60%	10%
2010	75%	45%
2011	100%	80%
2012	75%	40%
2013	70%	20%
2014	50%[(a)]	0%[(a)]

[(a)] Based on 2014 water supply allocation for Central Valley Project agricultural contractors and municipal and industrial contractors as updated by USBR on May 13, 2014.

Litigation has created uncertainty regarding the reliability of water deliveries through the Bay-Delta. Most of this litigation addresses compliance with the federal and State endangered species acts (see NRDC v. Kempthorne, and Watershed Enforcers v. Department of Water Resources (DWR)). In August 2007, the federal court in the Kempthorne case ordered that, as an interim remedy, Delta pumping be curtailed from late December through June to protect the Delta smelt (this became known as the Wanger Decision). In December 2008, a Biological Opinion (BiOp) regarding the Delta smelt was issued by the U.S. Fish and Wildlife Service which applied Delta pumping restrictions that are similar to the August 2007 interim court remedy, and a revised BiOp related to three salmon species was issued in June 2009 which included additional pumping restrictions. After the BiOps were released, numerous parties filed

suit. The court overturned the BiOps and remanded the BiOps to the fishery agencies. The final impacts of the BiOps on future SWP and CVP deliveries remain uncertain.

The City's CVP water supplies are treated at the City's John Jones Water Treatment Plant (JJWTP), which was originally constructed in 1979, expanded in 1988, and then expanded again in 2008. The JJWTP is located just north of the Delta-Mendota Canal in the southern portion of the City. With the recent plant expansion now complete, the current treatment capacity of the JJWTP is 30 million gallons per day (mgd). Future additional expansion of the JJWTP is planned in conjunction with buildout of the City's General Plan SOI and is described in the Citywide Water System Master Plan.

The City also treats and serves relatively small quantities of CVP water purchased by others through a "treatment and wheeling agreement" for use at the Patterson Pass Business Park only. The Patterson Pass Business Park is now built out. In 2013, 558 acre-feet of water from the PVWD (now part of the BBID) USBR allocation was treated at the City's JJWTP and delivered to the Patterson Pass Business Park. Deliveries to the Patterson Pass Business Park in the last several years are shown below:

- 2009: 363 af
- 2010: 419 af
- 2011: 527 af
- 2012: 538 af
- 2013: 558 af

A comparable quantity of BBID CVP water is anticipated to be available for annual delivery to the Patterson Pass Business Park in the future. A copy of the agreement between the City and BBID (PVWD) for this water supply, treatment and wheeling is included in Appendix A.

6.1.2 Stanislaus River Water

The City, in partnership with the cities of Manteca, Lathrop and Escalon, and the SSJID, have constructed a surface water treatment plant near Woodward Reservoir in Stanislaus County and a transmission pipeline to deliver treated surface water to each city. The project is called the South County Water Supply Project (SCWSP). This water supply is based on SSJID's senior pre-1914 appropriative water rights to the Stanislaus River, coupled with an agreement with the USBR to store water in New Melones Reservoir. As part of the SCWSP, the City was allocated up to 10,000 af/yr of water[10]. A Final EIR for the SCWSP was prepared in May 2000 (SCH No. 98022018). A copy of the agreement between the City and SSJID for this water supply is included in Appendix A.

[10] An additional amount of SCWSP supplies may be available to the City in the future; see *Section 6.2.4 Additional Supplies from the SCWSP*.

Treated water deliveries commenced in July 2005, and deliveries have been essentially uninterrupted since then (see Figure 6). In the first few years, SCWSP deliveries were less than the City's full project allotment; however, during these years the City did not require its full SCWSP allotment, even though the full 10,000 acre-feet was available from SCWSP. However, as shown below, since 2009 the City has actually received more than its allotment.

In August 2013, SSJID and the cities of Tracy and Lathrop approved a Lathrop-Tracy Purchase, Sale and Amendment Agreement for the sale of a portion of the City of Lathrop's SCWSP supply and capacity to the City of Tracy. The agreement provides the City of Tracy with an additional 1,120 af/yr of SCWSP supply and 2 mgd of SCWSP capacity. This additional SCWSP supply has the same reliability as the City's original SCWSP supplies. A copy of the agreement approving the City of Tracy's purchase of additional SCWSP from the City of Lathrop is provided in Appendix A of this WSA.

Historical deliveries from the SCWSP to the City are shown in Table 13.

Table 13. SCWSP Deliveries to City of Tracy and Other Project Participants

Year	SCWSP Deliveries to City of Tracy, af	Total SCWSP Deliveries to All Project Participants, af [(a)]
2005	3,146	6,493
2006	8,918	16,763
2007	9,130	17,139
2008	8,017	16,816
2009	10,401	19,746
2010	10,850	17,430
2011	11,786	16,525[(b)]
2012	12,294	16,269[(b)]
2013	13,112	20,362[(b)]

(a) 2005 through 2010 data from Table 4.4 of the SSJID 2010 Urban Water Management Plan, August 2011.
(b) 2011 through 2013 data provided by SSJID.

The Draft and Final EIRs for the SCWSP analyzed the environmental impact of deliveries to the project participants of up to 44,000 af/yr (Draft EIR page 3-13). Total SCWSP deliveries to all project participants in 2013 were 20,362 af/yr. The SCWSP is expected to have high reliability as a result of its senior pre-1914 rights. SSJID's 2010 UWMP[11], adopted by SSJID in September 2011, indicates that it will meet 100 percent of urban demands in normal years, 84.8 to 91.5 percent of urban demands in single dry years (the percent of urban demand met increases in the future as agricultural demands decrease), and 98 to 100 percent of urban demand in multiple dry years. For the City's 2010 UWMP, it was assumed that the City will be able to receive

[11] Provost & Pritchard Consulting Group, *South San Joaquin Irrigation District 2010 Urban Water Management Plan*, August 2011.

95 percent of its allocation, even during single dry years. This increase in supply reliability is premised upon the other project participants not using their entire project allotment and that water being available to the City.

6.1.3 Groundwater

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

10910(f)(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

10910(f)(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

10910(f)(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

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

10910(f)(4) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project.

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

6.1.3.1 Groundwater Overview

The City overlies a portion of the San Joaquin Valley Groundwater Basin-Tracy Sub-basin (Tracy Sub-basin). The City currently operates nine groundwater wells, with a total extraction capacity of about 15 mgd. Four wells (Production Wells 1, 2, 3 and 4) are located near the City's JJWTP and pump directly into the JJWTP clearwells, where the groundwater is blended with treated surface water. The other wells (Lincoln Well, Lewis Manor Well (Well 5), Park and Ride Well (Well 6), Ball Park Well (Well 7) and Well 8) are located throughout the City and pump water directly into the distribution system after disinfection. The City's newest well, Well 8, located near the intersection of Tracy Boulevard and 6th Street, was designed as an Aquifer Storage and Recovery (ASR) well, and has been put into service as an ASR well as permitted by the Central Valley Regional Water Quality Control Board (see discussion under *Section 6.2.3 Aquifer Storage and Recovery*).

Figure 7 shows the locations of the City's wells and the Tracy Sub-basin.

6.1.3.2 Basin Description

The following section describes the Tracy Sub-basin, including its water-bearing formations, water levels, and water quality. Much of the following information has been incorporated from the City's 2010 UWMP. Except where noted, the description of the sub-basin is based largely on information provided in the 2003 DWR Bulletin 118, in which the groundwater basin description was last updated in January 2006 (see Appendix C).

The sub-basin consists of unconsolidated to semi-consolidated sedimentary deposits that are bounded by the Diablo Range on the west, the Mokelumne and San Joaquin Rivers on the north, the San Joaquin River to the east, and the San Joaquin-Stanislaus County line on the south. Adjacent to the Tracy Sub-basin are the Eastern San Joaquin Sub-basin to the east, the Delta-Mendota Sub-basin to the south, and the Sacramento Valley Groundwater Basin to the north. The three sub-basins, not including the Sacramento Valley Groundwater Basin, are part of the San Joaquin Valley Groundwater Basin. The San Joaquin River and one of its major west side tributaries, Corral Hollow Creek, provide drainage from the Tracy Sub-basin. The San Joaquin River flows northward into the Sacramento and San Joaquin Delta and discharges into San Francisco Bay.

The Tracy Sub-basin is comprised of continental deposits of Late Tertiary to Quaternary age. These deposits include the Tulare Formation, Older Alluvium, Flood Basin Deposits, and Younger Alluvium. The cumulative thickness of these deposits increases from a few hundred feet near the Coast Range foothills on the west to about 3,000 feet along the eastern margin of the sub-basin.

Each of these formations is described below.

- The Tulare Formation is exposed in the Coast Range foothills along the western margin of the sub-basin and dips eastward toward the axis of the San Joaquin Valley. The Tulare Formation is approximately 1,400 feet thick and consists of semi-consolidated, poorly sorted, discontinuous deposits of clay, silt, and gravel. The Corcoran Clay occurs near the top of the Tulare Formation and confines the underlying fresh water deposits. The eastern limit of the Corcoran Clay is near the eastern boundary of the sub-basin. The Tulare Formation is moderately permeable, with most of the larger agricultural, municipal, and industrial wells completed below the Corcoran Clay and capable of producing up to about 3,000 gallons per minute (gpm). Smaller, domestic wells are typically completed above the Corcoran Clay, where the groundwater is often of poor quality. Specific yield values for the Tulare Formation in the San Joaquin Valley and Delta area range from 7 to 10 percent.
- The Older Alluvium is approximately 150 feet thick and consists of loosely to moderately compacted sand, silt, and gravel deposited in alluvial fans during the Pliocene and Pleistocene eras. The Older Alluvium is widely exposed between the Coast Range foothills and the Delta and is moderately to locally highly permeable.

- The Flood Basin Deposits occur in the Delta portion of the sub-basin and are the distal equivalents of the Tulare Formation and Older and Younger alluvial units. The Flood Basin Deposits consist primarily of silts and clays with occasional interbeds of gravel along the present waterways. Because of their fine-grained nature, the Flood Basin Deposits have low permeability and generally yield low quantities of water to wells. Occasional zones of fresh water are found in the Flood Basin Deposits, but they generally contain poor quality groundwater. The maximum thickness of the Flood Basin Deposits is about 1,400 feet.
- The Younger Alluvium includes those deposits that are currently accumulating, including sediments deposited in the channels of active streams, as well as overbank deposits and terraces of these active streams. The Younger Alluvium, consisting of unconsolidated silt, fine- to medium-grained sand, and gravel, is present to depths of less than 100 ft below ground surface (bgs) along the channel of Corral Hollow Creek. Sand and gravel zones in the Younger Alluvium are highly permeable and, where saturated, yield significant quantities of water to wells.

6.1.3.3 Groundwater Level Trends

The potentiometric surface in the semi-confined aquifer above the Corcoran Clay is located approximately 90 to 150 ft above mean sea level (msl). Review of hydrographs from wells throughout the sub-basin indicates that, except for seasonal variation resulting from recharge and pumping, water levels in most of these wells have remained stable over at least the last 10 years. As discussed below, as part of the City's Groundwater Management Policy, groundwater levels in the Tracy area are being monitored by the City on a semi-annual basis. These measurements indicate that groundwater levels in the City's wells have increased over the last few years, likely as a direct result of reduced groundwater pumpage by the City since 2005.

6.1.3.4 Groundwater Storage

There are no published groundwater storage values for the entire sub-basin (DWR, 2003). However, Hotchkiss and Balding (1971) estimated the groundwater storage capacity for the Tracy-Patterson Storage Unit at 4,040,000 af. The Tracy-Patterson Storage Unit includes the southern portion of the currently-defined Tracy Sub-basin, from approximately one mile north of Tracy to the San Joaquin-Stanislaus County line. Since the Tracy Sub-basin comprises roughly one-third of the Tracy-Patterson Storage Unit, it can be inferred that the approximate storage capacity of the Tracy Sub-basin is on the order of 1,300,000 af.

In an eight-year study conducted by Stoddard & Associates (1996), the average change in the entire sub-basin storage was approximately negative 13,000 af per year. Stoddard & Associates (1996) indicates a major contributor to this sub-basin storage decline was due to below-average rainfall during the study period. Stoddard concluded that the sub-basin is in a hydrologically-balanced condition and is not overdrafted[12]. Similarly, DWR has not identified the Tracy Sub-basin as being in an overdrafted condition (per DWR Bulletin 118-80).

[12] Page 23, City of Tracy 2010 Urban Water Management Plan, prepared by Erler & Kalinowski, Inc., May 2011.

6.1.3.5 Groundwater Yield

A 1990 Kennedy/Jenks/Chilton (K/J/C) study estimated a perennial groundwater yield of 6,700 af/yr in the Tracy Sub-basin within the Tracy Study Area. However, in 2001, to determine if additional groundwater resources were available in the Tracy Study Area, the City conducted an updated groundwater analysis. The Estimated Groundwater Yield Study, prepared by Bookman-Edmonston Engineering (included as an appendix to the City's Groundwater Management Policy Mitigated Negative Declaration; see Appendix C) provided an evaluation of potential groundwater yield and determined that a 2,300 af/yr increase of the average annual operational groundwater yield above the groundwater yield recommended in the 1990 K/J/C study could be provided within the estimated sustainable yield of the Tracy Sub-basin in the Tracy Study Area, without adverse impact to groundwater resources or quality in the Tracy Study Area over a 50-year timeframe. This expansion of groundwater usage to 9,000 af/yr would be within the City's estimated 22,000 af/yr share of the aquifer's estimated total sustainable yield of 28,000 af/yr (total includes City groundwater usage as well as groundwater usage within West Side Irrigation District, Naglee-Burk Irrigation District, Plain View Water District (now part of the Byron Bethany Irrigation District), and Banta-Carbona Irrigation District). It was also estimated that this expansion of groundwater usage would result in a groundwater level drop of 10 feet, but would stabilize at this level.

6.1.3.6 Groundwater Quality

Groundwater quality in the Tracy Sub-basin varies spatially and with depth. In general, the northern part of the Tracy Sub-basin is characterized by a sodium water type, and the southern part of the Sub-basin is characterized by calcium-sodium water type. The northern part of the Tracy Sub-basin is also characterized by a wide range of anionic water types, including bicarbonate; chloride; and mixed bicarbonate-chloride. Major anions in the southern part of the Tracy Sub-basin include sulfate-chloride and bicarbonate-chloride.

There is also a difference between the water quality in the water-bearing zones above the Corcoran Clay (termed the "semi-confined aquifer") and below the Corcoran Clay (termed the "confined aquifer"). Generally, the water quality of the confined aquifer is better than that of the semi-confined aquifer. Total Dissolved Solids (TDS) concentrations in well water sampled in the semi-confined aquifer ranged between 1,000 milligrams per liter (mg/L) and 1,500 mg/L, while the measured TDS in the confined aquifer was less than 1,000 mg/L. In the vicinity of Tracy, the TDS of the confined aquifer is between 600 mg/L and 700 mg/L.

Constituents present at elevated concentrations throughout the Tracy Sub-basin in both the semi-confined and confined aquifers include chloride, nitrate, sulfate, and boron. Elevated chloride occurs in several areas near Tracy and along the San Joaquin River. Areas of elevated nitrate occur in the northwestern part of the Tracy Sub-basin and in the vicinity of Tracy. Elevated boron occurs over a large portion of the Sub-basin from south of Tracy extending to the northwest side of the Tracy Sub-basin. Sulfate concentrations of up to 500 mg/L have been detected in Tracy Sub-basin groundwater. The groundwater near Tracy is considered to be very hard.

6.1.3.7 Groundwater Management

The 1992 Groundwater Management Act, AB 3030, established provisions by which local water agencies could develop and implement groundwater management plans (GMPs). GMPs are generally designed to prevent local and regional aquifer overdrafting, which reduces available groundwater resources and which, under certain conditions, can lead to degradation of water quality and to land subsidence. The City has been, and continues to be, involved in both regional and local groundwater management efforts.

6.1.3.7.1 Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area and a Portion of San Joaquin County

In 1996, the City adopted the Northern Delta-Mendota Canal Groundwater Management Plan pursuant to Water Code Sections 10750 et seq., also known as AB 3030. The plan was developed in coordination with other DMC northern agencies, including: BCID, BBID, Del Puerto Water District, Patterson Irrigation District, West Stanislaus Irrigation District, WSID, San Joaquin County, and the City of Tracy. The 1996 GMP included information on groundwater levels and quality, conjunctive management of groundwater and surface water resources, and measures to protect groundwater resources within the plan area.

In 2011, the GMP was revised to include additional information to comply with new provisions adopted by the State Legislature which included:

- The DWR to establish a priority schedule for monitoring groundwater basins and elevation reports as well as issuing recommendations to local entities to improve water quality;
- Permit local entities to determine best methods of groundwater monitoring to meet local demand;
- The DWR to implement groundwater monitoring if local agencies fail to do so. This will result in loss of eligibility for State grant funds.

A public hearing regarding the revised GMP was held on February 7, 2012 and the revised GMP was adopted by the City of Tracy on May 1, 2012.

A copy of the revised GMP is included in Appendix C.

6.1.3.7.2 San Joaquin County Groundwater Export Ordinance

Occasional drought conditions and ongoing restrictions on Delta export pumping have reduced the imported CVP surface water supply available to entities located south of the Delta that rely on CVP water (Stoddard, 1996). Arrangements for water transfers between entities that receive CVP water were developed to allocate the reduced CVP supply to match demand, including pumping of groundwater into the DMC for conveyance and use in other areas. This additional groundwater extraction, for the purpose of selling it to other CVP users, raised concerns amongst sub-basin groundwater users regarding groundwater overdraft and quality degradation. In response to these concerns, San Joaquin County enacted a Groundwater Export Ordinance in June 2000 that now requires an entity to secure a permit from San Joaquin County prior to

exporting groundwater out of the County (such as by pumping extracted groundwater into the DMC for conveyance to other areas).

6.1.3.7.3 City Groundwater Management Policy and Mitigated Negative Declaration for City Groundwater Production of 9,000 af/yr

On a local level, in 2001, the City adopted a Groundwater Management Policy, and prepared a Groundwater Management Policy Mitigated Negative Declaration (see Appendix C). The Groundwater Management Policy and the Groundwater Management Policy Mitigated Negative Declaration are described below.

As discussed above, in 2001, the City anticipated that, to make up a projected temporary shortfall between supply and demand, groundwater extraction would have to increase from approximately 6,000 af/yr to a maximum of 9,000 af/yr over the three-year period from 2001 through 2004. Prior to 2001, it had been estimated that 6,700 af/yr was the City's sustainable groundwater extraction rate (K/J/C, 1990). However, the 2001 Estimated Groundwater Yield Study by Bookman-Edmonston, revised the estimated average annual operational groundwater yield to 9,000 af/yr. This operational yield, though larger than the earlier estimate, is within the City's estimated 22,000 af/yr share of the aquifer's estimated total sustainable yield of 28,000 af/yr (total includes City groundwater usage as well as groundwater usage within West Side Irrigation District, Naglee-Burk Irrigation District, Plain View Water District (now part of the Byron Bethany Irrigation District), and Banta-Carbona Irrigation District).

Pursuant to the findings of the 2001 Bookman-Edmonston study, the City of Tracy adopted a Groundwater Management Policy in 2001 that established the City's maximum annual groundwater extraction rate of 9,000 af/yr. To comply with CEQA and to evaluate the potential negative effects of increased groundwater extraction on water quality, water levels, and subsidence, the City also prepared a Groundwater Management Policy Mitigated Negative Declaration (see Appendix C). The Groundwater Management Policy Mitigated Negative Declaration specifies the frequency and type of monitoring and reporting the City must conduct to evaluate the sustainability of the increased groundwater extraction rate.

Consistent with the Groundwater Management Policy Mitigated Negative Declaration, the City has maintained groundwater production rates well below the maximum annual groundwater extraction rate of 9,000 af/yr. In addition, the City hired Bookman to monitor the impacts of groundwater extraction on groundwater levels, groundwater quality, and land subsidence. Bookman's most recent Mitigation Monitoring Report dated January 23, 2009 covering the period from November 2007 through November 2008 includes well production data, water quality data, hydrographs, and groundwater contour maps for the City's production and monitoring wells (excerpts from this report are provided in Appendix C). As described in the report, there is no indication that pumping by the City is significantly or adversely affecting groundwater levels or water quality at this time. In fact, the report shows that groundwater levels in the City's wells have increased over the last couple of years, likely as a direct result of decreased groundwater pumpage by the City since 2005.

6.1.3.7.4 Tracy Regional Groundwater Management Plan (Regional City GMP)

In addition to participating in the development of the Tracy Sub-basin GMP, in 2005 the City was awarded a DWR grant for approximately $185,000 to prepare a Tracy Regional Groundwater Management Plan (Tracy Regional GMP) for the portion of the Tracy Sub-basin that underlies the City of Tracy. The Tracy Regional GMP was completed in March 2007. A key objective of the Tracy Regional GMP was the development of Basin Management Objectives (BMOs) for groundwater levels, groundwater quality, and land subsidence in the region.

Excerpts from the Tracy Regional GMP are provided in Appendix C.

6.1.3.8 Historical Groundwater Use

As discussed previously, the City currently operates nine groundwater extraction wells (see Figure 6):

- Well 1 (at JJWTP)
- Well 2 (at JJWTP)
- Well 3 (at JJWTP)
- Well 4 (at JJWTP)
- Lincoln Well
- Well 5 (Lewis Manor Well)
- Well 6 (Ball Park Well)
- Well 7 (Park & Ride Well)
- Well 8 (ASR)

The City's newest well, Well 8, was constructed in January 2004 and was permitted by the California Department of Public Health (DPH) for use as a municipal production well in September 2010, and was used as an ASR demonstration well during 2011, 2012 and 2013, In November 2013, the City received authorization from the Central Valley Regional Water Quality Control Board (RWQCB) to operate Well 8 as an ASR well (see discussion under *Section 6.2.3 Aquifer Storage and Recovery*).

Historically, groundwater has accounted for approximately 40 to 50 percent of the City's annual water supply. Prior to 2000, groundwater extraction by the City totaled less than 6,000 af/yr. Between 2000 and 2004, to meet increased demands for water, the City began extracting additional groundwater, with annual usage up to about 7,700 af/yr. In 2005, groundwater extraction decreased to less than 6,000 af/yr primarily because: (1) the SCWSP was completed and the City began receiving Stanislaus River water; and (2) rainfall was above normal, meaning that the City received a higher percentage of its CVP contractual entitlements. The City's groundwater production over the last five years is provided in Table 14.

Table 14. City of Tracy Historical Groundwater Production

	2009	2010	2011	2012	2013
Total Groundwater Production[(a)], af/yr	1,327	498	292	420	930

[(a)] Source: Table 11 Current and Historical Potable Water Supply, City of Tracy 2010 UWMP, May 2011 and 2011, 2012 and 2013 Water Production Data provided by the City.

As noted above, other groundwater users in the Tracy area include the West Side Irrigation District, Naglee-Burk Irrigation District, Plain View Water District (now the Byron Bethany Irrigation District), Banta-Carbona Irrigation District. Although current groundwater pumpage by these users was not available for inclusion in this WSA, the 2001 Estimated Groundwater Yield Study, which established the City's estimated groundwater yield of 9,000 af/yr, considered the cumulative groundwater usage in the study area by the City and other users in the Tracy area.

6.1.3.9 Projected Future Groundwater Use

As discussed above, the 2001 Estimated Groundwater Yield Study indicated an average annual operational groundwater yield for the City of 9,000 af/yr. The study indicated that this increase in the City's groundwater yield was within the estimated sustainable yield of the groundwater sub-basin within the Tracy Study Area, and could be maintained without adverse impact to groundwater resources or quality in the Tracy Study Area over a 50-year timeframe. However, because the hard, high-TDS groundwater is of poorer quality compared with the City's surface water sources, the City is planning to scale back its future groundwater extractions during normal years. For example, at buildout of the General Plan, groundwater production in normal years is anticipated to be approximately 2,500 af/yr. However, the City will continue to rely on groundwater for peaking, drought, and emergency supplies, and may pump up to 9,000 af/yr or more during single dry or multiple dry years, as needed, to meet demands when surface water supplies may be limited.

The City's existing groundwater wells currently have the capability of pumping 9,000 af/yr. The City has replaced a number of older wells with new wells (*e.g.*, the Tidewater Well was replaced by Well 8). Well 8, now part of the City's Aquifer Storage and Recovery Program (see further discussion below), was constructed in 2004, equipped in early 2010 and put into operation as an extraction well in September 2010, and used as an ASR demonstration well during 2011, 2012 and 2013. In the future, the City will construct new production and emergency supply wells, as needed, to replace and supplement existing, aging production wells and provide additional supply reliability in the event of a drought or other emergency situation.

The City's potential uses of groundwater during droughts are consistent with Tracy's Groundwater Management Policy (discussed above). In the event that the City is unable to secure additional high quality surface water supplies in the future, groundwater remains a sustainable water supply up to 9,000 af/yr. However, by reducing groundwater extraction on an average annual basis to approximately 2,500 af/yr, the City will:

- Increase the overall quality of its drinking water, thus increasing customer satisfaction and reducing system maintenance and repair caused by the lower-quality groundwater;
- Recharge the underlying aquifer, effectively increasing the availability of groundwater during a drought or emergency condition (*i.e.*, the City will effectively be practicing "in-lieu groundwater banking" of its groundwater); and
- Reduce salt loading to the City's wastewater treatment plant, which will help the City comply with wastewater discharge requirements.

If the City decreases future groundwater extraction during normal and wet years, current groundwater levels, groundwater flow directions and gradients, and groundwater quality would be expected to change correspondingly. Further, if the City moves ahead with its proposed future ASR Program (see discussion below), changes in groundwater flow patterns associated with the injection of treated surface water into the confined aquifer zone may occur. Groundwater quality would be expected to improve as a result of the introduction of higher quality surface water into the aquifer.

Table 15 shows the anticipated future groundwater production during a normal year.

Table 15. City of Tracy Projected Future Groundwater Production in Normal Years

	2015	2020	2025	2030	2035
Total Groundwater Production[(a,b)], af/yr	2,500	2,500	2,500	2,500	2,500

(a) Source: Table 18 Current and Projected Water Supply Allocations-Normal Year, City of Tracy 2010 UWMP, May 2011.

(b) Although the City can sustainably extract up to 9,000 af/yr of groundwater, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply. The City will continue to rely on groundwater for peaking and drought and emergency supplies, up to 9,000 af/yr, on an as-needed basis.

6.1.3.10 Groundwater Sufficiency

The City's 2010 UWMP addressed the sufficiency of the City's groundwater supplies, in conjunction with the City's other existing and additional water supplies, to meet the City's existing and planned future uses[13]. Based on the information provided above and that included in the City's 2010 UWMP, the City's groundwater supply, together with the City's other existing and additional planned future water supplies, is sufficient to meet the water demands of the Proposed Project, in addition to the City's existing and planned future uses. As discussed above, the City's use of groundwater over the last few years has significantly declined, primarily due to the availability of new high-quality surface water supplies from the SCWSP. In the future, although the City can sustainably extract up to 9,000 af/yr of groundwater, the City's use of groundwater is anticipated to decrease even further, as additional high-quality surface water supplies become available. As shown in Table 15, in the future, assuming normal year hydrologic conditions, annual groundwater use is anticipated to be as low as 2,500 af/yr by 2015. This anticipated future groundwater pumpage is significantly below the City's historical groundwater pumpage (see Table 14) and the average annual operational yield of 9,000 af/yr.

[13] Chapter 4, City of Tracy 2010 Urban Water Management Plan, May 2011.

By reducing groundwater extraction on an average annual basis, the City will:

1. Recharge the underlying aquifer, effectively increasing the availability of groundwater during a drought or emergency condition (*i.e.*, the City will effectively be "banking" its groundwater); and
2. Increase the overall quality of its drinking water, thus increasing customer satisfaction and reducing system maintenance and repair caused by the lower-quality groundwater.

As shown in Table 4, groundwater will be needed to supply the portions of the Proposed Project that are outside the BBID Raw Water Service Area 2, outside the CVP CPOU, and/or outside the BBID CVP service area. The potable water demand for groundwater for buildout of the Proposed Project is estimated to be approximately 670 af/yr (see Table 4).

6.1.4 Surface Water from BBID Pre-1914 Water Rights

Part of the proposed Tracy Hills Specific Plan area was annexed into the BBID in 1999 and is entitled to water service from BBID, using BBID's pre-1914 appropriative water rights. This area is referred to as the BBID Raw Water Service Area 2 (see Figure 2). The City anticipates that up to 4,500 af/yr of pre-1914 water rights water will be provided by BBID on a year-round basis (via the DMC with the Exchange Agreement between BBID and the USBR executed in April 2014) to serve the portion of the Proposed Project located within the BBID Raw Water Service Area 2. However, this supply can only be used within the BBID Raw Water Service Area 2, and cannot be used in any other part of the City's water service area. Furthermore, the Exchange Agreement between the United States Bureau of Reclamation (USBR) and BBID for the exchange of "non-project" water from BBID for "project" water from the USBR limits the use of the "project" water to the CVP CPOU[14]. As such, the quantity of supply available from this source can be no more than the potable water demand within the BBID Raw Water Service Area 2 which is also within the CVP CPOU[15]. Therefore, the maximum pre-1914 BBID supply to be delivered to the Proposed Project at buildout is 2,430 af/yr (see Table 4). Because the water supply is based on pre-1914 appropriative rights, the supply is considered to be firm and well-established.

[14] "Non-project" water refers to water sources that have not been appropriated by the United States (*e.g.*, the BBID pre-1914 water supplies). "Project" water refers to Central Valley Project water supplies managed by the United States Department of the Interior, Bureau of Reclamation (USBR).

[15] As described in Section 2.4, this BBID pre-1914 water supply may also be used on an interim basis to meet landscape irrigation demands in portions of the Proposed Project area eligible for use of this supply until recycled water becomes available.

A wholesale water agreement between BBID and the City was approved in August 2013. The agreement, in conjunction with the Exchange Agreement between BBID and the USBR executed in April 2014, provides for BBID's water to be pumped into the DMC and delivered to the City's JJTWP for treatment and delivery to the Proposed Project. Copies of the Exchange Agreement between BBID and the USBR and the Wholesale Water Agreement between BBID and the City are provided in Appendix A. A Final Environmental Assessment and FONSI were prepared by USBR in accordance with NEPA in December 2013 (FONSI-09-149).

Costs for obtaining the water supply from BBID and delivering the water supply to the City's JJWTP have been paid by Project Proponents. Costs for required improvements at the City's JJWTP will be paid in a manner consistent with the City's applicable fee program requiring fair share participation by the project developer. The City anticipates that the BBID pre-1914 water supply will be available by 2014.

6.1.5 Out-of-Basin Water Banking

The Semitropic Groundwater Storage District Groundwater Storage Bank (Semitropic) is a water storage system that began operation in the early 1990s. Located in Kern County between the California Aqueduct and the Delta-Mendota Canal, Semitropic is one of eight California groundwater banking agencies. Semitropic works by having its banking partners deliver their surplus water to Semitropic for groundwater storage. Then, when requested by the banking partner, Semitropic returns the stored water to the California Aqueduct for use by its partners either by exchanging its entitlement or by reversing the intake facility (known as "pumpback"). Through "pumpback", Semitropic can deliver a maximum of 90,000 af/yr of water into the California Aqueduct. The State would then deliver the water to the banking partners.

The total storage capacity at Semitropic is 2.15 million acre-feet and, as listed below, there is still a significant amount of storage capacity which is uncommitted and available. The current Semitropic banking partners and their reserved/available storage capacities are listed below[16]:

- Original Water Bank (1.0 million acre-feet)
  - Metropolitan Water District of Southern California: 350,000 acre-feet
  - Santa Clara Valley Water District: 350,000 acre-feet
  - Alameda County Water District: 150,000 acre-feet
  - Zone 7 Water Agency: 65,000 acre-feet
  - Newhall Land and Farming Company: 55,000 acre-feet
  - San Diego County Water Authority: 30,000 acre-feet

[16] Based on information provided on Semitropic Water Storage District website: www.semitropic.com, as of June 2014.

- Stored Water Recovery Unit (650,000 acre-feet)[17]
  - Poso Creek Water Company, LLC: 60,000 acre-feet
  - San Diego County Water Authority: 15,000 acre-feet
  - City of Tracy: 10,500 acre-feet
  - Homer, LLC: 15,000 acre-feet
  - Harris Farms, LLC: 10,500 acre-feet
  - Unallocated: 64,250 acre-feet
  - Uncommitted: 474,750 acre-feet

In June 2006, the City entered into a pilot agreement with Semitropic Water Storage District for 1,000 acre-feet of water storage at Semitropic, which allows for an annual withdrawal of up to 333 af/yr (*e.g.*, 1,000 acre-feet divided by 3). A Negative Declaration was prepared for the pilot agreement pursuant to the provisions of CEQA (SCH No. 2006052049) and a FONSI was issued by USBR (FONSI-05-111). The pilot agreement was intended to establish the procedures for water deposits and withdrawals by the City of Tracy. Now that the permanent agreement with Semitropic has been implemented (see below), this pilot agreement has been terminated.

On June 5, 2012 the City of Tracy approved a long-term agreement with Semitropic for 3,500 units of water storage in Semitropic's Stored Water Recovery Unit (see list of Stored Water Recovery Unit partners above). One unit of water storage allows for a withdrawal of up to 1 af/yr for three years; hence, the agreement would allow for withdrawal of 3,500 af/yr for three years (10,500 af total). To store water in Semitropic, the City would not withdraw its share of CVP water from the DMC, but instead allow this water to continue to move through the DMC and California Aqueduct systems for delivery to and use by Semitropic. This is called "in lieu storage." Upon request by the City, in accordance with the contract, Semitropic would pump the stored water into the California Aqueduct and a like amount of water would be made available to the City directly from the DMC. Though the City could utilize this supply in any year, it would be most valuable during drought years when the City's CVP surface water supplies are reduced. If the City uses water from the Semitropic water bank in any given year, it would work to manage its supplies during subsequent years such that it could "refill" its water bank for future water use. By banking surplus CVP water at Semitropic, the City will increase the quantity of supplies available during drought and/or other emergency conditions, thereby increasing the reliability of its water supply.

The purchase price for capacity in Semitropic was $5,206,961. A Negative Declaration was prepared for the permanent agreement pursuant to the provisions of CEQA (SCH No. 2010092012) and a FONSI (FONSI-09-164) was issued by USBR. A copy of the City's permanent agreement with Semitropic is included in Appendix A.

[17] The City's Semitropic storage is in the Stored Water Recovery Unit (see Section 6.1.4).

The City's current balance of stored supplies in Semitropic is 6,100 acre-feet[18]; these supplies are available to the City for withdrawal in dry years, if needed. Based on this current balance, it is assumed that 2,033 af will be available for withdrawal in 2015 (6,100 af over three years).

As noted in Section 6.2.1, additional dry-year supplies will be required to meet water demands associated with the Proposed Project for areas of the Proposed Project using the BBID CVP Ag-reliability supplies, which are subject to reduced deliveries as low as 10 percent of entitlement in multiple dry years.

6.2 Additional Planned Future Potable Water Supplies

The City is currently anticipating the following additional planned future potable water supplies in the future:

- BBID CVP supplies;
- Additional SCWSP supplies; and
- Aquifer Storage and Recovery.

Each of these additional planned future water supplies is described below. Summary tables listing the City's existing and additional planned future water supplies, and historical and anticipated future quantities are provided at the end of this section.

6.2.1 BBID Central Valley Project Supplies

The area served by the former PVWD is now part of BBID. Due to on-going urbanization in portions of BBID's service area (including the Proposed Project), BBID anticipates that it may have CVP contract entitlement water (with Ag-reliability) available for municipal uses in the future. The City and BBID are negotiating a water supply agreement. The estimated quantity of contract entitlement water potentially subject to such an agreement is approximately 11,000 af/yr. The exact quantity of BBID CVP water entitlement is the subject of the future agreement between the City and BBID. However, previous discussions have indicated that a contract entitlement quantity of water equal to 3.4 acre-feet per year per acre (af/ac/yr) of converted agricultural land may be available for M&I use.

It is estimated that an agreement between the City and BBID can be achieved within the next few years to allow for the transition of additional CVP supplies to be available to the City starting in 2015 (at 3,000 af/yr) and increasing to 11,000 af/yr by 2030. An approval will be required from the USBR and compliance with CEQA and NEPA will be required. Because the exact quantity of water available and terms of a future agreement are yet to be negotiated, the total cost and financing mechanisms for acquiring this supply have not yet been determined.

[18] Semitropic's distribution system, evaporative and aquifer losses are collectively assumed to be 10 percent of the amount of water furnished by banking partners for storage. The City's current balance is calculated as follows per Article 4 of the agreement between Semitropic and the City (see Appendix A): Total deposited (7,000 af) – 10% Losses (700 af) – Withdrawals (200 acre-feet) = Available (6,100 af).

The northeastern portion of the Proposed Project, north of the California Aqueduct and east of Lammers Road (comprising a majority of the proposed Phase 5 development area) (approximately 387 acres) is located within the former PVWD (now BBID) service area (see Figure 2). Conversion of this area of agricultural land in conjunction with the development of the Proposed Project would provide for approximately 1,315 af/yr (387 acres x 3.4 af/ac/yr) of CVP supply with Ag reliability to the City from BBID's CVP water entitlement. As shown on Table 4, the potable water demand for the portion of the Proposed Project within the BBID CVP area is estimated to be approximately 630 af/yr at buildout.

As discussed in Section 6.1.1, these Ag-reliability CVP supplies are subject to significantly reduced deliveries in dry years (*e.g.*, only 10 percent delivery in multiple dry years). Therefore, additional dry year supplies (such as those available through from Semitropic) will be required to supplement the Ag-reliability CVP supplies and assure adequate supply for the Proposed Project during dry years. An additional 1,500 af of storage capacity in Semitropic would allow for an annual withdrawal of 500 af to supplement available dry-year supplies from the CVP, which would be adequate to supplement the reduced CVP deliveries to the Proposed Project[19].

6.2.2 Additional SCWSP Supplies

The City is anticipating that an additional 1,880 af/yr of treated water supplies will be available from the SCWSP in the future through a Conserved Water Amendment Agreement. This additional supply would have the same high reliability as the supply that the City is currently receiving from the SCWSP, and that recently purchased from the City of Lathrop. Delivery of these additional supplies to the City would be through the same, existing facilities currently delivering the City's existing SCWSP supplies. Delivery of these additional supplies will be subject to approval and environmental review. The City anticipates that these additional supplies will be available starting in 2015.

6.2.3 Aquifer Storage and Recovery

The City's ASR Program would allow the City to optimize conjunctive use of its water supplies through injection of surplus treated (potable) drinking water into selected aquifer zones within the groundwater Sub-basin for storage when surplus supplies are available, and recovery of that potable water from the aquifer to optimize water quality and meet seasonal peak demands during drought periods, or when emergency or disaster scenarios preclude the use of imported water supplies.

As discussed above, the City constructed a new well in January 2004 (Well 8) that was designed to allow for both injection and extraction of water supplies in conjunction with the City's proposed ASR Program. In early 2009, the City contracted to construct the above-ground well facilities (including the pump house, pump, motor, SCADA, electrical, telemetry, chemical feed systems, *etc.*) to have Well 8 operational in September 2010, initially as an extraction well, and in the future as part of the City's proposed ASR Program. In addition, the City has already

[19] Supplemental dry-year supply required for the Proposed Project would be equal to the projected demand in the CVP area (630 af/yr) – 10 percent delivery of CVP supply (10% of 1,315 af/yr = 132 af/yr), or about 500 af/yr.

installed two monitoring wells for use in the demonstration project monitoring and testing for the proposed ASR Program.

The City obtained regulatory approval from the Central Valley RWQCB to conduct an ASR Demonstration Testing Program. A Negative Declaration was prepared for the project in November 2010 pursuant to the provisions of CEQA (SCH No. 2010112049). The Phase 1 ASR Demonstration Testing was conducted between January 2011 and September 2011 and involved the injection of 233 acre-feet (76 million gallons) of treated SSJID potable water, storage in the confined aquifer and subsequent extraction of 340 acre-feet (111 million gallons) of water[20]. The Phase 2 ASR Testing was initiated in late December 2011 and was completed in September 2012 with injection of 700 acre-feet. The Tracy City Council approved and adopted a CEQA Negative Declaration (SCH No. 2012102013) for the permanent ASR Program on December 4, 2012.

In November 2013, the City received a Notice of Applicability from the Central Valley RWQCB authorizing the City to implement the ASR Program for Well No. 8. It is estimated that as much as 685 to 915 af/yr of potable water could be injected into the aquifer, assuming a 5-month continuous injection rate of 1.5 to 2.0 mgd. Implementation of the City's ASR Program will occur incrementally (as new ASR wells are constructed) with up to 3,000 acre-feet of high-quality water ultimately (by 2025) being available in drought years to increase the reliability of the City's water supply. Approximately 1,000 af/yr of ASR supply is anticipated to be available starting in 2015 and increasing to 3,000 af/yr by 2025.

6.3 Existing Non-Potable Water Supplies

6.3.1 Diversion of Non-Potable Surface Water from Sugar Cut

As described in the Water Supply Assessment for the Holly Sugar Sports Park (now called Legacy Fields)[21], the City's Holly Sugar property has historically (since at least 1912) been irrigated using untreated surface water diverted from Sugar Cut. Over the years, the Holly Sugar property has been farmed and planted with a variety of crops, including winter wheat, corn, tomatoes, alfalfa and, when the property was owned by Holly Sugar, sugar beets. The Holly Sugar property is currently being farmed and irrigated with untreated surface water diverted from Sugar Cut. The water rights to the untreated surface water from Sugar Cut are considered to be pre-1914 appropriative rights, and may also be classified as riparian rights. Use of the water from Sugar Cut has been continuous on the Holly Sugar property for irrigation purposes since at least 1912.

The continued use of this non-potable water supply from Sugar Cut is proposed for the irrigation of the proposed Holly Sugar Sports Park (Legacy Fields)[22]. This use is considered a continued beneficial use of the supply for essentially the same purpose of irrigation. The use of untreated surface water from Sugar Cut for non-potable water uses for the proposed Holly Sugar Sports

[20] Interim (Final) Status Report for Well 8 ASR Demonstration Program, Memorandum prepared for City of Tracy by Pueblo Water Resources, dated December 7, 2011.

[21] Water Supply Assessment for the Holly Sugar Sports Park, prepared by West Yost Associates, June 2009.

[22] Water Supply Assessment for the Holly Sugar Sports Park, prepared by West Yost Associates, June 2009.

Park (Legacy Fields) would be for the interim only, until recycled water supplies become available. Therefore, future use of this non-potable supply, beyond the interim irrigation of the proposed Holly Sugar Sports Park (Legacy Fields), is not anticipated.

6.4 Additional Planned Future Non-Potable Water Supplies

6.4.1 Recycled Water

In 2002, the City adopted a Recycled and Non-Potable Water Ordinance requiring all new subdivisions, to the extent practicable, to install the required infrastructure (such as dual-distribution pipelines) to provide recycled water to meet non-potable water demands at parks, golf courses, athletic fields, schools, median island landscapes, and industrial sites. The ordinance was codified into the Tracy Municipal Code as Chapter 11.30 "Recycled and Non-Potable Water" (see Appendix D). As described in Chapter 2 of the Citywide Water System Master Plan, one of the principles developed for sustainable infrastructure in the City is to promote and encourage the use of recycled water for non-potable uses in existing and future publicly landscaped areas in the City, where feasible.

In March 2013, the City adopted Ordinance 1183 amending Chapter 11.30 of the Tracy Municipal Code to update the City's recycled water requirements to be consistent with State, regional and local standards, including the California Water Conservation Act of 2009 (SBx7-7), 2010 California Green Building Standards Code, California Model Water Efficient Landscape Ordinance, and the City of Tracy Sustainability Action Plan. One of the key provisions of the new ordinance provides that untreated surface water supplies may be used in lieu of recycled water supplies to meet non-potable demands on an interim basis, but only until December 31, 2020 (see Appendix D).

At buildout of the City's General Plan, it is estimated that the recycled water demand for landscape irrigation will be approximately 7,500 af/yr[23]. Based on the City's Citywide Wastewater System Master Plan, the quantity of recycled water supply available is up to 21.1 mgd (23,600 af/yr) at buildout, based on anticipated wastewater flows and the capacity of the City's WWTP[24]. Recycled water will be treated to a tertiary level in accordance with Title 22 requirements at the City's WWTP and will be distributed to recycled water use areas within the City's SOI. It is anticipated that adequate recycled water supplies will be available to meet the projected recycled water demands at buildout of the City's General Plan, including those associated with the Proposed Project. Approvals and permits for the production, distribution and use of recycled water will be required from the RWQCB and the DPH.

As described in Section 2.3.2, the recycled water demand for the Proposed Project at buildout is projected to be approximately 1,970 af/yr. As described previously, recycled water supplies for the Proposed Project may not be initially available to meet the landscape irrigation demands associated with the Proposed Project. Potable water supplies, if available, may be used in the

[23] City of Tracy Citywide Water System Master Plan, Final Report, prepared by West Yost Associates, December 2012.

[24] Table C-1, Tracy Wastewater Master Plan, Final Report, prepared by CH2MHill, December 2012.

interim period before recycled water becomes available (the interim use of these supplies to meet the landscape irrigation demands are subject to the same potable water supply use restrictions described in Table 4).

6.4.2 Shallow Non-Potable Groundwater

As discussed above, the Tracy Sub-basin underlying the City has two aquifers: semi-confined and confined. The uppermost semi-confined aquifer is primarily comprised of alluvial and flood basin formations. The underlying confined aquifer is primarily comprised of the Tulare Formation and it is overlain by the Corcoran Clay, which separates the upper unconfined aquifer from the underlying confined aquifer. The City's production wells draw from the confined aquifer only and the average annual operational groundwater yield of 9,000 af/yr described in previous sections applies only to the confined aquifer. The City does not currently pump any groundwater from the semi-confined aquifer.

The hydraulic characteristics of the semi-confined aquifer are highly variable, based on site-specific conditions. Wells in the semi-confined aquifer produce 6 gpm to 5,300 gpm; however, pump test data are limited. The transmissivity of the semi-confined aquifer, including the recent alluvium and upper portions of the Tulare Formation, ranges between 600 to greater than 2,300 gallons per day per foot (gpd/ft). The storativity is about 0.05. Where thicker sequences of sand are present, the transmissivity may be higher.

Relatively speaking, groundwater levels in the semi-confined aquifer are significantly deeper at the southern end of the City typically measuring about 48 feet below ground surface, whereas groundwater levels at the northern end of the City are as shallow as 5 feet below ground surface. There appears to be a natural groundwater cycle where water levels rise and then lower every few years (in response to pumpage and annual precipitation patterns), and there is also a seasonal fluctuation due to seasonal groundwater use and in response to tidal influences. Currently groundwater levels in the semi-confined aquifer appear on the rise at the northern end of the City; however, there are insufficient data in the southern portion of the City to make any conclusions in this regard. Groundwater flow in the semi-confined aquifer is generally from the southeast towards the Old River north of the City.

Groundwater recharge in the semi-confined aquifer occurs from rainfall, applied water that percolates to the water table, and seasonal infiltration by the creeks. The recharge for the shallow semi-confined aquifer is generally from the south, from the Coast Ranges, and moves to the north and west.

The semi-confined aquifer is monitored by other entities at four locations within the City[25]. Static water levels are measured on a quarterly basis and reported to the RWQCB. Groundwater quality is typically monitored just for specific contaminants of concern and does not coincide with the general parameters monitored by the City and others in the confined aquifer.

[25] Locations monitored are Dick's Exxon, 7-11 Convenience Store #32262, former Spreckels Sugar, the Tracy Army Depot, and Georgia-Pacific. Source: Summary of Groundwater Conditions November 2007 through November 2008, prepared by GEI Consultants, January 2009.

Current pumping from the semi-confined aquifer is thought to be widespread, via private wells, and used primarily for irrigation of agricultural areas. Current pumpage quantities are unknown; however, the stable groundwater level trends in the semi-confined aquifer indicate that existing pumpage is within the operational yield of the semi-confined aquifer.

Groundwater quality information is limited for the semi-confined aquifer. Most of the available water quality data for the semi-confined aquifer is from data from a 1968 basin-wide study. Groundwater extracted from the semi-confined aquifer is generally classified as being high in salts and not suitable for potable uses, but may be considered suitable for non-potable uses such as agricultural irrigation. The following provides an overview of key water quality constituents in the semi-confined aquifer:

- TDS varies greatly (ranging from 567 mg/L to 2,310 mg/L), but overall is poorer quality than the confined aquifer and exceeds recommended drinking water Maximum Contaminant Levels (MCLs)[26]. The TDS concentrations increase toward the north and to the west.
- Sulfate concentrations in the semi-confined aquifer ranged from less than 100 to over 600 mg/L[27].
- Chloride concentrations in the semi-confined aquifer range from 50 to 850 mg/L, with the lowest concentrations near the Coast Ranges, south of Tracy near the airport[28].
- Boron concentrations in the semi-confined aquifer range from 0.7 to 6.3 mg/L[29]. The lowest concentrations follow a similar pattern as the TDS, with low concentrations near the Coastal Range foothills (to the south).

The shallow groundwater is considered to be suitable for most agricultural irrigation purposes. However, given the relatively poor permeability of the soils in the City, there is concern for the potential accumulation of salts in the soil, leading to soil binding. This could partially be mitigated by planting salt-tolerant turf and plant materials and providing good subsurface drainage; however, this may not be a feasible long-term solution for the City.

[26] The recommended MCL for TDS is 500 mg/L, with an upper limit of 1,000 mg/L if it is not reasonable or feasible to supply water with lower concentrations. Short-term use is allowed for water between 1,000 and 1,500 mg/L.

[27] The recommended MCL for sulfate is 250 mg/L, with an upper limit of 500 mg/L if it is not reasonable or feasible to supply water with lower concentrations. Short-term use is allowed for water up to 600 mg/L.

[28] The recommended MCL for chloride is 250 mg/L, with an upper limit of 500 mg/L if it is not reasonable or feasible to supply water with lower concentrations. Short-term use is allowed for water up to 600 mg/L.

[29] There is no established MCL for boron. However, California DPH has established an Action Level of 1 mg/L for boron.

6.5 Summary of Existing and Additional Planned Future Water Supplies

Table 16 provides a summary of the City's existing and additional planned future water supply entitlements. Table 17 provides a summary of historical water supply deliveries and anticipated existing and additional planned future water supplies during normal years from each of the City's water supplies. A discussion of the future anticipated availability of these existing and additional planned future water supplies during dry years is provided in the next section.

Table 16. Summary of Existing and Additional Planned Future Water Supplies

Supply	Water Right or Available Supply Quantity, af/yr	Supply Ever Used by City
Existing Water Supplies		
USBR CVP Interim Renewal Contract	17,500	Yes
USBR CVP (WSID Option)	2,500	Yes
South County Water Supply Project (pre-1914)	11,120	Yes
Groundwater[(a)]	9,000	Yes
BBID (pre-1914)[(b)]	2,430	No
Semitropic Water Storage Bank[(c)]	3,500	Yes
Additional Planned Future Water Supplies		
Additional USBR CVP (BBID contract)	11,000	No
Additional SCWSP (pre-1914)	1,880	No
Additional Semitropic Water Storage Bank[(d)]	500	No
Aquifer Storage and Recovery[(e)]	3,000	Yes
Recycled Water[(f)]	23,600	No

(a) The City is planning to decrease groundwater use to 2,500 af/yr by the year 2015. However, studies described in this WSA have indicated that up to 9,000 af/yr of groundwater is available to the City to make up for shortfalls in the event of a severe drought or other water shortage.

(b) The water supply available from BBID (pre-1914) is up to 4,500 af/yr; however, this supply can only be used with the BBID Raw Water Service Area 2 that is also within the CVP CPOU. Quantity shown is amount needed to meet potable water demands within the Proposed Project area within the BBID Raw Water Service Area 2 and also within the CVP CPOU under all hydrologic conditions (2,430 af/yr).

(c) Supplies from Semitropic and ASR are assumed to be dry year supplies. As such, during normal years, supplies from these sources are assumed to be 0 af/yr.

(d) Based on additional dry-year supplies needed to supplement Ag-reliability CVP supplies available for the Proposed Project.

(e) Based on the total projected recycled water production at buildout (21.1 mgd) (reference: Table C-1, Tracy Wastewater Master Plan, Final Report, prepared by CH2MHill, December 2012).

Table 17. Quantity of Historical Water Deliveries and Existing and Additional Planned Future Water Supplies in Normal Years

Supply	Historical Water Deliveries, af/yr							Projected Future Available Supplies, af/yr				
	1980	1985	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035
Existing Water Supplies[a,b]												
USBR CVP Interim Renewal Contract	5,676	5,734	4,968	8,387	7,785	8,920	5,304	11,250	11,250	11,250	11,250	11,250
USBR CVP (WSID Option)	0	0	0	0	0	0	0	1,250	1,250	1,250	1,250	1,250
Total CVP Supplies	5,676	5,734	4,968	8,387	7,785	8,920	5,304	12,500	12,500	12,500	12,500	12,500
South County Water Supply Project (pre-1914)	0	0	0	0	0	3,146	10,850	11,120	11,120	11,120	11,120	11,120
Groundwater[c]	1,980	2,856	5,838	4,310	6,548	5,826	498	2,500	2,500	2,500	2,500	2,500
BBID (pre-1914)[d]								2,430	2,430	2,430	2,430	2,430
Semitropic Water Storage Bank[e]	0	0	0	0	0	0	0	0	0	0	0	0
Total Existing Potable Supplies	**7,656**	**8,590**	**10,806**	**12,697**	**14,333**	**17,892**	**16,652**	**28,550**	**28,550**	**28,550**	**28,550**	**28,550**
Additional Planned Future Water Supplies[b]												
Additional USBR CVP (BBID contract)								1,500	3,000	4,500	5,500	5,500
Additional SCWSP Supplies (pre-1914)								1,880	1,880	1,880	1,880	1,880
Additional Semitropic Water Storage Bank[e]								0	0	0	0	0
Aquifer Storage and Recovery[f]								0	0	0	0	0
Recycled Water (non-potable)[g]								12,400	14,900	17,500	19,900	22,500
Total Additional Planned Future Potable Supplies								**3,380**	**4,880**	**6,380**	**7,380**	**7,380**
Total Potable Supplies	**7,656**	**8,590**	**10,806**	**12,697**	**14,333**	**17,892**	**16,652**	**31,930**	**33,430**	**34,930**	**35,930**	**35,930**
Total Additional Planned Future Non-Potable Supplies								**12,400**	**14,900**	**17,500**	**19,900**	**22,500**

(a) Historical supply data based on production data.

(b) Projected additional supplies based on Table 18 Current and Projected Water Supply Allocations – Normal Year, City of Tracy 2010 Urban Water Management Plan, May 2011.

(c) Although the City can sustainably extract up to 9,000 af/yr of groundwater, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply. The City will continue to rely on groundwater for peaking and drought and emergency supplies, up to 9,000 af/yr, on an as-needed basis.

(d) The water supply available from BBID (pre-1914) is up to 4,500 af/yr; however, this supply can only be used with the BBID Raw Water Service Area 2 that is also within the CVP Consolidated Place of Use. Quantity shown is amount needed to meet potable water demands within the Proposed Project area within the BBID Raw Water Service Area 2 and also with the CVP Consolidated Place of Use under all hydrologic conditions.

(e) In normal years, supply from the Semitropic Water Storage Bank is assumed to be 0 af/yr, as this is considered a dry year supply.

(f) In normal years, supply from the ASR Project is assumed to be 0 af/yr, as this is considered a dry year supply.

(g) Table 15, City of Tracy 2010 Urban Water Management Plan, prepared by Erler & Kalinowski, Inc., May 2011.

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6.6 Dry Year Water Supply Availability and Reliability

Water Code section 10910 (c)(4) requires that a WSA include a discussion with regard to "whether total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses." Accordingly, this WSA addresses these three hydrologic conditions through the year 2035.

The reliability of each of the City's existing and additional planned water supplies and their projected availability during normal, single dry, and multiple dry years as described in Section 5 of the City's 2010 UWMP, is described below and summarized in Table 18.

Table 18. Water Supply Reliability in Normal, Single Dry, Multiple Dry Years

Supply Source	Anticipated Reliability (% of Entitlement)		
	Normal Years	Single Dry Years	Multiple Dry Years
Existing Water Supplies			
USBR CVP Interim Renewal Contract			
M&I Reliability Water	75%	65%	40%
Ag Reliability Water	50%	15%	10%
USBR CVP (WSID Option) (Ag Reliability Water)	50%	15%	10%
South County Water Supply Project (pre-1914)	100%	95%	95%
Groundwater[(a)]	100%	100%	100%
BBID (pre-1914)	100%	90%	90%
Semitropic Water Storage Bank[(b)]	--	100%	100%
Additional Planned Future Water Supplies			
USBR CVP (BBID contract) (Ag Reliability Water)	50%	15%	10%
Additional SCWSP (pre-1914)	100%	95%	95%
Additional Semitropic Water Storage Bank[(b)]	--	100%	100%
Aquifer Storage and Recovery[(b)]	--	100%	100%
Recycled Water	100%	100%	100%

(a) The City is planning to decrease groundwater use to 2,500 af/yr by the year 2015. However, studies described in this WSA have indicated that up to 9,000 af/yr of groundwater is available to the City to make up for shortfalls in the event of a severe drought or other water shortage.

(b) Supplies from Semitropic and ASR are assumed to be dry year supplies. As such, during normal years, supplies from these sources are assumed to be 0 af/yr.

With the current on-going drought conditions in California, water supply deliveries from the SWP and CVP (and other surface water supply sources throughout California) have been severely reduced. The impact of these current drought conditions on long-term water supply reliabilities is currently not known. Many water supply agencies, including the City, have requested increased voluntary water conservation or enacted mandatory water conservation

measures to reduce water use during this time. Even with 0 percent deliveries from the City's USBR CVP agricultural supplies in 2014, the diversity of the City's water supply portfolio together with water conservation efforts by the City's customers have allowed for the City to meet all water demands. If the current drought should continue, and deliveries of supplies reduced further, additional stages of the City's Water Shortage Contingency Plan will be enacted as needed. The City's Water Shortage Contingency Plan is included as an appendix in the City's 2010 UWMP and is discussed further in Section 8.3 of this WSA.

6.6.1 Normal Years

Normal or wet water years are those water years that match or exceed median rainfall and runoff levels. The following describes the availability and reliability of the City's existing and additional planned future water supplies under normal year conditions:

- The City's Interim Renewal Contract includes both M&I reliability water (10,000 af/yr) and Ag reliability water (7,500 af/yr). Due to recent environmental concerns in the Delta and potential future impacts due to climate change, it has been assumed that the long-term M&I reliability of USBR's CVP supplies in normal years will be 75 percent, such that the City's allocation in normal years will be 7,500 af/yr. The long-term Ag reliability of USBR's CVP supplies in normal years will be 50 percent, such that the City's allocation in normal years will be 3,750 af/yr. The City's WSID Option for additional CVP water (exercised in December 2013) also has Ag reliability water (2,500 af/yr), with a normal year reliability of 50 percent, resulting in an allocation of 1,250 af/yr in normal years.
- During a normal water year, the City expects to receive 100 percent of its SCWSP water supply allocation, or 11,120 af/yr.
- Pursuant to the Groundwater Management Policy, the City can extract up to 9,000 af/yr of local groundwater. Because of the high TDS and hardness of the City's groundwater, the City hopes to reduce its dependency on groundwater in the future. As additional higher quality water supplies come on line, the City estimates that it may be possible to reduce the quantity of groundwater used during a typical normal or wet year. This reduction, however, is highly dependent on future water supplies and demands and should be viewed as a goal, and not a firm projection. In the event that additional supplies are needed, the City may utilize up 9,000 af of groundwater per year.
- Per recently executed agreements, up to 4,500 af/yr of pre-1914 appropriative water rights water is available from BBID. The City anticipates being able to receive 100 percent of this supply during normal and wet years. However, this water supply can only be used within the BBID Water Service Area 2 that is also within the CVP CPOU, so only the quantity needed to meet the potable water demand within that area will be delivered to the City (approximately 2,430 af/yr at buildout)[30].

[30] As described in Section 2.4, this BBID pre-1914 water supply may also be used on an interim basis to meet landscape irrigation demands in portions of the Proposed Project area eligible for use of this supply until recycled water becomes available.

- In the future, up to approximately 11,000 af/yr of Ag-reliability water from the BBID CVP contract is expected to be available to the City. Therefore, in future normal water years, 5,500 af/yr (50 percent of 11,000 af) will be available.
- In the future, the City expects to receive 100 percent of a future SCWSP water supply allocation of 1,880 af/yr in normal years, or 1,880 af/yr.
- By 2015, 1,000 af/yr of banked water is assumed to be available through the City's ASR program and approximately 2,033 af/yr of banked water is assumed to be available through the City's participation in the Semitropic Water Storage Bank. Per the City's Permanent Agreement with Semitropic, up to 3,500 af/yr is assumed to be available in future dry years. As described in Section 6.2.1, an additional 500 af/yr of Semitropic supplies will be required in the future (by about 2025) to supplement Ag-reliability CVP supplies being used for the Proposed Project[31]. However, these supplies are considered dry year supplies, and are assumed to be zero in normal years.

The reliability of each of the City's existing and additional planned future water supplies and their projected availability during normal and wet years is shown in Table 19. Figure 8 shows the City's projected future supply versus demand in normal years.

6.6.2 Single Dry Years

During a single dry year, or when the CVP flows must be reduced due to hydrologic and/or environmental impacts, all of the City's existing surface water allotments are subject to some level of reduction. The actual reductions will vary with the severity of the regional water supply shortage and climatic conditions, and the consideration of water and contract rights. The following describes the availability and reliability of the City's existing and additional planned future water supplies under single dry year conditions:

- The City's Interim Renewal Contract includes both M&I reliability water (10,000 af/yr) and Ag reliability water (7,500 af/yr). Due to recent environmental concerns in the Delta and potential future impacts due to climate change, it has been assumed that the long-term M&I reliability of USBR's CVP supplies in single dry years will be 65 percent, such that the City's allocation in single dry years will be 6,500 af/yr. The long-term Ag reliability of USBR's CVP supplies in single dry years will be 15 percent, such that the City's allocation in single dry years will be 1,125 af/yr. The City's WSID Option for additional CVP water (exercised in December 2013) also has Ag reliability water (2,500 af/yr), with a single dry year reliability of 15 percent, resulting in an allocation of 375 af/yr in single dry years.
- During a single-dry year, it is assumed that the City will receive 95 percent of its SCWSP water supply allocation, or 10,564 af/yr.

[31] An additional 1,500 af of storage capacity in Semitropic would allow for an annual withdrawal of 500 af to supplement available dry-year supplies from the CVP, which would be adequate to supplement the reduced CVP deliveries to the Proposed Project.

Table 19. Projected Existing and Additional Planned Future Water Supplies Available in Normal Years

Supply	Anticipated Reliability (% of Entitlement)	Projected Future Available Supply, af/yr				
	Normal Years	2015	2020	2025	2030	2035
Existing Water Supplies						
USBR CVP Interim Renewal Contract	10,000 af/yr @ 75% (M&I) & 7,500 af/yr @ 50% (Ag)	11,250	11,250	11,250	11,250	11,250
USBR CVP (WSID Option)	2,500 af/yr @ 50%	1,250	1,250	1,250	1,250	1,250
Total CVP Supplies		12,500	12,500	12,500	12,500	12,500
South County Water Supply Project (pre-1914)	100%	11,120	11,120	11,120	11,120	11,120
Groundwater[a]	100%	2,500	2,500	2,500	2,500	2,500
BBID (pre-1914) [b]	100%	2,430	2,430	2,430	2,430	2,430
Semitropic Water Storage Bank[c]	--	0	0	0	0	0
Additional Planned Future Water Supplies						
USBR CVP (BBID contract)	50%	1,500	3,000	4,500	5,500	5,500
Additional SCWSP (pre-1914)	100%	1,880	1,880	1,880	1,880	1,880
Additional Semitropic Water Storage Bank[c]	--	0	0	0	0	0
Aquifer Storage and Recovery[c]	--	0	0	0	0	0
Recycled Water (non-potable)[d]	100%	12,400	14,900	17,500	19,900	22,500
Total Projected Potable Water Supply		31,930	33,430	34,930	35,930	35,930
% Cutback from Normal Year[e]		--	--	--	--	--
Total Projected Recycled Water Supply[d]		12,400	14,900	17,500	19,900	22,500
% Cutback from Normal Year[e]		--	--	--	--	--

[a] The City is planning to decrease groundwater use to 2,500 af/yr by the year 2015. However, studies described in this WSA have indicated that up to 9,000 af/yr of groundwater is available to the City to make up for shortfalls in the event of a severe drought or other water shortage.

[b] The water supply available from BBID (pre-1914) is up to 4,500 af/yr; however, this supply can only be used with the BBID Raw Water Service Area 2 that is also within the CVP Consolidated Place of Use. Quantity shown is amount needed to meet potable water demands within the Proposed Project area within the BBID Raw Water Service Area 2 and also with the CVP Consolidated Place of Use under all hydrologic conditions (2,430 af/yr).

[c] Assumed to be zero in normal years, as Semitropic and ASR are considered to be dry year supplies.

[d] Table 15, City of Tracy 2010 Urban Water Management Plan, prepared by Erler & Kalinowski, Inc., May 2011.

[e] Not applicable as Normal Year supplies are being shown.

- Pursuant to the Groundwater Management Policy, the City can extract up to 9,000 af/yr of local groundwater resources. However, as described above, the City may reduce its future groundwater use to 2,500 af/yr by 2015 (based on normal year supply conditions). In the event that groundwater is needed to supplement surface water supplies during a single-dry year, however, the City does intend to call on these supplies up to the maximum sustainable yield of 9,000 af/yr.
- Per recently executed agreements, up to 4,500 af/yr of pre-1914 appropriative water rights water is available from BBID. In single dry water years, it is assumed that up to 4,050 af/yr of BBID pre-1914 water right supplies, or 90 percent of the contractual allocation, will be available. However, this water supply can only be used within the BBID Water Service Area 2 that is also within the CVP CPOU, so only the quantity needed to meet the potable water demand within that area will be delivered to the City (approximately 2,430 af/yr at buildout)[32].
- In the future, up to 11,000 af/yr of Ag-reliability water from the BBID CVP contract is expected to be available to the City. In future single dry water years, it is assumed that 1,650 af/yr, or 15 percent of the contractual entitlement, of BBID water will be available.
- In the future, the City expects to receive 95 percent of a future SCWSP water supply allocation of 1,880 af/yr in single dry years, or 1,786 af/yr.
- By 2015, 1,000 af/yr of banked water is assumed to be available through the City's ASR program and approximately 2,033 af/yr of banked water is assumed to be available through the City's participation in the Semitropic Water Storage Bank. Per the City's Permanent Agreement with Semitropic, up to 3,500 af/yr is assumed to be available in future dry years. As described in Section 6.2.1, an additional 500 af/yr of Semitropic supplies will be required in the future (by about 2025) to supplement Ag-reliability CVP supplies being used for the Proposed Project[33].

The reliability of each of the City's existing and additional planned future water supplies and their projected availability during a single dry year is shown in Table 20. Figure 9 shows the City's projected future supply versus demand in single dry years.

[32] As described in Section 2.4, this BBID pre-1914 water supply may also be used on an interim basis to meet landscape irrigation demands in portions of the Proposed Project area eligible for use of this supply until recycled water becomes available.

[33] An additional 1,500 af of storage capacity in Semitropic would allow for an annual withdrawal of 500 af to supplement available dry-year supplies from the CVP, which would be adequate to supplement the reduced CVP deliveries to the Proposed Project.

Table 20. Projected Existing and Additional Planned Future Water Supplies Available in Single Dry Years

Supply	Anticipated Reliability (% of Entitlement)	Projected Future Available Supply, af/yr				
	Single Dry Years	2015	2020	2025	2030	2035
Existing Water Supplies						
USBR CVP Interim Renewal Contract	10,000 af/yr @ 65% (M&I) & 7,500 af/yr @ 15% (Ag)	7,625	7,625	7,625	7,625	7,625
USBR CVP (WSID Option)	2,500 af/yr @ 15%	375	375	375	375	375
Total CVP Supplies		8,000	8,000	8,000	8,000	8,000
South County Water Supply Project (pre-1914)	95%	10,564	10,564	10,564	10,564	10,564
Groundwater[a]	100%	9,000	9,000	9,000	9,000	9,000
BBID (pre-1914)[b]	90%	2,430	2,430	2,430	2,430	2,430
Semitropic Water Storage Bank	100%	2,033	3,500	3,500	3,500	3,500
Additional Planned Future Water Supplies						
USBR CVP (BBID contract)	15%	450	900	1,350	1,650	1,650
Additional SCWSP (pre-1914)	95%	1,786	1,786	1,786	1,786	1,786
Additional Semitropic Water Storage Bank	100%	0	0	500	500	500
Aquifer Storage and Recovery	100%	1,000	2,000	3,000	3,000	3,000
Recycled Water (non-potable)[c]	100%	12,400	14,900	17,500	19,900	22,500
Total Projected Potable Water Supply		35,263	38,180	40,130	40,430	40,430
% Cutback from Normal Year[d]		0%	0%	0%	0%	0%
Total Projected Recycled Water Supply[c]		12,400	14,900	17,500	19,900	22,500
% Cutback from Normal Year[d]		0%	0%	0%	0%	0%

[a] The City is planning to decrease groundwater use to 2,500 af/yr by the year 2015. However, studies described in this WSA have indicated that up to 9,000 af/yr of groundwater is available to the City to make up for shortfalls in the event of a severe drought or other water shortage.

[b] The water supply available from BBID (pre-1914) is up to 4,500 af/yr; however, this supply can only be used with the BBID Raw Water Service Area 2 that is also within the CVP Consolidated Place of Use. Quantity shown is amount needed to meet potable water demands within the Proposed Project area within the BBID Raw Water Service Area 2 and also with the CVP Consolidated Place of Use under all hydrologic conditions (2,430 af/yr).

[c] Table 15, City of Tracy 2010 Urban Water Management Plan, prepared by Erler & Kalinowski, Inc., May 2011.

[d] Percent cutback from normal year for potable water supplies is zero due to availability of Semitropic in single dry years. No cutback is anticipated for recycled water supplies.

6.6.3 Multiple Dry Years

If there are multiple dry years, the City's surface water allotments, especially from the CVP, may be significantly reduced. Thus, in the event of drought, the City will have to depend more heavily on conservation efforts, groundwater, SCWSP supplies and other drought contingency supplies (previously banked water). As an example, in 1991, due to prolonged drought, the USBR reduced the City's CVP surface water allotment by 50 percent, such that the City's 1991 allocation was reduced to 5,000 acre-feet. As a result, the City implemented a water conservation program consistent with its Water Shortage Contingency Plan and relied on its groundwater supply to satisfy a larger portion of the City's water demand. The City now has a broader portfolio of water supplies, so even with 0 percent deliveries from the City's USBR CVP agricultural supplies in 2014, the diversity of the City's water supply portfolio together with water conservation efforts by the City's customers has allowed for the City to meet all water demands. The following describes the availability and reliability of the City's existing and additional planned future water supplies under multiple dry year conditions:

- The City's Interim Renewal Contract includes both M&I reliability water (10,000 af/yr) and Ag reliability water (7,500 af/yr). Due to recent environmental concerns in the Delta and potential future impacts due to climate change, it has been assumed that the long-term M&I reliability of USBR's CVP supplies in multiple dry years will be 40 percent, such that the City's allocation in multiple dry years will be 4,500 af/yr. The long-term Ag reliability of USBR's CVP supplies in multiple dry years will be 10 percent, such that the City's allocation in multiple dry years will be 750 af/yr. The City's WSID Option for additional CVP water (exercised in December 2013) also has Ag reliability water (2,500 af/yr), with a multiple dry year reliability of 10 percent, resulting in an allocation of 250 af/yr in multiple dry years.
- During a multiple dry year period, the City expects to receive 95 percent of its SCWSP water supply allocation, or 10,564 af/yr.
- Pursuant to the Groundwater Management Policy, the City can extract up to 9,000 af/yr of local groundwater resources. However, as described above, the City may reduce its future groundwater use to 2,500 af/yr by 2015 (based on normal year supply conditions). In the event that groundwater is needed to supplement surface water supplies during a multiple dry year period, however, the City does intend to call on these supplies up to the maximum sustainable yield of 9,000 af/yr.

- Per recently executed agreements, up to 4,500 af/yr of pre-1914 appropriative water rights water is available from BBID. In multiple dry water years, it is assumed that 4,050 af/yr of BBID Pre-1914 water right supplies, or 90 percent of the contractual allocation, will be available. However, this water supply can only be used within the BBID Water Service Area 2 that is also within the CVP CPOU, so only the quantity needed to meet the potable water demand within that area will be delivered to the City (approximately 2,430 af/yr at buildout)[34].
- In the future, up to 11,000 af/yr of Ag-reliability water from BBID CVP contract is expected to be available to the City. In future multiple dry water years, it is assumed that 1,100 af/yr of BBID water, or 10 percent of the contractual entitlement, will be available.
- In the future, the City expects to receive 95 percent of a future SCWSP water supply allocation of 1,880 af/yr in multiple dry years, or 1,786 af/yr.
- By 2015, 1,000 af/yr of banked water is assumed to be available through the City's ASR program and approximately 2,033 af/yr of banked water is assumed to be available through the City's participation in the Semitropic Water Storage Bank. Per the City's Permanent Agreement with Semitropic, up to 3,500 af/yr is assumed to be available in future dry years. As described in Section 6.2.1, an additional 500 af/yr of Semitropic supplies will be required in the future (by about 2025) to supplement Ag-reliability CVP supplies being used for the Proposed Project[35].

The reliability of each of the City's existing and additional planned future water supplies and their projected availability during a multiple dry year period is shown in Table 21. Figure 10 shows the City's projected future supply versus demand in multiple dry years.

[34] As described in Section 2.4, this BBID pre-1914 water supply may also be used on an interim basis to meet landscape irrigation demands in portions of the Proposed Project area eligible for use of this supply until recycled water becomes available.

[35] An additional 1,500 af of storage capacity in Semitropic would allow for an annual withdrawal of 500 af to supplement available dry-year supplies from the CVP, which would be adequate to supplement the reduced CVP deliveries to the Proposed Project.

Table 21. Projected Existing and Additional Planned Future Water Supplies Available in Multiple Dry Years

Supply	Anticipated Reliability (% of Entitlement) Multiple Dry Years	Projected Future Available Supply, af/yr 2015	2020	2025	2030	2035
Existing Water Supplies						
USBR CVP Interim Renewal Contract	10,000 af/yr @ 40% (M&I) & 7,500 af/yr @ 10% (Ag)	4,750	4,750	4,750	4,750	4,750
USBR CVP (WSID Option)	2,500 af/yr @ 10%	250	250	250	250	250
Total CVP Supplies		5,000	5,000	5,000	5,000	5,000
South County Water Supply Project (pre-1914)	95%	10,564	10,564	10,564	10,564	10,564
Groundwater[a]	100%	9,000	9,000	9,000	9,000	9,000
BBID (pre-1914)[b]	90%	2,430	2,430	2,430	2,430	2,430
Semitropic Water Storage Bank	100%	2,033	3,500	3,500	3,500	3,500
Additional Planned Future Water Supplies						
USBR CVP (BBID contract)	10%	300	600	900	1,100	1,100
Additional SCWSP (pre-1914)	95%	1,786	1,786	1,786	1,786	1,786
Additional Semitropic Water Storage Bank	100%	0	0	500	500	500
Aquifer Storage and Recovery	100%	1,000	2,000	3,000	3,000	3,000
Recycled Water (non-potable)[c]	100%	12,400	14,900	17,500	19,900	22,500
Total Projected Potable Water Supply		32,113	34,880	36,680	36,880	36,880
% Cutback from Normal Year[d]		0.15%	0%	0%	0%	0%
Total Projected Recycled Water Supply[c]		12,400	14,900	17,500	19,900	22,500
% Cutback from Normal Year[d]		0%	0%	0%	0%	0%

[a] The City is planning to decrease groundwater use to 2,500 af/yr by the year 2015. However, studies described in this WSA have indicated that up to 9,000 af/yr of groundwater is available to the City to make up for shortfalls in the event of a severe drought or other water shortage.

[b] The water supply available from BBID (pre-1914) is up to 4,500 af/yr; however, this supply can only be used with the BBID Raw Water Service Area 2 that is also within the CVP Consolidated Place of Use. Quantity shown is amount needed to meet potable water demands within the Proposed Project area within the BBID Raw Water Service Area 2 and also with the CVP Consolidated Place of Use under all hydrologic conditions (2,430 af/yr).

[c] Table 15, City of Tracy 2010 Urban Water Management Plan, prepared by Erler & Kalinowski, Inc., May 2011.

[d] Percent cutback from normal year for potable water supplies is essentially zero due to availability of Semitropic in multiple dry years. No cutback is anticipated for recycled water supplies.

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

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

7.1 Findings

Pursuant to Water Code section 10910(c)(4), and based on the technical analyses described in this Water Supply Assessment, the City finds that the total projected water supplies determined to be available for the Proposed Project during Normal, Single Dry, and Multiple Dry water years during a 20-year projection will meet the projected water demand associated with the Proposed Project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

7.1.1 Existing Conditions with Development Projects with Approved Water Supply and the Proposed Project

Table 22 summarizes the projected availability of the City's existing water supplies, planned additional water supplies and the City's projected water demands in normal, single dry and multiple dry years based on existing demands plus the Proposed Project and Development Projects with Approved Water Supply described in Table 10 (see also Figure 11).

As shown, the following water supplies will be required to serve the water demands associated with buildout of the Proposed Project:

- BBID Pre-1914 Supplies: 2,430 af/yr
- BBID CVP Supplies: 630 af/yr (approximately 1,315 af/yr available in conjunction with annexation of 387 acres of agricultural land within the Proposed Project area)
- Additional Semitropic Water Storage District storage to offset reduced deliveries of BBID CVP supplies in dry years: 1,500 af of storage capacity to provide for 500 af/yr of dry year supplies
- Groundwater: 670 af/yr
- Recycled Water: 1,970 af/yr

Assuming these water supplies are available to the City, the following summarizes the supply availability in Normal, Single Dry and Multiple Dry Years:

- In Normal Years, the City's 28,550 af/yr of existing potable water supplies plus the planned future additional supply of 3,050 af/yr from the BBID CVP contract and 1,880 af/yr of additional supply from the SCWSP would leave a surplus of 4,010 af/yr after meeting the projected total potable demand of 29,470 af/yr.

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Table 22. Water Supply vs. Demand
(Under Existing Conditions + Proposed Project + Other Development Projects with Approved Water Supply)

Supply	Current Dry Year Water Supply Availability, af/yr		
	Normal Years	Single Dry Year	Multiple Dry Years
Potable Water Supplies			
Existing Water Supplies			
USBR CVP Interim Renewal Contract	11,250	7,625	4,750
USBR CVP (WSID Option)	1,250	375	250
Total CVP Supplies	*12,500*	*8,000*	*5,000*
South County Water Supply Project (pre-1914)	11,120	10,564	10,564
Groundwater[a]	2,500	9,000	9,000
BBID (pre-1914)[b]	2,430	2,430	2,430
Semitropic Water Storage Bank[c]	--	2,033	2,033
Subtotal Existing Potable Water Supplies	*28,550*	*32,027*	*29,027*
Additional Planned Future Water Supplies			
USBR CVP (BBID contract)[d]	3,050	915	610
Additional SCWSP (pre-1914)	1,880	1,786	1,786
Additional Semitropic Water Storage Bank[c]	--	500	500
Aquifer Storage and Recovery[c]	--	0	0
Subtotal Additional Planned Future Potable Water Supplies	*4,930*	*3,201*	*2,896*
Total Potable Water Supply	33,480	35,228	31,923
Existing Potable Water Demand (2007)	19,176	19,176	19,176
Additional Potable Water Demand for Development Projects with Approved Water Supply including the Proposed Project (see Table 10)	10,294	10,294	10,294
Total Potable Water Demand	29,470	29,470	29,470
Potable Water Supply Shortfall	0	0	0
Non-Potable Water Supplies			
Additional Planned Future Water Supplies			
Recycled Water[e]	9,900	9,900	9,900
Subtotal Additional Planned Future Non-Potable Water Supplies	9,900	9,900	9,900
Total Recycled Water Supply[e]	9,900	9,900	9,900
Total Recycled Water Demand[e]	3,926	3,926	3,926
Recycled Water Supply Shortfall	0	0	0

[a] The City is planning to decrease groundwater use to 2,500 af/yr by the year 2015. However, studies described in this WSA have indicated that up to 9,000 af/yr of groundwater is available to the City to make up for shortfalls in the event of a severe drought or other water shortage. Therefore, groundwater pumpage during a dry year conditions assumed to be up to 9,000 af/yr per average annual operational yield of 9,000 af/yr.

[b] The water supply available from BBID (pre-1914) is up to 4,500 af/yr; however, this supply can only be used with the BBID Raw Water Service Area 2 that is also within the CVP Consolidated Place of Use. Quantity shown is amount needed to meet potable water demands within the Proposed Project area within the BBID Raw Water Service Area 2 and also with the CVP Consolidated Place of Use under all hydrologic conditions (2,430 af/yr).

[c] The Semitropic Water Storage Bank and Aquifer Storage and Recovery are considered to be dry year supplies and are therefore considered to be zero in normal years. Current available dry year supply of 2,033 af is based on the City's current available storage (6,100 af) as of January 2013. An additional 500 af/yr of Semitropic supplies will be needed in the future to supplement water supplies for the Proposed Project.

[d] Additional CVP Surface Water (BBID USBR assignment) assumes annexation of 1,740 acres in conjunction with Ellis Specific Plan (321 acres), Cordes Ranch Specific Plan (1,080 acres), and Tracy Hills Specific Plan (387 acres) ; 1,788 acres x 3.4 af/ac/yr = 6,100 af/yr.

[e] Recycled water supply based on 2010 wastewater flows. Recycled water demand for approved projects plus Proposed Project = Gateway Phase 1 (84 af/yr) + Holly Sugar Sports Park (485 af/yr) + Ellis Specific Plan (116 af/yr) + Cordes Ranch Specific Plan (1,127 af/yr) + Tracy Hills Specific Plan (1,820 af/yr) = 3,632 af/yr + 7.5% UAFW = 3,926 af/yr.

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- In Single Dry Years, the City's 32,027 af/yr of existing potable water supplies plus the planned future additional supply of 915 af/yr from the BBID CVP contract, 1,786 af/yr of additional supply from the SCWSP, and 500 af/yr of additional Semitropic supply to supplement supplies for the Proposed Project would leave a surplus of 5,758 af/yr after meeting the projected total demand of 29,470 af/yr.
- In Multiple Dry Years, the City's 29,027 af/yr of existing potable water supplies plus the planned future additional supply of 610 af/yr from the BBID CVP contract, 1,786 af/yr of additional supply from the SCWSP, and 500 af/yr of additional Semitropic supply to supplement supplies for the Proposed Project would leave a surplus of 2,453 af/yr after meeting the projected total demand of 29,470 af/yr.

As described in this WSA, about 1,970 af/yr of recycled water supplies will be used to meet the landscape irrigation demands at buildout of the Proposed Project. Because recycled water supplies may not be initially available to meet the landscape irrigation demands associated with the initial phases of the Proposed Project, potable water supplies, if available, may be used in the interim period before recycled water becomes available (see Section 2.4 for further discussion).

7.1.2 2035 Conditions

Table 23 summarizes the projected availability of the City's existing and planned future additional water supplies and the City's projected water demands in normal, single dry and multiple dry years based on existing demands plus the Proposed Project, Development Projects with Approved Water Supply and Other Future Service Areas as described in Table 10 (see also Figure 12).

As shown, the City's existing and planned future additional sources of water supply are sufficient to meet existing demand plus the projected year 2035 demand from build-out of the Proposed Project, Other Development Projects with Approved Water Supply and additional potential future development (identified by Table 10 as "Other Future Service Areas").

The following summarizes the supply availability in Normal, Single Dry and Multiple Dry Years:

- In Normal Years, the City's 35,930 af/yr of existing potable water supplies and planned future additional supplies would leave a surplus of 2,330 af/yr after meeting the projected total potable demand of 33,600 af/yr.
- In Single Dry Years, the City's 40,430 af/yr of existing potable water supplies and planned future additional supplies would leave a surplus of 6,830 af/yr after meeting the projected total potable demand of 33,600 af/yr.
- In Multiple Dry Years, the City's 36,880 af/yr of existing potable water supplies would leave a surplus of 3,280 af/yr after meeting the projected total potable demand of 33,600 af/yr.

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Table 23. Water Supply vs. Demand (2035 Conditions)

Supply	Year 2035 Dry Year Water Supply Availability, af/yr		
	Normal Years	Single Dry Years	Multiple Dry Years
Potable Water Supplies			
Existing Water Supplies			
USBR CVP Interim Renewal Contract	11,250	7,625	4,750
USBR CVP (WSID Option)	1,250	375	250
Total CVP Supplies	*12,500*	*8,000*	*5,000*
South County Water Supply Project (pre-1914)	11,120	10,564	10,564
Groundwater[a]	2,500	9,000	9,000
BBID (pre-1914)[b]	2,430	2,430	2,430
Semitropic Water Storage Bank[c]	--	3,500	3,500
Subtotal Existing Potable Water Supplies	*28,550*	*33,494*	*30,494*
Additional Planned Future Water Supplies			
USBR CVP (BBID contract)	5,500	1,650	1,100
Additional SCWSP (pre-1914)	1,880	1,786	1,786
Additional Semitropic Water Storage Bank[c]	--	500	500
Aquifer Storage and Recovery[c]	--	3,000	3,000
Subtotal Additional Planned Future Potable Water Supplies	*7,380*	*6,936*	*6,386*
Total Potable Water Supply	35,930	40,430	36,880
Projected 2035 Potable Water Demand[d]	33,600	33,600	33,600
Potable Water Supply Shortfall	0	0	0
Non-Potable Water Supplies			
Additional Planned Future Water Supplies			
Recycled Water[e]	22,500	22,500	22,500
Subtotal Additional Planned Future Non-Potable Water Supplies	*22,500*	*22,500*	*22,500*
Total Recycled Water Supply[e]	22,500	22,500	22,500
Projected 2035 Recycled Water Demand[e]	6,234	6,234	6,234
Recycled Water Supply Shortfall	0	0	0

[a] The City is planning to decrease groundwater use to 2,500 af/yr by the year 2015 (based on normal year supply conditions). However, studies described in this WSA have indicated that up to 9,000 af/yr of groundwater is available to the City to make up for shortfalls in the event of a severe drought or other water shortage.

[b] The water supply available from BBID (pre-1914) is up to 4,500 af/yr; however, this supply can only be used with the BBID Raw Water Service Area 2 that is also within the CVP Consolidated Place of Use. Quantity shown is amount needed to meet potable water demands within the Proposed Project area within the BBID Raw Water Service Area 2 and also with the CVP Consolidated Place of Use under all hydrologic conditions (2,430 af/yr).

[c] Supply from Semitropic Water Storage Bank and Aquifer Storage and Recovery (ASR) assumed to be zero during normal years. An additional 500 af/yr of Semitropic supplies will be needed in the future to supplement water supplies for the Proposed Project.

[d] Projected 2035 water demand includes projected water demand for the Proposed Project.

[e] Tables 15 and 17, City of Tracy 2010 Urban Water Management Plan, May 2011. Actual recycled water demands may be higher based on actual recycled water use within future projects. Recycled water demand shown is 6,040 af/yr (per Table 17 of 2010 UWMP) + additional demand for Ellis (125 af/yr with UAFW) + additional demand for Tracy Hills (69 af/yr with UAFW) (see Table 5) = 6,234 af/yr.

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As described in this WSA, about 1,970 af/yr of recycled water supplies will be used to meet the landscape irrigation demands at buildout of the Proposed Project. Because recycled water supplies may not be initially available to meet the landscape irrigation demands associated with initial phases of the Proposed Project, potable water supplies, if available, may be used in the interim period before recycled water becomes available (see Section 2.4 for further discussion).

Table 23 indicates that the City's future recycled water supply is sufficient to meet the projected 2035 recycled water demand.

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8.0 VERIFICATION OF SUFFICIENT WATER SUPPLY BASED ON THE REQUIREMENTS OF SB 221

The Proposed Project, with up to 5,499 residential dwelling units, is also subject to the requirements of SB 221 (Government Code section 66473.7). SB 221 applies to residential development projects of more than 500 dwelling units (such as the Proposed Project) and requires that the water supplier (City of Tracy) provide a written verification that the water supply for the Proposed Project is sufficient.

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

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

The City's 2010 UWMP and this WSA for the Proposed Project provide the documentation required to comply with SB 221 and demonstrate that the City's supplies are sufficient to meet the projected demand associated with the Proposed Project, in addition to existing and planned future uses, including, but not limited to, agriculture and industrial uses. The specific considerations to be evaluated for the SB 221 verification are described below and reference applicable sections of the City's 2010 UWMP and this WSA.

8.1 Historical Water Deliveries

The City's water supplies are described in Section 6.0 of this WSA and Section 4 of the City's 2010 UWMP. Table 17 of this WSA presented the City's historical use of these supplies over the past 20 years. The use of these supplies will continue into the future as described in Section 6.0 of this WSA and as shown in Table 17 of this WSA.

The availability and historical and projected use of groundwater supplies is described in Section 6.1.3 of this WSA. At buildout of the General Plan, groundwater production in normal years is anticipated to be approximately 2,500 af/yr. However, the City will continue to rely on groundwater for peaking, drought, and emergency supplies, and may pump up to 9,000 af/yr or more during single dry or multiple dry years, as needed, to meet demands when surface water supplies may be limited.

Water supply availability and reliability during Normal, Single Dry and Multiple Dry years is described in Section 6.0 of this WSA.

8.2 Projected Water Demand by Customer Sector

Projected potable and recycled water demands in the City's water service area are described in Section 5.0 of this WSA based on information provided in Section 3 of the City's 2010 UWMP. Projected water demand by customer sector within the City's water service area is documented in the City's 2010 UWMP (Table 8) and is summarized in Table 24.

Table 24. Actual and Projected Water Demands by Customer Sector[(a)]

Water Source	2010 (actual)	2015	2020	2025	2030	2035
Potable Water, af/yr						
Single Family	9,468	13,600	13,500	14,800	15,400	16,000
Single Family (Low Income)	936	347	693	1,040	1,390	1,730
Multi-Family	--	1,450	1,580	1,710	1,840	1,970
Multi-Family (Low Income)	--	34	69	103	137	170
Commercial	1,346	1,790	2,220	2,650	3,070	3,500
Industrial	625	2,120	2,960	3,800	4,640	5,470
Institutional	1,143	696	756	816	876	936
Irrigation	1,258	1,320	1,320	1,320	1,320	1,320
Potable Water Subtotal, af/yr[(a)]	17,900	23,000	25,000	28,300	31,000	33,600
Recycled Water, af/yr[(b)]	--	1,200	2,410	3,620	4,830	6,040

[(a)] From Table 8, City of Tracy 2010 UWMP. Total includes estimated unaccounted for water.
[(b)] From Table 17, City of Tracy 2010 UWMP.

As described above in Section 3.4 of this WSA, the water demands currently calculated for the Proposed Project are different than those included in the City's 2010 UWMP. Table 5 of this WSA presented a comparison of the projected water demands for the Proposed Project with those included in the City's 2010 UWMP. As shown, the potable water demand for the Proposed Project is 503 af/yr higher than what was included in the City's 2010 UWMP, and the recycled water demand for the Proposed Project is 69 af/yr higher than what was included in the City's 2010 UWMP.

8.3 Water Shortage Contingency Analysis

The City's 2010 UWMP includes a Water Shortage Contingency Plan (WSCP) to address situations when catastrophic water supply interruptions occur due to regional power outage, earthquake, or other disasters; and when drought occurs.

The City established its WSCP in 1992, following a period of severe drought, to provide City staff and City water customers with guidelines for reducing water consumption in the event of another drought. The City's WSCP includes an analysis of existing and projected water demands and supplies, a water conservation and rationing plan with mandatory prohibitions and penalties, and an analysis of projected revenues and expenditures.

The WSCP was incorporated into the Water Management Chapter of the Tracy Municipal Code as codified in Chapter 11.28, Article 5 – Drought and Other Water Emergency, and Article 6 – Water Conservation and Rationing Plan, Water Emergency Plan, Variances and Appeals (WCRP). The WCRP sections of the Tracy Municipal Code have since been amended to incorporate changes in rate schedules, penalties, among others. Because the WCRP sections of the Tracy Municipal Code incorporate the amendments to the WSCP, for the purposes of this WSA, all water conservation and water emergency/drought mandates reference the WCRP sections of the Tracy Municipal Code rather than the WSCP.

Implementation of the WCRP can be triggered by four different scenarios:

1. Decline of groundwater basin level to 30 feet below sea level;
2. Cutback of CVP water supplies;
3. Drought declaration by the Governor of California; and
4. Any unusual situation that affects the quantity or quality of the City's water supply.

In the event that any of the aforementioned triggers occur, the City Council is granted the authority to declare a drought and direct the City Manager to implement the WCRP. Transitions between the conservation phases outlined in the WCRP are implemented by resolution of the City Council.

The five Stages of Action outlined in the City's WCRP (Tracy Municipal Code Chapter 11.28. Article 6) are intended to promote the proper management and distribution of water supplies during a drought or emergency situation. Each of the five stages describes specific actions to be taken by individual water customer sectors to achieve the water conservation requirement of that particular stage. All of the stages allow for adequate water to protect public health and safety and satisfy the fire protection needs of the City. Each of the five stages corresponds to a specific City-wide potable water demand reduction goal. These potable water demand reduction goals are based on the City's potential supply cutbacks during times of drought, with up to a 50 percent supply reduction as mandated by the UWMP Act.

If an emergency were to occur, or if drought conditions occurred, requiring the City to implement its WSCP/WCRP, all of the City's customers, including those within the Proposed Project, would be subject to the same water conservation measures and water use restrictions as included in City's WSCP/WCRP.

8.4 Future Water Supplies to Serve Water Demands Associated with Buildout of the Proposed Project

As described in this WSA, the following water supplies will be required to serve the water demands associated with buildout of the Proposed Project:

- BBID Pre-1914 Supplies: 2,430 af/yr
- BBID CVP Supplies: 630 af/yr (approximately 1,315 af/yr available in conjunction with annexation of 387 acres of agricultural land within the Proposed Project area)

- Additional Semitropic Water Storage District storage to offset reduced deliveries of USBR CVP supplies in dry years: 1,500 af of storage capacity to provide for 500 af/yr of dry year supplies
- Groundwater: 670 af/yr
- Recycled Water: 1,970 af/yr

The availability and reliability of these supplies and the City's other existing and future supplies are described in Section 6.0 of this WSA.

8.5 Verification of Sufficient Water Supply

As described in Section 7.0 of this WSA, the City's existing and projected potable water supplies and recycled water supply are sufficient to meet the projected demands associated with the Proposed Project, in addition to the City's existing and planned future uses, including, but not limited to, agricultural and industrial uses.

As described in this WSA, an agreement between the City and BBID for use of BBID pre-1914 water supplies to meet the projected demands associated with the Proposed Project was approved in August 2013. Two additional water supply agreements will be required to secure the needed water supplies to meet the projected demands of the Proposed Project: (1) an agreement between the City and BBID for use of BBID's CVP supplies; and (2) an agreement between the City and Semitropic for additional dry-year storage.

Recycled water infrastructure will also need to be constructed to deliver recycled water supplies to the Proposed Project. Until such recycled water infrastructure is constructed, potable water supplies, if available, may be used in the interim to meet landscape irrigation demands within the Proposed Project consistent with the City's recycled water ordinance.

9.0 WATER SUPPLY ASSESSMENT APPROVAL PROCESS

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

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.

The Tracy City Council must approve this WSA at a regular or special meeting. Furthermore, the City must include this WSA in the Draft Environmental Impact Report (EIR) being prepared for the Proposed Project.

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10.0 REFERENCES

AECOM, *Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area*, prepared for the San Luis & Delta-Mendota Water Authority, July 2011, revised November 2011.

CH2MHill, *Initial Study/Environmental Assessment for the Banta-Carbona Irrigation District/City of Tracy Water Assignment Project*, SCH No. 2002072106, Draft Report dated July 2002, Final Report dated September 2002, Final Environmental Assessment dated August 2003.

CH2MHill, Biological Assess*ment for the Banta-Carbona Irrigation District/City of Tracy Water Assignment Project and the West Side Irrigation District/City of Tracy Water Assignment Project*, July 2002, Updated November 2002.

CH2MHill, *Initial Study/Environmental Assessment for the West Side Irrigation District/City of Tracy Water Assignment Project*, SCH No. 2002072107, Draft Report dated July 2002, Final Report dated September 2002, Final Environmental Assessment dated July 2003.

CH2MHill, *Tracy Wastewater Master Plan*, prepared for the City of Tracy, December 2012.

City of Tracy, *Initial Study and Negative Declaration for the City of Tracy/Semitropic Water Storage District Pilot Water Banking Project*, SCH No. 2006052049, May 2006.

City of Tracy, *Negative Declaration, Aquifer Storage and Recovery (ASR) Demonstration Project*, SCH No. 2010112049, November 2010.

City of Tracy, *General Plan Amendment*, adopted by City Council on February 1, 2011.

City of Tracy, *Participation in the Semitropic Water Storage District Banking Program, Initial Study, Environmental Checklist & Proposed Negative Declaration, prepared by City of Tracy and Provost & Pritchard Consulting Group*, SCH No. 2010092012, September 2010.

City of Tracy, *Program Budget for Fiscal Year 2014-2015*, prepared by Administrative Services Department, May 2014.

City of Tracy, *Water Inventory Report*, August 1, 2006.

City of Tracy, *Water Inventory Report*, February 6, 2007.

City of Tracy, *Water Inventory Report*, February 5, 2008.

City of Tracy, *Water Inventory Report*, February 17, 2009.

City of Tracy, *Water Inventory Report*, February 16, 2010.

De Novo Planning Group, *Initial Study and Negative Declaration for the Tracy Aquifer Storage and Recovery Project*, SCH No. 2012102013, October 2012, approved by Tracy City Council December 4, 2012.

Design, Community & Environment, *City of Tracy General Plan*, prepared for the City of Tracy, February 1, 2011.

Environmental Science Associates, *Draft Environmental Impact Report for the South County Surface Water Supply Project*, SCH No. 98022018, July 1999.

Environmental Science Associates, *Final Environmental Impact Report for the South County Surface Water Supply Project*, SCH No. 98022018, May 2000.

Erler & Kalinowski, Inc., *City of Tracy 2005 Urban Water Management Plan*, prepared for the City of Tracy, December 2005.

Erler & Kalinowski, Inc., *City of Tracy 2010 Urban Water Management Plan*, prepared for the City of Tracy, May 2011.

GEI Consultants, *Summary of Groundwater Conditions November 2007 through November 2008*, prepared for City of Tracy, January 23, 2009.

GEI Consultants, *Tracy Regional Groundwater Management Plan*, prepared for the City of Tracy, March 2007.

Hotchkiss, W.R. and Balding, G.O., *Geology, Hydrology and Water Quality of the Tracy-Dos Palos Area, San Joaquin Valley, California*, USGS Open-File Report, 1971.

INTEGRAL Communities, *Tracy Hills Specific Plan: Specific Plan Amendment 2014*, March 2014.

Kennedy/Jenks/Chilton, *Tracy Area Groundwater Yield Evaluation*, Appendix B, Table B-2, 1990.

Kennedy/Jenks Consultants, *City of Tracy Water Master Plan*, 1994.

Pacific Municipal Consultants, *Groundwater Management Policy Mitigated Negative Declaration*, prepared for the City of Tracy, April 2001.

Pueblo Water Resources, *Interim (Final) Status Report for Well 8 ASR Demonstration Program*, Memorandum prepared for City of Tracy, dated December 7, 2011.

Provost & Pritchard Consulting Group, *South San Joaquin Irrigation District 2010 Urban Water Management Plan*, August 2011.

Ruggeri-Jensen-Azar, *Tracy Hills Phase 1A Water Study Technical Memorandum*, prepared for City of Tracy, December 2013.

Semitropic Water Storage District website: www.semitropic.com

Sorenson, S.K., *Chemical Quality of Groundwater in San Joaquin and Part of Contra Costa Counties, California*, Water Resources Investigation 81-26, USGS, 1981.

State of California, Department of Finance, *E-1 Population Estimates for Cities, Counties, and the State with Annual Percent Change—January 1, 2013 and 2014*, Sacramento, California, May 2014.

State of California, Department of Water Resources, *California's Groundwater Water, Bulletin 118*, San Joaquin Valley Groundwater Basin-Tracy Sub-basin Description, January 20, 2006.

State of California, Department of Water Resources, *California's Groundwater Water, Bulletin 118-03*, February 2003.

State of California, Department of Water Resources, *Ground Water Basins in California, Bulletin 118-80*, January 1980.

State of California, Department of Water Resources, *Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001*, October 8, 2003.

Stoddard & Associates, *Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area and a Portion of San Joaquin County*, revised April 1996.

United States Department of the Interior, Bureau of Reclamation, *Finding of No Significant Impact, Banta Carbona Irrigation District Partial Contract Assignment to the City of Tracy*, FONSI—01-63, October 2003.

United States Department of the Interior, Bureau of Reclamation, *Finding of No Significant Impact, City of Tracy Long-term Central Valley Project Water Groundwater Banking with Semitropic Water Storage District*, FONSI-09-164, May 2011.

United States Department of the Interior, Bureau of Reclamation, *Finding of No Significant Impact, Groundwater Banking Pilot Project of Central Valley Project Water from City of Tracy to Semitropic Water Storage District*, FONSI-05-111, February 2007.

United States Department of the Interior, Bureau of Reclamation, *Finding of No Significant Impact, Long-term Contract for the Exchange of Water between the Bureau of Reclamation and Byron-Bethany Irrigation District – Delta Division and San Luis Unit*, FONSI-09-149, December 2013.

West Yost Associates, *Citywide Water System Master Plan*, Final Report, prepared for City of Tracy, December 2012.

West Yost Associates, *Water Supply Assessment for the Downtown Specific Plan*, prepared for City of Tracy, April 2009.

West Yost Associates, *Water Supply Assessment for the Holly Sugar Sports Park*, prepared for City of Tracy, June 2009.

West Yost Associates, *Water Supply Assessment for the Surland Development Agreement and Ellis Specific Plan*, prepared for City of Tracy, March 2008.

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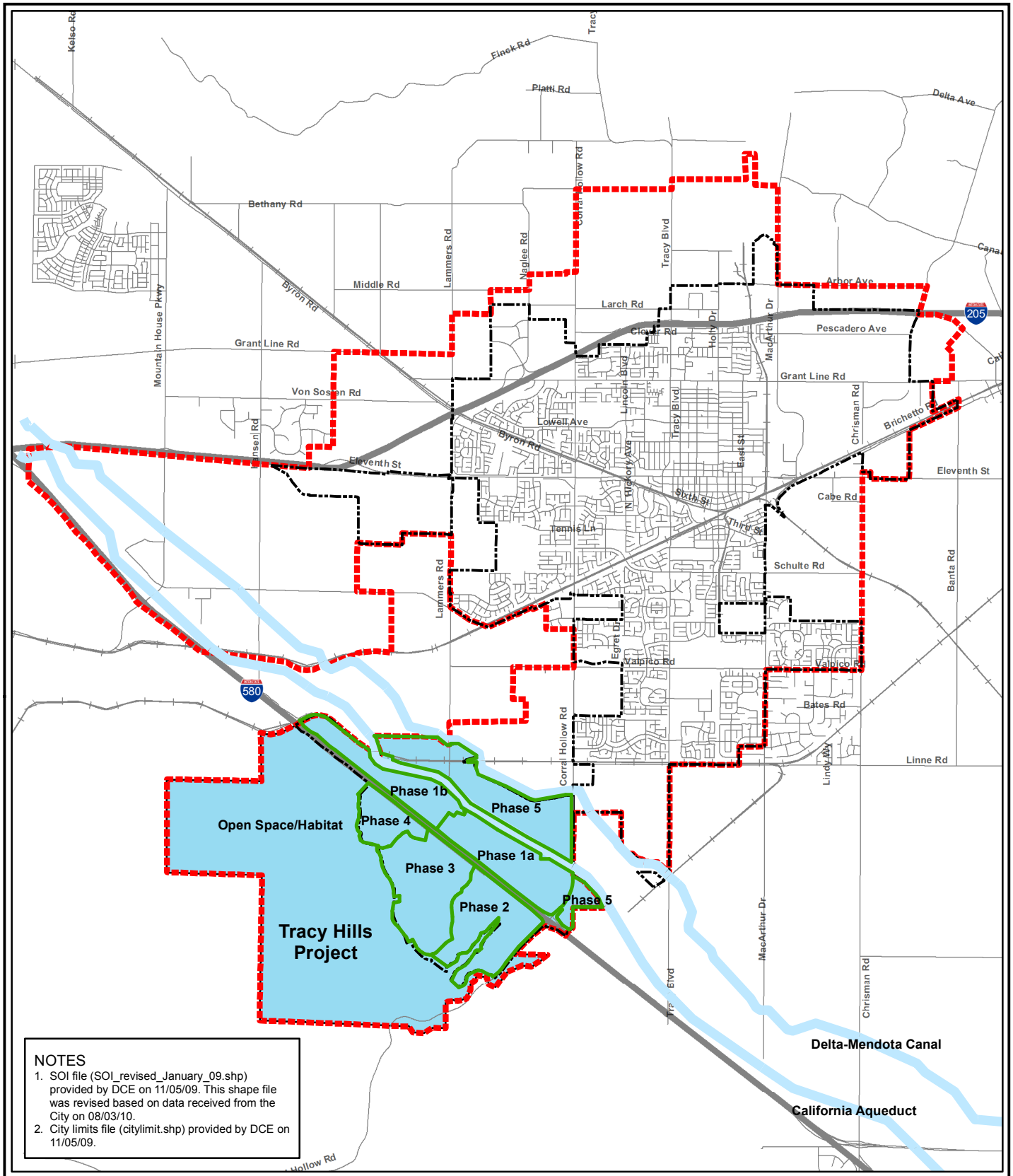

NOTES
1. SOI file (SOI_revised_January_09.shp) provided by DCE on 11/05/09. This shape file was revised based on data received from the City on 08/03/10.
2. City limits file (citylimit.shp) provided by DCE on 11/05/09.

LEGEND:
- Tracy Hills
- City Limits
- SOI
- Railroad
- Highway
- Existing Street

N

0 3,750 7,500
Scale in Feet

FIGURE 1

DRAFT

City of Tracy
Water Supply Assessment
for the Tracy Hills Specific Plan

PROPOSED PROJECT LOCATION

WEST YOST ASSOCIATES
Consulting Engineers

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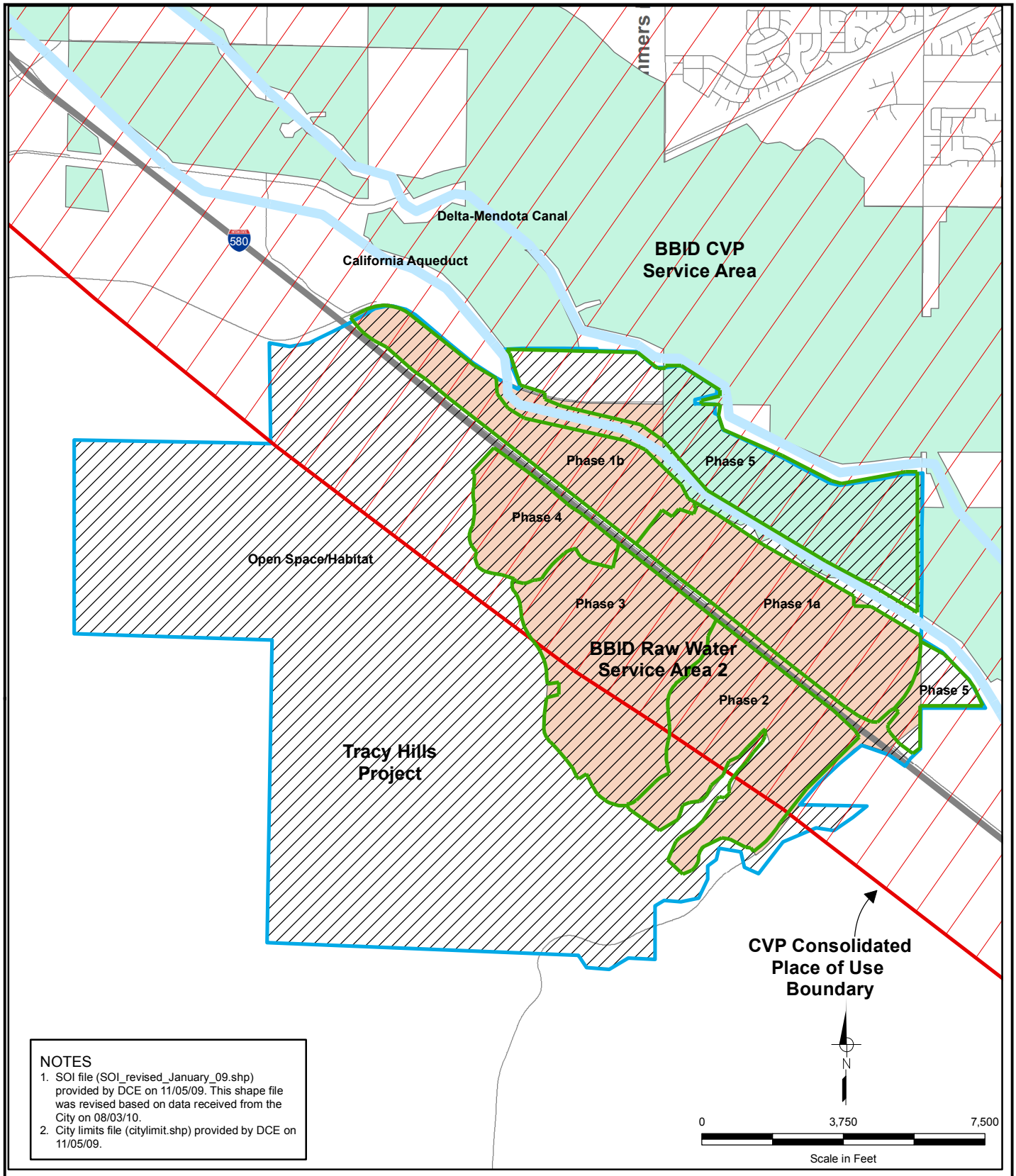

NOTES
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LEGEND:

- Tracy Hills
- Highway
- Existing Street
- BBID CVP Service Area
- BBID Raw Water Service Area 2
- CVP Consolidated Place of Use

FIGURE 2

DRAFT

City of Tracy
Water Supply Assessment
for the Tracy Hills Specific Plan

IRRIGATION DISTRICT BOUNDARIES

WEST YOST ASSOCIATES
Consulting Engineers

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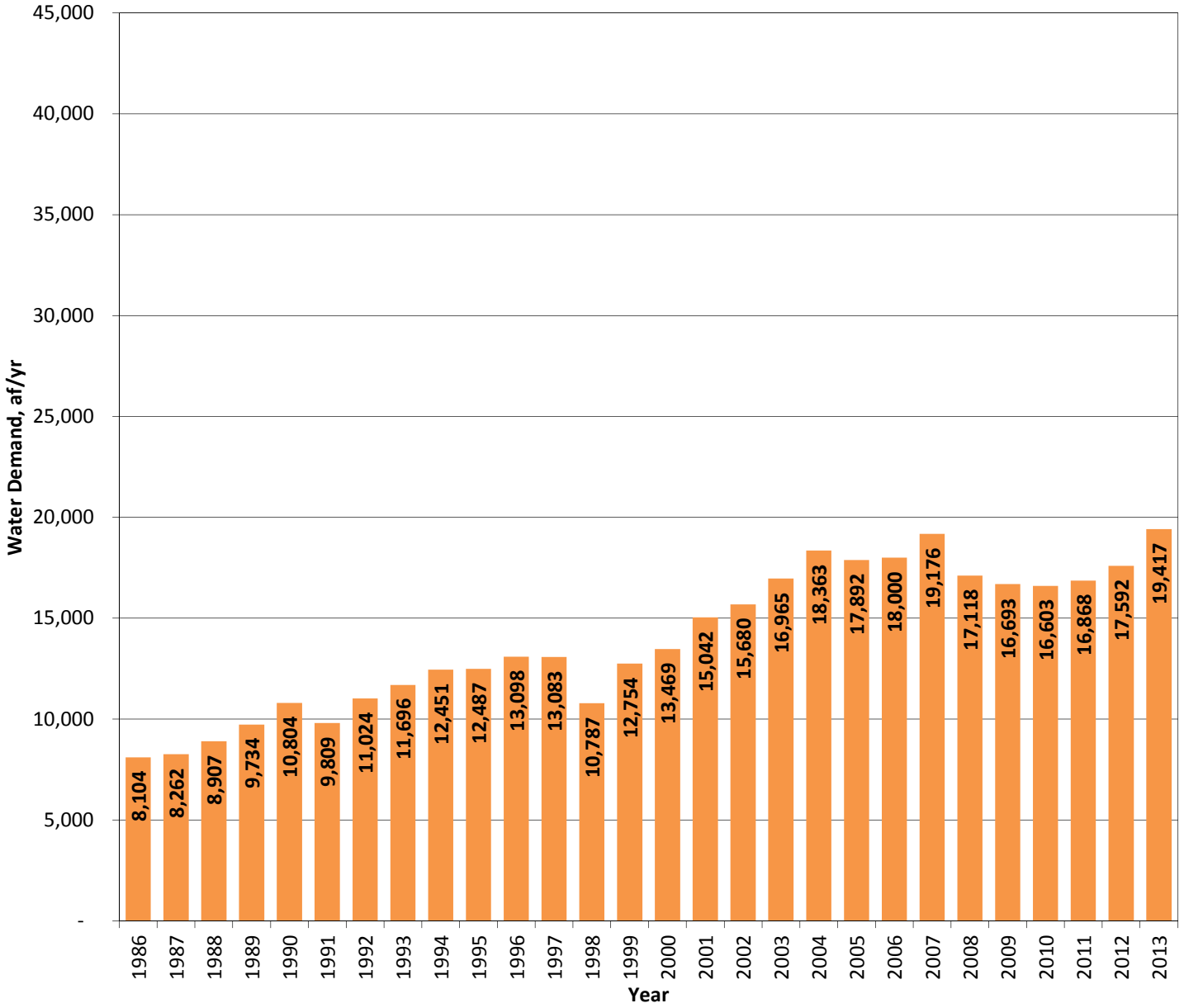
Figure 3. City of Tracy Historical Potable Water Demand



Legend:

Historical Potable Water Demand

Notes:

(1) Source: City of Tracy Water Inventory Reports, Annual Production Reports, and Table 6 Current and Historical Potable Water Demand by Water Demand Sector of the City of Tracy 2010 UWMP, May 2011.

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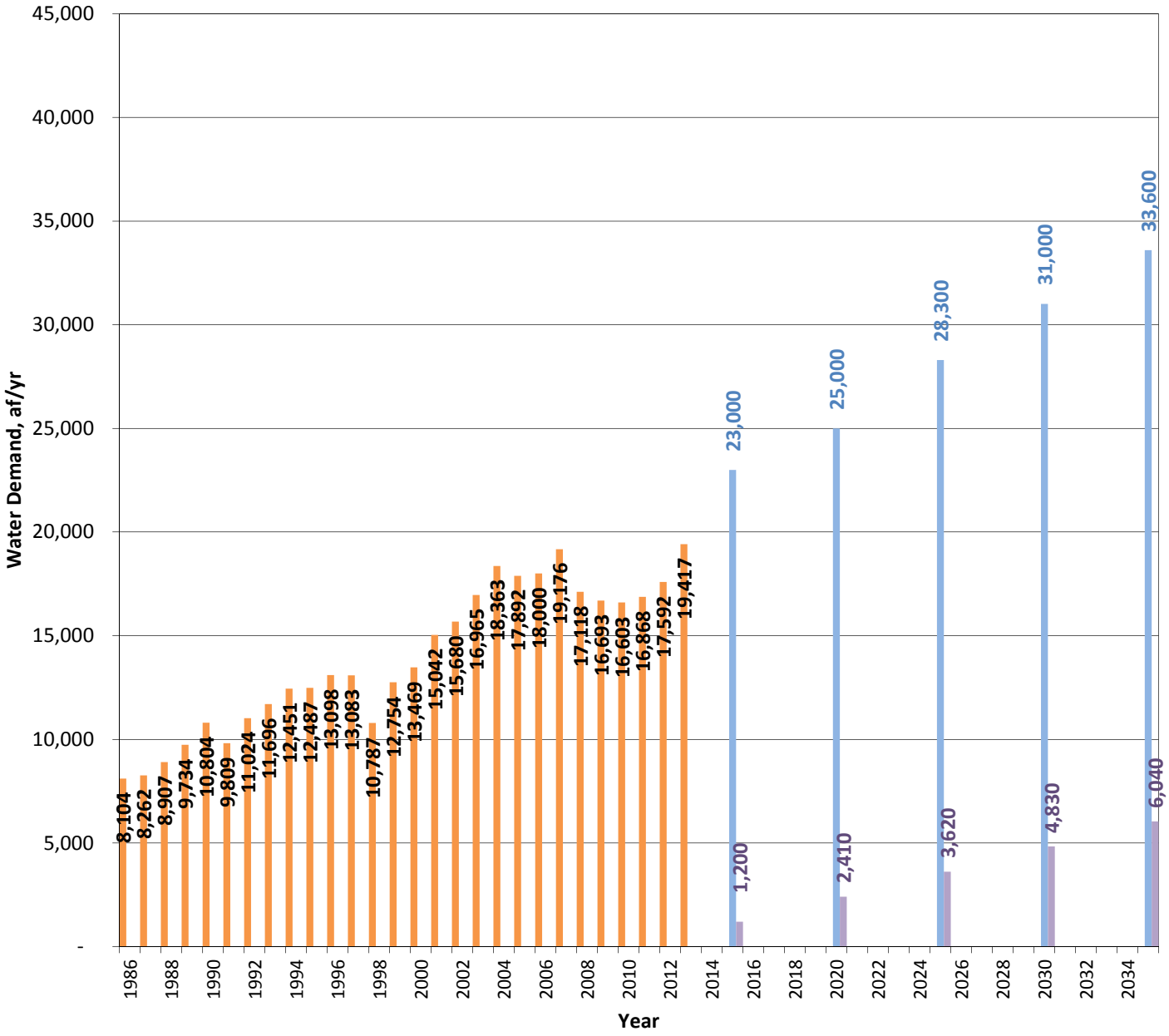
Figure 4. City of Tracy Historical and Projected Future Water Demand



Legend:

- Historical Potable Water Demand
- Projected Future Potable Water Demand (per 2010 UWMP)
- Projected Future Recycled Water Demand (per 2010 UWMP)

Notes:

(1) Historical water demand . Source: City of Tracy Water Inventory Reports, August 1, 2006 and February 6, 2007, annual production reports, and Table 6 of the City of Tracy 2010 UWMP, May 2011.

(2) Projected future demands include projected water demands for existing users, development projects with approved water supply and future service areas. Source: Table 8 of the City of Tracy 2010 UWMP, May 2011. Recycled water demands from Table 17 of the City of Tracy 2010 UWMP. See Table 7 of this WSA for additional information.

(3) Projected future water demands include unaccounted for water.

(4) For the purposes of the City's 2010 UWMP and this WSA, buildout of the City's General Plan has been assumed to occur in the year 2040. Due to the on-going economic conditions in the State and in the Tracy area, it is currently unclear if actual development will occur within this assumed time frame and if demands will increase as shown. However, it is likely that development within the General Plan SOI will occur over a longer period of time with buildout occurring sometime after the year 2040.

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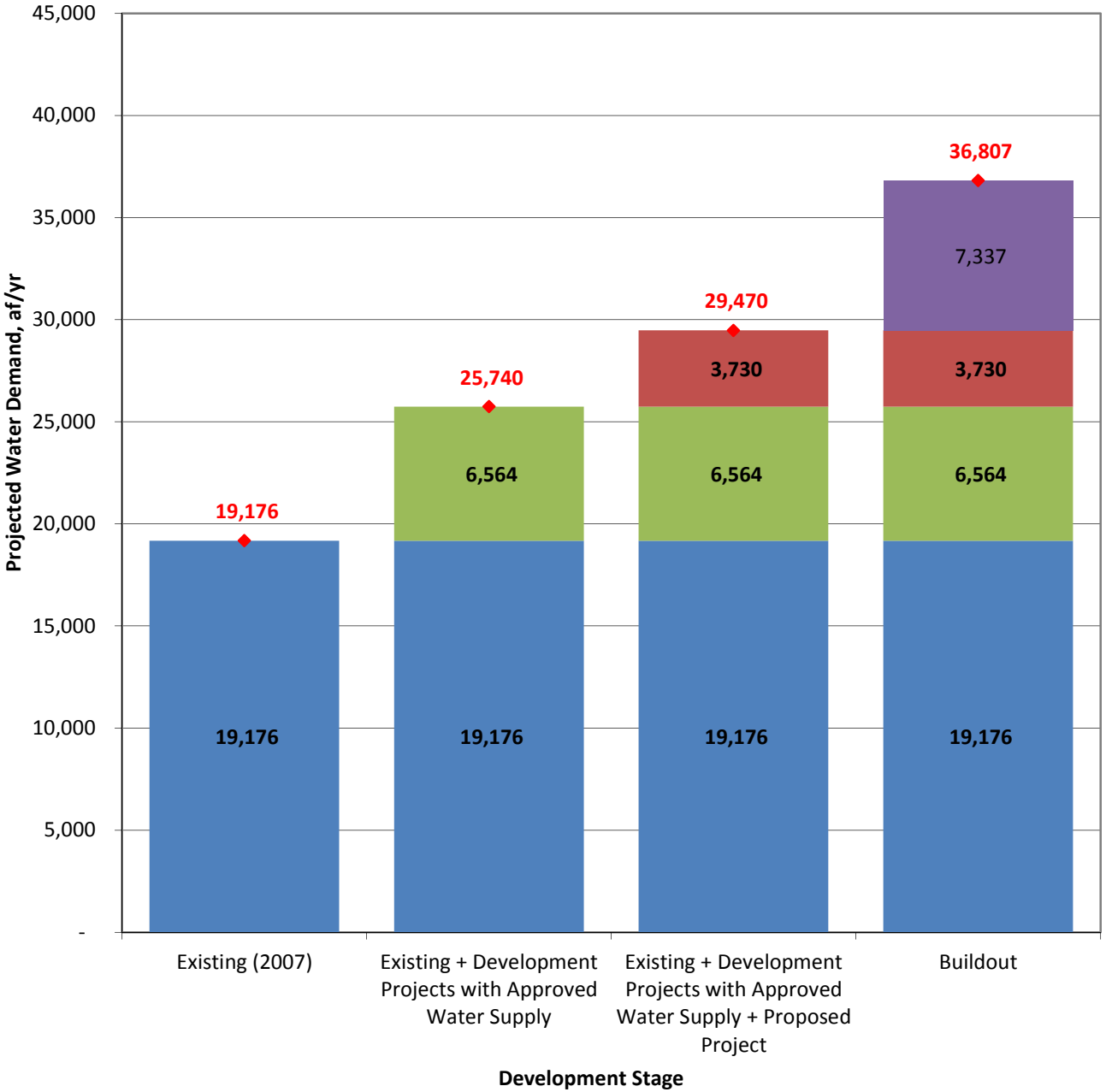
Figure 5. City of Tracy Projected Future Potable Water Demand at Buildout by Development Stage



Legend:

- Other Future Service Areas
- Tracy Hills Specific Plan (Proposed Project)
- Development Projects with Approved Water Supply
- Existing Users (2007)
- ◆ **Total Potable Water Demand**

Notes:

(1) See Table 3 for Tracy Hills demands.

(2) See Table 10 for itemized demands by project for Development Projects with Approved Water Supply and Other Future Service Areas.

(3) Projected water demands include unaccounted for water.

(4) For the purposes of the City's 2010 UWMP and this WSA, buildout of the City's General Plan has been assumed to occur in the year 2040. Due to the on-going economic conditions in the State and in the Tracy area, it is currently unclear if actual development will occur within this assumed time frame and if demands will increase as shown. However, it is likely that development within the General Plan SOI will occur over a longer period of time with buildout occurring sometime after the year 2040.

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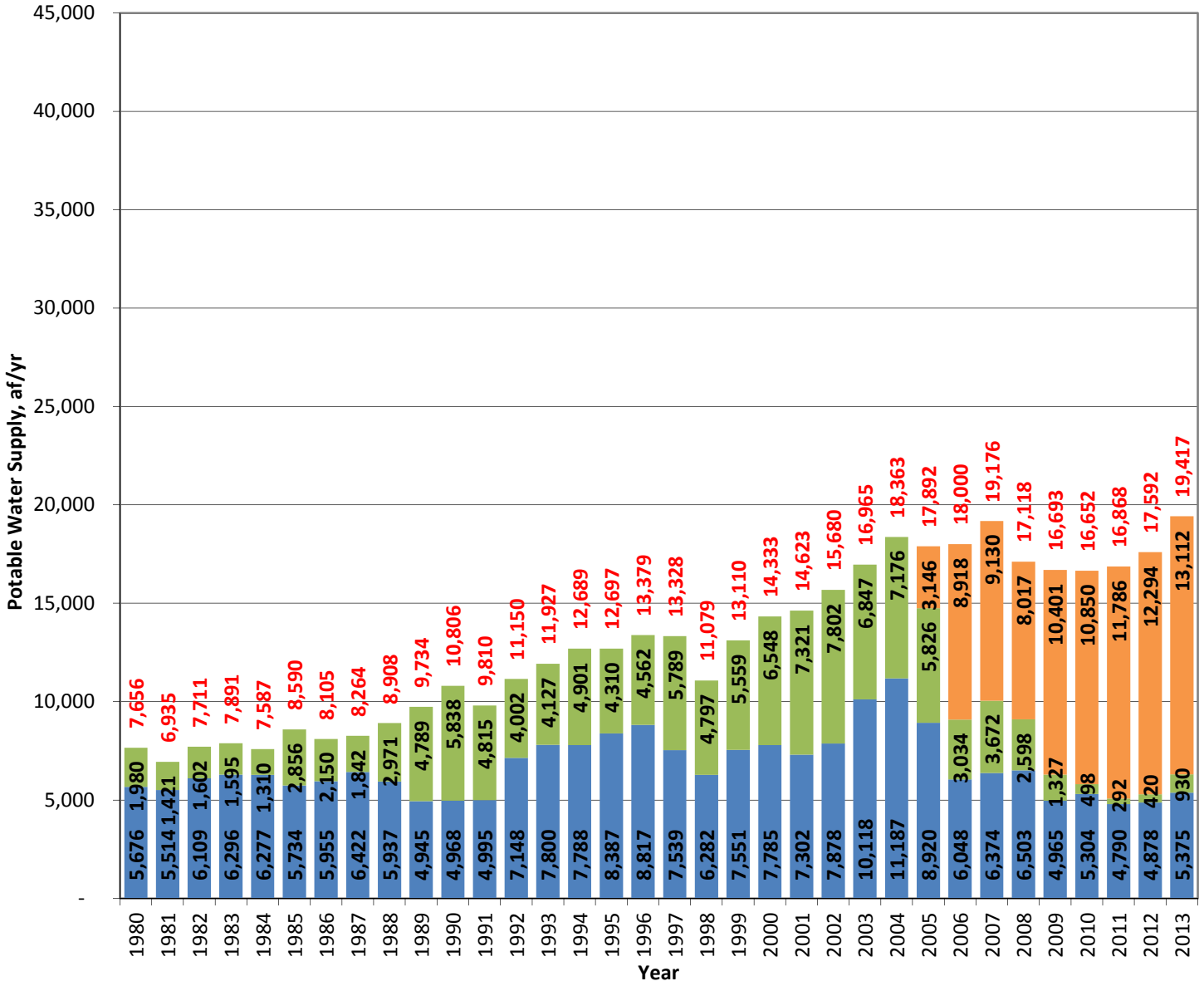
Figure 6. City of Tracy Historical Potable Water Supplies



Legend:

- SSJID (SCWSP)
- Groundwater
- CVP Deliveries
- **Total Supply**

Notes:

(1) Sources: Data for 1980 to 1997 based on historical City groundwater pumpage and CVP deliveries. Data for 1998 to 2004 based on City of Tracy Annual Water Delivery Schedule. Data for 2005 to 2010 based on Table 11 of City of Tracy 2010 UWMP, May 2011. Data for 2011,2012 and 2013 based on City production data.

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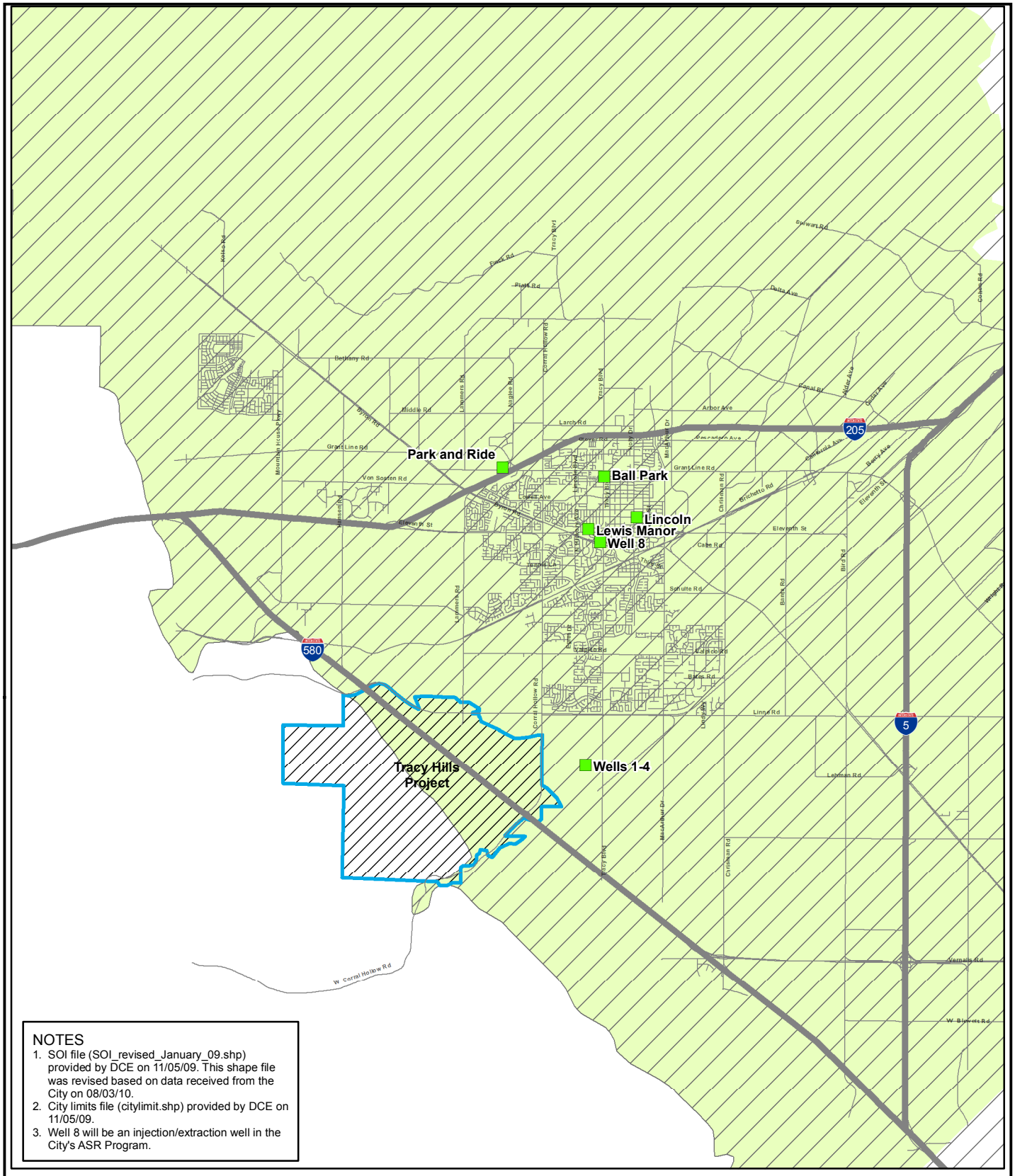

NOTES

1. SOI file (SOI_revised_January_09.shp) provided by DCE on 11/05/09. This shape file was revised based on data received from the City on 08/03/10.
2. City limits file (citylimit.shp) provided by DCE on 11/05/09.
3. Well 8 will be an injection/extraction well in the City's ASR Program.

LEGEND:

- Tracy Hills
- Groundwater Well
- San Joaquin Valley Basin
- Tracy Sub-basin
- Highway

N

0 6,250 12,500

Scale in Feet

FIGURE 7

DRAFT

City of Tracy
Water Supply Assessment
for the Tracy Hills Specific Plan

GROUNDWATER BASIN AND WELL LOCATIONS

WEST YOST ASSOCIATES
Consulting Engineers

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Figure 8. City of Tracy Future Potable Water Supply vs. Demand in Normal Years

Legend:

- Additional SCWSP
- Additional CVP Surface Water (BBID USBR assignment)
- BBID pre-1914 rights (for use in Tracy Hills)
- SSJID (SCWSP)
- Groundwater
- CVP Surface Water Deliveries
- Projected Water Demand
- Total Supply

Notes:

(1) Water demand projection includes water demands for the Proposed Project.

(2) Though the City can sustainably extract up to 9,000 af/yr of groundwater, the City is planning to reduce its groundwater extraction in future years to increase the overall quality of its water supply. The City will continue to rely on groundwater for peaking and drought and emergency supplies, up to 9,000 af/yr, on an as-needed basis.

(3) Source: Table 18 Current and Projected Water Supply Allocations-Normal Year, City of Tracy 2010 UWMP, May 2011.

(4) CVP deliveries include those from the City's CVP Contract and Assignments from BCID and WSID. Includes 10,000 af @ M&I normal year reliability of 75 percent and 7,500 af @ Ag normal year reliability of 50 percent.

(5) Supplies from Semitropic Water Storage Bank and ASR are considered to be dry year supplies and are assumed to be zero in normal years.

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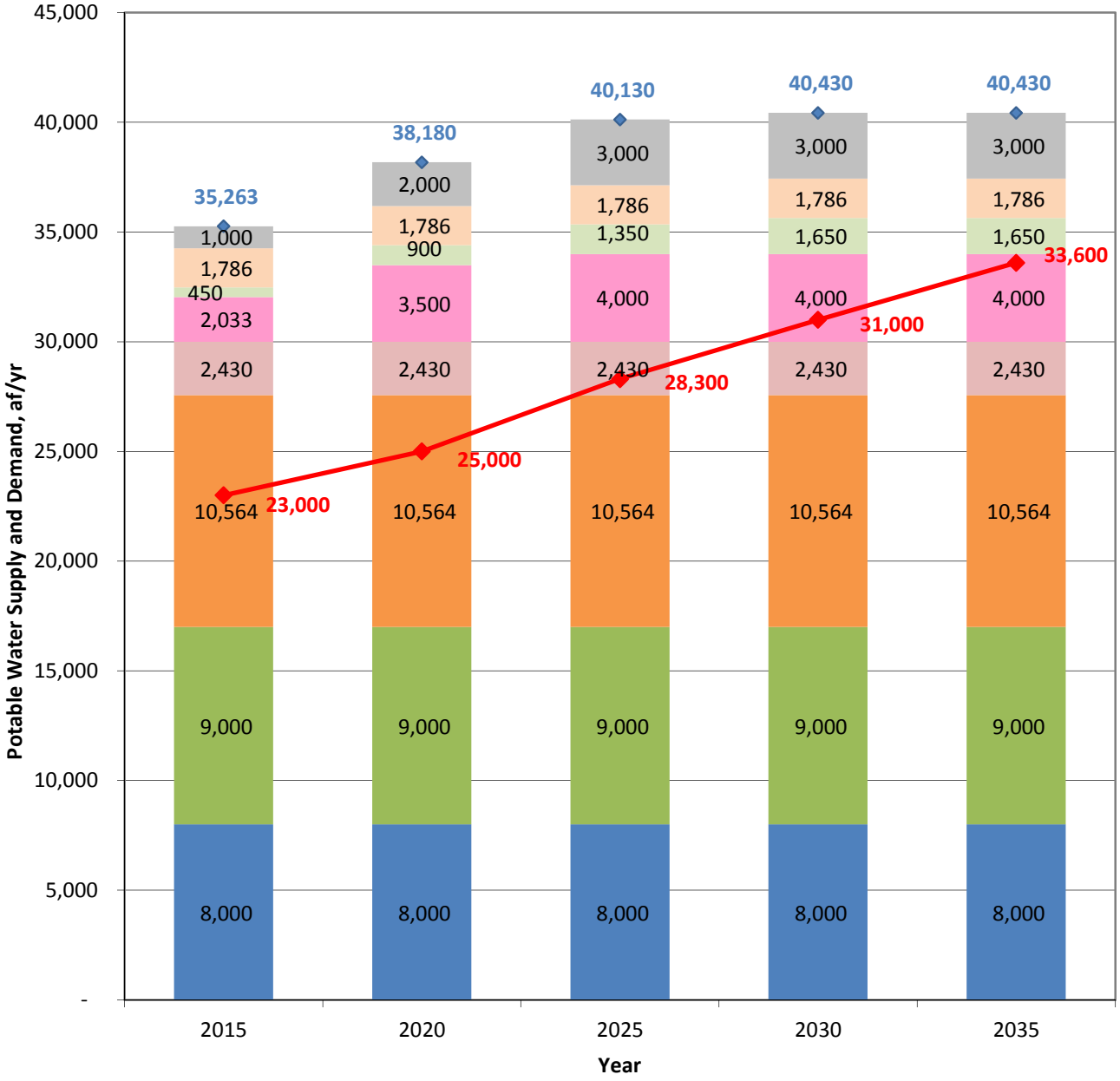
Figure 9. City of Tracy Future Potable Water Supply vs. Demand in a Single Dry Year



Legend:

- Future ASR Water Banking
- Additional SCWSP
- Additional CVP Surface Water (BBID USBR assignment)
- Semitropic Water Storage Bank
- BBID pre-1914 rights (for use in Tracy Hills)
- SSJID (SCWSP)
- Groundwater
- CVP Surface Water Deliveries
- Projected Water Demand
- Total Supply

Notes:

(1) Though the City can sustainably extract up to 9,000 af/yr of groundwater, the City is planning to reduce its groundwater extraction in future years to increase the overall quality of its water supply. The City will continue to rely on groundwater for peaking and drought and emergency supplies, up to 9,000 af/yr, on an as-needed basis.

(2) Source: Table 19 Current and Projected Water Supply Allocations-Single Dry Year, City of Tracy 2010 UWMP, May 2011.

(3) CVP deliveries include those from the City's CVP Contract and Assignments from BCID and WSID. Includes 10,000 af @ M&I single dry year reliability of 65 percent and 7,500 af @ Ag single dry year reliability of 15 percent.

(4) In 2012, the City entered into a permanent agreement with Semitropic Water Storage Bank which provides for up to 10,500 af of storage for the City of Tracy in the Semitropic Water Storage Bank, allowing for annual withdrawals of up to 3,500 af/yr when needed (as shown on this figure for a single dry year). An additional 500 af/yr of Semitropic supplies will be required in the future (by about 2025) to supplement BBID CVP supplies for Tracy Hills in dry years.

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Figure 10. City of Tracy Future Potable Water Supply vs. Demand in Multiple Dry Years

Legend:

- Future ASR Water Banking
- Additional SCWSP
- Additional CVP Surface Water (BBID USBR assignment)
- Semitropic Water Storage Bank
- BBID pre-1914 rights (for use in Tracy Hills)
- SSJID (SCWSP)
- Groundwater
- CVP Surface Water Deliveries
- **Projected Water Demand**
- Total Supply

Notes:

(1) Though the City can sustainably extract up to 9,000 af/yr of groundwater, the City is planning to reduce its groundwater extraction in future years to increase the overall quality of its water supply. The City will continue to rely on groundwater for peaking and drought and emergency supplies, up to 9,000 af/yr, on an as-needed basis.

(2) Source: Table 20 Current and Projected Water Supply Allocations-Mulitple Dry Years, City of Tracy 2010 UWMP, May 2011.

(3) CVP deliveries include those from the City's CVP Contract and Assignments from BCID and WSID. Includes 10,000 af @ M&I multiple dry year reliability of 40 percent and 7,500 af @ Ag multiple dry year reliability of 10 percent.

(4) In 2012, the City entered into a permanent agreement with Semitropic Water Storage Bank which provides for up to 10,500 af of storage for the City of Tracy in the Semitropic Water Storage Bank, allowing for annual withdrawals of up to 3,500 af/yr when needed (as shown on this figure for multiple dry years). An additional 500 af/yr of Semitropic supplies will be required in the future (by about 2025) to supplement BBID CVP supplies for Tracy Hills in dry years.

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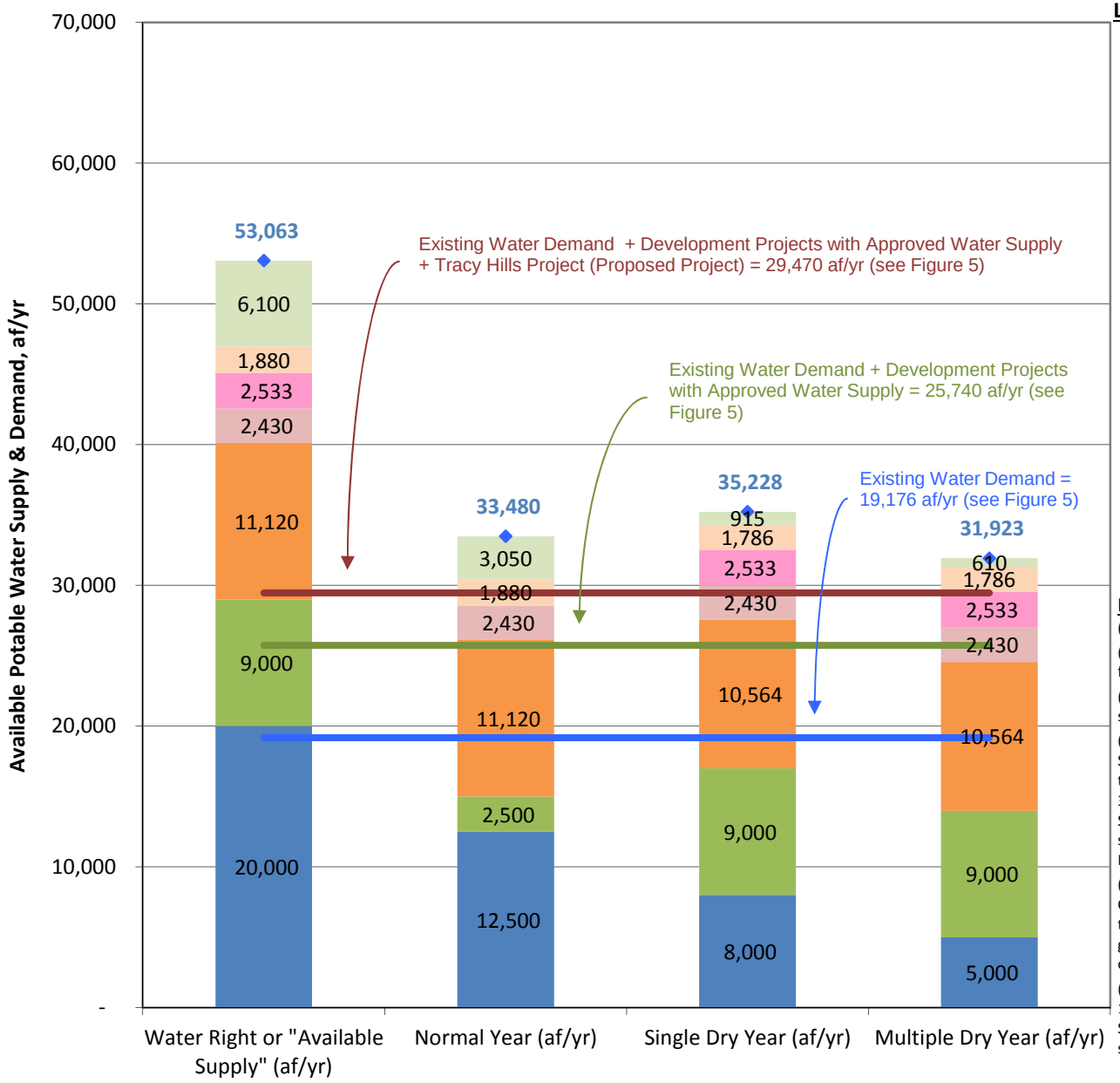
Figure 11. City of Tracy Existing Potable Water Supplies vs. Demand with Proposed Project



Legend:

- Additional CVP Surface Water (BBID USBR assignment)(annexation of Ellis, Cordes and part of Tracy Hills)
- Additional SCWSP Supplies
- Semitropic Water Storage Bank
- BBID Pre-1914 (only for Tracy Hills within BBID Service Area 2 and within CVP CPOU)
- SSJID (SCWSP)
- Groundwater
- CVP Surface Water Deliveries
- Existing Water Demand
- Existing Water Demand + Development Projects with Approved Water Supply
- Existing Water Demand + Development Projects with Approved Water Supply + Tracy Hills
- Total Potable Water Supply

Notes:

(1) Source: Tables 18, 19, and 20, City of Tracy 2010 UWMP, May 2011.

(2) CVP deliveries include those from the City's CVP Contract and Assignments from BCID and WSID.

(3) Supplies from Semitropic Water Storage Bank are considered to be dry year supplies and are assumed to be zero in normal years.

(4) In 2012, the City entered into a permanent agreement with Semitropic Water Storage Bank which provides for up to 10,500 af of storage for the City of Tracy in the Semitropic Water Storage Bank, allowing for annual withdrawals of up to 3,500 af/yr when needed. 2,033 af/yr is assumed to be currently available from Semitropic based on the City's deposits to date. An additional 500 af/yr of supplies from Semitropic will be needed to supplement water supplies for the Proposed Project.

(5) Though the City can sustainably extract up to 9,000 af/yr of groundwater, the City is planning to reduce its groundwater extraction in future years to increase the overall quality of its water supply. The City will continue to rely on groundwater for peaking and drought and emergency supplies, up to 9,000 af/yr, on an as-needed basis.

(6) Additional CVP Surface Water (BBID USBR assignment) assumes annexation of 1,788 acres in conjunction with Ellis Specific Plan (321 acres), Cordes Ranch Specific Plan (1,080 acres) and portion of Tracy Hills (387 acres) within BBID CVP service area.

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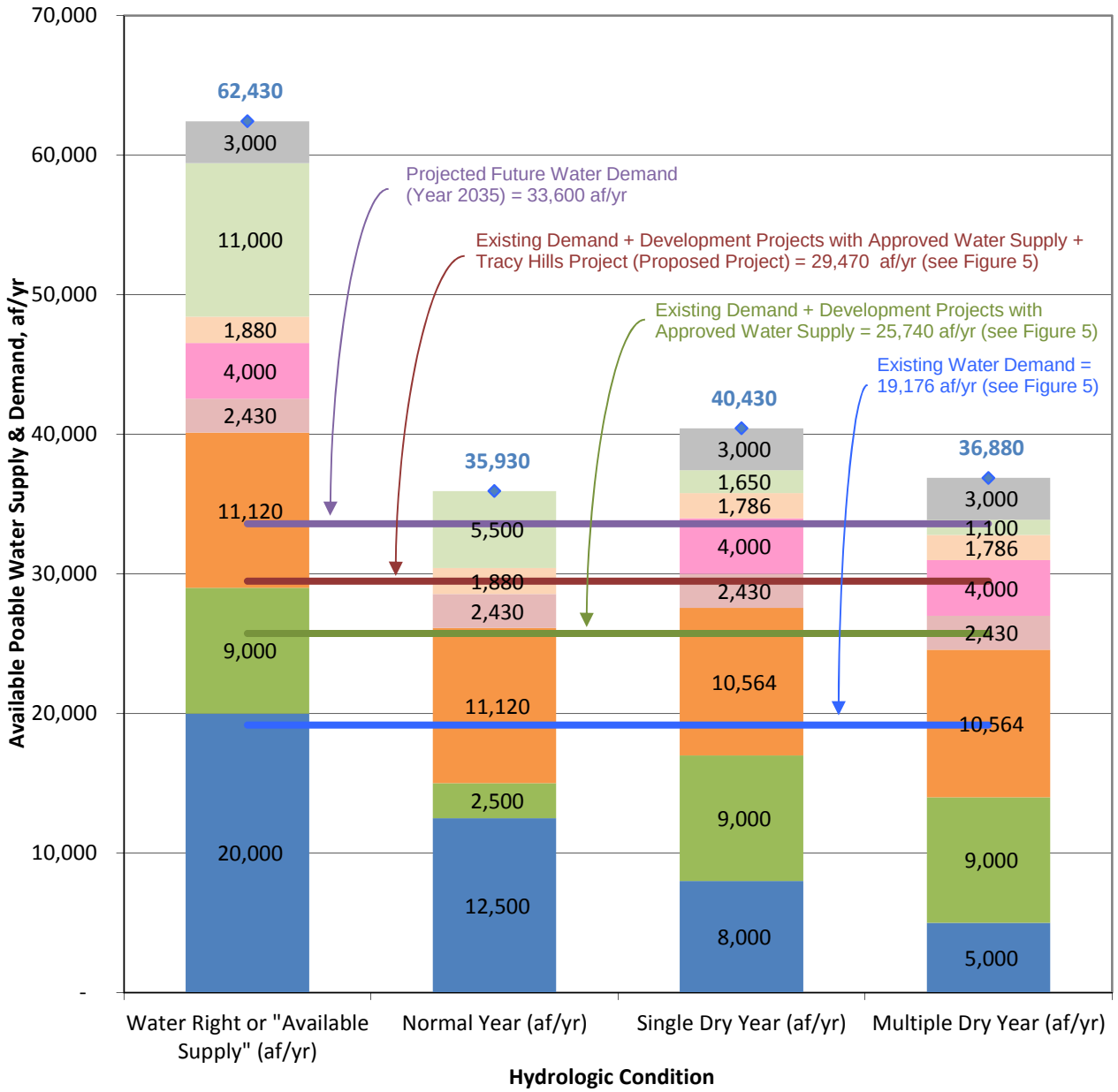
Figure 12. City of Tracy Existing and Additional Potable Water Supplies at Year 2035 vs. Demand



Legend:

- Future ASR Water Banking
- Additional CVP Surface Water (BBID USBR assignment)
- Additional SCWSP Supplies
- Semitropic Water Storage Bank
- BBID Pre-1914 (only for Tracy Hills within BBID Service Area 2 and within CVP CPOU)
- SSJID (SCWSP)
- Groundwater
- Total CVP Surface Water
- Existing Water Demand
- Existing Water Demand + Development Projects with Approved Water Supply
- Existing Water Demand + Development Projects with Approved Water Supply + Tracy Hills
- Projected Future Water Demand (Year 2035)---per 2010 UWMP
- Total Potable Water Supply

Notes:

See notes on Figure 11.

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